2017

CROSSROADS

An action plan to develop a world-leading tech startup ecosystem in Australia

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FOREWORD

Scott Farquhar
Co-CEO, Atlassian

Back in 2002, when we started Atlassian, Australia's startup and tech community was nascent. As we saw our company grow, we also saw the local tech sector develop. We have certainly come a long way.

There has been explosive growth in the last few years in particular. As a country we have begun to improve in the three key areas of a thriving startup ecosystem - capital, talent, and density. Governments around the country have, in recent years, played a positive role in that improvement.

On capital, new tax incentive structures have helped support rapid growth in capital availability, with record years for venture funds raised in both 2016 and 2017. Density, which has already improved in recent years with a flourishing community of incubators and coworking spaces, is likely to get another boost with dedicated startup hubs opening in major cities around the country, supported by state and local governments. This is particularly true in Sydney where, before 2017 is out, the CBD will be home to a startup hub of truly global scale.

But when it comes to talent, we are falling behind. Atlassian is one of the largest hirers of Australian tech talent, and we have sponsored more than $2m in scholarships to support graduates in technology disciplines from Australian universities. But it's not enough - there is a global gold rush at the moment that is generating intense international competition to attract the best tech talent, and Australia needs to lift its game.

Atlassian now employs more than 1000 people around Australia, about a quarter of whom are on 457 visas. This isn't in lieu of local talent - we hire hundreds of Australian graduates each year. We recruit from overseas when particular expertise isn't available locally, particularly where we need world-class talent to grow the company and educate our team.

Tech is a rapidly changing sector, meaning the skills that technology businesses need to draw on also change rapidly. Access to a high quality, dynamic skilled visa system is therefore of fundamental importance in building a fast-growing company in this space. So when the skilled migration system was overhauled earlier this year, it came as a real blow for tech companies across the country. Visas have been slashed as a result of the changes, with less than half as many visas being issued in Q3 this year as the same period in 2016.

Right now, Australian technology companies can't import talent in business-critical roles like product managers or user experience designers. And while software engineers have a path to permanent residency, their managers (who are classified as 'ICT managers') do not, limiting the ability of local companies to hire world-class managers and mentors for recent Australian graduates.

At Atlassian, we rely on the ability to offer assured long-term employment when recruiting, and at the moment we are losing some of the highest quality candidates regularly because of the current uncertainty about ongoing residency status in Australia. This sort of uncertainty pushes talented people away. World-class people are very unlikely to uproot their lives and move to Australia if they can't be sure that they'll be allowed to live here in the long-term.

This needs urgent attention. As this report highlights, attracting talent is now the single biggest barrier facing Australian startups.

If we want to take advantage of the huge wave of prosperity that technology is set to deliver over the coming decades, we need to focus right now on making Australia a home for the best and brightest in the world, regardless of where they were born. The outcome of boosting growth in this sector will be more jobs for Australians in tech-driven industries, not fewer.

Becoming a global magnet for tech talent will not be easy, even if we commit to it as a goal. Other countries are moving fast, because the prize is too big to ignore. To be successful, we need a focused, deliberate approach that draws on our natural advantages and is clear-eyed about the challenges that lie ahead.

If we act immediately, timing could work in our favour. The current political and economic climate is causing many Silicon Valley residents to reconsider where they live and work. And with a range of other countries tightening their own immigration, now is the perfect time for Australia to make a play to lead the world in attracting talent.

This will require focused support from government and coordination with the private sector.

This report calls for an immediate update to the skilled migration visa to address the skills gap. It also calls for the creation of a 'digital skills visa' to help startups better compete in this global war for talent. Now is the time for the country to come together to push for these positive changes and encourage the best talent from around the world to come to Australia.

The bottom line is, to become a world-leader in innovation Australia must attract world-leading talent.

We've seen this industry come a very long way in the last 15 years. Its growth is something we should celebrate, but we can't take it for granted. Long-term success is by no means assured, and will require us to tackle difficult problems head-on.

Scott Farquhar is one of Australia's most successful tech entrepreneurs, having co-founded Atlassian in 2002 with Mike Cannon-Brookes. They have run the business together since then, including through a NASDAQ IPO in late 2015. Scott is a Blackbird investor and Startmate mentor, and in 2014 he co-founded Pledge 1%. Scott also sits on the board of the federal government's innovation agency, Innovation and Science Australia.

OVERVIEW
(tl;dr)

Startups in Australia are booming. Capital availability is at record highs, local tertiary institutions continue to produce high quality talent, and governments around the country are increasing support for young high-growth businesses and the organisations that help them grow. Coworking spaces in major cities are overflowing, requiring rapid expansion to accommodate increased demand by entrepreneurs. A number of Australian ecosystems have begun to attract the attention of prestigious international events and programs, including TechCrunch Battlefield, Techstars, 500 Startups, MassChallenge, and Launch Festival. Prominent international investors are increasingly investing in Australian businesses.

Nevertheless, as we will see, if Australia's young and relatively immature startup ecosystem is to be truly globally competitive there remains a lot of work to be done.

If we succeed in developing a globally competitive technology sector, it will be to the benefit of all Australians. Technology is already delivering huge economic dividends to economies around the world, and that trend is only likely to accelerate in coming years. Ensuring Australia is positioned to receive some of those dividends is vitally important to the continuing prosperity of the country as a whole.

// Startups in Australia increasingly have access to abundant capital

Australia's venture capital sector has expanded rapidly in the last few years. 2015-16 saw $568m raised for new VC funds in Australia, and was a record year in this regard. It was immediately eclipsed by 2016-17, which saw more than $1 billion raised. Superannuation funds have long been thought to hold the key to unlocking massive growth in Australia's VC sector - Australia's super funds manage more than $2 trillion, the 4th biggest such industry in the world. Indeed, much of the growth in the last few years has been a result of large super funds beginning to invest in venture firms. Improvements to the tax-friendly structure available to Australian venture firms have helped too, with the total number of registered venture firms more than doubling since the start of 2016.

Angels have also benefited from regulatory changes. Tax incentives for early stage investors were introduced in July 2016 as part of the federal government's signature 2015 innovation package, though a paucity of data makes assessing the impact of this scheme difficult.

This proliferation of capital has helped Australian startups raise more funds locally. Since 2014, total VC investment in Australian startups has remained consistent at around $400-$500m per year, but the number of deals involving overseas investors has decreased dramatically. Australian founders are now more able to get funded locally, which is likely to increase retention. At the same time, companies headquartered in Australia have increased their ability to attract top-tier overseas venture funding, with Sequoia and Index Ventures both leading multiple investment rounds in Australian startups since 2016.

// Deals involving overseas investors in Australian startups

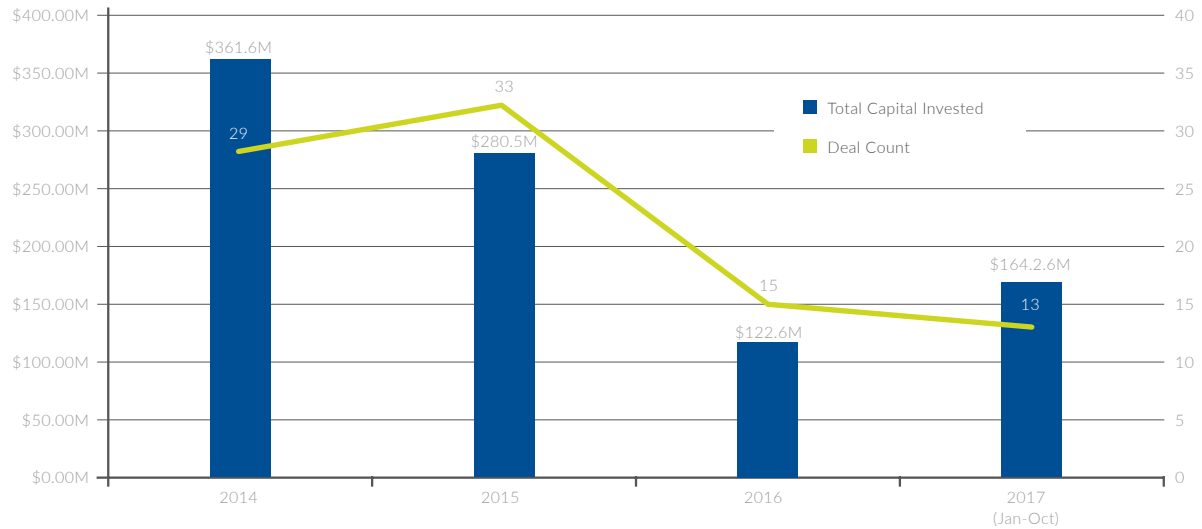


Figure 1: Venture capital invested and deal count - deals involving overseas investors 2014-17[1]

In all of this we need to keep in mind that Australia is growing from a small base when it comes to venture funding. The Australian Venture Capital Association's contribution to this report suggests that despite strong growth in the sector Australia is still 'boxing below its weight'. There remains substantial room for further improvement.

1 Pitchbook Data

// Government support for startups is broadening

Government support for startups in Australia was extremely limited prior to 2015. Since then, the federal government's National Innovation and Science Agenda (NISA) has rolled out a range of programs across the country, many of which are canvassed and assessed in this report. Bipartisan support largely remains, although new government policy initiatives in this space have been limited since the 2016 federal election.

In the meantime, state governments have rapidly increased support for emerging startup sectors. Substantial levels of funding have been dedicated to growing local ecosystems in New South Wales, Victoria, South Australia and Queensland. This report identifies key developments around the country over the past year, and takes a deep dive into the NSW startup ecosystem.

// The sector is building from a small base

There is reason to feel optimistic about the momentum building in the sector, but this optimism should be tempered by the understanding that Australia has a young, relatively immature sector and will require sustained growth and success to be truly internationally competitive. Globally, countries and cities are moving fast to help support the rapid development of digital economies. Despite the absolute growth being experienced in Australia's startup sector in recent years, our relative global performance indicators have remained flat or trended downwards.

// In some crucial areas, Australia is moving backwards

While positive steps have been taken in a range of policy areas, in others Australia has lost ground recently. The ability of Australian startup founders to attract world-class talent was made harder by the 2017 tightening of the skilled migration visa.

Talent is the single biggest challenge facing Australian startups, and there is currently no mechanism for startups to attract overseas workers to fill a range of high-demand digital roles, particularly in product development and management. At a time when Australian startups are crying out for talent and high-skill tech workers are likely to be looking for roles outside the US, this gap requires immediate attention.

Increasing skilled migration in the right areas could even be politically advantageous: a Gallup poll from December 2015 identified Australia as the only Western country where those who supported increased migration (30%) outweighed those who wanted to see it cut (25%).[2]

Cost concerns around the R&D Tax Incentive have also led to backwards steps in the federal government's most important program for startups. The Turnbull government has delayed its response to a comprehensive review of the program for more than 18 months, leaving the scheme's administrators to deal with its expanding costs. That has led to tightened access for software startups, with previously broad interpretation about qualifying activities beginning to narrow.

// Innovation still isn't well understood

While startups have seen increased political support at both a federal and state level since 2015, the significance of the positive impact of these businesses needs to be more strongly communicated. The 2016 federal election left many in politics with a sense that 'innovation' was a tough sell, politically.

Fears about technology-driven job displacement and shifting labour force dynamics have threatened to overshadow the vast economic opportunities that emerging technologies present. The evidence suggests those fears are exaggerated, with automation likely to largely replace tasks, rather than whole jobs, for the foreseeable future. The real risk is that without sustained, ambitious, targeted support for the growth of new-economy businesses, Australia will experience the disruptive elements of rapid technology adoption without realising its share of the benefits.

// To succeed, support must be laser-focused

To broaden its appeal, policy-makers have attempted to widen the focus of innovation policy to include SMEs, large enterprise, and a range of other economic stakeholders. This group certainly has an important role in a new digital economy, and technology will present challenges and opportunities for these businesses, some of which will require the attention of lawmakers. But if Australia is to develop a genuine high-value local tech sector we will need specific policy attention directed at supporting the creation and rapid growth of local tech startups. Bundling startup policy with broader innovation or business support risks diluting this focus and greatly reducing impact.

// The way forward

With the help of contributions from sector leaders around the country, this document sets out a series of high-impact recommendations to drive growth in Australia's startup sector. These recommendations stem from detailed data analysis and extensive consultation with startups, investors, corporates, and startup support organisations across the country.

This report also makes the case for decisive, forward-looking support for the growth of an internationally competitive local tech sector, led by ambitious high-growth young companies. It outlines the powerful job creation effect these companies bring, and highlights the economic impact they have had in regions where successful tech ecosystems have emerged. There are compelling reasons why supporting startups should be politically popular. And, regardless of what the polling says, this is an area of economic policy that requires immediate, sustained action.

2 Gallup (2015), Migration Policies, Attitudes in Sync Worldwide (news.gallup.com)

SUMMARY OF RECOMMENDATIONS

Expand skilled worker visas to include digital skills and reflect startup needs (p95)

The federal government should, in consultation with the sector, update the lists of eligible occupations under the skilled migration visa arrangements to reflect the critical skills shortages faced by digital startups. The focus should be on recognising new-economy jobs such as specialists in product management, user experience and interface design, and digital growth. Visa legislation should also be updated to take account of equity-based remuneration.

The federal government should also explore the development of a more flexible standalone 'digital skills visa' to help Australian businesses meet the fast-changing talent needs of a digital economy.

Pay the R&D Tax Incentive quarterly (p101)

The federal government should pay the R&D Tax Incentive on a quarterly basis for early-stage startups to more closely align the timing of the refundable tax offset with business needs. Genuine digital technology startups should also be identified as high value recipients of the refundable portion of the scheme. ATO and Department of Industry interpretation of eligible activities under the scheme should be broadened in recognition that development and commercialisation activity should be strongly supported.

Continue to build and connect innovation precincts (p47)

State governments should continue to resource and expand startup precincts, in collaboration with industry partners. Victoria, New South Wales, and Queensland should look to consolidate and expand existing efforts and ensure resources remain adequate over the medium term.

Further work should also be done by precinct managers and governments to connect and coordinate precincts to create a true network of global-scale startup districts.

// Substantially improve the entrepreneur visa (p96)

The federal government should improve the entrepreneur visa by altering and simplifying qualification criteria, dramatically shortening processing times, and reducing application fees.

// Make targeted amendments to legislation affecting Employee Share Schemes (p69)

The federal government should make targeted amendments to legislation affecting Employee Share Schemes to exempt options issued under the scheme from the 20/12 rule and to make the scheme available to a broader array of companies.

// Extend the digital technologies curriculum (p48)

The federal government should extend the digital technologies curriculum to make computer science and computational thinking mandatory to Year 10 and elective in Years 11 and 12. State governments should invest in careers advice services to provide students with appropriate ongoing support.

// Introduce copyright safe harbour protections (p103)

The federal government should proceed with plans to implement a copyright safe harbour for online content providers.

// Entrepreneurship programs in high schools and universities (p104)

The federal government should work with state governments to implement entrepreneurship programs in primary and secondary schools and provide additional funding support for university student incubators.

// Establish dedicated policy teams focused on new technology (p111)

Governments at all levels should establish dedicated policy teams to ensure new technologies and digital business models are regulated effectively and in a timely way.

THE AUSTRALIAN STARTUP ECOSYSTEM

// The Australian startup ecosystem map

//Government

ADVANCE QUEENSLAND

Australian Government
Department of Industry, Innovation and Science

Innovation and Science Australia

JOBS FOR NSW

launchvic

NATIONAL INNOVATION & SCIENCE AGENDA

Office of the Queensland Chief Entrepreneur

//Co-Working Spaces

BLOOM · Fishburners (where startups start) · FLUX (Powered by SPACECUBED) · YORK BUTTER FACTORY · GRAVITY · HAYMARKET HQ · hub AUSTRALIA · inspire9 · WOTSO WorkSpace. · spacecubed · リトル東京 Little Tokyo Two · QUEENS COLLECTIVE · RIVER CITY LABS · SYNC LABS · SproutX (In partnership with FINDEX) · STONE & CHALK · tech hub · the studio · tyro fintech hub · wework

//Early Stage Investors

ADVENTURE CAPITAL · BlueChilli VENTURE FUND · Brisbane Angels · CARTHONA CAPITAL · dominet (digital | innovation | investments) · Perth Angels · FOLLOW [THE] SEED · TSV · SYDNEY SEED FUND · iNNOVATION BAY · Right Click CAPITAL · SOUTH AUSTRALIA · SYD VENTURES · scale · TRANSITIONLEVEL INVESTMENTS · Sydney Angels

//Media

australian anthill · startup smart · OPEN THE POD BAY DOORS · STARTUP DAILY · SHARK TANK · THAT STARTUP SHOW · THIS WEEK IN STARTUPS AUSTRALIA · Techboard · InnovationAus.com (Public Policy and Innovation in Australia) · The Tech Street Journal (We love things that seem impossible.)

//Events

above all human · POST PITCHFEST Regional · B2B ROCKS · Creative³ · CeBIT AUSTRALIA · iAWARDS · iNNOVATION BAY · MYRIAD · South Australia entrepreneurs week 2017 (INNOVATION STARTS HERE) · salesforce · SiliconBeach · _southstart · TECH23 · Startup Weekend · TC · STARTCON · spark festival sydney · THE SUNRISE · Curtin University WESTVITECH fest · WD WILDIGITAL

//Education

FOUNDER INSTITUTE · iAccelerate · MAP MELBOURNE ACCELERATOR PROGRAM · WADE INSTITUTE · STARTUP CATALYST · INCUBATE · GENERAL ASSEMBLY · NEW VENTURE INSTITUTE · STARTUP ONRAMP · ThincLab. · ICC INNOVATION & COLLABORATION CENTRE · The Entourage (DREAM OUT LOUD) · UTS Hatchery · UNSW AUSTRALIA · Michael Crouch Innovation Centre

//Series A/B Funds

AirTree · ALIUM CAPITAL MANAGEMENT · SOUTH AUSTRALIA · artesian VENTURE PARTNERS · Blackbird VENTURES · BlueSky Alternative Thinking · MACDOCH VENTURES · GIANT LEAP FUND · OUR | INNOVATION FUND, LP · reinventure · nabventures · nab · main sequence ventures · r&mpersand. · VENTURES · One Ventures · SquarePeg capital · salesforce · cisco · Starfish Ventures · Tempus Partners

//Industry Groups

StartupAUS · acs · aiia australian information industry association · Australia-Israel Chamber of Commerce (WA) Inc · AVCAL · AustCyber Australian Cyber Security Growth Network · FinTech Australia · StartupAdelaide · RegTech · START UP TAS · STARTUPWA · insurtechAustralia · VIC UP START · StartupQLD · TechSydney

//Accelerators & Incubators

ANGEL CUBE · Atomic Sky · POWERED BY CSIRO · COLLIDER · CyRise · enterprize · FUEL·D ACCELERATOR · muru D · GRIFFIN Accelerator (ENABLING STARTUP SUCCESS) · KPMG Energise · H2 VENTURES · Microsoft Innovation Center · rcl accelerator · the moonshine laboratory · VOCUS · upstart · BlueChilli · Springboard ENTERPRISES · 25Fifteen · cicada INNOVATIONS · slingshot · PlusEIGHT POWERED BY muru D · Adelaide Smart City STUDIO · Startmate · techstars · Unearthed

STATE OF THE STARTUP ECOSYSTEM IN 2017

	Ranking	Performance	Funding	Market Reach	Talent	Startup Exp.	Growth Index	
Silicon Valley	1	←	1	1	1	2	1	4.2
NYC	2	←	3	2	3	7	4	4.5
London	3	↑3	4	4	2	10	5	4.8
Beijing	4	NEW	2	5	19	8	2	4.4
Boston	5	↓1	6	6	12	4	3	4.0
Tel Aviv	6	↓1	9	8	4	11	7	4.5
Berlin	7	↑2	7	9	6	5	10	5.5
Shanghai	8	NEW	8	3	10	9	13	5.5
Los Angeles	9	↓6	5	7	15	14	11	4.2
Seattle	10	↓2	12	13	14	3	6	4.5
Paris	11	←	14	14	9	16	8	4.2
Singapore	12	↓2	16	16	11	1	9	4.3
Austin	13	←	15	11	18	6	9	4.3
Stockholm	14	NEW	17	20	8	18	12	5.3
Vancouver	15	↑3	19	19	7	15	15	4.3
Toronto	16	↑1	18	12	5	20	18	4.7
Sydney	**17**	**↓1**	**20**	**10**	**13**	**12**	**17**	**6.3**
Chicago	18	↓11	13	15	20	13	14	3.9
Amsterdam	19	←	10	17	17	19	16	4.8
Bangalore	20	↓15	11	18	16	17	19	4.7

Figure 2: Top 20 startup ecosystems as ranked by Startup Genome[3]

Supporting startups has become an economic priority for governments in many countries. Australia's progress must therefore be measured with reference to the rest of the world.

One important benchmark is the Startup Genome report on Global Startup Ecosystems (formerly called the 'Compass Report'). Startup Genome's 2017 report is the most comprehensive longitudinal study ever undertaken of international startup ecosystems. It is based on data from 11,000 surveys completed by startups, investors and other stakeholders around the world and over 250 interviews with investors, entrepreneurs, and experts. The latest Genome report included a detailed analysis of the startup ecosystems in 20 cities, plus commentary on several other cities outside the top 20.

Sydney is the only Australian city to rank in the top 20 globally, and has largely held steady in its rankings in recent years. It was ranked 17th in the world in 2017. The report notes that Beijing and Shanghai were not ranked in the 2015 iteration of the report. Had they been, Sydney would have climbed one spot (from 18th to 17th) from 2015 to 2017. We examine Sydney's performance in more detail later in this report in our deep dive on the NSW startup ecosystem.

The Genome report makes the important observation that international policy efforts to support startup ecosystems have intensified in recent years, with particular progress having been made by places such as Singapore and Stockholm as a direct result of government investment in supporting startup ecosystems. This helps explain why, despite substantial growth in Australian startup ecosystem factors (particularly exits and capital availability), our ecosystem rankings have remained static.

Melbourne is featured in the 2017 report and has previously ranked just outside Genome's top 20 (21st, in 2015). On these numbers, Australia as a whole sits somewhere on the edge of the global top 10 ecosystems – clearly behind the US, the UK, China, Israel, Germany, France and Canada, but competitive with Singapore and Sweden.

// Global entrepreneurship rankings

The Global Entrepreneurship Development Institute (GEDI) rankings represent the relative health of national entrepreneurial ecosystems around the world, based on a methodology covering 14 key pillars of entrepreneurship.

IMPROVING THE CONDITIONS FOR ENTREPRENEURSHIP BY 10% COULD ADD

$170 BILLION

TO THE ECONOMY

UNITED STATES	NORTH AMERICA
GDP per capita PPP	$52,676
Individual variables	78.4%
Institutional variables	93.9%
GEI	83.4%

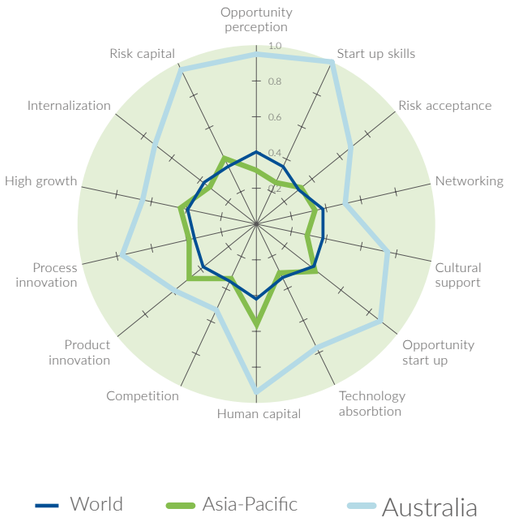
SWITZERLAND	EUROPE
GDP per capita PPP	$54,933
Individual variables	67.5%
Institutional variables	93.3%
GEI	78%

ISRAEL	MIDDLE EAST / NORTH AFRICA
GDP per capita PPP	$31,092
Individual variables	72.1%
Institutional variables	78.5%
GEI	59.1%

CHILE	SOUTH AND CENTRAL AMERICA / CARIBBEAN
GDP per capita PPP	$21,302
Individual variables	77.3%
Institutional variables	66.9%
GEI	58.8%

BOTSWANA	SUB-SAHARAN AFRICA
GDP per capita PPP	$15,286
Individual variables	66.1%
Institutional variables	46.2%
GEI	34.4%

AUSTRALIA	ASIA-PACIFIC
$42,149	GDP per capita PPP
72%	Individual variables
82%	Institutional Variables
73%	GEI



// Australia's 14 Pillar Performance

Human capital	.94	Opportunity perception	.95
Competition	.53	Start up skills	1.00
Product innovation	.59	Risk acceptance	.68
Process innovation	.77	Networking	.51
High growth	.65	Cultural support	.75
Internationalization	.72	Opportunity start up	.88
Risk capital	.96	Technology absorbtion	.77

1

Australia ranks 1st out of 24 countries in Asia-Pacific

7

Australia ranks 7th in the world out of 132 countries

GEDI Global Entrepreneurship Index Report 17, www.thegedi.org

THE IMPORTANCE OF STARTUPS

STARTUPS DRIVE MASSIVE JOB CREATION

The global startup sector is undergoing a massive expansion, with the low cost and ubiquity of building blocks for tech startups leading to more entrepreneurs tackling billion-dollar markets than at any time in history. In 2014, the Economist called this a 'cambrian explosion' – with entrepreneurs reshaping entire industries and giving rise to a global movement. If anything, that expansion has solidified and accelerated. The economic forces at work here are profound, as startups – and the technology companies they become – now account for a large and growing proportion of the world's productive output.

One of the clearest outputs of the startup boom has been rapid job creation in areas where tech firms have clustered. Research conducted by Enrico Moretti, Professor of Economics at the University of California, Berkeley and an expert on the future of economic growth, suggests technology-based jobs have a larger multiplier effect than jobs in any other sector. Moretti found that for each new technology-based job, five additional jobs are created in other sectors[4]. He notes that this multiplier effect is three times larger in the technology sector than in extractive industries (such as mining) or traditional manufacturing. He notes this multiplier is one of the reasons that employment in the US technology sector has grown at 25 times that of other parts of the economy.

Moretti highlights a snowball effect whereby regions that spawn a number of large technology companies generate their own attractive pull, making that region more conducive to attracting further knowledge-intensive companies and workers.

By way of example, Moretti points out that in 2012 (when his work was published) Facebook employed only a few thousand people in its Menlo Park headquarters, but in doing so had indirectly created an estimated 53,000 jobs for Facebook app creators and 130,000 jobs in related business services. In 2015, Deloitte estimated that Facebook was already responsible for the creation of as many as 4.5 million jobs around the globe.[5] Similarly, Apple estimates its 80,000 direct employees in the US make up just 4% of the total number of US-based jobs the firm has created, with 450,000 jobs having been generated with US-based suppliers and more than 1.5 million jobs attributable to the app store ecosystem.[6]

A study by the Kauffman Foundation in 2015 found that 1.5 million new jobs are added to the US economy each year by new firms, while over an extended period existing firms have been net job destroyers, losing a total of 1 million jobs per year. The report emphasises that it is not small businesses that are the primary engine of job creation, but rather young businesses.

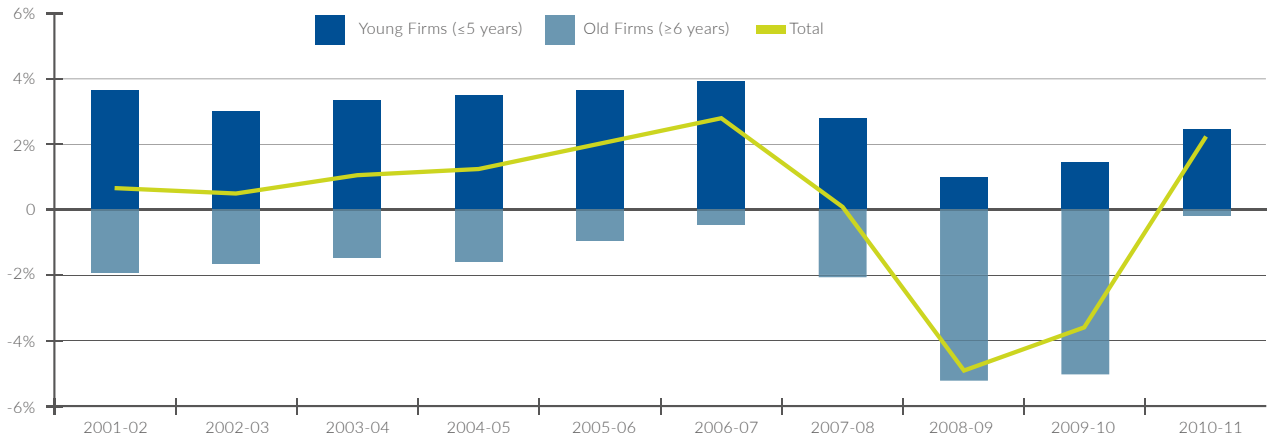


Figure 3: Net job growth: new versus established firms, 2001-11 (average over 15 countries)[7]

The UK's Centre for Economics and Business Research[7] found that high growth companies (those with more than 20% growth per year) generated 256,000 new jobs in 2012-13, or 68% of the total new jobs created in that period, while only accounting for 1% of all UK businesses.

