Startup Genome launchvic

Melbourne Startup Ecosystem Report

Leading Australia into a New Economic Future

By Startup Genome in collaboration with LaunchVic

Global partners: GEN crunchbase orb Intelligence

About Startup Genome

Startup Genome works to increase the success rate of startups and improve the performance of startup ecosystems globally. In a collaborative effort with hundreds of public and private organizations in more than 30 countries, we've built the world's largest primary research on startups, the Voice of the Entrepreneur, with over 10,000 founders participating each year. This has allowed us to develop rigorous models considered to be the new science of startup ecosystem assessment.

We advise leaders of innovation ministries, agencies, and organizations supporting startups—bringing data-driven insights, clarity, and focus to the actions needed to produce more scale-ups, job creation, and economic growth.

With our partners Global Entrepreneurship Network and Tech Nation (formerly Tech City UK), and thanks to the generous support of the Kauffman Foundation, we deliver holistic, evidence-based strategy frameworks for startup ecosystems across all phases of development.

Thanks must go to all startups, partners, and members who have joined us in the mission to bring more regions into the global startup revolution.

About Our Partners On This Report

About LaunchVic

LaunchVic is the Australian State of Victoria's startup agency. It aims to create the most enabling environment to drive investment in startups and increase the number of successful companies that contribute to the Victorian economy through jobs and Gross Domestic Product. According to its 2016-17 Annual Report, LaunchVic invests in research, marketing, events and other economic development. Rather than funding startups directly, LaunchVic builds products and funds organizations that provide support services for the benefit of startups and investors, through the funding of world class accelerators, incubators, educational workshops and events for the Victorian community.

About our Global Partners

Global Entrepreneurship Network (GEN): Operates programs in 170 countries that foster cross border collaboration between entrepreneurs, investors, researchers, policymakers, and entrepreneurial support organizations to fuel healthier start and scale ecosystems

CrunchBase: Everyday investors, journalists, founders, and the global business community turn to CrunchBase for information on start-ups and the people behind them

Tech Nation (formerly Tech City UK): Empowers ambitious tech entrepreneurs through growth programmes, digital entrepreneurship skills, a visa scheme for exceptional talent, and by championing the UK digital sector through data, stories and media campaigns

Orb Intelligence: Database of firmographics that provides company information on 50 million companies worldwide and powerful data matching capabilities to marketing software vendors and B2B marketing agencies

Dealroom: Helps corporations, investment firms and governments to track innovative companies and identify strategic opportunities through its data-driven software

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All over the world, there is rising anxiety about the future of jobs and standards of living. Will technology lead to mass unemployment? Will economic returns from technology be further concentrated among a small group of winners? These are pressing questions—but when the global economy is humming along relatively nicely (as it has been in early 2018)—the temptation is to postpone addressing them.

Not in Melbourne.

Public and private leaders in Australia's second-largest city and the surrounding state of Victoria know a different economic future is at hand and that, despite present prosperity, they must act now to help create it. Startups are the foundation of this new economic future, and Victoria and Melbourne are dedicated to fostering a vibrant startup ecosystem that will support their creation, growth, and success. Failure to do so will erode prosperity.

For many cities, creating an enabling startup environment is not an obvious future-proofing strategy. Melbourne, however, is doing quite well overall. For seven years in a row, it has been named the world's Most Livable City, and in 2016 was named the "Ultimate Sports City" of the preceding decade.[1] A lively art scene has made

Princes Bridge over the Yarra River. Credit: Startup Genome.

it Australia's "cultural capital," too.[2] These achievements have a strong economic basis. The Australian economy has not suffered a recession for over a quarter-century, a record run driven particularly by property development and a mining and resource boom. In Melbourne, this has generated strong job growth, low unemployment, and high business and consumer confidence. So why do anything differently? Stakeholders in Victoria and Melbourne recognize that this "homes and holes" strategy breeds

1 Economist, 2017; SportBusiness, 2016.

2 New York Times, 2017.

complacency and will eventually run its course. They are investing heavily in building a startup ecosystem that will generate a new foundation for economic prosperity. The results so far indicate that **Melbourne is leading Australia into this new economic future.**