Based on this and similar research in other countries, the UK government has increasingly taken an economic policy approach of focusing support on the relatively small number of companies with the highest growth potential, rather than broad support programs for new businesses and SMEs.[8] According to NESTA's Chief Executive Jonathan Kestenbaum, 'Backing excellence and innovation is not an elitist policy: rather, it is the best way of generating employment and opportunity.'

Similar results were reported in the OECD Science, Technology and Industry Scoreboard 2013 which shows that over an extended period, including during the global financial crisis, new businesses have consistently been net job creators whilst existing business have been net job destroyers.

// Australia

Data from the Australian Department of Industry shows that new firms create substantially more jobs than established ones, and that in Australia firms up to three years old created 1.44 million jobs over the six years to 2011 compared with a net loss of 400,000 jobs by established firms over the same period. The report notes that 'the bulk of this employment growth is driven by a relatively small number of high-growth-orientated startups'.[9]

The Office of the Chief Economist's 2015 Innovation System Report notes that 'while innovative entrepreneurship can disrupt competitive markets, it also has the potential to nurture business dynamism and economic growth. Like many OECD countries, Australia is in the midst of an economic transition. Australia's situation is different in that it is not so much seeking recovery from a downturn as searching for new sources of growth to balance the relative decline in resources sector investment. The role of the entrepreneur is central to this process.'[10]

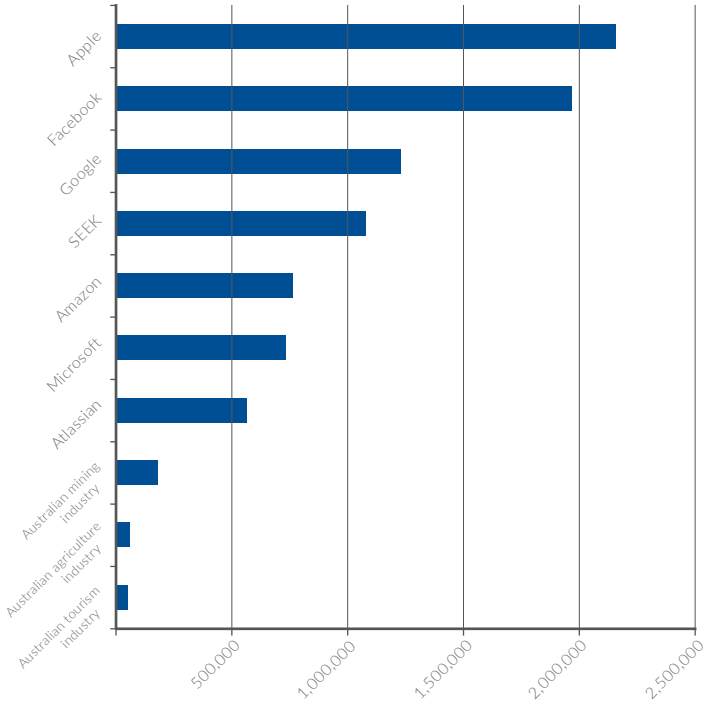


Figure 4: Revenue per employee – selected companies and industries[13]

Technology-based companies are also consistently able to generate jobs with much higher labour productivity (revenue per employee) than any other sector (see Figure 4).

At the same time, genuine concerns exist about technology-driven employment dislocation. Research from the University of Oxford has suggested that software and automation will replace close to half of all low knowledge-intensity jobs over the next 20 years.[11]

But more recent research based in Australia suggests that automation is likely to impact tasks, rather than whole jobs, in the near future - in particular, manual or routine tasks. The same research also notes the economic opportunity from automation could be as great as $2.2 trillion.[12]

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7 highgrowthsmallbusiness.co.uk
8 nesta.org.uk
9 Office of the Chief Economist, Australian Innovation System Report 2015 (industry.gov.au)
10 Office of the Chief Economist, Australian Innovation System Report 2015 (industry.gov.au)
11 Frey & Osborne (2013), The Future of Employment: How susceptible are jobs to computerisation? (oxfordmartin.ox.ac.uk)
12 alphabeta (2017), The Automation Advantage (alphabeta.com)
13 StartupAUS analysis

STARTUPS DRIVE DISRUPTION (AND THATS A GOOD THING)

Industry	Disruptor	Market capitalisation (US$)
Advertising	Google	$720 billion
Books	amazon	$520 billion
Music		$860 billion
Retail	ebay	$39 billion
Movies/TV	NETFLIX	$85 billion

Tech startups exist in any industry in which technology is an enabler of growth, including engineering, biotech, pharmaceuticals, energy, health, education, agriculture, technology hardware and software. However, a particular focus of this report is the opportunities presented by the internet as an enabler of disruptive innovation.

Startups are now able to reach the almost four billion consumers connected to the internet, and do so with significantly lower levels of capital investment than at any time in history.

Many industries are in the process of being transformed by online business models, providing entrepreneurs with an unprecedented opportunity to create economic growth, wealth and jobs. Startups in all corners of the globe are aggressively competing to share in the massive redistribution of revenues enabled by the removal of geographic trade boundaries.

The internet has opened up new opportunities for companies in Australia which have historically been constrained by operating in a small domestic market. At the same time it has exposed startups and established enterprises to new competition from every corner of the globe.

As famously pointed out by Netscape founder and leading venture capitalist Marc Andreessen, 'software is eating the world'. Industries are increasingly dominated by software companies, with a growing number of products and services now being delivered online.

According to data analytics firm BoundIss, 25% of the Australian economy is likely to be directly impacted by software by 2025, which equates to $524 billion of GDP. More importantly, 5.5% of the Australian economy, or $115 billion in direct revenues, could be captured by software companies by 2025.

The companies that will drive global economic growth over the next decade will be technology companies, many of which do not yet exist. The key question for Australia is whether these companies are home-grown (in which case Australia stands to benefit from their economic impact).

The scale of economic impact being made by technology companies can be seen in many countries, including in the US, where over the last fifteen years just nine software companies have grown to a point where they collectively contribute $1.3 trillion to the US economy, or over 6% of US GDP.[14] The combined value of just three of these companies – Apple, Google and Facebook – now exceeds the value of the entire ASX.

The companies that capture the economic rent in the industries of the future will be those that are able to implement technology and business model innovation faster and more effectively than their competitors. The losers will be startups that are constrained by inexperience, lack of technical skills, lack of capital or uncompetitive regulatory environments.

Given the speed at which technology is pervading every industry, Australia has no choice but to embark on an economic transformation in which it actively develops an environment that is conducive to the creation and growth of technology-based businesses that are capable of competing on a world stage.

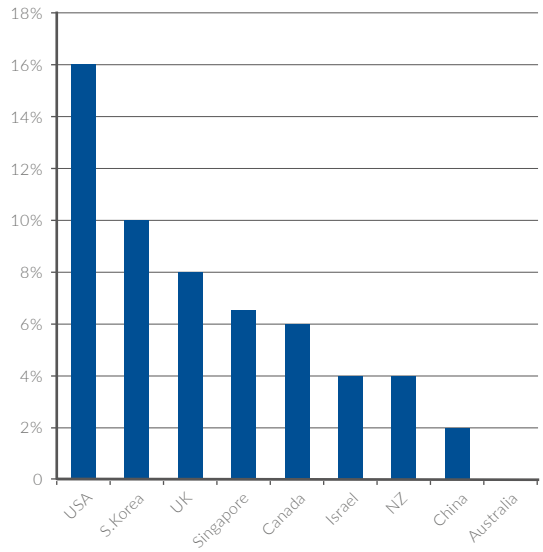


Figure 5: Software companies as a percentage of top 50* listed companies[15]

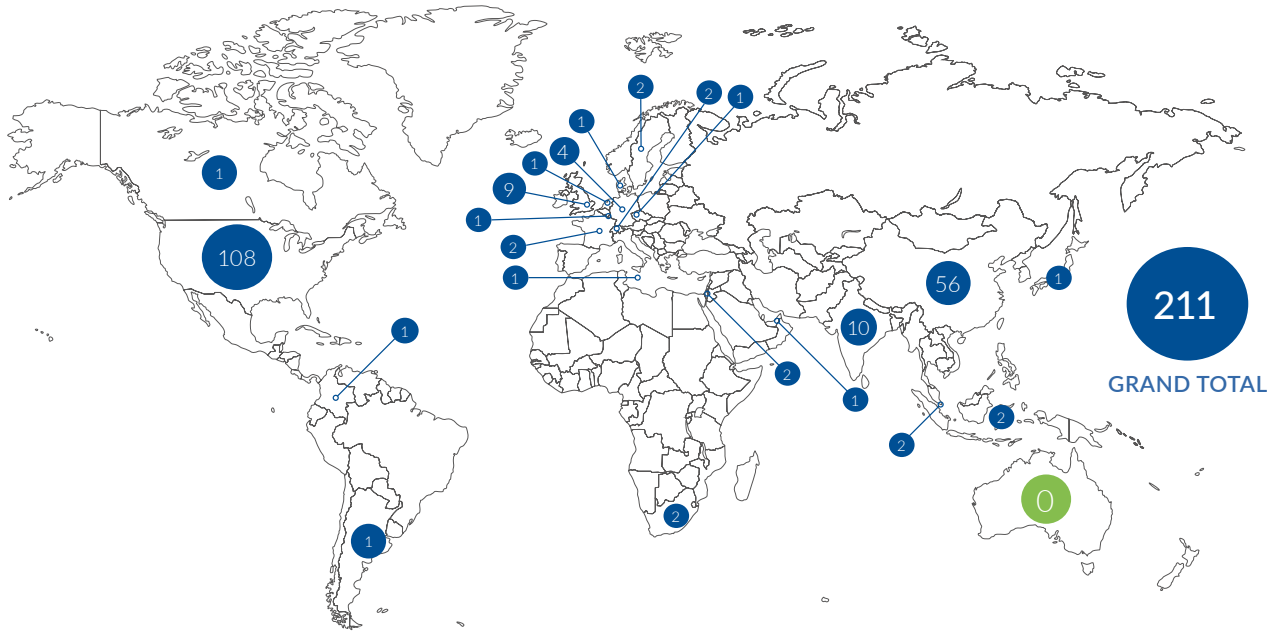
*Singapore analysis conducted on top 30 listed companies

A commonly expressed view in Australia is that startups don't create large numbers of jobs and therefore have limited impact on the broader economic prospects of the nation. Notwithstanding the evidence we've already identified suggesting this is untrue, this view also fails to take into account the fact that formation of startups is not an end-point in itself, but a necessary step in creating large, globally significant and sustaining companies that drive economic growth and prosperity and create large numbers of high-value jobs. These companies are, by definition, startups in their early years. Some of the biggest firms in the world were startups just a decade ago.

This misconception has arisen in Australia partly because we have very few examples of technology companies that have gone on to achieve substantial global growth and create large numbers of jobs. Currently none of the top 50 companies listed on the ASX (by market capitalisation) are software companies, compared to 16% in the US and 6-10% in South Korea, the UK, Singapore and Canada.

Of course, many emerging startups remain private companies for significant periods before listing. When Facebook listed on the NASDAQ in May 2012, it debuted at a market capitalisation of US$104 billion (about the same as the present-day valuation of Australia's largest company the Commonwealth Bank). Mapping the existence of high-value, privately held companies can provide a strong indicator of a flourishing tech sector. Here, too, Australia is lagging, according to data from CB Insights.

// Privately held companies worth $1 billion or more[16]



For Australia to reap the benefit of startups it is essential that three conditions are met:

We must produce large numbers of startups.	We must ensure that some of these startups are going on to achieve significant global growth.	We must ensure that the most successful startups retain a sufficient connection to Australia so that we are able to benefit from their success.

14 Amazon, Apple, Google, Salesforce, VMware, Facebook, Twitter, Groupon and Zynga
15 StartupAUS analysis
16 CB Insights

WE NEED TO RETAIN THE MOST SUCCESSFUL STARTUPS

If Australia is to grow a world class startup ecosystem it is essential that we create an environment that is conducive not just to the creation of successful technology companies, but also to the retention of those companies for long enough that we can harness their economic impact.

Companies that achieve real scale (the industry standard measure is a market cap greater than US$1 billion) are relatively rare (hence the term 'unicorn'), but are vital to the creation of a vibrant startup ecosystem. When they achieve a liquidity event (or 'exit') via IPO or acquisition, their impact is to spawn a large number (often hundreds or even thousands) of experienced former employees, many of whom will go on to form their own startups and invest in others.

The effect of startups reaching genuine scale can be seen in San Francisco, where companies such as Salesforce, Twitter and Yelp (and nearby giants Apple, Google, and Facebook) have increased the city's value as a location from which to launch and grow other tech startups. These companies act as a magnet for other entrepreneurs, and thus for investors and service providers to locate alongside this valuable pipeline of opportunities.

The IPOs of Google, Facebook and Twitter together created close to 4,000 millionaires, many of whom will go on to start, invest in, and mentor the next wave of companies. After it was acquired by eBay in 2002, PayPal's founders and early employees went on to form Tesla and SpaceX (Elon Musk), Palantir (Peter Thiel), LinkedIn (Reid Hoffman), YouTube (Chad Hurley and Jawed Karim), Yammer (David Sacks), and Yelp (Russel Simmons). Each of these companies is now a unicorn in its own right.

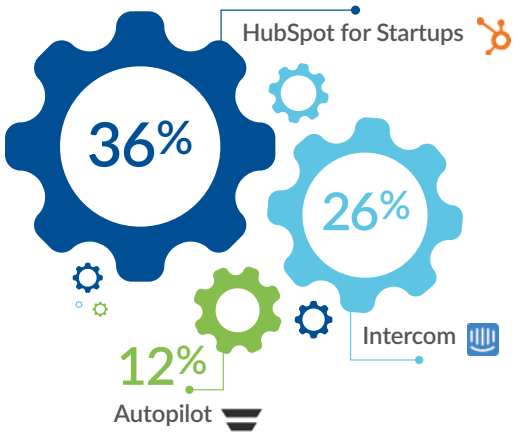
The impact of global-scale startups in helping to grow startup ecosystems can also be seen in Israel where, as a result of acquisitions of successful startups such as NDS (acquired by Cisco for $5 billion) and Waze (acquired by Google for US$1 billion) there are thousands of serial entrepreneurs who have cycled back into the local startup ecosystem to become angel investors and advisors to the next generation of entrepreneurs.

Similar examples can be seen elsewhere, including in Sweden (Skype was acquired by Microsoft for $8.5 billion and Spotify currently has a market capitalisation more than US$11 billion) and the UK (Betfair's IPO valued the company at US$2.4 billion, and lastminute.com was acquired by Sabre for US$1.2 billion).

Australia has some standout successes, too. A wave of technology businesses founded in the 1990s led the way, including SEEK (founded in 1997 and now worth $6 billion), and Carsales.com (founded in 1996 and now worth $3 billion). Since then, highlights have included Atlassian, now worth more than $11 billion, and MenuLog, which sold to Just Eat for $855m in 2015. Nevertheless, with most of these businesses focused principally on the Australian market in their growth phases (Atlassian is an exception), Australia has not yet firmly established itself as a leading location from which to grow a global technology company.

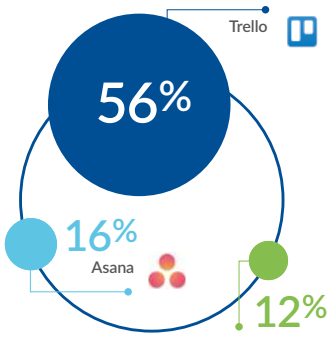
// Australia's most recommended tools and services for startups and SMEs[17]

// Marketing automation



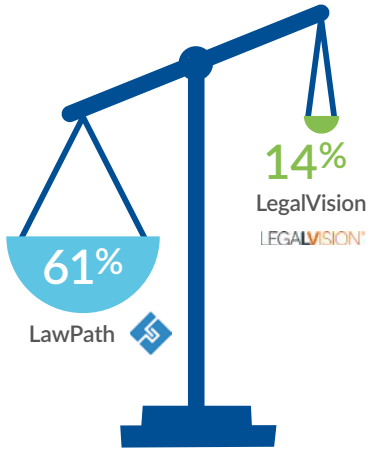
8% Agile CRM
5% Ontraport
4% Drip
4% ClickFunnels
2% Infusionsoft
2% Gleam
1% Mautic

// Task Management



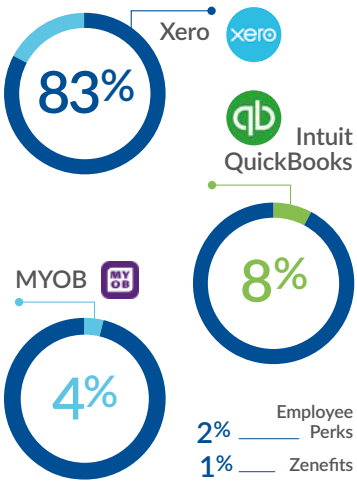
5% Microsoft Project
2% Wunderlist
2% Todoist
2% Basecamp
2% Activeinbox
2% Pivotal Tracker
1% Microsoft Office 365

// Law firms



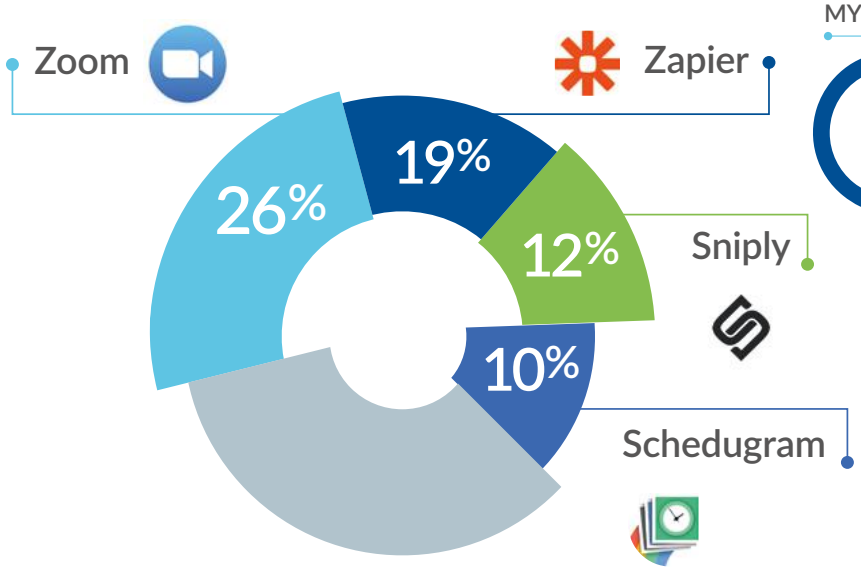
11% Allens
7% K&L Gates
7% General Standards

// Payroll/Benefits



2% Employee Perks
1% Zenefits
1% FreeAgent
1% Saasu

// Trending



17 Data provided by Recomazing (recomazing.com)

// Startups as part of a modern Australian economy - boosting economic complexity

The Australian economy is dominated by service-based businesses, constituting around 70% of GDP. Exports are heavily skewed towards the resources sector, with primary products such as minerals, metals and coal constituting 64% of Australia's exports.

According to Klaus Schwab, executive chairman of the World Economic Forum, 'the extent to which an economy can develop higher value-added products, processes and business models through innovation is a major determinant of long-term, sustained prosperity.'

Schwab notes the importance of 'a strong scientific and technological base, investment from public and private sectors, links between businesses and research centers, a high-quality education system, political transparency, and a culture that encourages entrepreneurship and risk-taking.'

The economic complexity index (ECI) is a holistic measure of the production characteristics of countries. It was developed by economists at Harvard and MIT to explain an economic system as a whole and to identify the knowledge accumulated in a country's population and expressed in the country's industrial output.

The ECI is a measure of the degree to which a nation is able to produce a range of goods varying in complexity, from extracting and selling unprocessed natural resources to building and selling complex industrial products.

In a 2011 interview with the ABC, Harvard Economist Professor Ricardo Hausmann described Australia as having 'an amazingly primitive export basket'. Hausmann warned that this could lead Australia gradually to become one of the worst performers in the region in terms of GDP growth.

Professor Hausmann's advice for the Australian economy was 'think of new areas of global activity where [we] can lead, have new products, new ideas and new industries that are going to be the sources of growth for the future.'

Australia's ECI has declined over the last 20 years to a value of negative 0.76 in 2015 (the latest year for which ECI has been calculated), ranking us 82nd out of 121 countries. Australia ranks alongside Kuwait, the Republic of Congo, and Senegal (83rd-85th) and behind Namibia (65th), Guatemala (67th), and Cambodia (73rd).

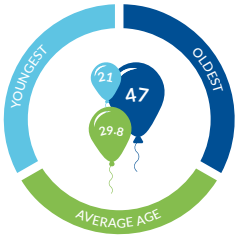
The following pages provide a visual representation of the export profiles of Australia and the UK, broken down by type and complexity of products in the export basket.

Australia's profile is dominated by minerals (iron ore, coal, gas, copper, etc), precious metals (mostly gold), and agricultural goods (grains, animal meats, wine, wool, etc). These are predominantly very simple goods. Complex goods, shown in shades of blue, account for a small fraction of the overall basket.

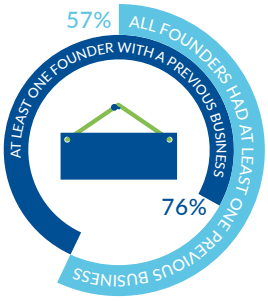
The UK, ranked 13th in the world, has a strikingly different profile. Complex goods in the 'machines' and 'transportation' categories (gas turbines, cars, and vehicle and aircraft parts) dominate. 'Chemical products', including medicines, feature strongly. And while simple precious metals (particularly gold) and minerals (petroleum) account for a sizeable portion of the remainder of Britain's export profile, so too do other complex products such as medical instruments.

// Key demographics of Australian scale-ups[18]

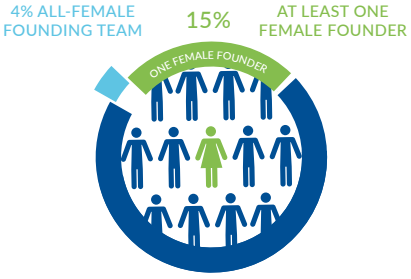
// Founders



AGE WHEN FOUNDING BUSINESS



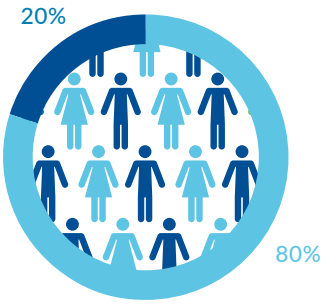
FOUNDERS EXPERIENCE



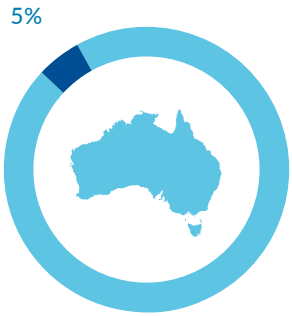
FOUNDERS GENDER

FOUNDERS
IMMIGRANT STATUS

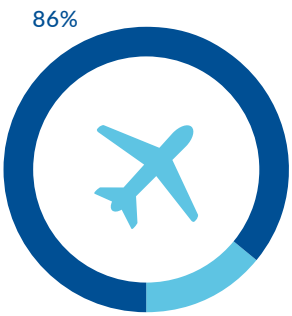
// Employees



WORKFORCE MAKEUP
LOCAL/INTERNATIONAL

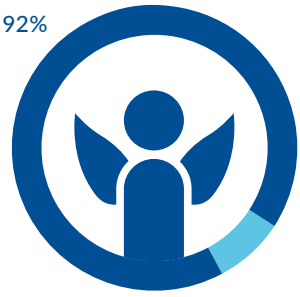


AUSTRALIAN-BASED
WORKFORCE ON 457 VISAS

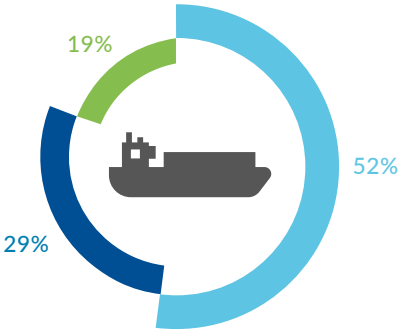


BUSINESSES LOOKING TO HIRE INTERNATIONAL
TALENT WITHIN 6 MONTHS

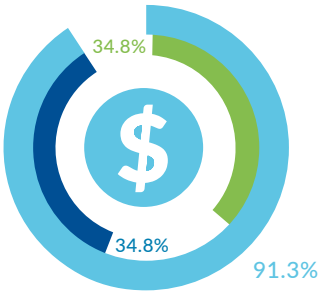
// Business



PERCENTAGE OF COMPANIES BACKED
BY ANGEL OR VC INVESTMENT



PERCENTAGE OF REVENUE FROM EXPORTS
<25% 25-75% >75%



CLAIMING R&D TAX INCENTIVE
CLAIMING EMDG CLAIMING OTHER GRANTS

18 StartupAUS research of leading Australian scale-ups for Department of Industry, Innovation and Science

// Australia's Export Profile - Economic Complexity Atlas

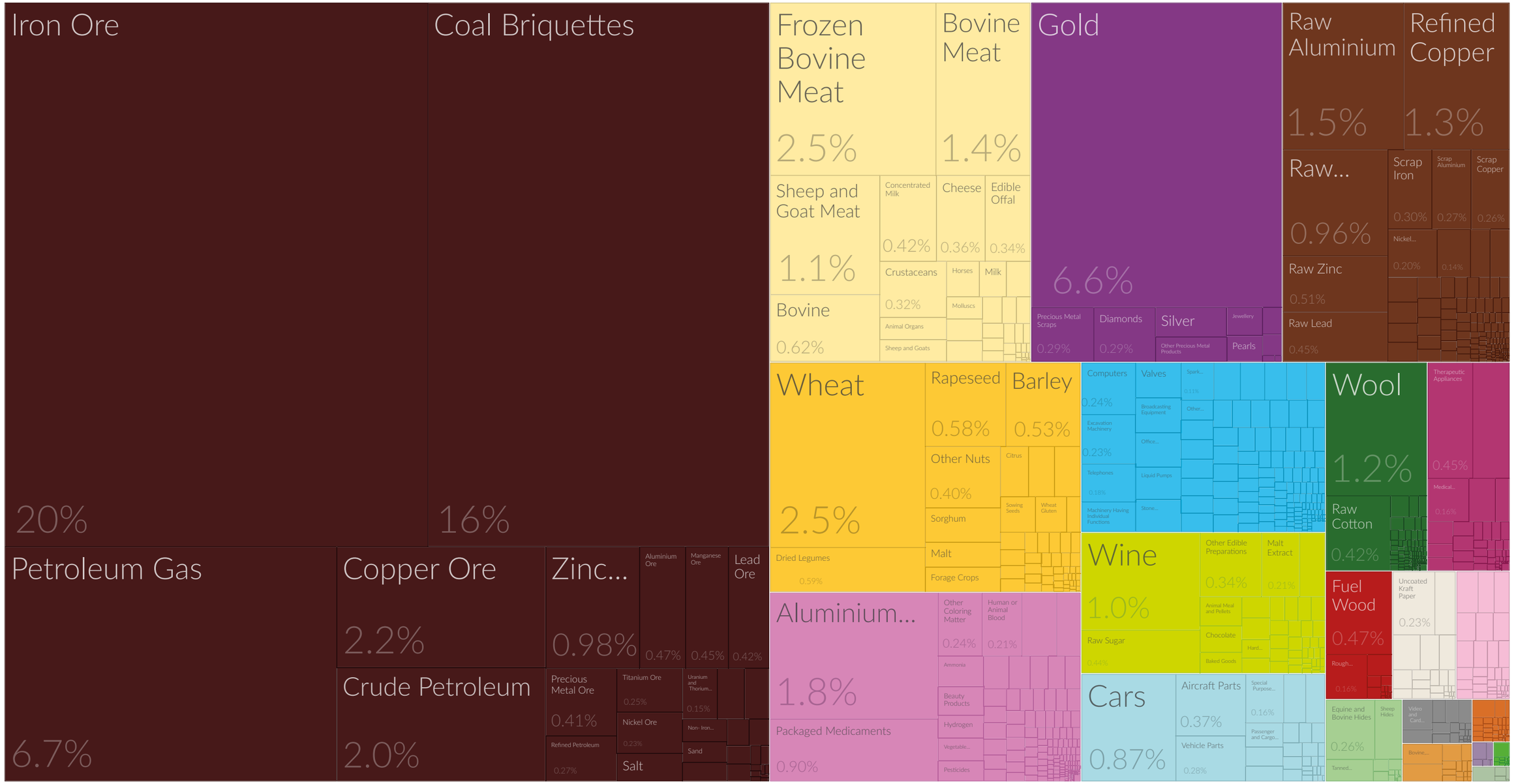


Figure 6: Australian exports by economic complexity, 2015[19]

19 atlas.media.mit.edu/

// UK Export Profile - Economic Complexity Atlas

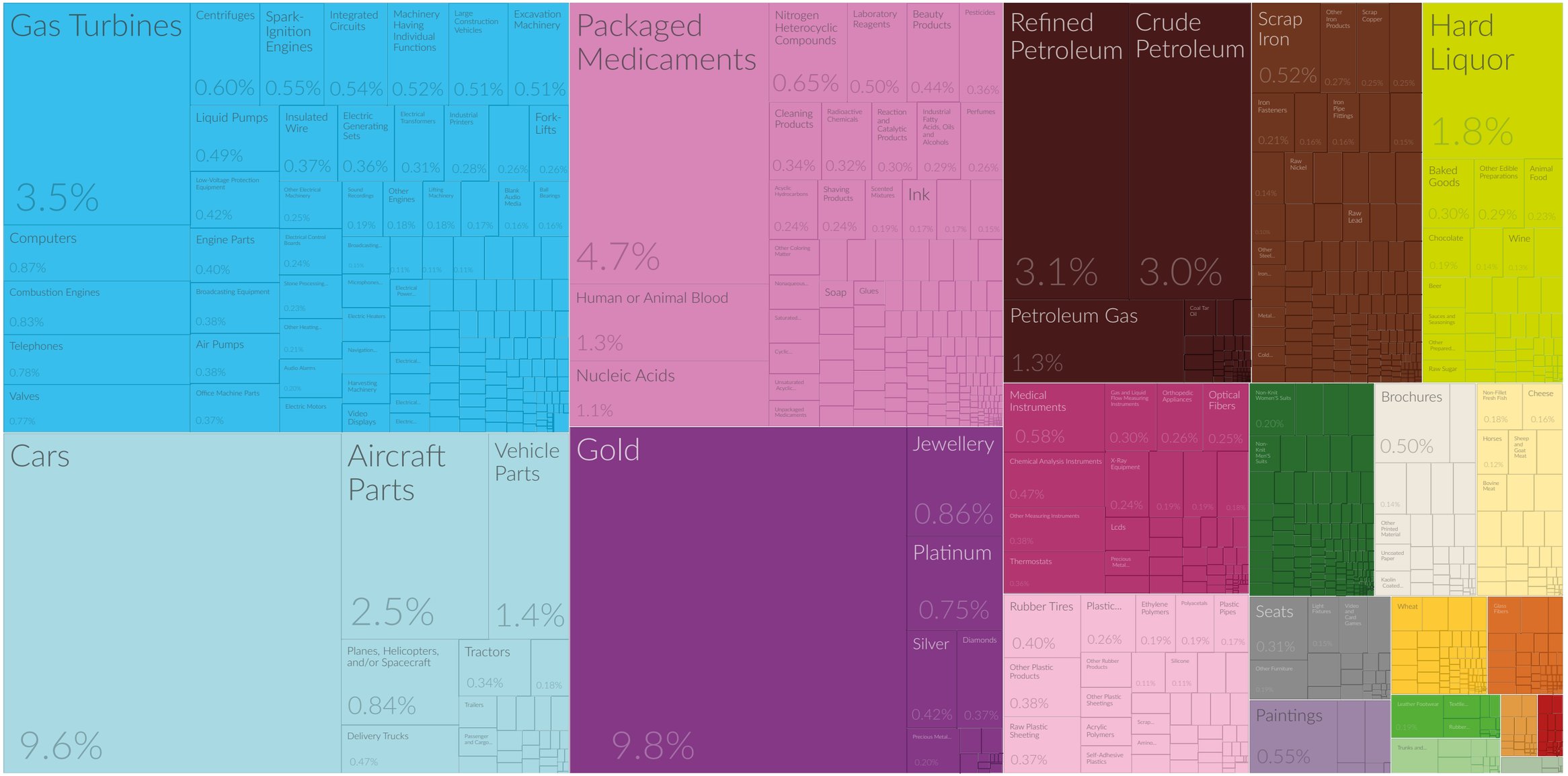


Figure 7: UK Exports by economic complexity, 2015[20]

20 atlas.media.mit.edu/

// Change over time – the growth of Australia's simple export profile

Economies reliant on simple, untransformed resources exports are often subject to 'Dutch Disease' (an economic phenomenon named for the collapse of Holland's manufacturing sector following the discovery of natural gas). Dutch Disease is characterised by high-value export industries being hurt by an over-reliance on exports of natural, unimproved (and finite) commodities which are exposed to price volatility. Symptoms of Dutch Disease include economic resources being skewed towards unsustainable industries, while booming resource exports raise exchange rates and tend to make other exporting sectors less competitive. These effects can harm other sectors so badly that they disappear, leaving economies extremely vulnerable when the resources boom subsides.

Clearly there are some parallels with Australia's economy over the last two decades.

As Australia adjusts to a post mining-boom reality, it must shift away from being a derivative economy and instead create high labour productivity jobs that use our greatest asset, intellectual capital, to add value and increase national income. These jobs are less susceptible to being usurped by lower cost-of-labour locations, as has been seen in the case of car manufacturing, and at the same time will help to avoid the fate of resource-rich Argentina which has suffered massive economic downturn as a consequence of government failure to alter the composition of its economy.

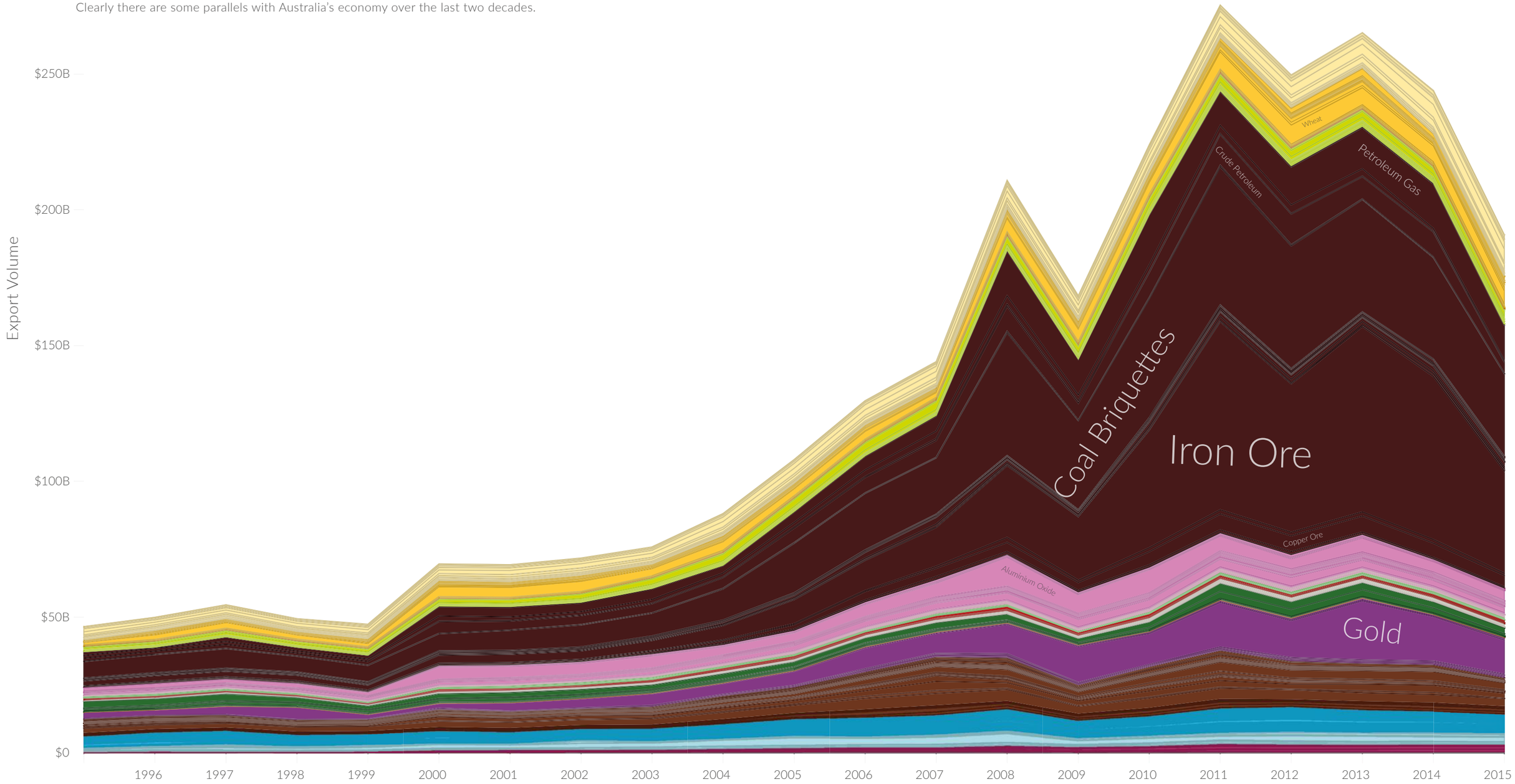


Figure 8: Change over time – the growth of Australia's simple export profile[21]

21 atlas.media.mit.edu/

STATE OF PLAY: WHERE ARE WE WINNING?

COMPANY MILESTONES

Many Australian startups have achieved promising milestones, ranging from major public listings to closing funding rounds, achieving revenue growth targets and expanding into international markets. A selection of some of the most notable milestones is provided.

AfterPay, a Sydney fintech startup, merged with Touchcorp and partnered with Tyro to expand its offering in retail stores. Afterpay was founded in 2014, and its post-merger business, Afterpay Touch Group (ASX:APT), is now worth around **$700m.**

Airtasker, a Sydney-based labour marketplace for tasks, raised a **$33m** Series C round in October to fund expansion to the UK. Airtasker has now raised more than **$50m**.

Airwallex, a Melbourne-based fintech startup, raised **$17m** from Sequoia, Tencent and Mastercard.

Atlassian, a B2B software giant based in Sydney and San Francisco, bought popular New York-based project management app Trello for **$577m** in January.

Carthona Capital secured a **$50m** investment from superannuation firm Hostplus and is looking to raise a **$100m-$200m** fund.

Culture Amp, based in Melbourne, raised a **$26.4m** Series C funding round. Culture Amp has now raised more than **$45m** to support the growth and expansion of its employee engagement platform.

Deputy, a workforce management startup based in Sydney, raised a **$33m** Series A round led by Boston-based VC firm, OpenView Partners.

Expert360, a Sydney-based contingent workforce management platform, raised a **$13m** Series-B round led by AirTree Ventures.

Flirtey, a drone-delivery startup, raised **$16m** to get drone delivery approval in the US.

GreenSync, a Melbourne-based energy tech startup focused on using technology to manage and optimise the power grid using renewables, raised **$11.5m** led by the federal government's Clean Energy Finance Corporation.

COMPANY MILESTONES

PEXA, a Melbourne-based online property settlement system, raised **$64.7m** from Link Group ahead of a likely IPO in 2017-18. The deal valued PEXA at **$779.5m**.

Prospa, a Sydney-based online business lender, raised **$25m** in March led by AirTree Ventures. It subsequently raised a further **$20m** through a tailored debt facility from US-based Partners for Growth in July.

RangeMe, a Sydney-based marketplace connecting retailers and suppliers, was acquired by US-based ECRM in June for an undisclosed amount.

ROKT, a marketing tech startup founded by former Jetstar CEO Bruce Buchanan in 2011, raised a **$33m** Series B round led by Moelis Australia.

Redflow, a publicly listed battery startup based in Brisbane, announced it would raise an additional **$14.5m** to meet increasing demand.

Red Marker, a Sydney-based AI startup, was acquired by global education giant Kaplan in March for an undisclosed amount.

Saluda Medical, a medical device manufacturer spun off from Data61's predecessor, NICTA, raised **$53m** to continue development of its Evoke neural spinal cord stimulator.

Snappr, a Sydney startup with a platform for booking freelance photographers, graduated from leading US accelerator Y-Combinator and topped the list of fastest-growing YC Winter 2017 startups.

Square Peg Capital a prominent Melbourne-based VC firm, closed a **$233m** fund.

Tempus Partners closed a new **$40m** venture fund, and will look to back scaleable Australian B2B startups.

Unlockd, a Melbourne advertising tech startup, raised a **$30.8m** Series B round led by Malaysian telecommunications giant Axiata Group Berhad to fuel expansion into Southeast Asia.

99 Designs, an online platform for crowdsourcing visual design work, announced it would return its headquarters to Melbourne from the US, ahead of a possible IPO on the ASX in 2018.

ECOSYSTEM MILESTONES

// National

- In September, the federal government announced that after a consultation period, a new Digital Economy Strategy will be developed and formally launched in 2018. The Strategy will focus primarily on the use of digital infrastructure, developing digital business capability, and building digital skills. The government estimates that the adoption and use of digital technologies could contribute $140 billion to $250 billion to Australia's GDP by 2025.

- Innovation and Science Australia released its performance review of Australia's innovation ecosystem in February. The review ranked Australia's performance in key innovation indicators relative to 35 OECD countries plus China, Taiwan and Singapore. Australia performed well on some metrics, including 'knowledge creation', but lagged substantially on others, particularly around commercialisation. ISA's 2030 Strategic Review is expected to be released before the end of 2017.

- In May, Slingshot launched CoVentured, a collaboration platform to connect corporates with startups. The platform currently has more than 1700 startups and 45 corporates signed up.

- Australia's first regulatory technology (RegTech) association launched in March. RegTech is technology that helps businesses comply with regulation and better manage business risk. The RegTech Association aims to facilitate collaboration between RegTech startups and Australia's biggest financial institutions in Australia's $141 billion financial services sector.

- In July, national agtech innovation hub SproutX announced the lineup of 11 startups accepted into the SproutX Accelerator Program. The program is backed by the SproutX Venture Capital Fund, a $10m fund managed by Artesian Venture Capital.

- Equity Crowdfunding legislation allowing public companies to raise funds through crowdsourced equity funding came into effect on September 29th and a bill currently before the House of Representatives will extend the framework to cover eligible proprietary companies.

- Slingshot launched Barayamal, an indigenous startup accelerator program, in November 2016. Five indigenous startups attended a 4-week business-accelerator program run by Barayamal in Brisbane at the end of 2016. The accelerator programs followed Australia's first Indigenous Startup Weekend which took place in August, 2016.

// South Australia

- Techstars, a leading US accelerator program, launched in Adelaide. It is Techstars' first Asia Pacific location, and the deal with South Australia is set to run at least five years. The accelerator is focused on defence and security startups. The first cohort, which included six Australian companies and four from overseas, graduated in October.

- In July the South Australian government announced it would establish a $50m South Australia-focused venture fund, to be managed by Blue Sky Ventures. The fund is slated to run for 15 years.

- Elon Musk's Tesla Motors and French wind farm developer Neoen won the tender to build the world's largest lithium-ion battery installation in Jamestown, north of Adelaide. The SA Government is contributing financially in return for the right to tap up to 70% of the battery's output. A grid connection agreement for the 100-megawatt battery array was signed on September 29th, sparking the start of a 100-day deadline for Tesla to complete construction of the battery or build it for free.

- The establishment of the South Australian Space Industry Centre, Australia's first centre dedicated to growing the local space sector, was announced in September. The organisation will run a Space Incubator Program and a Space Accelerator Program. The programs are backed by the South Australian Government's Space Innovation Fund which will provide funding of up to $1m per year for four years.

- Airbnb and the South Australian Government co-funded $100,000 in prizes for SHARE SA Challenge, a competition for the best and most innovative sharing economy idea to be implemented in South Australia. The top ten entries included a concept to provide tiny houses for Adelaide's homeless, an app that matches refugees with spare rooms, and a website to help disability sector organisations share their special transport vehicles. The co-winners were announced at Open State, an 11 day festival of innovation, collaboration, ideas and enterprise held in Adelaide in October.

// Victoria

- Intersekt, Australia's first fintech festival was held in Melbourne in October. The festival, which included the Collab Collide Summit, was hosted by FinTech Australia and FinTech Victoria in conjunction with fintech company NextMoney and coworking community York Butter Factory.

- In July, Sydney-based fintech hub Stone and Chalk announced it was expanding to Melbourne, led by FinTech Victoria founder Alan Tsen. It will be housed alongside agtech accelerator SproutX, with whom it plans to develop a new agri-fintech program.

- Victoria followed the Northern Territory, Queensland, and South Australia in implementing the national Digital Technologies Curriculum, with other states to follow by the end of 2018. The Victorian government announced it would invest $125m to create 10 'tech schools' and spend $21.6m to support specialised teacher training.

- The Victorian Fintech Hub, a 4,000m^2 precinct to be established in Docklands, was announced in June by the state government who will provide funding for the design and fit-out, rent and other support measures for at least three years.

- CyRise, a cybersecurity accelerator, was launched by Dimension Data and Deakin University in Melbourne in July. LaunchVic, the Victorian government's startup support organisation, contributed $450,000.

// Queensland

- The Queensland government appointed angel investor, entrepreneur, and Channel 10 Shark Tank judge Steve Baxter as its next Chief Entrepreneur. Baxter becomes the second entrepreneur to take on the year-long position. He took over from Mark Sowerby, founder of Blue Sky Investments, whose term finished in October.

- The Queensland Government invested $6m to deliver The Precinct, a startup and innovation hub which opened in 2017. Located in Brisbane's Fortitude Valley, the 5,300m^2 hub brings together startups, incubators, investors and mentors. It also has digital and physical links to regional innovation centres through its dedicated 'regional landing pad'.

- Twelve regional hubs across Queensland each received matched funding of $500,000 over three years from the Advancing Regional Innovation Program (ARIP) to drive innovation across the state and support local economies to create jobs for regional Queenslanders.

- Round 2 of Hot DesQ was finalised, with 28 startups arriving from interstate and overseas to spend at least 6 months in Queensland. Under Hot DesQ, entrepreneurs apply to receive up to $100,000 in funding to relocate their ideas and business ventures to Queensland. Round 2 included participants from the UK, USA, Spain, Chile, Pakistan, Luxembourg and Silicon Valley.

- The inaugural Myriad Festival, modeled on Europe's Slush startup conference and backed by more than $2m in funding from the Queensland government, was held at Brisbane's Powerhouse Arts Centre in March. More than 3,000 people attended the festival and satellite events. Qantas and the Queensland state government have announced they will partner to charter a 747 to bring 360 international executives and venture capitalists to next year's Myriad Festival.

- In August Brisbane hosted the inaugural Investor Pitch Night which saw leading venture capitalists pitch their firms to an audience of more than 900.

- In March, Queensland University of Technology hosted the MIT Global Entrepreneurship Bootcamp. The event was attended by 120 participants from 35 countries.

- The Brisbane City Council opened a $5m startup hub, called The Capital, in the Brisbane CBD. The Capital houses startups as part of Fishburners' Brisbane office and Little Toyko Two.

- Startup Onramp, a Brisbane-based founder education initiative, launched its first training program in 2017. The program provides aspiring founders with 12 weeks of training and mentoring to build high-growth startup skills.

// Tasmania

- A not-for-profit organisation, Enterprize Tasmania, which manages a pair of innovation hubs based in Hobart and Launceston, launched in September 2016. It was funded by $3m from the Federal Government and $500,000 in seed funding from the Tasmanian Government. In July, Enterprize Hobart and Enterprize Launceston hosted GovHack 2017, an annual hackathon to explore creative uses of government open data.

- The Tasmanian Budget for 2017-18, released in May, further supported the growth of the state's startup ecosystem with two major initiatives: $900,000 over two years to form a new startup accelerator program in Tasmania and an additional $1.1m over four years to support the Enterprize Hubs.

// NSW

- Sydney School for Entrepreneurship, a partnership between all 11 NSW universities and TAFE NSW, launched in August following a $25m cornerstone investment by the NSW government. Nick Kaye, who previously ran the Stockholm School for Entrepreneurship, returned to Australia to head the program.

- The Sydney Startup Hub was announced in July, with the NSW government set to spend $35m on the project. The building will provide 17,000m^2 of space for startups, with around 2,500 desks. Several prominent Sydney startup hubs, including Stone & Chalk, Fishburners and Tank Stream Labs will relocate into one shared space above Wynyard train station. The Sydney Startup Hub is expected to open before the end of 2017.

- The Sharing Hub, Australia's first startup accelerator for the sharing economy, launched in April. The facility provides training, mentorship and investment opportunities as well as physical working space.

- In April, the University of New South Wales unveiled a $100m deal with the Chinese Ministry of Science and Technology to build a collaborative innovation precinct on its Kensington campus. The Torch Innovation Precinct is the first such precinct outside China and will support research around energy storage, biotechnology and environmental engineering.

- York Butter Factory expanded to Sydney, opening Hoist in partnership with Mirvac. Hoist is a tech hub located at the Australian Technology Park in Redfern. Mirvac and YBF have said they plan to expand the collaboration to other sites around the country.

- TechCrunch Disrupt Battlefield debuted in Australia on November 16 in Sydney. The one-day event saw 15 local startups pitch to take part in TechCrunch Disrupt, one of the world's leading pitch competitions, in San Francisco in 2018.

- In April, the NSW government announced it had secured the rights to host LAUNCH Startup Festival in Sydney in 2018 and 2019. It will be the first time LAUNCH has been held outside the US. LAUNCH festival San Francisco typically attracts more than 10,000 attendees and its competition alumni include Dropbox, Fitbit and Yammer.

// Western Australia

- The WA Budget 2017-18, released in September, allocated $16.7 million to creating a New Industries Fund to support and accelerate emerging tech startups. The New Industries Fund also included a Regional Startups stream which will be funded by $4.5m of the total grant.

- In August, the Ministry of Data (MoD) hosted its first hackathon in Perth and simultaneously in Geraldton as a regional satellite event. The 2017 Perth winner tackled the problem, proposed by Main Roads WA, of identifying roadside hazards from video footage.

- In April, Spacecubed announced the six companies selected for Perth's first cohort of the Plus Eight Accelerator Program which offers entrepreneurs the support of the program's partners - Spacecubed, Hawaiian, Seven West Media, Telstra and muru-D as well as up to $40,000 in seed funding, and six months of resident desk space at coworking space FLUX.

DENSITY

Startup density is an important factor in growing successful startup ecosystems. Research by Richard Florida and others highlights the importance of bringing entrepreneurs and people who support the startup ecosystem together. High startup density is achieved when startup founders and other participants in the ecosystem (investors, advisors, mentors etc) work in close proximity and benefit from frequent 'collisions' which enable them to rapidly share information and build highly effective networks.

Startup co-working spaces and incubators are an effective means of artificially creating pockets of startup density. Increasing the scale of these enterprises, through precincts or large clusters dedicated to young technology firms, can amplify these benefits.

Ecosystems with density on a large scale receive significant windfalls from increased collisions and high value network effects. Silicon Valley is an example of where this has worked at the extreme end of the spectrum. More moderate examples include the startup clusters around Tech City and Plexal in London, Silicon Sentier in Paris and Silicon Allee in Berlin.

Cities with mature startup ecosystems are often characterised by having one major hub of startup activity. The MaRS Discovery District is a 140,000m^2 innovation precinct in the centre of Toronto, and London's Tech City UK is now home to around 5,000 startups as well as many larger tech companies. In June 2017 Paris opened the doors to Station F, a 34,000m^2 startup campus. To get an idea of scale, the Director of Station F, Roxanne Varza, has described the space as 'the size of the Eiffel Tower lying down'.

These cities are investing heavily in startup precincts because the benefits are increasingly difficult to ignore. Leading work from the Brookings Institution suggests innovation districts have become a key part of the new wave of city-based economic development by playing a number of important roles, including:

- Helping cities align economic development with disruptive forces in the economy and leverage their distinct economic position
- Empowering entrepreneurs as a key vehicle for economic growth and job creation
- Growing better and more accessible jobs at a time of rising poverty and social inequality

In Crossroads 2016 we noted that Australia was substantially behind its peers in the development of startup hubs, and recommended the creation of a national network of startup precincts. In the past year, significant progress has been made on this front. Precincts in major Australian cities now include:

- Sydney's Startup Hub (17,000m^2)
- Brisbane's two startup hubs, 'The Precinct' and 'The Capital' (5,500m^2 and 2,700m^2 respectively)
- Melbourne's fintech hub which will be housed in the Goods Shed North in Docklands (4,000m^2)

These projects represent positive shifts towards growing density in Australia's startup ecosystems. The $35m Sydney Startup Hub in particular is a global-scale precinct, one of the largest of its kind in the Southern Hemisphere. Despite this, there remains significant room for growth if Australian cities are to compete with the likes of Toronto, London, and Paris (let alone cities in the US).

There is more work that can usefully be done in continuing to expand and connect these precincts. Forward planning is required to cater for rapid expansion in demand for space, and strong national coordination will help drive performance and impact. Provisioning urban startup hubs to support regional ecosystems will also help boost and diversify economic returns.

// Recommendation
Further expand and integrate startup precincts

StartupAUS recommends that state governments continue to resource and expand startup precincts, in collaboration with industry partners. In particular, Victoria, New South Wales, and Queensland should look to amplify and consolidate existing efforts and ensure funding remains adequate over the medium term.

StartupAUS also recommends that further work be done by precinct managers and governments to connect and coordinate precincts to create a true network of global-scale startup districts.

Tech City UK is a technology precinct located in the Shoreditch area of East London. Established by the UK government in 2010, Tech City was based on an existing cluster of 15-20 technology companies around the Old Street Roundabout. The area has grown into a major European startup hub, with over 5,000 technology companies currently located in the area.

Tech City has attracted a number of large tech companies including a major Google campus which has become a focal point for the local startup community. Between 2011 and 2014 the number of technology jobs in London grew by 13% per annum, with technology sector revenues doubling over the same period.

According to Tech City's 2017 Tech Nation report, 1.6 million people are now employed in digital technology jobs in the UK, with a jobs growth rate of more than double the non-digital sector over the last five years.

When launching Tech City in November 2010, then British Prime Minister David Cameron said 'As part of our strategy for growth, we've made a really important decision. We're not just going to back the big businesses of today, we're going to back the big businesses of tomorrow. We are firmly on the side of the high-growth, highly innovative companies of the future. [This is] our vision for East London Tech City.'

In December 2013, David Cameron announced continued support for Tech City, noting that he was 'determined to make the UK the best place in the world to start and grow a company'. He added 'Tech City serves not only as an example of how a city can be transformed into an engine for growth and innovation, but is also a blueprint for fostering growth that has been recognised globally'.

DIGITAL TECHNOLOGIES CURRICULUM

Recommendation
Extend the digital technologies curriculum

Implement and extend the digital technologies curriculum to make computer science and computational thinking mandatory to Year 10 and elective in Years 11 and 12. Invest in careers advice services to provide students with appropriate ongoing support.

State governments around the country have begun implementing the Digital Technologies Curriculum, the nation's first coordinated effort to teach computer science in every primary and high school. The curriculum includes computational thinking as a mandatory subject until Year 8, and an elective for Years 9 and 10.

StartupAUS advocates extending the Digital Technologies Curriculum to make computer science and computational thinking a mandatory component of the school curriculum in Years 9 and 10, and an elective subject in Years 11 and 12.

Implementing and extending the Digital Technologies Curriculum also requires investment in careers guidance so that students receive appropriate advice and ongoing support. Extending the program in this way would help students understand how to connect their educational outcomes with career pathways.

This proposal would also give Australian school leavers a stronger base set of skills to compete and engage in a rapidly digitising workforce. With careers increasingly divided into shorter segments, workforce participants need solid foundations in computational thinking skills in order to adapt to new roles in emerging sectors.

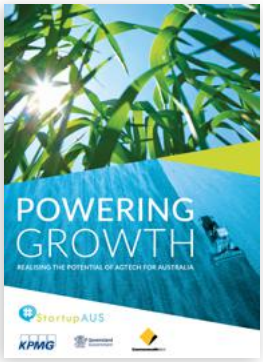
Changes along these lines would be consistent with trends in computer science education in countries such as the USA, the UK, New Zealand, and many countries in Europe, where it is a required subject in schools from kindergarten to Year 10 or beyond.

// Estonia
All publicly-educated students now learn how to code starting in first grade and continue to their final year of school.

// United Kindom
From September 2014 coding was a mandatory part of the school curriculum for all students aged 5 to 16 years old.

// Vietnam
Computer science education now begins in Year 4 and continues as a mandatory subject through to final year of high school.

// New Zealand
The New Zealand government recently announced that digital technology will be formally integrated into the school curriculum by 2018.