- **Activation Success.** Melbourne has raced through the Activation phase of the Ecosystem Lifecycle, creating scores of accelerators, coworking spaces, and other startup support organizations. The state government, through LaunchVic, has committed millions of dollars to building out this support infrastructure for startups.
- **High Startup Output.** That investment in the ecosystem has helped lead to a high level of Startup Output in Melbourne. With around 1,100 tech startups, Melbourne has about twice the average for other ecosystems at a similar developmental stage.
- **Steady Exits.** In December 2017, the software giant Oracle bought Aconex, a Melbourne-based construction software firm, for US$1.2 billion. With this acquisition, Melbourne has now produced five technology exits worth over US$100 million in the last five years.[3]
- **Startups Breaking Out.** Melbourne is also home to several exciting startups that are taking on global markets, raising money overseas, and making their presence felt domestically. Examples include:
  - Culture Amp, an HR-tech startup, raised US$20 million in a Series C round last year from a venture capital firm in Silicon Valley.[4]
  - Unlockd, an Adtech company, raised a US$23 million Series B round, led by a Malaysian investor, while Airwallex (a payments startup) raised US$13 million in a round led by Tencent Holdings in China.
  - Envato and AuctionFox, two fast-growing startups, have enjoyed early success without any outside funding.
    - Co-founded by a husband and wife along with a friend, Envato is an online marketplace for designers and developers. It has over 8 million community members worldwide and in 2015, one of the co-founders was named the 2015 Telstra Victorian Businesswoman of the Year.[5] Envato is one of the leaders in the fast-growing "digital marketplaces" sub-sector in Victoria, which is estimated to have generated A$1.6 billion in economic value and around 80,000 new jobs.
    - AuctionFox focuses on house sales in Australia, a large share of which is done at public auction. The company provides real-time information on these auctions, bringing data and transparency not previously available. It was co-founded by Stewart Boon, who spent 9 years at Seek, one of the largest public tech companies in Australia, and three years at Envato.
  - Travel-tech startup, Rome2rio, moved out of the Inspire9 coworking space last year into its own offices, and continues to enjoy impressive global growth, with thousands of transport partners worldwide and millions of visitors who use the site to plan their trips. The company has only taken a small amount of angel investment and achieved profitability after a few years.
- **IPO Pipeline.** In 2017, the on-demand design marketplace 99designs, which was founded in Melbourne, moved back to its home city from San Francisco to position itself for an IPO in Australia. The company has raised $45 million in total venture funding. Property Exchange Australia (PEXA), an eight-year-old company located in the Docklands near central Melbourne, raised a large round of financing in 2017. It is widely expected to go public soon at a valuation of over $1 billion.

Rome2rio logo at their offices. Credit: Startup Genome.

Startup Genome's Success Factor Analysis of Melbourne shows important strengths to build on:

- **Global Connectedness:** For an ecosystem in Late Activation, Melbourne founders have a solid level of Global Connectedness, especially among the relationships built with peers in the world's top ecosystems. Taking advantage of this will help Melbourne startups grow faster.

3 Except where noted, all monetary amounts are reported in US$.

4 Victorian Startup Investment Snapshot, LaunchVic and Dandolo Partners, November 2017, at: https://launchvic.org/news_items/reports_archive/victorian-startup-investment-snapshot.

5 Digital Marketplaces report.

- **Global Attraction:** Melbourne attracts talented people from all over the world— including entrepreneurs looking for a place to start their next company. Compared to other ecosystems, even those that are more developed, Melbourne draws a high number of entrepreneurs from elsewhere. It is even, as in the case of 99designs, attracting startups to return home. The Government has also attracted a number of well-known tech companies to locate their Asia-Pacific headquarters in Melbourne, including Slack, Square, Eventbrite, GoPro, Hired, Zendesk and others.