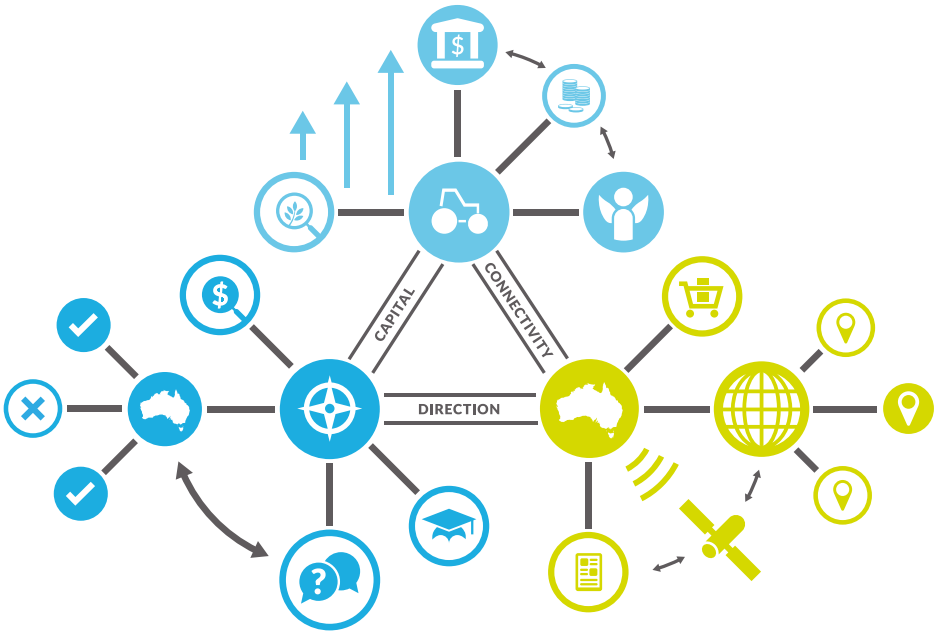


AGTECH

In 2016 StartupAUS released *Powering Growth*, a report detailing the potential for agtech in Australia. A year on, we asked report co-authors KPMG to provide an update on the state of play in the sector.

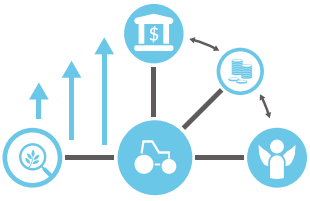
Contributing author:
Ben van Delden
Partner, KPMG

Momentum has developed quickly within the Australian agtech ecosystem. Since releasing *Powering Growth* in September 2016, there has been an increase in capital invested into startups, the emergence of several agtech incubators and accelerators, and numerous summits focused on showcasing Australian agtech startups and connecting the sector to investors. There are also encouraging signs from the federal and state governments to make it easier for entrepreneurs to access cash and support.



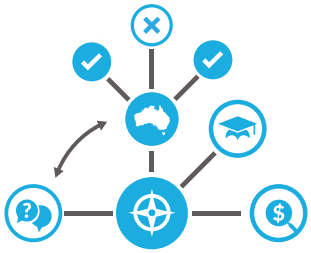
Powering Growth provided 12 recommendations across 3 key themes – Capital, Connectivity, and Direction. Here we've produced a snapshot of some of the key activities and initiatives over the past 12 months within Australia's agtech ecosystem.

There is growing interest and focus on agtech with industry, government, investors, corporates and farmers driving significant innovation, focus and funding. Real momentum has been generated in the sector, moving towards *Powering Growth*'s forecast of agtech enabling the agrifood industry to grow to $100 billion in export earnings by 2030. Some of the many highlights in agtech over the last 12 months include:



CAPITAL

Australian Government	$4.3m Accelerating Commercialisation Grants to eight agtech startups
SproutX	$10m SproutX accelerator supported by Artesian Capital
The Yield	$6.5m Series A raised by The Yield
Agersens	$2m seed round raised by Agersens
Agworld	$4m Series B raised by Agworld
OBSERVANT	Observant acquired by Jain Irrigations
Swarm Farm Robotic Agriculture	Swarmfarm announced Adama as a global partner



DIRECTION

food AGILITY	$200m committed funds 50 partners Food Agility CRC launched and aims to empower Australia's food industry through digital technology.
FoodBytes! by Rabobank	RaboBank 'FoodBytes' was held in Sydney attracting 1,600 attendees - the first time FoodBytes was held outside the USA.

CONNECTIVITY

Victoria State Government	$45m Victorian government 'Connecting Regional Communities Program' aimed at improving digital infrastructure
GATE Global Ag-Tech Ecosystem	A range of agtech accelerators, incubators and collaboration hubs have launched including NSW DPI initiative the GATE
Finistere Ventures LLC Cultivian Sandbox	US Venture Capital agtech tour hosted by Austrade
AgFutures Innovation & Investment Conference	AgFutures conference hosted by QLD government
Startup Catalyst	AICC, Startup Catalyst and Austrade have led agtech missions to Israel
Israel Trade Commission Sydney, Australia	Bridge summit connecting Israel-Australia startups and investors

FINTECH

Contributing author:
Danielle Szetho,
CEO, FinTech Australia

// 2017: A year for great fintech policy progress - but who will benefit?

Australia's fintech industry has had a very good year. It has seen us elevated to the world stage, with a raft of fintech-friendly measures making progress in the Australian Parliament and a solid number of capital raises announced across seed, series A and B – including some with leading international VC funds. Despite this, the next 12 months could be make or break for us.

The recent federal budget, delivered in May, largely set the scene. It included a range of fintech-friendly policy measures in response to the industry's advocacy: a commitment to establish an open banking regime in 2018, reduce barriers to obtaining a bank licence, expand Australia's fintech regulatory sandbox, extend equity crowdfunding to private companies and remove the double application of GST on use of digital currencies. Most of these measures have now seen extensive consultation, and several have reached Parliament.

The comprehensive and coordinated nature of the government budget announcements were very welcome. Their rapid progress to legislation, ensuring we will catch up with the world's fintech leaders, even more so. Federal Treasury, our regulators and indeed both major political parties, are seeking to create stronger competition and improve choice in our financial services sector. They clearly see the fintech industry has the potential to make this happen.

Recent international benchmarking reports have also reinforced Australia's position as an emerging leader in fintech. KPMG International's Pulse of FinTech report highlighted Australia's strong fintech capital investment growth compared to the rest of the world, and the 22nd Global Financial Centres Index saw Sydney hold and Melbourne increase its ranking.

Australia also jumped ahead of Hong Kong, Singapore and the US for fintech market adoption, according to the June 2017 EY FinTech Adoption Index. It showed 37% of Australia's digitally active population are now fintech users, compared to 13% in 2015. It also showed that the number of Australians who said they would prefer to use a traditional financial services provider has dropped to just 10%.

However, while funding and regulatory reform are positives for Aussie fintech, challenges still remain ahead, including increasingly intense competition from massive global digital players like WeChat, Ant Financial, Apple, Amazon, Google and Facebook. They threaten the aspirations of both our traditional financial services businesses and newly thriving fintech industries, as they are just as capable of taking advantage of these new policy developments to grow into the Australian market.

More collaboration between traditional financial institutions and fintechs would create a stronger joint response to this competition. Some significant recent funding announcements by banks investing in fintechs indicate improvement in this area, but the level of openness and appetite for cooperation from our banks is nowhere near that of our regional peers. Incentives for greater collaboration, via the R&D Tax Incentive or other corporate incentive schemes, would certainly help in this area.

But the removal of some major hurdles to startup company growth will also go a long way to making us more internationally competitive. The fintech industry, like the broader startup industry, needs access to great talent. Talent is increasingly expensive, and difficult to find. Since the recent 457 Visa overhaul, the problem has escalated further, and has seen some high-potential startups relocate to other markets where talent is cheaper and easier to import.

Greater gender diversity will help - and this is an area FinTech Australia has actively taken steps in. But we also need incentives for our universities and successful companies to invest in training (or even retraining) more entrepreneurial home-grown talent, and to reform many other aspects of our entrepreneur and skilled visa systems to address the skills crisis the industry faces.

Likewise, the reduction of payroll tax for our successful, fast-growing companies would go a long way toward accelerating growth and the creation of more Australian jobs, and giving our industry every chance of creating the next global digital giant that everyone else is afraid of.

EDTECH

Contributing author:
Riley Batchelor,
CEO, EduGrowth

The edtech sector has the potential to create huge economic advantage for Australia, and more importantly have significant social impact globally. The current value of the Australian education export sector is $21 billion, making this the country's third largest export product. Representing 1.75% of GDP the education sector continues to grow with exports projected to reach $33 billion by 2025. Australian edtech companies will be a key factor in this growth.

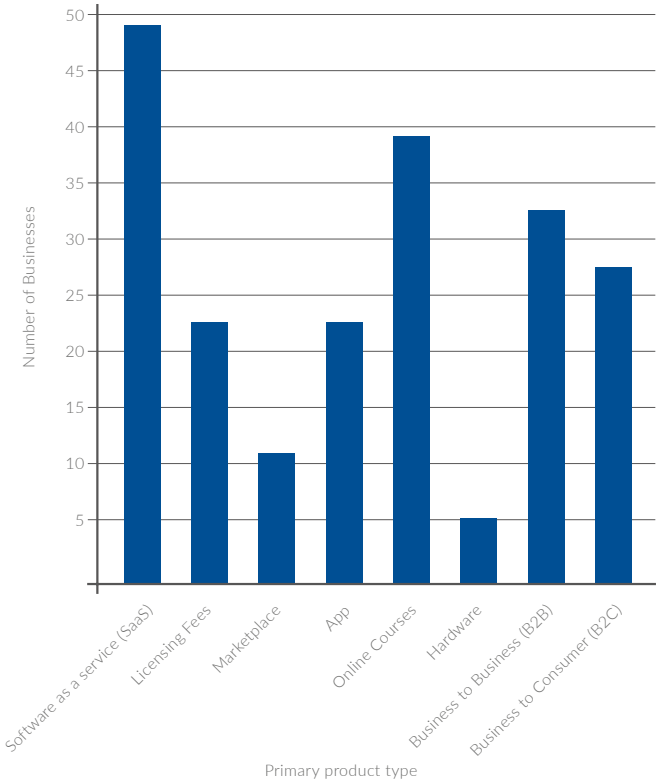


Figure 9: Overview of products being developed by Australian edtech companies.

The EduGrowth Australian EdTech Census, conducted earlier this year, shows strong forecast jobs growth in the edtech sector with 60% of organisations looking to hire in the next six months and 10% of those looking to hire six or more employees in the next six months. Edtech companies have strong global focus as 6% have customers overseas and 22% say they are planning to expand overseas. There are still many challenges as 63% of respondents have no capital investment and 29% see raising investment as one of their major challenges in 2017.

Australian edtech has already produced global edtech giants including Moodle, which currently services over 96 million users globally. Another success story is one of the country's earliest edtech companies, 3P Learning. The company currently has annual revenue of $22.4m and teaches maths to over five million students.

Opportunities in the edtech sector are being identified by investors. In recent years SmartSparrow, an innovative adaptive learning platform, raised $12m in its series B round. Compliance and professional training platform Go1 raised $4m in late 2016. Additionally, investors are beginning to see returns, as there has also been some consolidation in the schools learning market with SEQTA and Synergetic combining to become Australia's largest school software provider Education Horizons Group.

In order to take advantage of the opportunities in the edtech market, EduGrowth - Australia's peak body for education technology companies - was launched in 2016. With hundreds of members including individual startup founders, government and traditional education institutions, EduGrowth aims to support the growth of the Australian edtech sector to make it a global top five edtech hub, that can serve as many as 100 million learners globally. EduGrowth has launched Australia's first edtech accelerator and continues to provide resources to support new and established edtech founders.

As the world's citizens look to education to solve our biggest problems, the global edtech market is projected to reach $252 billion. With so much experience in delivering internationally renowned education, Australian edtech companies are well positioned to be part of this huge opportunity.

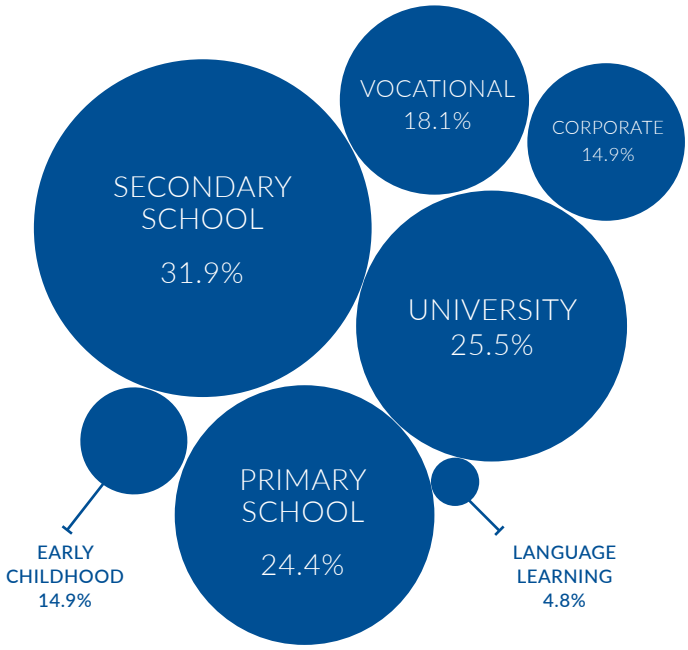


Figure 10: Australian edtech startup focus areas (some companies across multiple areas)

CONSTRUCTION TECH

In 2017 StartupAUS released a report entitled *Digital Foundations* which looked at how technology is transforming the construction sector in Australia. We partnered with Aconex, LendLease, EY, and the Victorian Government on the research.[22]

Contributing author:
Alex Gruszka
COO, StartupAUS
Author of *Digital Foundations*

Almost two decades after Australia's most successful construction technology company, Aconex, was founded, the local construction industry finds itself at a tipping point. Digitisation is coming fast, and the industry is on the verge of widespread adoption of a range of new technologies.

The sense of excitement and activity in ConstructionTech is palpable. Startups are not looking to disrupt tier one construction firms - very high capital costs mean that established industry players remain firmly in position. Instead, startups are looking to provide digital solutions and technological additions that help improve existing businesses and overcome some of the most enduring challenges of this complex sector.

The opportunities are vast. Within 10 years, according to figures from BCG, global full-scale digitisation in nonresidential construction could lead to annual cost savings of US$0.7-1.2 trillion (13% to 21%) in the engineering and construction phases and US$0.3-0.5 trillion (10% to 17%) in the operations phase. Extrapolating to the Australian construction sector, the potential added value increase could be $25 billion year on year within the next decade.

Startups, therefore, have the potential to add huge value to the local construction sector as well as enjoying healthy global demand for exported technology solutions. Larger firms are themselves proactively exploring how to change. Both the workforce and management are keen to move away from burdensome paper-based administration towards integrated digital solutions. This has opened a significant market opportunity for some of Australia's most promising startups, companies like APE Solutions and SafetyCulture. For these businesses, removing paper translates into a host of business-wide benefits, including providing managers with better, more timely data, improving safety for workers on site, and increasing build speed.

Firms are looking to deliver building assets alongside 'as-built' building information modelling (BIM). This provides the technological features necessary to optimise the performance, maintenance and energy costs of the building long into its life cycle. Australian startups such as CIM Enviro and 30Mhz are able to employ a series of IoT sensors and use advanced data collection coupled with machine learning to optimise building performance. Technology is an edge in a competitive market.

This is not to say it will be easy. Construction already operates with some of the thinnest profit margins of any industry, and firms have large and complex legacy systems. Change management requires significant time and investment, and is hampered by the project-based nature of siloed operations. Construction sectors the world over are grappling with these challenges, and construction remains one of the least 'innovation active' sectors globally. However, when set against a backdrop of a global construction output valued at over US$8 trillion in 2015 and forecast to grow to US$15.5 trillion by 2030, it's clear that the stakes are high.

That huge market opportunity has led to a big upswing in global interest in ConstructionTech in recent years. CB Insights estimates more than US$1 billion has been invested in global ConstructionTech companies across more than 200 deals since 2013, with the trend line moving upwards. Leading venture capital firms including Andreesen Horowitz and Google Ventures have invested heavily in the space, and specialised US-based ConstructionTech venture firm Brick & Mortar Ventures has made more than 25 investments since it was founded in 2014.

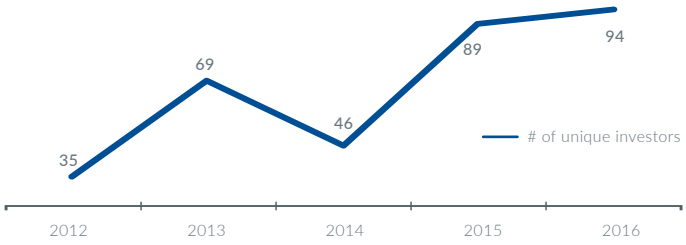


Figure 11: Yearly unique investors in ConstructionTech[23]

The growth hasn't just been in the amount of money or the number of deals, either - an increasing number of investors have been involved in ConstructionTech deals in recent years. CB Insights estimates the number of unique investors in the space almost tripled from 2012-2016.

Australia, too, has seen strong growth in the space, with firms like SafetyCulture and Assignar attracting venture capital from leading Australia-based venture funds including Blackbird and Our Innovation Fund, alongside Silicon Valley titans Index Ventures. StartupAUS estimates Australian ConstructionTech startups have attracted at least $98 million in investment since the start of 2016. With over 75% of these deals at an early stage ('seed' or 'A'), this figure has the potential to rise sharply in coming years.

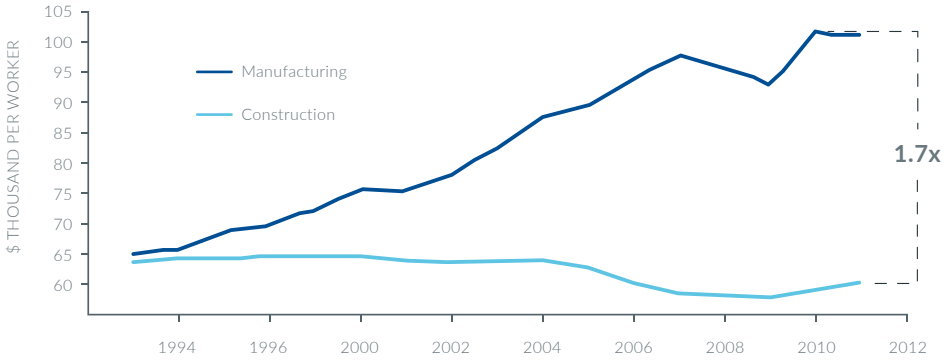


Figure 12: Overview of productivity over time, as measured by real dollar output per worker.[24]

Productivity in manufacturing has nearly doubled, whereas in construction it has remained flat.

In fact, Australia has some significant advantages in the adoption of new technologies in this space. Our construction sector is heavily concentrated, with just 20 firms accounting for 68% of contracts won. That means proactive steps being taken to digitise by sector leaders are already having industry-wide repercussions. Anecdotal evidence also suggests Australia's construction sector has been a leading adopter of technology for some time - most notably in cloud software, use of mobile products for field processes and in adoption of BIM.

With the right action, Australia can capitalise on its burgeoning ConstructionTech ecosystem and drive value throughout the construction sector and the economy as a whole.

22 Full report at startupaus.org
23 CB Insights (2017), The Most Active Investors in Construction Tech (cbinsights.com)
24 McKinsey (2015), The Construction Productivity Imperative (mckinsey.com)

B2B SOFTWARE
A HIDDEN STRENGTH FOR AUSTRALIA?

Contributing author:
Jerry Stesel
Partner, Our Innovation Fund

// 5 reasons Australian B2B software companies punch significantly above their weight on the global stage

In the late 1990s Australia produced its fair share of globally successful consumer internet companies – think Seek, REA & Carsales. These companies and their founding teams were Australia's pioneers on the difficult road towards success in the tech industry. The companies that made it through that journey built incredible businesses with beautifully in-sync product-market fits and very strong and defensible network effects. Arguably though, Australia jumped on the bandwagon of the dot.com boom late and the inflow of capital, talent and support infrastructure which are vital for innovation to thrive, quickly dispersed after the 'bubble' burst.

Following the collapse of the dot.com bubble, capital in Australia began to withdraw from the VC and early stage technology sector as investors no longer saw the attractive risk/reward outlook which those earlier years brought. This was compounded by the resources boom, which drew capital, focus and talent from other sectors as it continued to go from strength to strength.

A surprising shift occurred. Throughout the 2000s, with a heavy government and national focus on resources, an outflow of entrepreneurial talent and a significant lack of funding in the Australian tech ecosystem, we saw Australian B2B software startups flourish. Why did Atlassian, WiseTech, Enboarder and many more B2B software businesses continue to grow rapidly and succeed on a global scale?

Ingrained in our way of life and economy are a few key traits that allowed these companies to thrive despite the tide of challenges they faced.

1. A small market forces us to find scale offshore
   First and foremost, Australia is undeniably a small market. We are the 56th most populous country on earth and one of the most sparsely populated. We're surrounded by water and hours by air to more developed economies and markets. If California, Texas, New York or Guangdong were countries, they would all have significantly larger GDPs than our own. What does this mean for a B2B software founder? As a founding team in Australia, if you want to build a large and scalable business, you are forced to think and design for scale beyond your home market. Aussie founders are forced to develop a global mindset from day one, and this is a huge asset.

2. Brand Australia

There's no doubt Australian founders benefit from 'Brand Australia'. This brand (or country) equity is built by an appreciation for the quality of everything we produce (our resources, agriculture, vitamins, education and our athletes) and our robust and *mostly* stable regulatory and legal environment. Global markets, customers and investors appreciate Australia's robust laws and regulatory frameworks (especially around intellectual property, corporate governance and financial securities) as well as strong processes and regimes for quality control. While government red-tape is often derided as unnecessary and time-consuming 'box ticking', and sometimes justifiably so, it does help contribute to the compliance mindset that tests founders early on as they refine their business model and product.

3. Risk-averse corporates refine our enterprise offering

Founding a company in Australia is not all roses and by no means a guarantee of success on the global stage. B2B software businesses, typically target large corporates as prospective customers. There are few harder corporate markets to crack than Australia's. Many words have been written about the pervasive risk-aversion of Australian executives and boards, a discussion of which is beyond the scope of this article. This risk aversion, coupled with the lack of early-stage funding in the 2000s has meant that early-stage companies have had to demonstrate a very clear value proposition to their prospective customers early on in their life cycle. While risk aversion can be a dangerous thing, having this risk aversion in our corporate DNA has meant we have inadvertently adopted a vigorous, Navy Seal-like testing ground where businesses and business models are tested quickly and where the weaker ones fall by the wayside while the more robust ones prevail – and are stronger for it. To quote Frank Sinatra, 'if you can make it here, you can make it anywhere'.

4. Fear of failure has bred strong risk mitigating technologies

The same fear of failure and risk aversion which saw a mass exodus of capital from the startup landscape in the early 2000s has had additional inadvertent advantages. Despite our corporate market being difficult to crack, that same corporate market has had an insatiable appetite for products and services which mitigate risk and improve efficiencies. This appetite has been supported by a robust regulatory and legal framework with regimes, like OH&S and personal director liability. In the University of Melbourne's annual HILDA survey, it was found that a majority of Australians (62%) were unwilling to take on financial risk even if they had 'spare cash'. While this risk aversion presents a barrier to innovation, it has also provided opportunities for B2B software startups in the regulatory or compliance space like EFTsure to succeed.

5. World class education breeds world class talent

The HILDA study also found that education and risk are positively correlated. The better our education is, the bigger our risk appetite. Australia's education system, despite its significant challenges, is world class, and it is a defining reason why our B2B software companies continue to succeed on the world stage. The talent is here and it's world-leading.

In saying this, our education (and immigration) system can and must improve. There is a global shift toward a more entrepreneurial system of education which actively encourages innovation and STEM studies. This is a shift which, if missed, will haunt us long into the future as we get left behind in the modern and global economy.

This is not to say there aren't already sweeping and positive changes underway. There are. We are at a crucial inflection point in the transition of the Australian economy from a resources and primary industries intensive economy to one based on exporting our leading IP and services to the world.

Each week at Our Innovation Fund we meet inspiring founders chasing their dreams and working tirelessly to live their purpose and get their companies out in the global market. Australia's tech landscape is rapidly shaping up to become a powerhouse of successful innovation. However, we must collectively capture the opportunity currently before us for our innovation ecosystem to shine on the world stage and take the lead from the impressive performance of many Australian B2B software companies already flying the flag globally.

VENTURE CAPITAL

2017 STATE OF PLAY IN AUSTRALIA

Contributing author:
Christian Gergis,
Head of Policy

Australian Private Equity
and Venture Capital
Association (AVCAL)

Over recent years, the Australian innovation ecosystem has come on in leaps and bounds, creating an enviable pipeline of talented entrepreneurs and savvy investors that bodes well for the nation's future.

Venture capital is playing an important role in this economic transformation – providing the capital and expertise to ensure Australian companies reach their potential, not just locally, but also on the global stage. Venture fundraising reaching a record high in FY2016 of $568m, a remarkable figure when compared with the $154m raised just a few years back in FY2013. We can now confirm that FY2017 is the second consecutive record year for Australian venture fundraising – more than doubling from FY2016. Since July 2016, around $1.32 billion has been raised, including $500m for the Biomedical Translation Fund (managed by Bioscience Managers, Brandon Capital and One Ventures), $250m by AirTree Ventures, $234m by Square Peg Capital, $100m allocated by the federal government to the CSIRO Innovation Fund – now known as Main Sequence Ventures - (with another $100m expected to be raised from private investors), and $75m by IAG Ventures (a new corporate venture capital fund), all of which we can expect to be deployed in the next few years.

Clearly, there is renewed confidence from the institutional investor community in Australian venture with a number of superannuation funds, including Hostplus, Australian Super, HESTA, First State Super and Statewide Super, making important commitments over recent times.

While the impact of the policy measures comprising the National Innovation & Science Agenda will take time to be fully felt, NISA has been a catalyst for the national conversation around building a more diversified, sophisticated Australian economy. This has helped attract more investment into the early stage ecosystem, with venture offering a smart way for investors to gain exposure to cutting-edge technologies and disruptive businesses. Given time, the NISA measures can act as a foundation stone for a more knowledge-driven Australian economy.

So while there has clearly been a huge influx of funding to venture capital, can it be sensibly deployed? The short answer is yes.

While the recent growth in local venture has been significant, it must be acknowledged that it is coming off a very low base. As AVCAL's research report, The Venture Capital Effect, shows, Australian venture capital sector remains small, both in absolute terms, and relative to its international peers. Australian venture capital investment as a percentage of GDP is 0.023%, less than half the OECD+ average, and less than a tenth of the size of Israeli or US markets. This leaves Australia ranking 18th out of 30 OECD+ nations.

In dollar terms, Australia's record fundraising year of 2017 ($1.32 billion) pales in comparison to the US$41.6bn raised in 2016 in the US. The potential for such investment is easy to see: currently the top five US companies by market capitalisation all received VC-backing: Apple, Google, Microsoft, Amazon and Facebook. Fifteen years ago, Microsoft was the only company to make that list, showing the potential for venture to transform the makeup of entire economies.

Clearly, for a nation that harbours ambitions to be an innovation leader, Australia is boxing below its weight. Growing the venture capital sector will mean that promising Australian companies receive the capital and expertise they need to prosper in an increasingly competitive and global economy.

In order to ensure that Australian venture firms are not diluted out of their best performing portfolio companies, and that investees receive the capital they need to succeed, funds need to be of sufficient scale so as to make staged, follow-investments. As larger venture funds are raised in Australia it is becoming easier for firms to stay meaningfully invested, for longer, with better results for their investors and the businesses that they back. It will also mean that Australian founders won't have to look overseas for capital as often as in the past.

Most importantly, the quality of startups and high growth companies that are emerging in Australia should give us great confidence that there is a strong base of investable companies. Consistently we hear from venture managers that the sophistication of Australian founders and young companies is rapidly improving, making investors excited about the opportunities on offer locally.

This is borne out by high profile Australian venture capital exits over recent years such as:

- The $279m sale of Australian head lice treatment company, Hatchtech, in September 2015 (backed by investors including One Ventures, QIC, GBS Ventures, Uniseed and Blue Sky Ventures);
- The June 2015 sale of Spinifex, a company tackling neuropathic pain, for US$200m with potential milestone payments of US$500m (invested in by GBS Ventures, Brandon Capital Partners and Uniseed); and
- Brandon Capital's investee Fibrotech, an Australian firm addressing renal and fibrotic diseases, being acquired in May 2014 in a deal worth potentially US$557.5m.

Atlassian's success also shows that Australian entrepreneurship isn't limited to the life sciences, and that there is local talent capable of building multi-billion dollar digital businesses, creating thousands of skilled jobs.

Looking ahead, there remains great opportunities to boost venture capital's impact on the Australian economy. Ultimately, the continued growth of the sector will depend on Australian superannuation funds making a long-term commitment of patient capital. With total superannuation assets of around $2.3 trillion, yet only around $421m committed by funds to Australian venture in FY2017, the potential to boost allocations is enormous. This will be crucial if the Australian economy is to, at scale, develop whole new industries and genuinely transform itself into an innovation leader. The recent renewed commitment of super funds to Australian VC is therefore particularly pleasing to see.

The other area which bodes well for the future is the recent growth in corporate venture capital. In the last three years alone, NAB Ventures, IAG Ventures, Reinventure (backed by Westpac), and Scaleup Media Fund (owned by media firms including News Corp Australia and Nova Entertainment) have emerged as venture firms, backed by large, established Australian companies. This is heartening, indicating corporate Australia's willingness to proactively respond to dynamic technological change. Globally, corporate venture is an important part of the innovation economy, but is only now just emerging in Australia.

With focused collaboration and strategic thinking from government, industry and stakeholders, venture capital can help Australia achieve its goal of joining the top tier of innovation nations. Recent developments should give us confidence that this is both a realistic and necessary ambition.

GOING GLOBAL

HOW AUSTRALIAN TECH COMPANIES CAN THINK ABOUT SILICON VALLEY

Contributing author:
Mick Liubinskas
Portfolio Manager, muru-D San Francisco

I've been travelling to and working in the San Francisco Bay Area since 2005 and moved here in August 2016. I've seen over 100 Australian companies visit, move to, or operate in the US. Here are a few things I've come to believe through my experience.

// You can succeed in the US.

Yes, it's huge, challenging and competitive. But with effort, consideration and perseverance, you can succeed in the US. It's also possible to do this while keeping your team in Australia. Many have done it. There is a path and there is help. Keep reading to find out how.

// It's very different.

The US is similar to Australia, but also different in 100 small ways that add up. This means that PMF (product market fit) in Australia is not PMF in the US. My rule of thumb; for consumer businesses it's 60-80% the same and for B2B companies it's 30-60% the same.

// It's very big.

You really can't comprehend this remotely. 25 million Aussies. 325 million Americans. There are 53 regions in the US with over a million people. You could get to $10m ARR without leaving California. Safesite from Brisbane had five clients in Australia after 12 months, then moved to the US. 12 months later they had 500 clients in a single US state, and 12 months after that they were at 3,000 nationally. You can't get that scale in most industries in Australia.

// It's competitive.

Just because it's big doesn't mean it's easy. People work hard, get two weeks annual leave (but often don't take it), study hard and are very ambitious. You need to stay focused. Solve one problem for one type of customer with one solution in one geography with one business model and one acquisition model. Get to $1m ARR then grow from there.

// Venture capital doesn't flow in the streets.

Don't believe TechCrunch. Yes, there is more money in the US, but there are also way more companies. The rounds are larger but often they are harder to raise than in Australia because the whole world is here pitching. You also have 2nd and 6th time founders raising and they get blank cheques (or checks as they say here. And yes, people still use cheque books in the US...). If you do earn venture capital, you will most likely do it with a US-focused story and with your core team (including you) moving to the US permanently.

// Talent is very expensive.

This is great if you want a job. But I suggest you don't bring your tech team over (Facebook will meet them at the airport and offer free food and a sign on bonus). This is also great for Aussie companies. Build in Australia, sell in the U.S. This works and you can use R&D offset and the Export Market Development Grant (EMDG). Perfect match. Also don't underestimate your ability to poach a big name from a big company. Sell a big dream and you might just find a senior product manager for Slack joining your team for $150K a year and 10% equity (don't be stingy, they have networks and experience that will make your business much more likely to succeed - plus they will bring their favourite team members too).

// What are your options?

I've seen a few main approaches work:

1. Build local and stay local - forget big markets. Build for Australia, make it a success and be happy with that. No shame in that and if you do, you can either start another one or build on it.
2. Move to US and stay here. As above, if you raise early you will most likely have to move, like Bugcrowd and Safesite. If you raise later you can stay in Australia, like Campaign Monitor and 99Designs (though both have big offices in SF).
3. Build local, get big, then go global. Australia is too small for most businesses and rarely means you win the global market. Seek and Carsales did this. Stayed in Australia for 10 years, got to $1 billion value, then looked global.

   Let's say two identical companies start in Australia and the US focused on their home markets. After 3 years, the Aussie company will maybe have $2-3M in revenue, the U.S. company $10M. The Aussie company can raise maybe $5M, the U.S. company will raise $50M. The Aussie company will now find it very hard to get into the US with that gorilla there. Maybe one day the US company will buy the Aussie company.

4. Build local, sell global. This is the ideal scenario. Hire local talent but sell into the big market. This is what BigCommerce, Freelancer, Invoice2Go, Campaign Monitor and Envato did.

// It's accessible.

Don't spend your life wondering. Buy a ticket for about $1,800 (yes, United isn't a great airline but Qantas has good deals now too). Sleep on couches (not mine, I already have three kids but others should oblige) or stay at StartupHouse (started by an Aussie, nice work Elias.) Join Aussie Founders Network. Meet with five local Aussies for coffee at Red Door, Coffee Culture or even Starbucks (they have a flat white now). Come prepared, listen, follow up and you should get 10 intros to good people for customers or even investors. You're not pitching, you're asking questions and listening. You're learning. You're starting the process. You're starting a journey of effort, consideration and perseverance because...

You can succeed here.

LISTING ON THE ASX

ISRAELI TECH FIRMS ARE LOOKING TO AUSTRALIA

Contributing author:
Dave Sharma,
Australian Ambassador
to Israel 2013-2017

Israeli tech companies are finding their way to Australia in growing numbers, with the attractiveness of the Australian Stock Exchange (ASX) a key driver.

Sixteen Israeli tech companies now call the ASX home, a doubling of the number from only a year ago. Together they account for a market capitalisation of over $1.5 billion. And a pipeline is building, with several more Israeli tech companies undertaking pre-IPO funding rounds in preparation for listing.

Whilst still a niche, the relative rush of Israeli tech companies to the ASX requires some explanation. Like most tech sectors worldwide, Israel has a natural bias towards the United States, for both customers and capital. But Australia is increasingly seen as an attractive alternative, with the ASX acting as a magnet.

Particularly for tech companies listing with a market capitalisation in the $50 million to $500 million range, the ASX is a compelling offer. Such companies will find themselves on or within reach of the ASX 300 index, with the liquidity advantages this brings, and have access to a single main board listing. In other major exchanges, tech companies of this size would fail to make the indices or be relegated to a secondary board.

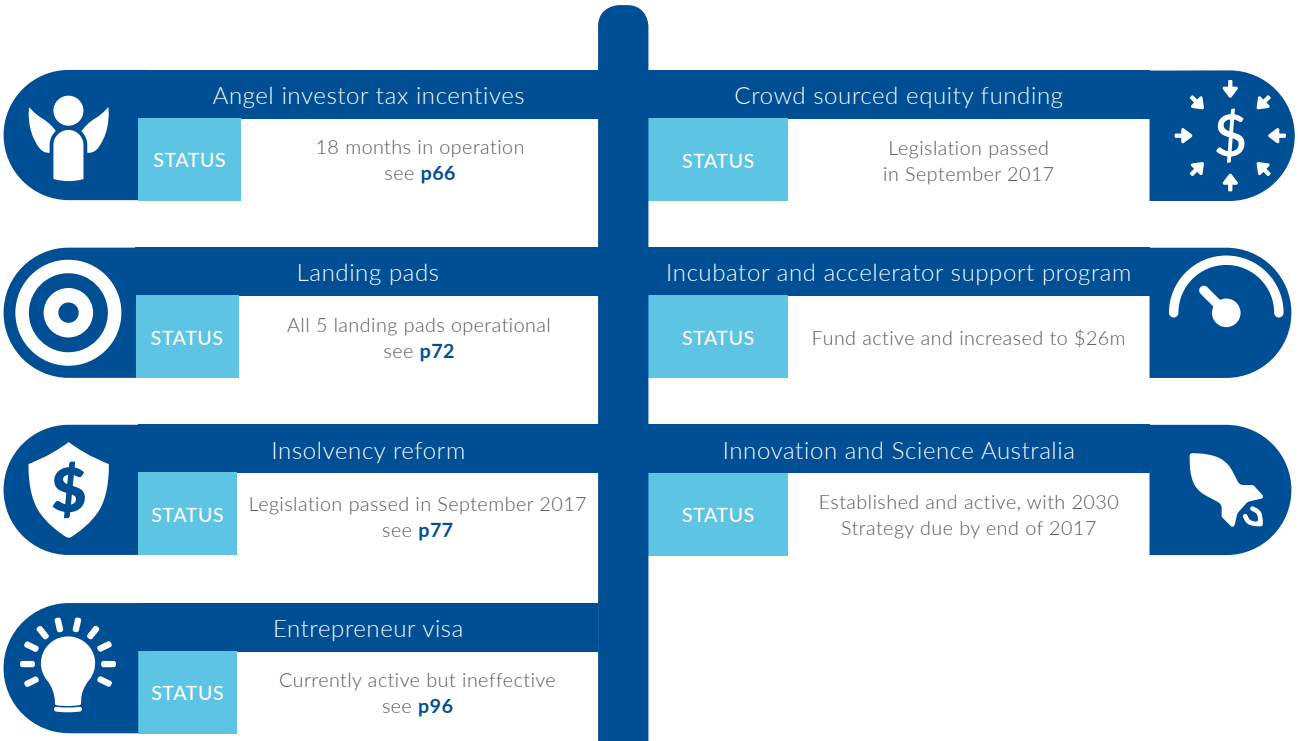
In addition, there is the attractiveness of Australia as a market in its own right, the strong linkages with the major growth markets of the Asia-Pacific, and a large number of sophisticated investors and institutionals with a growing appetite for technology. Taken together, the package is an appealing one for the right sort of Israeli tech companies.

ASX CEO Dominic Stevens led a delegation to Israel at the end of October – the fourth such trip by the ASX to Israel in the past year – and it is clear the ASX sees the Israeli tech sector as a growth partner. But the ASX stresses it is aiming for quality over quantity, urging prospective Israeli tech companies not to rush into an IPO, and stressing that the ASX is not the right fit for everyone.

Australian entrepreneur Paul Bassat has been one of the voices warning about the risk of early-stage tech companies listing prematurely and without a proper business model, burning retail investors in the process and damaging the entire sector, and has urged a tightening of the listing requirements for tech companies.

Provided the quality remains high, more Israeli tech companies listing on the ASX should be a gain for Australia, helping grow the skills base, ambition and technological literacy needed for a more vibrant startup culture.

// National Innovation and Science Agenda



ANGEL INVESTOR
TAX INCENTIVES (ESIC SCHEME)

On 1 July 2016 the federal government introduced a tax incentive designed to encourage angel investment in early stage innovative companies (ESICs). The legislation offers investors a 20% tax offset of up to $200,000 and a capital gains tax (CGT) exemption on the disposal of their interests in the ESIC.

The ESIC legislation was modelled on the UK's Seed Enterprise Investment Scheme (SEIS), and had been a core part of StartupAUS's advocacy for some time before it was introduced. It had bipartisan support in parliament and constitutes one of the most generous schemes of its kind in the world.

// Eligibility

Startups can qualify as ESICs if they are both 'early stage' and engaged in 'innovation'. The legislation provides tests for each of these elements:

1. Early stage' means the company:

   - Is less than 3 years old;
   - Had expenses less than $1m in the previous income year; and
   - Had an assessable income of less than $200,000 in the previous income year.

2. To satisfy the 'innovation' test, the company must either accrue 100 points under the points test in the legislation, or satisfy the ATO that it is an appropriately innovative company under the basic principles of the legislation.

   The points test focuses on areas including eligible research and development spend, receipt of particular government grants, participation in an incubator or accelerator program, previous investment, and IP developed by the company. A full list can be found on the ATO website. The points test was designed as a way to give investors and companies a quick path to 'yes': if a company satisfies the 'early stage' test and meets requirements for 100 points on the points test it is an ESIC and no ruling is required.

   If a company does not meet the points test it may nevertheless qualify as an ESIC, but will need to obtain a ruling from the ATO under the 'principles-based innovation test'. The principles-based test was designed to catch innovative, young, high-growth companies which, for whatever reason, don't fall into enough of the points categories.

   The full detail of this path to ESIC status is set out on the ATO website. Essentially, to satisfy the principles-based test a business must:

   - Be focused on developing a new or significantly improved innovation for commercialisation
   - Have high growth potential
   - Show the potential to have a competitive advantage
   - Have the potential to successfully scale
   - Have the potential to address a 'broader than local' market

// Benefits

// A 20% income tax offset

Investors that acquire newly issued shares in an ESIC receive an income tax offset of 20% of the amount paid for their investment. There is a cap on the tax offset of $200,000 each income year for the investor and their affiliates combined. An investor can therefore invest $1m in eligible startups before hitting the cap.

// No capital gains payable on sale of the shares

Capital gains realised as a result of the sale of ESIC shares are exempt from capital gains tax. The shares must have been held for at least 12 months and not more than 10 years.

// Intention and progress so far

The ESIC rules were intended to boost angel investment in startups. It is notoriously difficult to collect data on investments at this early stage, making assessing the impact of such schemes highly unreliable. Australia's fragmented angel investor ecosystem makes this challenge even greater. Of course, the ATO is collecting large quantities of data under the scheme, but the data has not been made public and we were unable to obtain access to it for this report.

The limited quantitative data we do have suggests angel investment in Australian startups has fallen since the introduction of the tax incentives. Pitchbook data for Australia suggests total angel investment fell by 46% from FY15-16 to FY16-17. Deal size involving angel investors fell by 21% over the same period.

That fall may be a natural consequence of a boost in VC capital availability, however, as companies are now less reliant on angels.

Anecdotal evidence suggests startups have been able to use the tax incentives to encourage angel investment in some circumstances. Snappr, a Sydney-based startup, went on to participate in Y-Combinator after closing a $500,000 seed round the day the ESIC legislation came into force. Snappr's founders said the raise had been helped substantially by the introduction of the ESIC incentives. Co-founder Matt Schiller told StartupSmart at the time that 'people were absolutely sold on the business model and expansion plans for the business but the incentive scheme definitely helped to seal the deal... the coming in of this scheme has given the signal that startups are a very viable investment option.'

Overseas experience supports this view. The UK's similar Seed Enterprise Investment Scheme (SEIS) has been in operation for longer, with more data available. There, the numbers are promising: according to a Deloitte study, 58% of those who invested under the SEIS said they would not have made the investment, or would have invested less, had the SEIS not been in place.[25]

25 Deloitte & UK Business Angels Association (2013), Taking the pulse of the angel market (deloitte.com)

EMPLOYEE SHARE SCHEMES

The long-awaited changes to Employee Share Schemes (ESS) in Australia were well received by the startup community when they were announced in 2015, and substantially achieved the policy outcomes desired. There remain two fundamental issues that require attention in order for the Employee Share Schemes regime to achieve its full potential.

Fortunately, both issues can be addressed through simple legislative changes that will remove the remaining bugs in what is otherwise a world-class system.

// The 20/12 Rule

The Corporations Act prohibits companies from issuing securities without a disclosure document (such as a prospectus) unless the company falls within one of the exemptions to the disclosure regime (the safe harbour exemptions).

The exemption that has practical application to startups is the small scale offering exemption, which provides for offers to no more than 20 investors in a 12 month period (the '20/12 rule'), raising no more than $2m.

Employees issued with shares under an ESS are characterised as 'investors', potentially causing the company to fall foul of the investor ceiling and triggering a requirement to publish its audited financials.

Where a fast-growing startup is seeking both to raise capital (by issuing equity) and to use ESS as a recruitment incentive, it can easily fall foul of the investor ceiling and would be subject to the burdensome requirement to publish its audited financials.

This substantially limits the usefulness of the ESS regime for many of Australia's most promising startups, particularly those that are growing their workforce rapidly.

StartupAUS recommends a simple change to the legislative framework so that employees are not considered 'investors' for the purpose of this rule. This would enable Australia's ESS regime to be truly effective in supporting Australia's most promising startups.

The barrier in place to issuing options/shares to staff in a high growth business is the limited application of subsection 3 of section 708 of the Corporations Act 2001. This presents two significant disadvantages which have a high probability of large impact on a startup:

1. Public availability of commercially confidential disclosure documents including prospectuses, short form prospectuses, profile statements and offer information statements including an audited 12 month financial report, and corresponding ability of competitors to gain access to such financial information.
2. Cost of preparing these disclosure documents and an audited 12 month financial report. Many startups have not prepared, and have not had the need to prepare disclosure documents and audited financial information – the cost of which for an early stage company would be prohibitive.

A detailed recommendation on this topic was made in a StartupAUS policy submission to the government in November 2015 and can be found on our website.[26]

// Recommendation

Make targeted amendments to legislation affecting Employee Share Schemes

Make targeted amendments to legislation affecting Employee Share Schemes to exempt options issued under the scheme from the 20/12 rule and to make the scheme available to a broader array of companies.

26 startupaus.org/advocacy/submissions/

// Eligibility requirements for Employee Share Schemes

Changes to the tax treatment of Employee Share Schemes (ESS) in 2015 introduced a 'startup' concession aimed at resolving the bizarre situation that existed since 2009 in which options were taxed in the hands of the employee at the time of issue, rather than at the time they received the proceeds.

The startup concession is available to companies that (a) are not listed on a stock exchange (b) have been incorporated less than 10 years, (c) have aggregated turnover of less than $50m and (d) are a resident Australian taxpayer.

While the startup concession is favourable to early stage startups, the legislation is significantly less advantageous to more mature technology companies. These companies must still operate under the ESS rules introduced in 2009. Given the increasing reliance on the ASX as a means of raising growth capital, StartupAUS is concerned that the exclusion of listed companies will negatively impact on the ability of these companies to attract and retain the best talent. The $50m turnover limit is also too low for many of Australia's most promising tech startups. Ironically, under the current regime, a company's rapid growth may be both the reason its new employees are interested in the company's employee share options plan, and the reason they might not be able to partake in it.

StartupAUS recommends that the government amend the startup concession to ensure its applicability to all Australian tech companies.

Australian technology companies in the scale-up stage are competing for talent with global tech companies such as Google and Facebook, and to require them to compete on anything other than a level playing field represents a major handbrake on their growth.

Recruiting experienced executives from overseas is a valuable strategy for Australian tech companies at the scale-up stage. However many of these companies are above the $50m turnover threshold and are therefore at a global disadvantage in their efforts to recruit and retain the best people.

Excluding companies with a turnover of more than $50m is also likely to disadvantage companies operating marketplaces or online payments businesses in which turnover of $50m may translate to annual revenues of less than $5m.

The ASX has been increasingly seen as a viable path for Australian startups to raise modest amounts of capital, and excluding listed companies has the effect of preventing many early and mid-stage technology companies from accessing the amended ESS rules.

Excluding companies that are more than ten years old similarly disadvantages companies that are no longer early stage startups. Even companies that are under ten years old could be excluded from the concession if they acquire another company that is more than ten years old, since the test applies to all companies in a group.

Google
Digital Garage

Boosting digital skills for small business growth

As the world goes increasingly digital, the skills that people need to grow successful businesses have changed.

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SPONSOR CONTENT

LANDING PADS

Contributing author:
Stephanie Fahey
CEO,
Austrade

With 60% of Australian startups in a recently held survey expressing an interest in 'going global', the Landing Pads offer an opportunity for startups to expand into international markets with assistance from Austrade. Landing Pads provide market-ready Australian startups and scale-ups with a short-term operational base in innovation global hotspots for up to 90 days.

Over the past 12 months, 3 Landing Pads have been established in Berlin, Singapore and Shanghai. Together with the previously established Landing Pads in Tel Aviv and San Francisco, there are now five operational Landing Pads assisting Australian startups to expand their international reach.

In each location the Landing Pad is situated within an established co-working space. For example, the Landing Pad in Shanghai is located at Xnode, which brings together local and China-based international startups into one community. Each of the Landing Pads has a dedicated Landing Pad manager who is either a founder, investor or technology scout with extensive experience working with startups.

Early participants in the Landing Pads program have achieved notable commercial successes including strategic partnerships, investment, as well as graduating from the Landing Pads into other world-leading international incubators and accelerator programs.

The program has also enabled startups to test their product market fit and gain insights around entering new markets. Our alumni have been actively communicating their learnings back into the Australian ecosystem to assist other startups considering international expansion.

Austrade's Landing Pad program has recently commenced its second year of implementation and it is constantly evolving, and with learnings from each of the cohorts, the program has been flexible in adapting and responding to the opportunities at each of the Landing Pad locations and the requirements of startups looking to expand in each of the five markets.

Each Landing Pad has a distinct focus. While the San Francisco Landing Pad is suited to later stage startups that have gained significant traction in the Australian market and are looking to access the US, the Tel Aviv Landing Pad is best suited for startups looking to refine their product/service offering or go-global strategy, and to develop strategic partnerships.

In addition to the "up to 90-day program", at the Tel Aviv Landing Pad, Austrade is running shorter intensive 'bootcamp missions' which help provide Australian startups with insights from a world leading startup ecosystem. The bootcamp missions are tailored programs which engage strategic partners, investors, serial entrepreneurs, corporate innovation labs and accelerators, as well as taking part in professional workshops.

In response to receiving applications from startups who were too early in their development, the program has refined its offering and messaging at each location. As a result, the number of applications from startups at the right stage to go global has grown significantly.

The Landing Pads team has collaborated with a number of Australian startup events including SouthStart, Myriad, Spark Festival, Tech23, Startcon and the "What's Up" series with StartupVic.

Austrade looks forward to increased engagement with the startup ecosystem and continuing to support Australian startups and scaleups with their global growth plans.

// Founders successes

SAN FRANCISCO

EWG — signed up the Super Bowl and the Aspen Ski World Cup

TEL AVIV

secured integration of their product with Check Point (world's largest cyber company)

SINGAPORE

Zed+ — secured a deal with RadLink

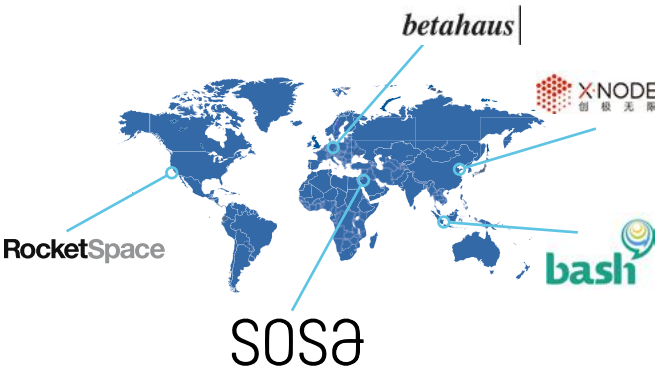
BERLIN

LIQUID STATE — secured a deal with a German hospital

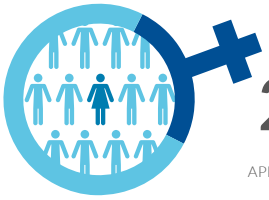
SHANGHAI

trendwise — secured a strategic alliance with MobPromo

// Co-working partners



// Female founders



25%

MOST RECENT APPLICATION ROUND

// Participation satisfaction

100%

OF LANDING PAD SURVEY RESPONDENTS WERE SATISFIED WITH THE LANDING PAD PROGRAMME

// Tel Aviv landing pad bootcamps

- NSW FINTECH & CYBER 2016
- ADVANCE QUEENSLAND & STARTUP CATALYST AGTECH 2017
- NSW FINTECH & CYBER 2017

// Landing pad participation profile

NUMBER OF STARTUPS SUPPORTED BY THE PROGRAM AS OF SEPTEMBER 2017

40 COMPLETED THE UP-TO 90 DAY PROGRAM

28 PARTICIPATED IN INTENSIVE BOOTCAMPS

INNOVATION IN REGIONAL AUSTRALIA

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CEO,
Regional Australia Institute

Innovation in regional Australia is big business. A recent Commonwealth Bank report[27] found that regional businesses perform better than their metropolitan counterparts on measures like asking employees for new ideas and looking to benefit from technology changes. The report estimated that regional businesses are seeing a financial return from their investment in innovation to be an average of $279,000, contributing $19 billion to the economy each year. If all regional businesses reached this benchmark, the report suggests the regional economy could grow by $44 billion every year.

But where are Australia's innovative regions? The Regional Australia Institute's Innovation Index has mapped the national spread of the two main parts of the innovation pathway – R&D and business dynamo:

1. R&D covers the traditional view of innovation focused primarily on technical expertise in R&D, and the measurement of those developments through applications for patents; and
2. Business Dynamo reflects a broader concept of innovation that incorporates startup rates, trademarks and the depth of B2B service capability.

Using these two innovation components, it remains true that big cities are the nation's key innovation assets. One cause of this is that only 26 regional local government areas (LGAs) have a registered R&D institution. This is where much of the R&D investment flows to, and R&D strength is concentrated in these areas.

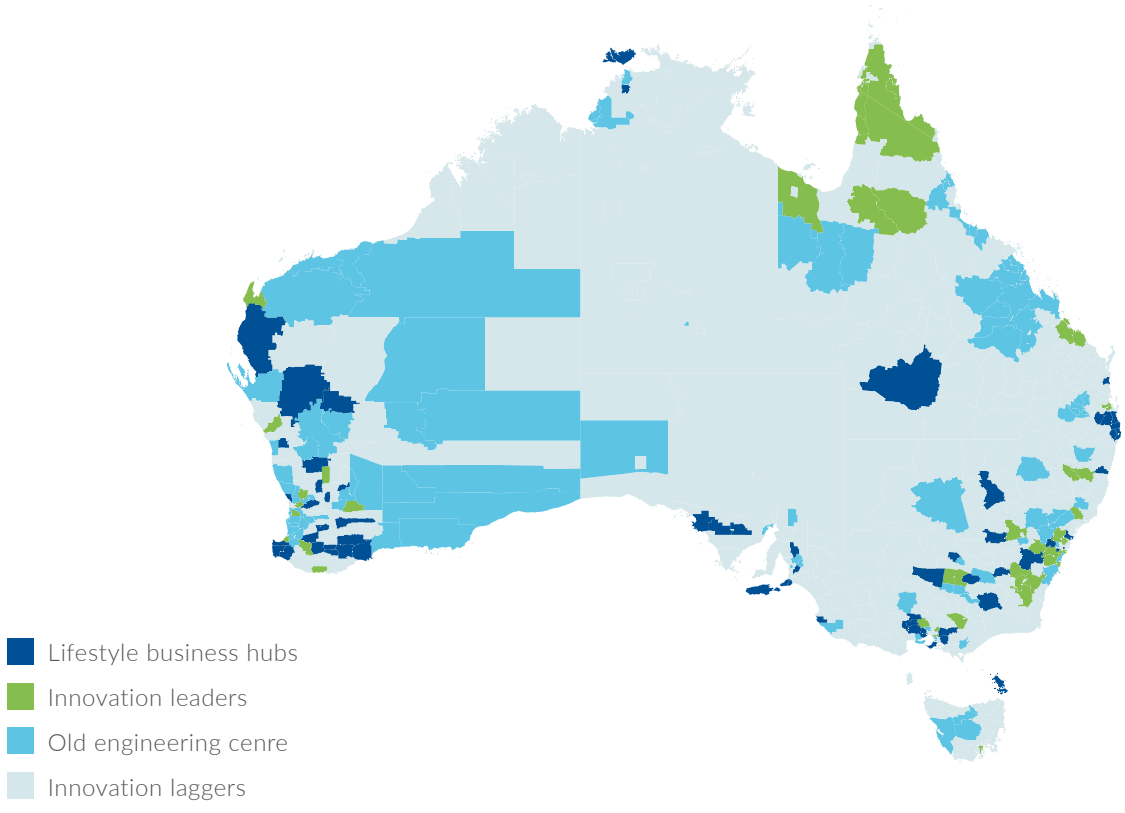
But more than 150 regional areas have higher than average rates of innovative capacity that provide a foundation for spreading the 'Ideas Boom'.

Places like Palerang (NSW/ACT), Byron (NSW) and Surf Coast (Vic) combine a rich local business network with a high rate of trademark applications suggesting that existing businesses in these places are innovating successfully.

The concerning contrast to this great news is Australia's old industrial centres. These areas have lost many businesses and jobs over the last 20 years. They are also among the worst performers in terms of innovation in regional Australia.

Mapping both the 'new school' business dynamo and the 'old school' R&D measures shows that some regions do well in both (the Innovation Leaders), some (the Lifestyle Business Hubs) show strength in the business dynamo without the R&D base, some (the Old Engineering Centres) have R&D capabilities without corresponding business growth and other regions perform poorly on both.

- 49 Innovation Leaders are regions performing above average on both new and old school measures. These are places like Hobart (Tas), Palerang and Yass Valley (NSW/ACT), Queenscliff (Vic), Toodyay (WA) and Darwin (NT).
- 110 Lifestyle Business Hubs are strong in Business Dynamo but have limited R&D capacity. This group gets its name from the many places in it with strong lifestyle features like Byron (NSW), Surf Coast and Hepburn (Vic), Gold and Sunshine Coasts (Qld), Claire Valley and Victor Harbour (SA) and Busselton (WA), along with regional entrepreneurial centres like Griffith (NSW), and Ballarat (Vic).
- 77 Old Engineering Centres are strong in engineering, science and R&D but weaker in the business dynamo measure. These LGAs are largely a mix of longstanding mining and minerals processing areas like Whyalla (SA), Mt Isa (Qld), Muswellbrook and Singleton (NSW Hunter Valley), and new mining hotspots like Karratha (WA), Pilbara (WA), Weipa (QLD) and Roxby Downs (SA).
- 195 Innovation Laggers have below average capacity in both facets of innovation. These include a large number of low population agricultural and remote LGAs, as well as larger population LGAs founded on heavy industry such as Burnie and Glenorchy (Tas), Port Pirie (SA), Broken Hill (NSW) and Benalla (Vic).