In addition to these overarching ecosystem strengths, Melbourne features strong performance and promise in three key innovation sub-sectors:

- **Adtech:** Startups in this sector raised around $7 million in early-stage funding in 2016 and, by the end of that year, Melbourne was home to 41 Adtech startups. Growth in this sub-sector is strongly linked to the success of REA Group and Carsales.com, multi-billion dollar public companies.
- **Biotech & Life Sciences:** The biotech and life sciences sector saw multiple new venture funds emerge in the past few years, injecting upwards of $580 million into Melbourne's ecosystem. Nearly 200 biotech companies are concentrated in the innovation district around the University of Melbourne.
- **Healthtech:** Eleven percent of startups in Victoria are in the health sector, comprising 26% of total startup employment. A recent report on the local VC industry highlighted that health startups receive the largest amount of funding from VCs compared to startups in other sectors. Healthcare and social assistance is also one of the top industries employing the most people in the city. With 41,200 jobs it accounts for nearly 10% of all employment in the area.

Startup Genome's research also identified gaps and actionable insights that ecosystem leaders can use to take the Victorian and Melbourne ecosystems to the next level.

If these gaps are addressed, allowing Melbourne to sustain its current growth trajectory, we estimate that the size of its startup ecosystem will at least double in value over the next few years. If Melbourne reaches the average size of Globalization phase ecosystems, it will **more than double, adding $2.5 billion in ecosystem value**. With further growth in Startup Output and Exit Value, however, Melbourne **can likely quadruple its ecosystem value, adding over $4 billion in value**, which will create thousands of jobs directly and indirectly.

Achieving this will require a significant increase in public and private efforts: an allocation of greater financial resources and an implementation of policy reforms. Ecosystems that Melbourne competes with directly—such as Sydney, Singapore, and Boston—are not stationary in their efforts, and Melbourne shouldn't either.

To realize its ecosystem potential and lead the way for Australia into a new economic future, we offer the following actionable insights:

- **Take Aggressive Action to Increase Early-Stage Funding**
  - Public and private efforts—such as more structured angel groups and a fund of funds program—should double the amount of accessible seed and Series A funding available to startups.
- **Make Melbourne a Globalized Ecosystem**
  - Move programs from Activation to Globalization focus.
  - Expand ways for those in the Melbourne ecosystem to build relationships in top global ecosystems.
- **Leverage Sub-Sector Strengths, Especially in Life Sciences and Health**
  - Experiment with different, more open ways of commercializing discoveries from universities and research institutions.
  - Create more ways for industry (including startups) to work directly with researchers at universities and research institutions.

Despite gaps, the startup ecosystem in Melbourne is in an enviable position worldwide. It has good Global Connectedness and attracts entrepreneurs from other parts of the world. Capitalizing on these assets and opportunities, and addressing the ecosystem gaps shown in the Startup Genome research through well-targeted and well-timed public and private action, can create more successful startups and generate greater economic value for the entire region.

Melbourne Economic and Ecosystem Overview

Ecosystem Overview

With 170 coworking spaces in Melbourne and the surrounding areas—roughly 15 for every 100 startups—the city has become known as the 'coworking capital' of Australia. Put this together with more than two dozen accelerators and dedicated public investment into supporting entrepreneurship, and the ecosystem provides a well-developed support structure for startups.

Melbourne has around 1,100 tech startups with an overall Ecosystem Value (a measure of valuation and exits) of $1.6 billion. Local success stories include Seek, REA Group, and Carsales.com, all of which grew out of the 1990s dotcom boom to become large, successful technology companies. Since going public in the 2000s, the three firms have together created more than $10 billion in additional economic value.

More recently, construction software company Aconex (which was also publicly-listed) was acquired in 2017 by Oracle for $1.2 billion. Emerging startups that lead the ecosystem's growth include: Envato, AuctionFox, Rome2rio, CultureAmp, PEXA, UnLockd, Red Bubble, and 99designs.

> "Since 2012 or 2013, a lot has changed here, in a very encouraging way. The watermark has risen, the quality has risen, and it's much harder to sift through all the good companies.
>
> Paul Naphtali
> *Managing Partner at Rampersand*

Both the City of Melbourne and State of Victoria continue to be highly active in promoting and supporting the startup ecosystem. The region hosted the Tech Inclusion Conference in February 2018, and Melbourne Knowledge Week is becoming a major event with over 13,000 attendees annually. Pause Festival is Melbourne's annual startup conference celebrating innovation, and

Pivot Summit is a fast-growing regional summit in Geelong. The Victorian State Government leads the two week Digital Innovation Festival annually, attracting over 100 events across the state. These efforts help enhance the ecosystem's strong performance on Global Connectedness and Global Entrepreneur Attraction as discussed in this report.