27 commbank.com.au/content/dam/commbank/assets/business/can/agribusiness/commbank-regional-business-insights-report.pdf

Regions are clearly important pieces of the state and national innovation ecosystems. The extent of creativity in both solving problems and offering scalable solutions to global markets is shown in the finalists of the Regional Online Heroes[28] and Lightbulb Moments[29] competitions.

therapyconnect
Therapy Anywhere Anytime

Therapy Connect, founded in Deniliquin NSW and solely online, was a finalist in Regional Online Heroes 2015. Since the Google masterclass that was part of the competition, Therapy Connect has become recognised as a leader in the field of providing online speech and occupational therapy supports to children and families in Australia. Their business has provided services to over 25 new regional areas across states and Territories in Australia and reaches as far as Asia, all from their own regional bases in New South Wales & Victoria.

POINTER

Pointer Remote Role is a platform that matches professional candidate profiles with roles that can be conducted remotely and that are specific to their skill set and experience. Think 'Tinder' but for remote employment. The business was started to create a more level playing field for professionals living regionally. Pointer Remote Role is based in The Rock NSW and was a Lightbulb Moments finalist in 2016.

Innovation policy is a dynamic space in Australia – with national efforts and resources being channeled into universities to assist with startup and commercialisation activities. States too are active. Queensland has a Regional Innovation Hubs program which is starting to fund spaces and activities to foster innovation in regional places; NSW has an augmented NSW incubators and accelerators program, and South Australia has both early stage and venture capital funds.

Our improving understanding of regional ecosystems mean that these interventions can be even more targeted to addressing known weaknesses in particular regional ecosystems. Longreach's Entrepreneur in Residence is a great example of how dedicated people and a little financial support can address a key gap. It is this kind of targeted approach, involving partnerships and collaboration with regional innovators and resource organisations, that will deliver the support needed to lift the contribution of regions in the next phase of the national innovation journey.

The RAI is currently working on an assessment of the gaps in the 'economic engines' of our regional cities, and of the kinds of programs and initiatives that are seen to work in addressing these gaps in other cities in other countries. We are keen to hear from regional innovators and entrepreneurs about how you are getting started and growing in a regional context – and what are the best and worst parts of running a new business in regional Australia. If you'd like to share your story please get in touch.

Daniel Johnsen
Entrepreneur in Residence
Longreach

// Longreach's Entrepreneur in Residence

How did Longreach in Central West Queensland come to host an Entrepreneur in Residence from California in 2017? The answer lies in jumping off from the local ingenuity and entrepreneurship which many regions have, to make use of a little bit of just the right sort of help to access capital and people resources from supporting organisations across the state, nation and overseas. The campaign to drive innovation in the region started many years ago, and took a step forward with a partnership through Advance Queensland which enabled the region to host delegations and network across outback Queensland with global entrepreneurs and with Queensland experts. US-based Startup Weekend Facilitator and mentor Daniel Johnsen is now the region's Entrepreneur in Residence, with a busy schedule of activities stimulating innovation in the region. With the first Startup Weekend Outback Edition in August a great success, Daniel says 'The pitches and ideas were on par with those that I have seen all over the world. I look forward to facilitating another one in the region before my time as Entrepreneur in Residence finishes next June'.

INSOLVENCY REFORMS

DIRECTOR SAFE HARBOURS

Contributing author:
Louise Petschler,
General Manager Advocacy,
Australian Institute
of Company Directors

//Startups set to attract more high-calibre directors under insolvency reforms

In September this year the federal Parliament passed legislation that will introduce a 'safe harbour' for company directors, carving out an exception to a director's personal liability for insolvent trading. This is welcome news for directors of all companies, and startups in particular.

The AICD had argued over many years that the previous insolvency regime pushed directors to trigger premature insolvency, resulting in job losses, contract terminations, and destruction of both goodwill and overall value. The previous regime also dissuaded experienced and knowledgeable directors from providing their expertise and guidance to startups and scale-ups. StartupAUS had pursued the case on behalf of startups specifically, and had recommended changes to insolvency laws in its 2015 Crossroads Report, saying:

Australia's insolvent trading laws are among the strictest in the world. They stifle entrepreneurial risk-taking by forcing company directors to focus excessively on personal risk mitigation rather than on maximising economic opportunities.

Rebalancing the legal exposure of company directors would enable more entrepreneurial behaviour and encourage more Australians to become directors of startups.

In response to these concerns, and following a recommendation of the Productivity Commission, the Turnbull government announced in December 2015 as part of the National Innovation and Science Agenda that it would address these problems by providing some form of 'safe harbour'. In September this year these changes passed the Parliament with support from across the political spectrum.

Under the new provisions, directors of companies in financial distress will be able to rely on the safe harbour protection if they start developing one or more courses of action that are 'reasonably likely' to lead to a 'better outcome for the company than the immediate appointment of an administrator or liquidator.' Whether a course of action is reasonably likely to lead to a better outcome will, of course, vary on a case by case basis depending on all the circumstances and the information available at the time.

The safe harbour will also be conditional on the company meeting employee entitlements and tax reporting obligations, and directors fulfilling existing statutory obligations to provide assistance in the event of administration or liquidation.

The reforms will give affected companies a realistic chance to restructure their business and improve performance. What we have seen previously is that once a company enters administration it was swiftly followed by liquidation, helped along by 'ipso facto clauses', which allowed contracts to be terminated solely because a company had become insolvent. Under the new regime there will be a stay on a counterparty's ability to enforce an ipso facto clause in cases where a formal restructure is underway, allowing a company much-needed breathing room.

These landmark reforms have the potential to energise business and the economy by enabling directors to take commonsense steps to rehabilitate distressed businesses. They will also help foster greater engagement with, and investment in, startup and scale-up businesses from experienced directors.

28 regionalaustralia.org.au/home/tools-and-products/regional-online-heroes/
29 regionalaustralia.org.au/home/prime7

STATE IN FOCUS: NSW

NSW GOVERNMENT

// Startups and NSW

Colin Pohl

Colin Pohl is the Managing Director of Pohl Capital, an advisory firm delivering strategy and M&A advice to leading Australian companies and organisations. Colin is closely involved in the startup community in Australia and in 2016 was the lead author of the StartupAUS report Economy In Transition: Startups, Innovation, and a workforce for the future.

// Overview

With a strong state economy and the greatest number of startups in the country, NSW is positioning itself as Australia's 'home of startups'. Successful startups across multiple industries, strong and growing government support, and a new Sydney home for the sector help reinforce that claim. This review of the NSW ecosystem will explore its core strengths and opportunities for growth as the state tackles an ambitious plan to become a world-leading centre for innovation.

// Why startups?

The NSW Premier, Gladys Berejiklian, has identified job creation as one of her highest priorities, and the Ministers interviewed for this report highlighted that startups have a central role to play in job growth strategy. Innovation Minister Matt Kean noted that recent research commissioned by the NSW government indicated that in the six years to 2014, 100% of net-growth jobs had come from small to medium enterprises (SMEs), even though they made up only 6% of NSW businesses.[30]

The State's startup sector has grown significantly since 2011. This growth has been strongly led by the industry, with focused government support starting to coalesce in 2016 with the launch of Jobs for NSW. Since then, the government has taken a more proactive role in the development of the State's startup sector. Jobs for NSW has taken on support for a high-growth startup sector as a core part of its mission, and has a budget of $190m over four years, designed to invest in the sustainable growth of entrepreneurial businesses in NSW with the intention of assisting to create one million new rewarding jobs in the state by 2036.

"We have a bold but realistic ambition of increasing Sydney's global ranking higher on the scale to become one of the top ten startup ecosystems globally. This would enable the state to attract even more global talent, investment, and the all-important collaboration of ideas."

John Barilaro, NSW Deputy Premier

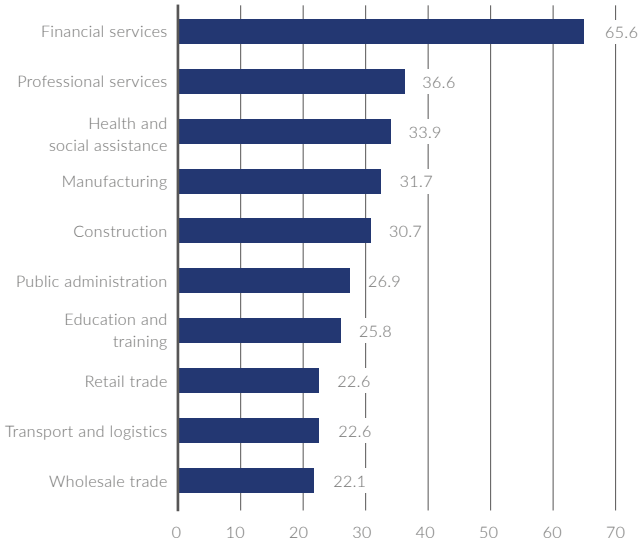


Figure 12: NSW's 10 largest industries[31]

// Startup sector strengths

Given the importance of financial services in the NSW economy, it should come as no surprise that the largest startup industry cluster in NSW is fintech. A wave of successful fintech startups (including companies such as Afterpay and Prospa) as well as a concentration of support structures in NSW (including Stone & Chalk, Fintech Australia, Tyro Fintech Hub, and the H2 fintech accelerator) have driven rapid growth. Fintech startups have received 25% of all capital raised by NSW startups since the start of 2015.

A wide range of other verticals have also developed significant momentum, fuelled by strong economic growth across the NSW economy. More than $900m has been invested in NSW startups since the start of 2015, with Health and Life Sciences businesses (18%), Software as a Service (SaaS) businesses (17%), and Sharing Economy/ Marketplace businesses (8%) all attracting significant levels of investment. Many of these are B2B software businesses, which is emerging as a particular strength (see p58). The state has also seen significant investments made in cyber security, quantum computing, and data analytics.

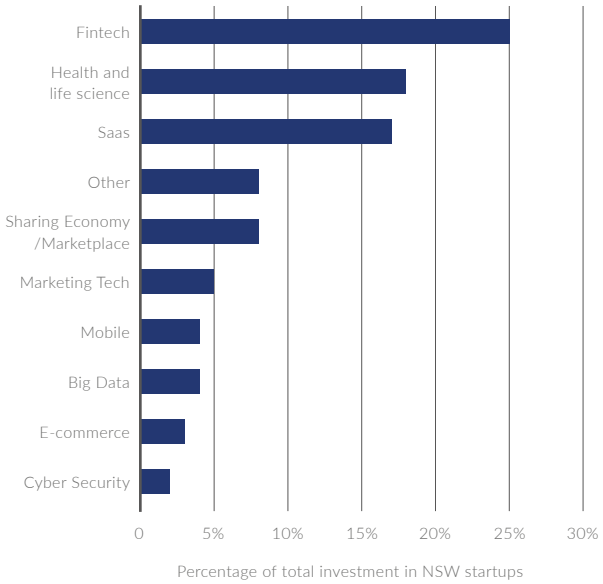


Figure 14: Investment in NSW startups by industry vertical: Jan 2015 - Oct 2017[32]

// Leading startups and support structures

A number of Australia's most notable startup success stories are based in Sydney. At the mature end, Freelancer, Campaign Monitor, and Atlassian have helped boost Sydney's standing as a viable base to grow a global startup and have established world-class teams in Sydney in the process. More recently, a cohort of Sydney-based companies including Canva, Airtasker, Afterpay, Expert360, LocalMeasure, and Prospa have led a new wave of high-growth venture-backed businesses.

Support structures have also played a crucial role, with Fishburners, Stone & Chalk, BlueChilli, Muru-d, Startmate, Haymarket HQ, Tank Stream Labs, and Slingshot all having started in Sydney since 2011. In 2016 the Sydney-based startup and tech community came together to create TechSydney, a non-profit industry group which aims to help make Sydney one of the top 10 cities in the world for tech startups. TechSydney has been a strong advocate for visa reform and the establishment of the Sydney Startup Hub, and has built a platform for connecting its members with high quality engineering and technical talent.

Many of Australia's largest venture capital firms are also headquartered in Sydney, including AirTree, Blackbird, H2, and Telstra Ventures.

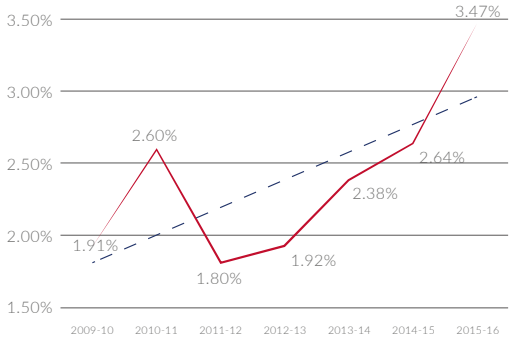


Figure 15: NSW Gross State Product growth[33]

"We need to keep in mind the bigger picture here. What we're trying to do is boost economic and social progress right across the board. It's easy to lose sight of that sometimes."

David Thodey, Chair, Jobs for NSW

30 Jobs for NSW, Jobs for the Future: Adding 1 million rewarding jobs in NSW by 2036, (jobsfornsw.com.au)
31 NSW Treasury, Department of Foreighn affairs and Trade, ABS
32 Pitchbook data and StartupAUS analysis
33 ABS

// More than just Sydney

NSW's startup ecosystem extends substantially beyond metropolitan Sydney. Data from StartupMuster 2017 suggests more than 1 in 10 NSW startups are based outside Sydney. On p75 of this report we outline some of the most innovation-active local government areas in the country, with regional NSW accounting for almost half the country's total 'innovation leader' districts.

The NSW Government has been clear in its commitment to include regions in the state's innovation push. As part of its strategy, Jobs for NSW is focused on delivering innovation 'clusters' across both metro and regional areas - specifically in fintech (central Sydney), healthtech (western Sydney), and agtech (Armidale). Agtech has been a strong driver of regional innovation, with regional NSW businesses like Full Profile and AgDraft contributing to a national agtech surge that could boost Australia's export bottom line dramatically in coming years.

Jobs for NSW has also included a 'regional landing pad' within the Sydney Startup Hub, designed to provide infrastructure to regional businesses to leverage the resources of the Hub and the Sydney community more broadly. That infrastructure is likely to include both physical space and remote-access facilities for events, mentoring, and other support services.

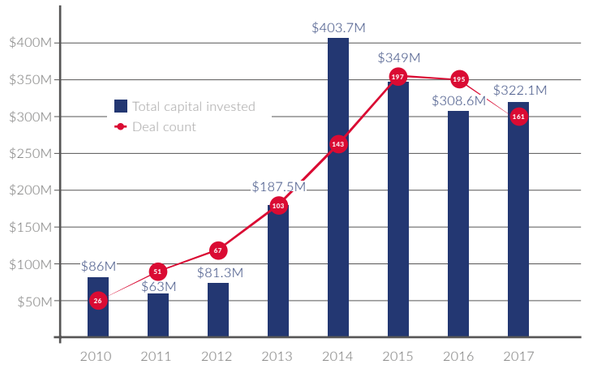


Figure 17: Total investment in NSW startups 2010-2017[34]

More recently, companies like Canva, Airtasker, Afterpay, Expert360, LocalMeasure, and Prospa have led a new wave of high-growth venture-backed businesses based in Sydney. That wave has been supported by rapid growth in startup support structures, with Fishburners, Stone & Chalk, BlueChilli, Muru-d, Startmate, Haymarket HQ, Tank Stream Labs, and Slingshot all having started in Sydney since 2011. In 2016 the Sydney-based startup and tech community came together to create TechSydney, a non-profit industry group which aims to help make Sydney one of the top 10 cities in the world for tech startups.

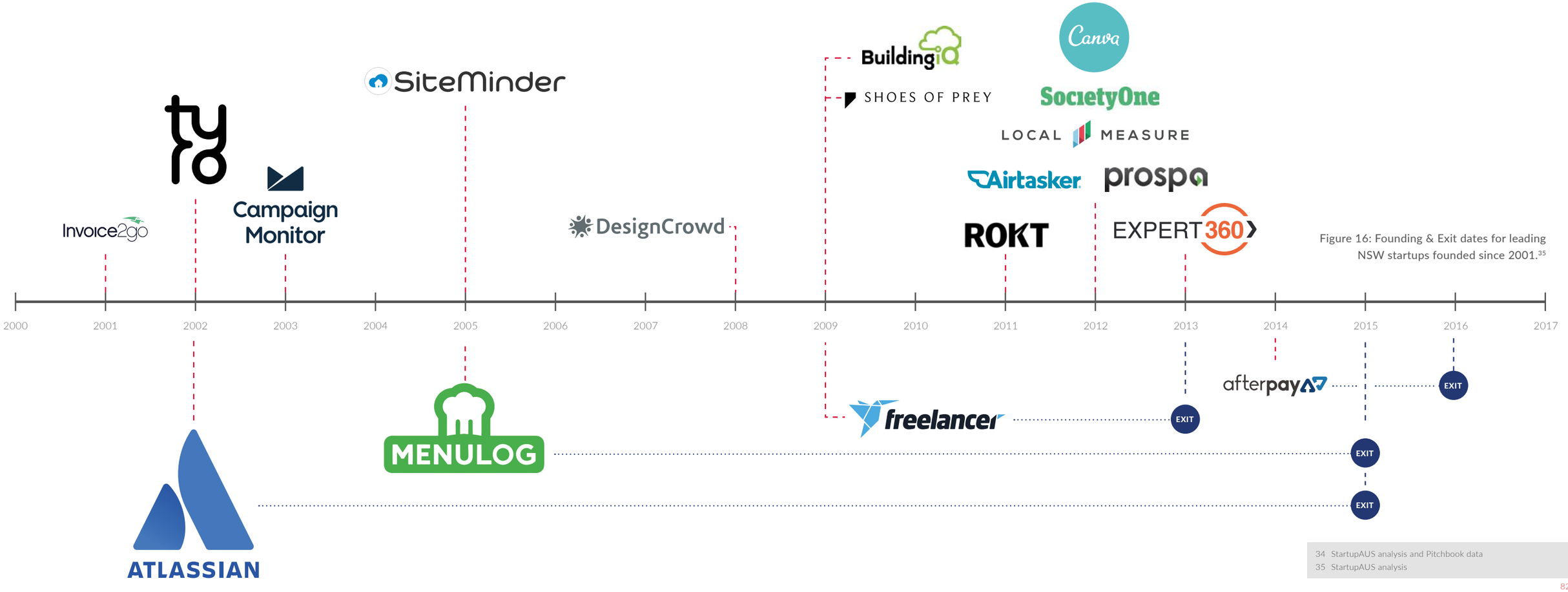


Figure 16: Founding & Exit dates for leading NSW startups founded since 2001.[35]

34 StartupAUS analysis and Pitchbook data
35 StartupAUS analysis

// NSW government support for startups

Jobs for NSW is leading the Government's effort to support startup formation and growth. It has a strong focus on supporting scale-ups through loans and bank guarantees, but there are also programs suited to earlier stage startups, and the agency is able to make direct investments in infrastructure to support startup growth (as discussed in more detail below). After just two years in operation it has invested in more than 180 startups.

While the investment in Jobs NSW represents the most obvious support to startups, significant funding has also been provided to enable startups to establish in offshore markets, facilitate the development of the skills that will be needed in the future, address regulatory constraints, more effectively utilise the government's $25 billion procurement spend to support innovation, and encourage greater collaboration between research institutions, startups, and larger businesses. These are summarised in the table below.

Category	Lead agency	Summary	Detail
Support high-growth companies to create new jobs	Jobs for NSW	Direct support for eligible, high growth businesses which have potential to create many new jobs	• Min viable product grants (max $25,000) • Building partnerships grants (max $100,000) • Accelerating growth loans (max $500,000) • Regional growth loans (max $500,000) • Strategic growth loans (max $1.2m) • Bank guarantees (max $5m)
Support 'job boosting infrastructure and activities'	Jobs for NSW	Support infrastruture projects and activity which boost the state economy and jobs	• Sydney Startup Hub ($35m) • Support for hubs in Westmead and Armidale (focused on healthtech and agtech sectors respectively) • Sydney School of Entrepreneurship ($25m) • Sponsorship of StartCon and other startup infrastructure
'Landing pad' programme	Trade & Investment NSW	Support for NSW businesses looking to establish in offshore markets	• Startups can apply to gain access to office accomondation and networks in key offshore locations in China, USA and Europe • Delivered in association with the Austrade
'Boosting business innovation' program	Industry NSW	Supports globally competitive research hubs for high growth industries	• Fosters collaboration across Universities, CSIRO and business and connects NSW to global hubs • Hubs established include "Transport and logistics', 'Financial Services', 'Medical Technology', 'Digital Creative', 'Deep Green Biotech' hubs and 'SMART Region' Incubator
'Growing local economies' program	Office of regional development	Supports regional infrastructure projects and other activity which boosts local economies and jobs	• Supports the establishment of regional hubs and other infrastructure • Significant funding pool, but projects must show strong alignment to economic policies at state and regional level
Procurement Innovation program	Department of Finance, Services and Innovation	Fosters innovation through the way government buys goods and services	• Has increased the innovation procurement threshold from $250,000 to $1m, to make it easier for startups to do business with government
'Innovation Launch' and concierge programs	Department of Finance, Services and Innovation	Innovation Launch is a collaboration with the private sector to solve government problems	• Innovation Launch provides seed money up to $150,000. Challenges to date include Accessible Cities, and reducing domestic violence reoffending. • The 'Innovation Concierge' service aims to facilitate entrepreneurs gaining easier access to government
'Better regulation' program	Department of Finance, Services and Innovation	Works on streamlining regulations pertaining to small businesses	• Undertaking a comprehensive review of the NSW regulatory policy framework to develop improved policies, institutions and tools

// Support at scale: investing in large, impactful projects

In addition to its programmatic support for startups, the NSW Government has committed to a number of ambitious major projects over the last few years to help rapidly improve the state's innovation infrastructure. These projects have included substantial capital outlay, with just two of them (the Sydney Startup Hub and the Sydney School of Entrepreneurship) accounting for $60m.

// Sydney Startup Hub

In July 2017, in response to strong advocacy from the local startup sector, Jobs for NSW announced it would open a 17,000m^2 'startup hub' in Sydney's CBD, at a cost of $35m. The Sydney Startup Hub will accommodate 2,500 entrepreneurs above Wynyard and will provide a new (and substantially expanded) home for established Sydney coworking spaces Stone & Chalk, Fishburners, and Tank Stream Labs, alongside new workspace The Studio.

StartupAUS has been a strong advocate for the establishment of large, dense, startup-focused precincts in Australia's major cities. We made the case in Crossroads 2016 for such projects to be advanced quickly and at scale around Australia. The Sydney Startup Hub, which is expected to open before the end of 2017, is a significant step forward in this regard. It has come at just the right time for Sydney's startup sector - its largest startup coworking locations, Stone & Chalk and Fishburners, were in immediate need of additional space, with demand for desks growing rapidly.

To achieve its full potential, the project will face a range of challenges. The space will need to be carefully and thoughtfully managed, with a strong focus on community-building across the distinct coworking brands whose startups will fill the majority of desks. That onus will fall on both the administrators of the site and its tenants – each of whom will need to see the space's establishment as the start of a larger, ongoing community building exercise.

// School for Entrepreneurship

In June 2016 Jobs for NSW announced it would spend $25m on a new collaborative project with the university sector - the Sydney School of Entrepreneurship (SSE). The project aims to emulate (or surpass) the highly successful Stockholm School of Entrepreneurship, and has recruited the Stockholm school's CEO, Nick Kaye, to run the Sydney version. The vision - to establish one of the world's leading education institutions for entrepreneurs in Sydney - is bold and ambitious. It should be applauded.

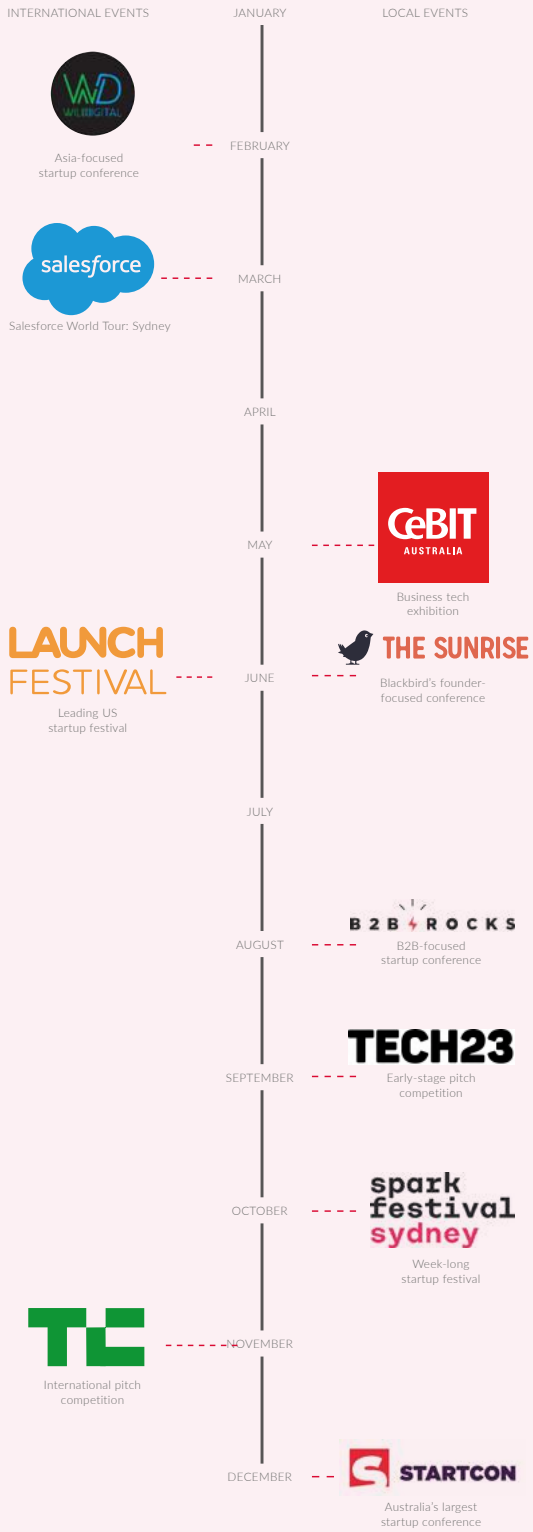
As with the Stockholm school, the SSE is strongly oriented towards the university sector. Buy-in to the project has been very strong - 11 NSW-based universities are involved, as well as TAFE NSW. With the project's success metrics likely to centre on the volume and quality of startups founded by students at the school, a strong focus on 'applied' entrepreneurship will help deliver the best results. The SSE took its first cohort of students in August 2017 and aims to take at least 1,000 students each year.

"We believe that we need to bring everybody under one roof and really ensure that we get that maximisation of talent, as well as all of the components that will ultimately drive the startup community."

Karen Borg, CEO, Jobs for NSW

// STARTUP AND TECH EVENTS IN SYDNEY

Sydney boasts a packed calendar of startup and tech-focused events throughout the year, including Australia's largest startup conference, StartCon. Recently, global leaders in the space such as TechCrunch Disrupt and LAUNCH Festival have established a presence in Sydney.



NSW GOVERNMENT

// Sydney in a global context

Startup Genome is the global leader in startup ecosystem rankings, producing an annual 'Global Startup Ecosystem Report' which evaluates startup ecosystems using a well-defined framework and data from both local and global sources.

"In five years, NSW will have cemented its reputation as the technology and innovation hub of the southern hemisphere... this is a global race."

Victor Dominello, NSW Minister for Finance, Services, and Property

GLOBAL RANKING: STARTUP GENOME[36]

10 Funding (25%)

Underlying Measures	StartupAUS comments
• Access to capital (90%) • Completed early stage funding • growth in early stage funding (minor sub-factor) • Depth of VC experience (10%)	Performing strongly on 'early stage' funding Need to improve the involvement of international investors Need to enhance total VC funding

12 Talent (10%)

Underlying Measures	StartupAUS comments
• Access (80%) • Availability of experienced founders and personnel, and graduate engineers • Effectiveness of Visa policies • Cost (10%) • Quality (10%)	Need to improve availability of other personnel who have experience scaling startups Relatively good availability of engineers at senior and graduate level, including from other ecosystems, but may lack 'stars'

13 Global market reach & connectedness (20%)

Underlying Measures	StartupAUS comments
• Market reach (50%) • Global - % foreign customers • Local - GDP of national economy • Global Connectedness (50%) • Relationships between local and global entrepreneurs	Perfoming well on global connectedness but poorly on market reach. Need to improve average proportion of startup revenue achieved with global customers.

SYDNEY RANKED 17th OVERALL

17 Startup Experience (15%)

Underlying Measures	StartupAUS comments
• Ecosystem experience (60%) • Cumulative exits prior 10 years ($ and #) • Team experience (40%) • Current experience • Equity distribution, advisors and team	Need to improve availability of C-level executives with experience in scaling global technology companies

20 Performance (30%)

Underlying Measures	StartupAUS comments
• Total valuation of startups (50%) • Total number of startups (25%) • Exit value 2014-16 (25%)	Need to continue perfoming strongly on a per capita basis in forming and maturing startups to compete with larger, developing cities.

"Startups in Sydney appear to lack access to experienced growth employees. This may help explain why startups in Sydney, despite strong Global Connectedness, score lower on going-global strategy than startups in peer cities such as Singapore, and Toronto. Founder ambition is certainly present: a relatively high share of Sydney's founders say they intend to develop globally-leading products. However, weak access to the right personnel may be constraining development of an effective global strategy."

Dane Strangler, Head of Policy, Startup Genome

36 Startup Genome, Global Startup Ecosystem Report 2017, StartupAUS analysis

NSW GOVERNMENT

// What is the sector saying?

To understand the challenges and opportunities, StartupAUS spoke to a range of key players in the NSW ecosystem, including at a breakfast event with sector leaders held at the Hatchery at UTS in September.

The primary research determined that access to global talent was the single biggest factor limiting the growth of NSW-based startups. NSW founders are looking to hire global talent with strong startup experience to amplify growth. The most acute gaps identified were:

- Scale-up CEOs and executives who have the capability and experience to facilitate the expansion of tech-enabled companies from c. 50 to 500 employees;
- 'Product' specialists with experience in digital;
- Chief Technology Officers with the experience and confidence to lead a fast-growing company into the right technology stacks and talent investments; and
- World-class software engineers who have the experience and skills to create globally significant, rapidly scalable technology.

These findings align closely with our experience more broadly among Australian startups, as well as Startup Genome's analysis of Sydney's ecosystem.

Talent is a two-part problem. In the immediate term, access to the world's best tech and business talent is needed to help our most promising companies grow into global contenders. International talent attraction initiatives, the right visa settings, and a strong narrative are essential. But we also need to look to the medium term and how we keep developing local talent to meet the needs of our best young businesses. That will require the development of well-targeted education and work experience programs, transition programs for experienced workers, and the establishment of favourable cultural settings - including bold leadership from senior political and business leaders.

Other significant gaps were also noted in respect to the breadth of regulatory and procurement reforms still required, and more support for the development of global market strategies.

// Looking ahead

Many of the recommendations made in this report are directed at improving conditions for startups on a national scale. A number of the biggest levers are Federal, and the recommendations in Crossroads focus on those levers. But there is also a range of policy options available for the NSW government to build the local ecosystem further. These include:

1. Removing payroll tax for young companies, eliminating the perverse incentive for young businesses to limit jobs growth.

2. Continuing to centralise support for startups into a single innovation agency to consolidate state government support for startups and oversee the creation and delivery of a coherent whole-of-government startup strategy and a suite of tightly-integrated startup-focused programs and policies. Jobs for NSW has progressively been adopting this role.

"We need to be really proactive about encouraging large multinationals to do more R&D here. That could be a real driver of growth in this sector."

David Thodey, Chair, Jobs for NSW

3. Building an ambitious, global best-in-class, Asia-focused accelerator in NSW. Sydney is uniquely positioned to provide a genuine gateway into Asia for English-speaking founders and could host a "Y-combinator for Asia". Existing government support for Asia-focused startup hub Haymarket HQ may provide a base.

4. Providing support for programs designed to connect job seekers more effectively with startups through a dedicated startup and technology careers event.

5. Establishing a structured program to incentivise select multinationals to set up genuine R&D centres in Sydney, greatly boosting the pool of engineering talent. These organisations also have the resources to work with research institutions, helping to boost commercialisation (an area in which Australia substantially lags behind its peers). This has been highly successful in places like Tel Aviv, where more than 300 major multinationals now have a substantial R&D presence.

6. Continuing to develop a high-quality set of materials, alongside a coordinated communication strategy, to effectively promote a cohesive narrative around NSW's position as a successful global hub for technology businesses. The strategy should focus on high-value international targets, but also be designed to reach local startups, helping them more easily understand the full range of government and other support programs available.

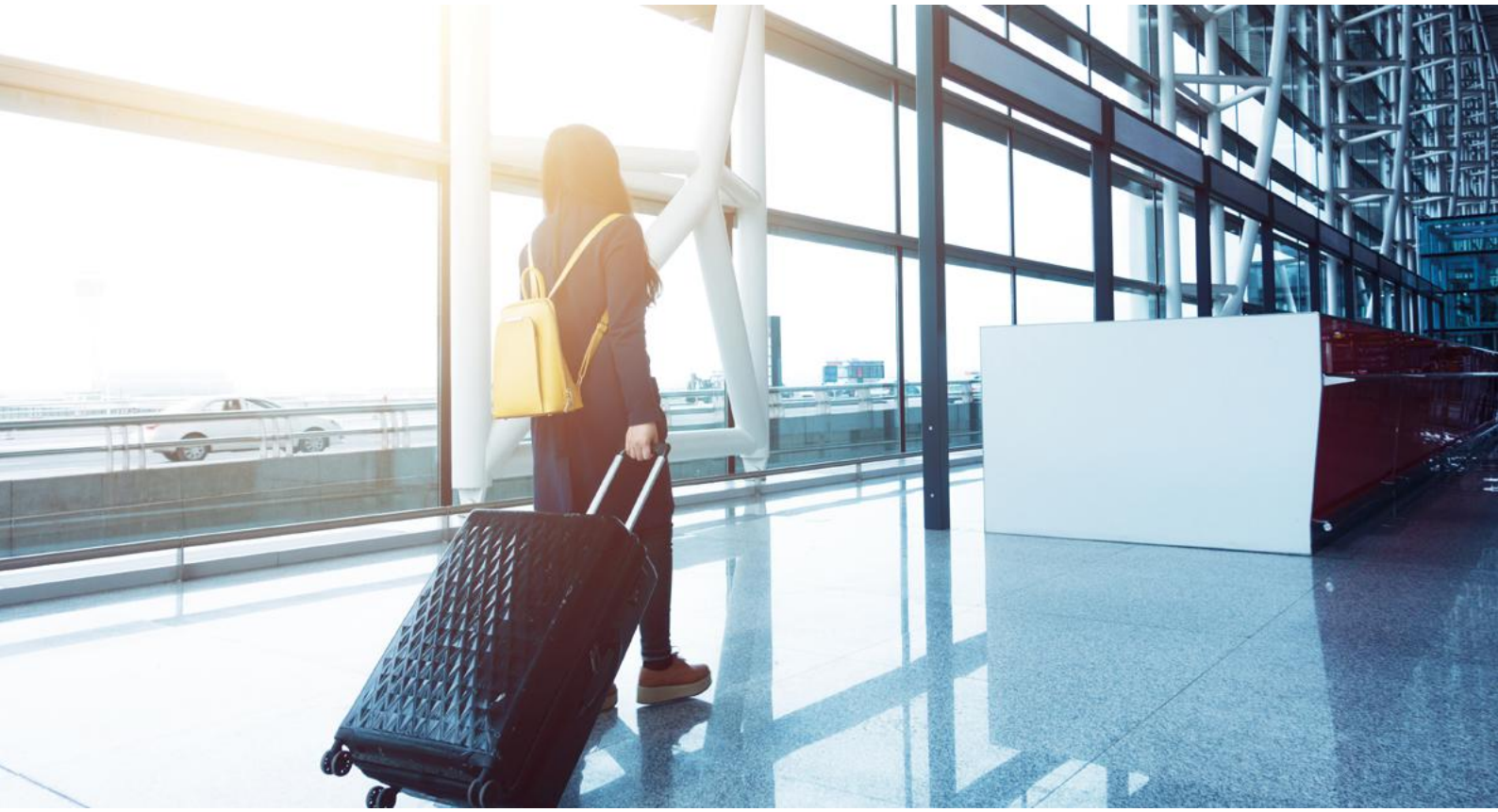
The NSW government commissioned this State in Focus section of Crossroads 2017. Research and authorship was conducted independently by StartupAUS.

STATE OF PLAY: WHERE ARE WE LOSING?

In Crossroads 2016 we said 'the NISA should be seen as a good start, but not the end of the process. The quantum of funds committed remains substantially below the level that other competitive startup ecosystems are committing, and more thought and investment will be required to achieve the desired system-wide outcomes.'

At the time, the federal government's public position was that the NISA would be followed by additional 'waves' of startup and innovation policy in the coming years. The 2015 NISA package was described as building a 'platform' from which to develop genuine international leadership credentials in this area.

Since then, the federal government has delivered some targeted initiatives, particularly in the fintech space, and has rolled out and implemented NISA programs. But there is little evidence that substantial further measures targeting startups more broadly are near. The federal government has said it is preparing a digital economy strategy for release in 2018, which may signal an intention to revisit this policy area. If so, the strategy will need to clearly articulate policy initiatives with short implementation timeframes which can address some of the lingering gaps identified here.



SKILLED MIGRATION VISAS

One key component for the success of high-growth tech companies is ready access to a broad talent pool of skilled employees. A shortage of local talent in key startup business roles has been a bottleneck to the growth of Australian startups for some time. But while other challenges have been gradually diminishing (particularly when it comes to funding availability for early stage and growth businesses), access to talent has become more difficult.

Access to world class talent has emerged over the last year as the single biggest challenge facing Australian startups.

Given Australia's strong international reputation as a desirable place to live and work, attracting foreign talent could be a very significant strength of the Australian startup ecosystem. Former Assistant Minister for Innovation, Wyatt Roy, described Australia as a 'lifestyle superpower' and advocated using this to our advantage to lure world-class talent. But substantial barriers remain to unlocking this potential.

In the past, StartupAUS has advocated for improved access to global talent for Australian startups through changes to the 457 skilled migration scheme. However, in April 2017 the Turnbull government announced that it was abolishing the old 457 scheme.

The new framework has reduced the number of skilled occupations for which visas can be sought, removed the permanent residency track for many of the remaining occupations, and increased red tape around accessing skilled migration visas. No new tech-relevant skills have yet been added to the occupations list despite a concerted industry push.

// The skills list needs a significant upgrade

The new skilled migration regime represents an increased challenge for the tech startup sector in an area of critical importance. But it also presents an opportunity, as the establishment of a new framework has meant the federal government is taking a more active interest in visa reform and updating the list of occupations for which skilled visas are available.

For some time, startups have struggled to hire highly skilled professionals in emerging specialties like product management, user experience (UX) and user interface (UI) design, and digital growth. These were not roles for which the old 457 regime made allowances either, because they are relatively new employment categories. The process by which these lists are created and updated periodically is not well-suited to reflecting jobs on the cutting edge of technology.

Nevertheless, there is now substantial evidence mounting that a significant number of digital skills are in short supply locally in Australia and the new skilled visa regime presents an opportunity to include those skills on the long term Strategic Skills List. Occupations on this list retain a path to permanent residency – a crucial element when attempting to recruit high value candidates in skills areas experiencing strong global demand.

Startups are also faced with two additional challenges under the new visa framework.

// 1: Salary minimums don't take into account equity

The first is that, in order to ensure only high-value candidates are eligible to receive visas under certain categories, the legislation provides for minimum salary requirements to be met before a candidate for a position is eligible for a visa. For example, to hire a 'sales and marketing manager' on a skilled migration visa, a business must pay the candidate a salary of at least $65,000 per year. To recruit a foreign CEO, the minimum is $180,000. The difficulty arises because these minimum salaries don't take into account equity issued by employers as part of a remuneration package, removing a significant part of a startup's salary toolkit. Including equity in this calculation would put startups on a level footing with other businesses looking to access skilled visas.

// 2: Small firms are excluded for some positions

The second startup-specific barrier faced under the legislation is that a number of key positions are excluded for businesses under a certain size. For example, businesses with less than $1m in annual turnover are excluded from accessing skilled visas to hire a sales and marketing manager (even if they meet the minimum salary requirements discussed above). Early-stage companies are often pre-revenue but need to attract world-class talent and have the resources to do so thanks to venture or angel funding. This element of the new framework should make an exception for early-stage innovative companies (such as those that qualify for the ESIC angel investor tax incentives introduced in 2016).

// Australia needs a dynamic visa category for fast-changing technology roles

Longer-term, serious thought needs to be given to the development of a 'digital skills visa' which has an adaptive, responsive mechanism for assessing local skills shortfalls in emerging digital industries. Such a visa should be targeted at companies in new digitally-enabled sectors of the economy. Well-targeted skills delineation, fast processing times, and few regulatory hurdles would make such a visa a powerful tool for young, high growth, globally minded Australian tech firms.

// Recommendation

Update the skilled migration visa to reflect critical skills shortages faced by digital startups

StartupAUS recommends that the federal government update the lists of eligible occupations under the skilled migration visa arrangements to reflect the critical skills shortages faced by digital startups. This should be done in consultation with the sector, and should focus on recognising new-economy jobs such as specialists in product management, user experience and interface design, and digital growth.

Visa legislation should also be updated to include equity issued to employees as a component of reimbursement offered to prospective visa applicants.

At the same time, the federal government should consider developing a flexible 'digital skills visa' to help Australian businesses meet the fast-changing talent needs of a digital economy.

ENTREPRENEUR VISA

In Crossroads 2015, when recommending the introduction of an entrepreneur visa, we said:

"Australia's startup sector needs diversity and new skills. An entrepreneur visa, like those in place in many other countries, would help to attract entrepreneurs and accelerate the growth of our startup ecosystem"

The federal government announced it would introduce an entrepreneur visa in December 2015 as part of the National Innovation and Science Agenda. That visa came into effect in September 2016 but has not, as far as we are aware, attracted any legitimate applications.

The visa is unlikely to attract any applicants unless it is substantially improved. To be competitive against similar visas from other marker nations, an Australian entrepreneur visa needs to be:

- easy for high quality applicants to obtain;
- easy to apply for;
- quick to process;
- simple;
- well advertised.

The current visa does not yet meet any of these criteria.

In advocating for such a visa in the past, StartupAUS has recommended that the eligibility criteria focus on entrepreneurial experience rather than capital raised. An experienced entrepreneur who has had previous successes will be highly valuable in the Australian startup ecosystem regardless of whether they have already received funding for their current startup. Conversely, an inexperienced entrepreneur is likely to add much less value, even if they have raised capital.

The current program does not focus on experience: the primary requirement is that the applicant must have raised at least $200,000 from an approved Australian funding source. The list of funding sources discounts angel investment, leaving prospective applicants with very few potential sources of funding given most Australian seed rounds are angel-led. Expansion of this list, and the inclusion of alternative qualification requirements would markedly improve the visa. For example, acceptance into a recognised startup incubator or accelerator would be a reasonable threshold test, and a similar approach has been adopted in several other countries.

The processing time, cost, and administrative burden of the visa should also be part of a continuous improvement process. Currently, visa applicants will need to pay a minimum of $3,670 to file an application (this cost increases if you have dependents). Visa applicants then need to be accepted by a state or territory government before their application can be approved.

That adds complexity, delay, and red tape.

Once the application is formally lodged with the Department of Immigration and Border Protection, the visa needs to be approved. The Department has previously advertised that the visa approval process for this category of visa should take around nine months, but it has subsequently removed the estimate from its website, saying an estimate is 'unavailable due to low volume of applications'.

Recommendation
Improve the entrepreneur visa

Improve the entrepreneur visa by altering and simplifying qualification criteria, dramatically shortening processing times, and reducing application fees.

An entrepreneur visa candidate, then, needs to raise $200,000 from a very limited pool of approved Australian investors, apply for acceptance by a state or territory government, pay a minimum $3670 filing fee, and then wait an unknown period of time that might look something like nine months (or more) before finding out whether they have been approved.

In the fast-moving, bootstrapping environment of entrepreneurship, this is unlikely to be an enticing prospect for high-quality candidates (or their investors, making the start of the process even more difficult). These elements should be subject to ongoing review and improvement if the visa is to have an impact.

If we are to attract high quality international entrepreneurs we also need to promote the visa strategically among target groups. Other countries, including the UK and Israel, are actively recruiting the most promising entrepreneurs around the world to take advantage of their equivalent visas. Creative thinking, concerted effort, and dedicated resources will be needed if we are to compete.

// Rationale

The rationale for an effective entrepreneur visa remains strong. Skilled workers are more mobile than at any time in history.

The impact of immigrants can be seen in a host of high-profile examples. Whatsapp, the instant messaging startup founded in Silicon Valley by Ukrainian immigrant Jan Koum in February 2009, was acquired by Facebook in February 2014 for $19 billion. This continues the trend of American immigrant tech founders like Pierre Omidyar (eBay), Elon Musk (Paypal, SpaceX and Tesla) and Sergey Brin (Google). These figures highlight the economic and social value that can be achieved by attracting entrepreneurs from other nations.

A high quality entrepreneur visa is an extremely low cost but effective way of injecting much-needed expertise into the Australian startup ecosystem, increasing the availability of sound guidance to emerging Australian startups, and helping to continue to build a culture of innovation and entrepreneurship.

A world-class entrepreneur visa would also be a valuable tool in retaining more of the approximately 8,000 overseas students who complete a computer science degree in Australian universities each year, by encouraging them to stay in the country and create a startup.

Evidence suggests that immigrant entrepreneurs create jobs and boost competitiveness. By way of illustration:

- Recent StartupAUS research highlighted that 57% of Australia's most successful tech startups founded since 2003 had at least one first or second-generation immigrant founder
- More than 40% of Fortune 500 companies were founded by immigrants or the children of immigrants (despite the immigrant population of the US averaging only 10.5%)
- In Israel, immigration (particularly from the former Soviet Union in the 1990s) is credited with playing a major role in the rapid emergence of Tel Aviv's world class startup ecosystem
- One third of venture-backed companies in the United States that went public between 2006 and 2012 had at least one immigrant founder
- 60% of America's most successful 25 startups were founded by first or second-generation Americans
- 70% of engineers in Silicon Valley are immigrants

A detailed StartupAUS proposal on developing a high-quality entrepreneur visa can be found on our website.[37]

37 startupaus.org/advocacy/submissions/

R&D TAX INCENTIVE

The Research and Development Tax Incentive is the most important form of governmental support for startups in Australia. It is one of the most generous indirect R&D support schemes in the world, providing cash rebates to smaller businesses (less than $20m in turnover) of 43.5% of eligible R&D spend, and tax offsets to larger businesses of 38.5%. Support of this kind doesn't come cheaply – the federal government spends almost $3 billion on the R&D Tax Incentive each year.

This cost has been growing in recent years, which has led to questions arising about how to cap the cost of the scheme. In April 2016 an independent panel delivered a report to the Turnbull government which recommended changes to limit the costs of the scheme, including a cap on claims by smaller companies eligible for the 'refundable' (cash) portion of the scheme. Eighteen months later the federal government has yet to respond to the review's recommendations, leaving the scheme in a state of some flux.

In the interim, uncertainty over the eligibility of software companies and startups to access the scheme has grown. In February 2017 the ATO released advice framed as clarification of the scheme suggesting that software companies had been over-claiming the R&D Tax Incentive. The advice indicated that the ATO and the Department of Industry, Innovation and Science were 'reviewing arrangements of companies that are claiming the R&D Tax Incentive on software development projects'. Anecdotal evidence suggests claims by software companies for the R&D Tax Incentive in the 2016-17 tax year have received a significantly increased level of scrutiny (and a lower rate of approval).

StartupAUS recognises that there are cost pressures on the federal budget, but research and development is a critical part of the innovation system, and should be seen as an investment rather than a cost. Contrary to current thinking, there is room to increase overall R&D spend.

Australia currently punches below its weight on R&D spending by comparison to marker countries. We spend just over 2% of GDP on R&D, putting us 14th in the world, while global innovation leaders like Israel and South Korea spend around 4%. To be in the top 10 in the world on this measure we would need to increase spending on R&D by about 30%, taking total spending to around 2.85% of GDP.

// R&D Spending globally

Country	Gross expenditure on R&D (GERD) as a percentage of GDP	Business expenditure on R&D (BERD) as a percentage of GDP
Israel	4.11%	3.47%
South Korea	4.29%	3.36%
United States	2.74%	1.94%
Australia	2.11%	1.19%
Singapore	2.20%	1.34%
United Kingdom	1.70%	1.09%
New Zealand	1.15%	0.54%

Figure 18: Summary of GERD and BERD by key leading economies[38]

38 KPMG analysis

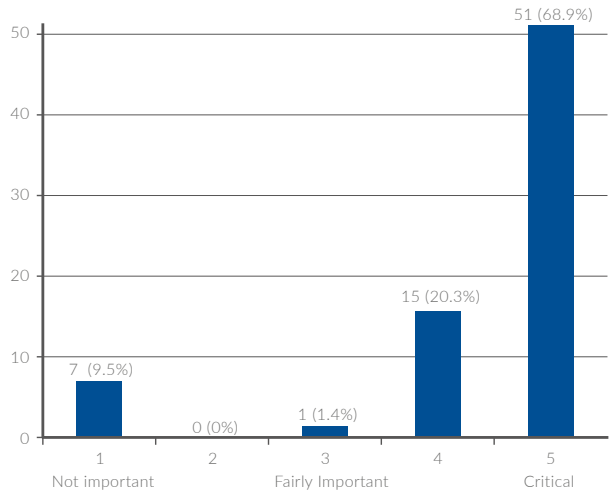
// Digital startups and the R&D Tax Incentive

StartupAUS has long been a strong advocate for the R&D Tax Incentive and its key role in growing and supporting the startup ecosystem.

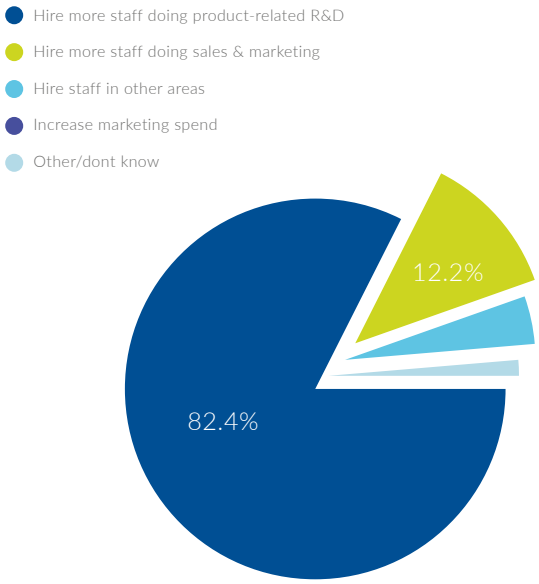
Research conducted by StartupAUS indicates unambiguously that the R&D Tax Incentive scheme is a critical part of the success of startups in Australia. In a survey of 74 startups we conducted in 2016, 89% of national respondents reported that the R&D Tax Incentive was either critical (68.9%) or very important (20.3%) to their business. In 2017 we looked at 20 of Australia's most successful scale-ups over the last 12 years – 90% relied on the R&D Tax Incentive. Our extensive in-person consultation with founders is broadly in line with these results.

Our research also suggests startups use the R&D Tax Incentive exactly as it was intended: to hire more staff doing product-related R&D. Overwhelmingly (82.4%), founders tell us that they would use an increase in R&D Tax Incentive to hire more R&D-related staff.

// How important is the R&D Tax Incentive to your business?



// If the R&D Tax Incentive were increased, how would you spend it?



Startups are at the core of the R&D Tax Incentive – it is a critical component of their businesses and they use it to increase their levels of R&D at rates much greater than other claimants. Any adjustments to the scheme should therefore amplify the access by startups to the scheme, though recently the momentum has been travelling in the opposite direction.

// Focusing on development

The current legislative framework for the R&D Tax Incentive uses language which is heavily weighted towards research outcomes. Startups are, typically, much more focused on development than on research. Stronger recognition in the language and interpretation of the R&D Tax Incentive for job-creating development activities would help reinforce and solidify the place of startups in the program. It would also help Australia move towards overcoming its significant shortcomings in commercialisation - an area identified by Innovation and Science Australia's performance review as particularly acute.

// Cashflow

The most significant difficulty for startups in accessing the R&D Tax Incentive (other than the scope of the scheme being incrementally reduced) is the frequency with which payments are made. Currently, payments are made annually, so eligible R&D costs incurred by startups on 1 July are not refunded until the second half of the following year at the earliest. For an early-stage business whose costs are heavily weighted towards R&D, that 18 month cash shortage can be crippling – or even fatal.

The private sector has developed mechanisms to cover this gap, with firms now routinely lending money against future expected R&D Tax Incentive returns. But interest rates on these deals are high (typically 20-30% per annum), introducing significant inefficiency into the scheme. If the refundable portion of the scheme were to be paid quarterly this inefficiency would be removed, accelerating early access to capital and boosting rates of R&D.

Cash flow is critically important to early stage companies and this is, consistently, the policy initiative which startups say would be most impactful for their businesses.

Detailed submissions delivered to the federal government as part of the R&D Tax Incentive Review can be found on our website.[39]

// Recommendation
Pay the R&D Tax Incentive quarterly

StartupAUS recommends that the Federal Government introduce quarterly payment of the R&D incentive for early-stage startups to more closely align the timing of the refundable tax offset with business needs.

At the same time, genuine digital technology startups should be identified as high value recipients of the refundable portion of the scheme. ATO and Department of Industry interpretation of eligible activities under the scheme should be broadened in recognition that critical development and commercialisation activity should be supported even though it may not fit a research-centric framework.

39 startupaus.org/advocacy/submissions/

COPYRIGHT REFORM

Most online content, and in turn any company providing an online platform for users to post content, is subject to copyright law. A key facet of copyright law for technology companies is a 'safe harbour' regime, which gives copyright holders a quick and simple way to get infringing content removed. In return for quickly removing the content, the provider is granted particular legal protections.

For example, if a YouTube user uploads a video for which they do not hold copyright, under US safe harbour legislation the copyright holder will be able to notify YouTube about the infringement. YouTube is then required to quickly remove the content and is in turn protected from being sued for damages for hosting it. However, without a safe harbour provision, YouTube would have no such protection, and would be able to be sued for the breach of copyright by its user.

Given the crowd-sourced nature of online content and the ease with which a user can, often unwittingly, upload material in breach of copyright, a lack of safe harbour provision exposes content hosts to extraordinary risk.

In Australia, safe harbour is only available to carriage service providers - internet service providers and telecommunications companies - and not to other online content hosts.

There are a number of quickly-growing Australian companies that are being put at risk because of Australia's lack of adequate safe harbour protections. Redbubble, an online marketplace for artists, where customers can have images printed onto anything from a t-shirt to an iPhone case, is facing multiple lawsuits as a result of hosting copyright infringing material uploaded by its users, despite the company quickly removing the content in question when notified.

Redbubble founder Martin Hosking has already said he will seriously consider moving the company overseas unless Australia's copyright laws are updated, which could mean the loss of a growing company worth $160 million, and nearly 200 jobs.

Melbourne-based Envato, an online marketplace for digital visual assets, is one of Australia's most successful startups, and is also facing legal uncertainty due to the lack of safe harbours. The company employs 260 people and made a pre-tax profit of $43.3 million in 2015.

Australia excels at producing two-way marketplaces and platforms - these successful startup business models are among our core strengths as a startup ecosystem. But every one of these companies is at risk from legal uncertainty due to our copyright laws, and many others may also considering moving overseas.

This comes at a significant economic cost to Australia. Some of the world's most successful tech companies rely on safe harbour provisions in these jurisdictions to operate, including the likes of Google, Facebook, YouTube, Snapchat, Reddit and Pinterest. Just these six firms have a combined market cap of more than $1.7 trillion and employ over 90,000 people. In 2011, Google's founders told UK Prime Minister David Cameron that their business couldn't have started in the UK because it didn't have a safe harbour regime. The UK has remedied that problem, but Australia has lagged behind.

Any startup that does stay in Australia faces an unfair disadvantage in comparison to its global rivals. A safe harbour regime that includes all online service providers is now best practice around the world, with the US, UK, Europe, South Korea and Singapore all adopting similar safe harbour provisions.

The federal government has taken steps towards this reform, even tabling a draft bill which would have brought about the changes. But when the final legislation was entered into Parliament in March this year, the safe harbour extension had been removed at the last minute, with the government saying it had opted to conduct further review.

Several reviews and public consultations over more than a decade have recommended this action. Nine separate public consultations have been conducted on the matter since 2004, and the last six have recommended that safe harbour be extended. Most recently, a Productivity Commission report in 2016 recommended that safe harbour provisions be extended to include online service providers.

In August, after additional consultation, the government responded to the Productivity Commission's report, saying it "supports in principle" the safe harbour recommendation. It is currently holding additional consultation with stakeholders on the issue.

// Recommendation
Introduce copyright safe harbour protections

The federal government should introduce amendments to the Copyright Act to expand the safe harbour regime to include all providers of online content.

ENCOURAGING ENTREPRENEURSHIP

A culture that supports, encourages, and celebrates entrepreneurship is a crucial factor in driving startup formation rates. For entrepreneurship to be encouraged among young Australians, it needs to be regarded as a legitimate – even prestigious – career option. Recent statistics published as part of GEDI's 2017 Global Entrepreneurship Index suggest that low 'vocational prestige' may be a major driver holding Australia's ecosystem back. The GEDI report looks at a range of cultural variables around entrepreneurship, and highlights that 'career status' is the area in which Australia performs worst.[40]

Some reasons for this include limited exposure to entrepreneurship among the broader population, and scarcity of successful entrepreneur role models. Entrepreneurship is generally seen as an unusual career path, and even when children and young adults are exposed to the notion of starting their own company they are generally guided toward small business creation.

StartupAUS recommends that the federal and state governments work together to create comprehensive entrepreneurship exposure and education programs in all schools, commencing by Year 6 and continuing to at least Year 10.

It is well established that attitudes toward entrepreneurship begin to be shaped well before university, and StartupAUS therefore recommends the introduction of programs in the primary and high school curriculums to expose children to basic entrepreneurship concepts.

Funding could take the form of grants available to schools to establish programs that are in line with global best practice, and would enable schools to deliver programs and engage successful entrepreneurs and others with deep knowledge of entrepreneurship concepts rather than relying purely on existing teaching staff.

This should be paired with an increase in support for on-campus student incubators and accelerators at a tertiary level. Programs like Hatchery Ideate and Hatchery Accelerate (UTS), Melbourne Accelerator Program (Melbourne University), and INCUBATE (Sydney University) have led a recent surge by universities looking to encourage student entrepreneurship. Additional resources underpinning such programs would enable support to be expanded and could help bridge the significant gap that currently exists in Australia between research and commercial outcomes. Exposure to entrepreneurship in a pre-career environment has the potential to help break the vocation-risk barrier to entrepreneurship, where early and mid-career professionals feel it is too risky to leave their jobs to pursue new ventures.

// Recommendation
Entrepreneurship programs in high schools and universities

Federal government to work with state governments to implement entrepreneurship programs in primary and secondary schools and provide additional funding support for university student incubators

According to a recent World Economic Forum report, a lack of emphasis on entrepreneurship education and poor cultural support for entrepreneurs are among the reasons Australia's startup ecosystem has not yet caught up with those of many other developed nations.

Targeted funding for educational institutions would enable them to develop high quality entrepreneurship programs that would expose large numbers of students to basic entrepreneurship concepts both before they reach university and on campus.

A growing list of countries have implemented entrepreneurship exposure and education programs in primary, secondary, and tertiary level:

// Singapore

The Singapore government's Young Entrepreneurs Scheme for Schools provides schools with grants of up to $90,000 to implement entrepreneurship learning programs for students.

// Europe

The European Commission has committed $23m to support development of entrepreneurship education programs to be delivered via accelerators, incubators and hubs and aimed primarily at university students.

// USA

The Kauffman Foundation in the US provides a range of modular entrepreneurship programs that schools can incorporate in the curriculum or provide as an extra-curricular activity.

The Junior Achievement program exposes students to entrepreneurship principles through experiential, hands-on programs delivered largely by volunteers from the business community. More than 4 million students participate in the program every year in the US.

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

FROM IDEATION TO ACCELERATION, ENTREPRENEURS FLY AT THE UTS HATCHERY

Connecting maths students with tutors. Creating empowering technologies for people with disabilities. Enabling young people to save quickly and efficiently for their next big goal.

These are just a flavour of the startup businesses that have come through the UTS Hatchery Accelerate program since the resounding success of the pilot in 2016.

From the 2016 cohorts, 13 out of 15 startups are still active and have together raised close to $1.8 million in funding, generated around $1.7 million in revenue and created 81 paid and internship positions.

The track record of Hatchery Accelerate - rebranded for 2018 from its pilot name, Hatchery+ - also tells a story of diversity across the university.

Co-founders have emerged from all faculties, and 60 per cent of Hatchery Accelerate startup founders to date have been female – around double the national average, according to Startup Muster 2017. Three UTS alumni have also gone onto become Startups-in-Residence within the program.

The startups accepted into Hatchery Accelerate are in for an intense three months of mentoring, masterclasses, networking, workshops, all within the renowned Hatchery co-working space.

Once they fly the nest, the sky is the limit. Check out our side boxes to read the stories of startups WallSync, myInterview, Carrots Money, Tekuma and Conexie.

Hatchery Accelerate mentor and co-founder of digital design agency For The People, Andy Wright, comments: “Ultimately, what you can see from Hatchery Accelerate is the beginning of a change in the tide of the role of education. We know that practicality is becoming more and more a focus of universities smoothing the path into industry, but this is a step further. Go to (or back to) university and start a business – and ‘maybe’ do a course on the side. Obviously, that state is some way off, but watch this space.”

HATCHERY IDEATE - THE BEGINNING OF THE UTS ENTREPRENEURSHIP JOURNEY

Several Hatchery Accelerate co-founders began their journey through the Hatchery Ideate educational program, which teaches the methods of entrepreneurship and boosts participants’ career trajectory with an entrepreneurial edge.

To address the sky-rocketing demand from students, Hatchery Ideate is being repackaged for 2018 to equip even more of the UTS community to become leading, impact-minded entrepreneurs - or intrapreneurs, including an online stream designed to offer greater flexibility.

Hatchery Ideate intrapreneur alumni are now forging their own futures in the workforce. These include Matthew Sayer, Operations and Growth Manager at Ribit.net, Emma Jenkins, Classes and Workshops Producer at General Assembly, Leah Callon-Butler, Engagement Director at Intimate, and Bernardo Bilotta, Project Manager at Pocketbook.

For all of these reasons, the Hatchery as an overall entrepreneurial program was named Best Learning Experience at the 2017 AFR Higher Education Awards. Judges commended it for creating high student demand, and for helping students engage with industry and the innovation ecosystem. Hatchery Accelerate in particular has been described as ‘vital to Australia’ and ‘a model program that should be unhesitatingly supported’.

Nick Berriman, a UTS student who completed the Hatchery Ideate program this year, commented: “The best thing I learnt was that I was capable of working in the startup community. Originally, I didn’t know how the startup space worked or even whether it was something I wanted to do, but having gone through the program I’m more sure than ever about continuing on this trajectory.”

INNOVATION COMES DOWN TO PEOPLE

In the words of UTS Chancellor Catherine Livingstone:

“It’s people who innovate - not governments, not institutions, not businesses.”

Innovative entrepreneurs play an integral role to improving productivity and growing economies, and UTS is committed to exposing every student to entrepreneurial mindsets and opportunities.

UTS HATCHERY ACCELERATE STARTUP SUCCESSES

WallSync

For WallSync, the augmented reality app co-founded by UTS MBA in Entrepreneurship student Geoff Bullen, the $5000 prize they took home from Hatchery Accelerate’s first 2017 Demo Day is the tip of the iceberg. They officially launched in September as an Innovation Partner at the Atlassian Global Summit, and are in discussions with potential investors attracted by the Demo Day win.

myInterview

myInterview, a video interview recruitment tool co-founded by UTS Bachelor of Business/Bachelor of Science graduate Guy Abelsohn, was the first Australian start-up to secure a place in the Tel Aviv Landing Pad program for early stage entrepreneurs. myInterview was also accepted as a scale-up in the Slingshot HR Tech Accelerator.

carrots

Carrots Money, a goal-oriented saving app, was awarded People’s Choice at Hatchery Accelerate’s first 2017 Demo Day. Co-founded by UTS BA (Communication) graduate Sarah Nguyen, the startup has gone on to be part of the SBE Australia E3 program for female-led companies.

Tekuma

Drone piloting technology company Tekuma, co-founded by UTS MBA graduate Annette McClelland, recently pitched at the Shanghai Life Geek International Entrepreneurship Competition, and was placed in the top 10. Tekuma also represented UTS at the VTKnowledgeWorks Global Partnership at Virginia Tech in the US as one of 30 teams from across the globe.

Conexie

Formerly Fixit, the property management platform that took home the big prize at Hatchery Accelerate’s second Demo Day in 2016. Conexie has also since secured a partnership with a big bank and signed UTS as a client, helping streamline the property management communications process.

The startup also took part in a new Hatchery International program, partnering with students from Shanghai Commercial School to gain insights into the Chinese market.

BROADBAND SPEED

Ubiquitous high-speed internet access is critical to unlocking the economic potential of digital technology. In its 2016 report on 'digital dividends', the World Bank warned that inadequate internet access was a principal component in the 'digital divide', separating countries and people that will benefit from the digital boom from those that will not.[41]

Digital startups need top-tier internet speeds in urban areas for a vast array of next-generation businesses that are bandwidth-intensive. For cloud-based solutions, SaaS products, cutting edge virtual reality, and streaming services fast and reliable connectivity is essential both for businesses and consumers seeking to access their products. In regional areas, boosting farming productivity with agtech needs high speed connectivity, and the same is true in mining, construction, and transport.

Connectivity has always been a challenge for Australia, largely due to both its size and global position. Only six countries in the world are more sparsely populated (Mongolia, Namibia, Iceland, Suriname, Mauritania and Botswana), and the distances involved for infrastructure projects that seek to connect Australia to the outside world pose an additional challenge. Canada is the most readily comparable country in terms of absolute size and density (about 30% larger in land area, with about 50% more people), but its proximity to the US helps boost its connectedness.

Partly as a result of these challenges, Australia's internet speeds in 2017 remain far behind where they need to be to properly support an economically impactful high-growth tech sector. According to speedtest.net's September 2017 Global Speedtest Index, Australia ranks 54th in the world on average internet speed, at 25.52 mbps.[42] That puts Australia on par with countries like Kazakhstan (26.19), Armenia (24.61), and Italy (26.89) but a long way behind marker countries like the US (74.99), the UK (49.85), Singapore (156.67), New Zealand (64.32), South Korea (121.49) and Canada (63.72).

These results include statistics from more than 5 million homes and businesses that have already been connected to Australia's National Broadband Network (NBN).

The NBN was a major policy item in the 2007 election campaign. In 2009 the plan was confirmed: the government would build a nationwide broadband network with fibre to the premises (FTTP) technology. The project was initially slated to be completed by 2017-2018.

Since that time, the NBN has increased substantially in cost, pushed out completion timelines, and reduced significantly its speed delivery ambition. The original promise of near-ubiquitous FTTP has transformed into a mix of FTTP, fibre to the node (FTTN), Hybrid Fibre-Coaxial (HFC), fixed wireless, and satellite. Existing copper wire (fixed phone line) infrastructure is now being used extensively to connect homes to the network. Expectations for the NBN's speed are now that 90% of premises will be able to access peak wholesale download rates of at least 50mbps, with infrastructure not set to be completed until 2020-21. According to the Global Speedtest Index, 24 countries already experience average speeds above 50mbps in 2017.

The NBN is a huge infrastructure project, and it is reasonable to expect delays and cost adjustments along the way with projects of this scale. Nevertheless, the slow progress, cost cutting in technology and low speed delivery has compounded to jeopardise the effectiveness of the project as a whole. Increasingly, customers forced to transition to FTTN NBN connections have complained that their internet connection speeds are now slower than previous ADSL or Cable connections. The 2017 Telecommunications Industry Ombudsman report highlighted a steep increase in complaints about the NBN in 2016-17, both on an absolute basis and as a percentage of premises connected.[43]

In September 2016 the federal government established a parliamentary Joint Standing Committee on the National Broadband Network to review the network's rollout. The committee included members of both major parties, as well as crossbench representatives. After a year of investigation, hearings, and analysis, the Committee's September 2017 report concluded:[44]

> *nbn is tasked with rolling out the NBN to 'provide peak wholesale download data rates (and proportionate upload rates) of at least 25 megabits per second to all premises, and at least 50 megabits per second to 90% of fixed line premises as soon as possible. Evidence provided by nbn through the Senate Estimates process suggests this expectation is not being met.*

It went on to note:

> *All the evidence strongly suggests that speed and data requirements of Australian households and business will continue to grow rapidly... As it stands, Australia will not be provided with a fast, affordable, ubiquitous, and fair broadband network.*

As a result of these findings the report recommended that the government direct NBN to complete 'as much as possible' of the remaining network using fibre to the curb (FTTC) as a minimum, or FTTP.

StartupAUS strongly supports the development of ubiquitous, truly high-speed internet to underpin the development of a high value tech sector in Australia. Australia's geographical challenges make an investment in genuinely world-class internet services both more difficult and more critical to our future prosperity. For the benefits of technology to be felt in regional and remote areas, it is also essential that internet speeds not provide a substantial barrier to the use of technology in those regions.

LANDMARK

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Landmark is in the process of actively testing and adopting new crop imaging techniques for stress detection and nutrient mapping. During this process, large volumes of raw data are captured by multi-spectral imaging sensors in rural areas of Australia, which then need to be sent back to Sydney for image processing on a terrestrial server. In this testing phase, everything is centrally processed by commercial researchers, to validate their techniques and models before allowing for more broad roll-out to our retail network.

We have established these trials across the country, to validate the models in multiple growing conditions and settings, where the services will be actually used commercially. The volumes of data are large (5-70 GB), but not outside the usual range for data transfers. Nevertheless, we have been hindered by glacial upload speeds even when operating on the NBN. As a measure to get the data processed in a timely fashion – the crop continues to grow – and make the management decisions before we miss the growing window, it has been quicker to use a courier and ship encrypted hard drives back and forth from rural centres to Sydney than wait for multi-day uploads.

These roadblocks are significant enough in small pilot programs, that we have been forced to exclude or re-evaluate many new tools and services that we would like to adopt within our retail environment, because of the limitations we face in our rural retail locations – even those on the NBN.

41 The World Bank, World Development Report 2016: Digital Dividends (worldbank.org)
42 Telecommunications Industry Ombudsman, 2016-2017 Annual Report (annualreport.tio.com.au)
43 Telecommunications Industry Ombudsman, 2016-2017 Annual Report (annualreport.tio.com.au)
44 Parliamentary Joint Standing Committee on the National Broadband Network, First Report: The rollout of the National Broadband Network, September 2017 (aph.gov.au)

COMMERCIALISATION

In its 2017 performance review of the Australian innovation system, Innovation and Science Australia notes that -

Australia currently has a low percentage of researchers working in businesses. In 2011, businesses employed around one-third of all researchers in the country, a low rate by OECD standards. As a share of total business employment, Australia ranks 21st out of 36 OECD+ countries in the employment of researchers in businesses. In comparison, over 80% of all researchers in Israel were employed in business enterprises in 2013. In Canada, around 60% of researchers are employed by businesses. Further, only 18.9% of Australian research students aspire to a career in research-related work outside of a university and 23% intend to follow a non-research work pathway in a professional occupation. This is distinct from other countries like France, where industry-based PhD positions are highly sought-after.[45]

Several NISA initiatives were aimed squarely at incentivising universities to improve their collaboration with industry, including:

- Introducing a national impact and engagement assessment to assess the economic, social and environmental benefits from university research; and
- Introducing new research funding arrangements for universities which give equal emphasis to success in industry and other end-user engagement as they do to research quality.

StartupAUS welcomes the government's efforts to encourage greater industry-university collaboration, particularly when it comes to pairing researchers directly with industry. Many of the world's largest technology companies, including Google, owe much of their success to researchers who successfully commercialised their ideas.

Nevertheless, it would be a mistake to think that innovative technologies and high-value companies always rely on research. Indeed, an under-emphasis on the 'development' side of R&D is likely responsible for Australia's current strength in generating new knowledge but its comparative weakness in commercialising that knowledge. ISA's 2016 performance review of the Australian innovation system identified this as one of the system's most pressing overall weaknesses:

In too many areas, a lack of connectivity across [the innovation system] means that strong performance in research is not matched by similar performance in commercialisation.

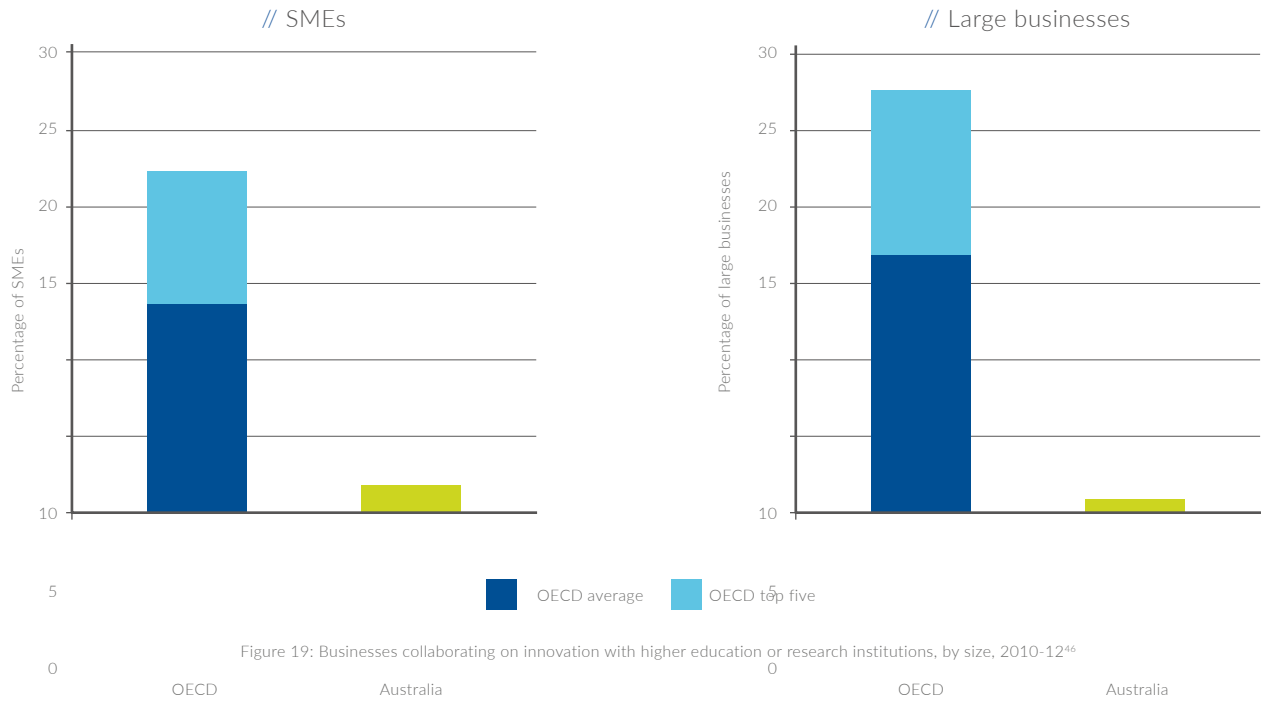

Figure 19: Businesses collaborating on innovation with higher education or research institutions, by size, 2010-12[46]

NISA has a clear emphasis on the research sector, and in terms of dollars committed is much more heavily weighted towards science rather than entrepreneurship.

We encourage policymakers to decouple the concepts of 'research', 'innovation' and 'entrepreneurship' in developing policy and ensure that funding remains balanced across the three areas. Many of today's most successful companies are based on business model innovation rather than any particular scientific or technological breakthroughs. They are often using available technologies rather than developing new technology as the core basis for their competitive advantage. By way of example, Amazon, Facebook, Microsoft and Uber have a combined market capitalisation of A$1.6 trillion, which is more than the combined value of all companies on the ASX, but none had their origins in research. In R&D policy terms, it is important to recognise that the majority of commercial outcomes are driven by firms developing new products, whether or not those products are based on scientific research.

Focusing narrowly on research-based opportunities could have the undesirable effect of under-supporting digital startups and could jeopardise their potential to grow rapidly and become global tech companies on the same scale as Amazon, Facebook, Microsoft and Uber.

// Focusing on development

Regulatory barriers to the commercialisation of emerging technology remain substantial blockages in Australia's innovation system.

This report has canvassed a range of regulatory areas that need addressing thanks to fast-paced technology shifts, including intellectual property, immigration, and corporations law reform. Movement in these areas would help Australian innovators, but a system-wide programme to regularly update and modernise existing rules to be in line with emerging business models and technologies would have substantial impact over the medium to long term.

Developing an innovation-friendly regulatory environment could do more than put Australian innovators on an equal footing. A vast array of new high-impact technological developments will require thoughtful policy responses from regulators. Countries that are able to move quickly to implement balanced, permissive regulatory environments for emerging technologies will benefit enormously.

Artificial intelligence, for example, will challenge legislators as it gains in capability and relies on vast amounts of private data. But it could revolutionise huge segments of the economy, from the way we treat disease to how business decisions are made. Likewise, autonomous vehicles and drones will present big challenges to regulators, particularly when it comes to safety. But the market for driverless vehicles could be as big as $50bn as soon as 2025, and industry leaders like Amazon are betting on drones to revolutionise the $70bn parcel delivery market.

Challenges such as these will continue to present themselves at a rapid rate in the coming period. Countries and regions with regulatory environments that support the development of cutting-edge products will see a disproportionate spend on R&D projects in advanced technology. They will also tend to be areas in which new products are trialled and deployed first, giving local firms a clear advantage in the adjacent product categories that inevitably emerge. A cross-departmental government body dedicated to proactively identifying and actioning policy in this area would help local tech players compete globally. It would also help attract R&D centres from multinationals to Australia, with the resulting economic and talent benefits.

// Recommendation
Establish dedicated policy teams focused on new technology

Governments at all levels should establish dedicated policy teams to ensure new technologies and digital business models are regulated effectively and in a timely way.

45 Innovation and Science Australia (2016), Performance Review of the Australian Innovation, Science and Research System (industry.gov.au)
46 Office of the Chief Economist, Commonwealth Department of Industry, Innovation and Science

APPENDIX: BACKGROUND AND DEFINITIONS

WHAT ARE ‘STARTUPS’?

StartupAUS defines a tech startup (or startup for short) as a young high-growth company that is using technology and innovation to tackle a large, probably global, market. Startups have two important defining characteristics:

1. Potential for high growth. Whilst not all startups will need to raise capital to grow, StartupAUS advocates an ‘investability test’ as a proxy for high growth potential, in which the ability of companies to raise capital from professional, arm’s length investors is a good indicator of their growth potential. Professional investors recognise the high risk of failure in startups and therefore will only invest in opportunities capable of generating high returns to compensate for this risk.
2. Disruptive innovation. Startups are reshaping the way entire industries work by displacing established competitors through use of technology and business model innovation. The mere act of selling undifferentiated products or services online does not make a business a tech startup, and StartupAUS excludes such companies from its definition.

StartupAUS has a particular focus on the opportunities presented by the internet as an enabler of growth, but recognises that startups can be based on cutting edge technology in any field including engineering, biotech, pharmaceuticals, energy, hardware and software. Many of the observations and recommendations in this document are relevant across all technology sectors, and StartupAUS strongly supports the notion of a diverse Australian economy that draws upon a wide range of skills and technologies. Emerging technologies, and the startups based on them, have the potential to transform sectors across the economy.

// Why are startups important?

Startups represent an important part of the future growth of the Australian economy. In the coming years, technology is set to deliver vast economic opportunities as well as substantial disruption of mainstream economic sectors. It is only with a strong startup sector, harnessing emerging technologies to deliver jobs and prosperity, that we will be able to manage that transition effectively.

Research undertaken by PwC found that startups have the potential to contribute over $100 billion to Australia's GDP and create over half a million new jobs by 2033. This finding was based on an assessment that technology is profoundly changing many industries, leading to massive opportunities for new companies that will dominate the industries of the future, as well as significant threats for companies that fail to embrace technology.

Startups that grow to become globally significant business can create large numbers of high-value, knowledge-intensive jobs with high labour productivity. Australia will need more of these jobs over the coming two decades, a timeframe in which half of the world's current jobs will be replaced by software.

Startups also represent an opportunity for Australia to diversify its economy and generate export income that is not tied to the resources sector, which currently constitutes 64% of Australia's exports. The internet is an enabler of massive growth, and by connecting three billion people it allows startups formed in any part of the world to instantly compete in global rather than domestic markets.

// Startups are not the same as small businesses

The term 'startup' is widely recognised to mean an emerging high growth technology-based business as defined above, whereas a 'small business' is generally considered to be a business that is providing less differentiated products or services, is often trading in a confined geographical area.

Even if a small business experiences growth it will remain a small business over an extended period. Startups, on the other hand, start small but have the capacity to experience massive and sustained growth, often enabling them to become significant players in global industries within a small number of years.

Small businesses are important to any economy because they are numerous (there are around 2 million in Australia) and they provide an income to a significant proportion of the workforce (they represent almost half Australia's employment in the private non-financial sector). However, small businesses are not a source of significant potential economic growth in the same way that startups are.

From an economic policy perspective it is vital to make a clear distinction between startups and small businesses because they have very different needs.

// What is a startup ecosystem?

A startup ecosystem is the complex set of forces that determine the economic environment in which startups are born and have a significant effect on their ability to succeed.

The participants in any startup ecosystem, and the forces they exert, include:

- Startups – including both their founders and their employees
- Incubators and accelerators – providing expertise and guidance, usually to first-time founders in the form of mentoring and coaching
- Investors – providing access to capital, networks and guidance
- Customers, in particular early adopters – providing startups with the opportunity to test whether their products and services meet a real customer need and to gain early market traction
- Government – which sets the regulatory environment and may also intervene to address specific market failures or accelerate economic change
- Universities – providing talented graduates and access to cutting edge intellectual property and research capabilities
- Advisors and service providers – providing specialist expertise (eg. legal, financial, PR) to startups as they grow

In the same way as a biological ecosystem determines the fate of the organisms that live within it, the health of a startup ecosystem determines how easy it is for startups within it to form and flourish.

// What makes a successful startup ecosystem?

Successful startup ecosystems produce large numbers of startups that go on to become globally successful companies in their own right. Successful ecosystems are characterised by the following attributes:

1. Large numbers of startups
2. Ample supply of entrepreneurs
3. A strong pro-entrepreneurship and risk-tolerant culture
4. High quality incubators and accelerators run by teams with first-hand experience in scaling tech companies globally
5. Investors willing to invest at the various stages of growth of a startup (seed, Series A, Series B etc)
6. Collaboration with large companies
7. A supportive regulatory environment
8. Universities actively engaged in exposing students to entrepreneurship as a career path
9. High quality advisors who specialise in startups and are often willing to provide services at a discounted rate (or in return for equity) in order to work with the most promising companies
10. Intervention by government where there are identified gaps

In successful ecosystems the interests of the participants are aligned such that the success of each participant leads to the success of the startups and the ecosystem as a whole, thus avoiding behaviours that benefit one entity at the expense of others.

It should be clearly stated that the action plan outlined in this report is not about replicating Silicon Valley. It is increasingly accepted that any notion of creating another Silicon Valley is fundamentally flawed. However, StartupAUS believes that the success of regions such as Silicon Valley underscores the scale of opportunity that now exists to create globally meaningful technology companies anywhere.

// About StartupAUS

StartupAUS

www.startupaus.org

StartupAUS is Australia's national non-profit startup advocacy organisation, formed in 2013 by 50 leaders of the startup sector.

Our mission is to transform Australia through technology entrepreneurship. In practical terms, that means we want to make Australia one of the best places in the world to build and grow a tech startup. StartupAUS seeks to do this by catalysing a major shift in attitudes in Australia from being consumers of technology to being creators of technology and using technology companies as a driver of economic growth.

We believe innovative, high-growth businesses will play a crucial role in driving prosperity for Australia in the years to come. Technology is changing the world rapidly, and our economy is no exception.

StartupAUS seeks to help Australia get ready for, and make the most of, that technology-driven shift.

To achieve this goal, StartupAUS engages with all levels of government to help shape economic policy discussions with the objective of better supporting the creation and growth of technology startups to become globally significant companies. We see this as part of Australia's much needed transformation to a knowledge-intensive economy.

The work we do to support the growth of startups in Australia is funded by generous corporate partners and personal donations. Over the last two years we have grown from a volunteer-run organisation to a small team of full-time staff.

StartupAUS gratefully acknowledges the support of its community members, the corporate partners who made this report possible, and its lead organisational sponsors Google and UTS.

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After a brief career in the law, Alex joined Australia's foreign service in 2010. He was a diplomat in Israel for three years from 2012-2015, and came home passionate about helping Australia realise the economic benefits of technology.

Alex joined StartupAUS in July 2015 as Head of Policy and Strategy, leading the organisation's extensive contribution to the federal government's National Innovation and Science Agenda. He took over as CEO in February 2016, and joined the StartupAUS board in later that year.

As StartupAUS CEO Alex has helped grow the organisation's reach and influence substantially. During his tenure he has travelled extensively in Australia to talk with founders, investors and mentors, and has spent time in Ireland, Estonia, Israel, Sweden, Singapore, the US and the UK to identify leading international programs and policies.

Alex has commissioned, edited, and produced two StartupAUS Crossroads reports, and is the report's lead author this year. He has also edited StartupAUS research on agtech, construction tech, and the future of work, as well as numerous StartupAUS submissions and policy papers.

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Colin Kinner has been the lead author on three previous Crossroads reports, from 2014-2016, and his work contributed substantially to this year's report.

Colin is director of Spike Innovation, a consulting firm that specialises in development and implementation of programs to build startup ecosystems and support the growth of tech startups.

Colin is also an experienced entrepreneurship educator, having delivered startup training and coaching to hundreds of aspiring entrepreneurs. He is founder of Startup Onramp, a training program that gives aspiring founders of high-growth startups the essential skills to launch and grow their company.

Colin has previously run a startup incubator, served on the boards of a number of venture-backed technology companies, and managed early stage venture funds in Australia and the UK.

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Alex is the Chief Operating Officer of StartupAUS, taking responsibility for managing its research, data and communications.

After an eight-year career in media, Alex transitioned into the startup space, initially as a founder, then educator, until he found a home at StartupAUS.

Alex has previously authored *Digital Foundations* and contributed to *Powering Growth*, *Crossroads 2016* and many StartupAUS projects, submissions and policy papers.

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Crossroads is proudly supported by the following organisations

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Adobe

AirTree VENTURES

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Blackbird VENTURES

BlueSky Alternative Thinking

FinTech Australia

Fishburners where startups start

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KPMG

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OUR INNOVATION FUND, LP

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