Big Exits (US$) in Melbourne, Victoria

- Spinifex Pharma was acquired in 2015 by Novartis for $200 million (plus potentially $500 million in milestone payments).
- TouchCorp (fintech, payments) founded in 2000, went public in 2015 at $143 million, then merged with Afterpay in 2017.
- Kogan (ecommerce), founded in 2006, went public in 2016 at $131 million.
- RedBubble (digital marketplace) founded in 2006, went public in 2016 at $225 million.
- Aconex (construction cloud software), founded in 2000, IPO in 2014, $1.2 billion acquisition by Oracle in 2017.
- In the last four years, eight life science companies from Melbourne have gone public, with combined listing valuations of over $300 million.

For a glossary of key terms and metrics covered on this report, please see Page 46**.**

Co-working in Melbourne. Credit: That Startup Show

Active side-streets of Melbourne. Credit: Robert Blackburn

Economic Overview

Spend a few minutes talking to anyone in Melbourne, and they are bound to mention that it has been named the world's most livable city for seven years in a row by The Economist.[1] Spend a few days exploring the city, and it's not hard to see why. It is well designed, with free transit on the public tram system within the central business district, and hosts a number of major international events throughout the year. Melbourne is known as both the sporting and cultural capital of Australia.

Economically, the region's fate is closely tied to the national economy. Australia has gone 26 years without a recession, mostly propelled by mining and property development, which have also helped drive Victorian economic prosperity.[2] Job creation in the city of Melbourne has grown 26% since 2006, to 455,800 in total.[3] However, there is a strong desire in the region for a "more sustainable future economy" that is not reliant on "digging shit out of the ground and building shit on top of it,"[4] as one interviewee colorfully described it.

Technology-based startups are seen as the key to this alternate economic future, and as a way for Victoria and Australia to make greater global gains in innovation. Some progress has been made on this front. In fiscal year 2016, for example, information technology (IT) companies took in 47% of venture capital investments in Australia, though that fell to 42% in FY2017.[5] And in the last three years, **technology sector listings on the Australian Securities Exchange (ASX) have doubled to over 200 companies.[6]**

> "There is now greater awareness and understanding of entrepreneurs and their value to Australia.
>
> Katie Liddicoat
> *Melbourne Accelerator Program*

Still, there is plenty of room for improvement. Aconex, the Melbourne software company acquired by Oracle is "one of the few Australian technology businesses to have a global footprint. **Only eight listed technology companies based in Australia are worth more than A$1 billion, whilst in mining there are 21 such companies."[7]** This economic profile only underscores the importance of what LaunchVic and other stakeholders in Melbourne are actively promoting to other ecosystems globally: that technology startups truly are the future of local and national economies, and that they need a supportive ecosystem for success.

1 Economist, 2017
2 Heath, 2017.
3 Census of Land Use and Employment (CLUE)
4 Interview.
5 AVCAL, 2017 yearbook.
6 Deloitte Australia, 2018.
7 Foley and Burgess, 2017.

Identifying Sub-Sector Strengths

The entrepreneurial revolutions of the recent past have been built almost entirely on the foundations of the Internet, driven by the information and communications technology sector. The value of these revolutions was overwhelmingly captured by Silicon Valley, the world's preeminent powerhouse for manufacturing the silicon-based microchips the Internet itself relied on.

Looking ahead, the entrepreneurial revolutions of the present and future are taking us further beyond just information technology and Internet-focused businesses. While the prominent technology companies from the early 1990s to the 2000s have built businesses that live almost entirely on the web and mobile with things like search, email, social media, and video—the prominent technologies of the future will live in the "real world." They will transform not only what we do online, but also what we do offline. Sectors affected will include transportation, healthcare, heavy manufacturing, agriculture, and many more brick-and-mortar industries.

Entrepreneur and investor Steve Case calls this the Third Wave of the Internet revolution.[8] The first wave of this revolution was carried out by companies like Case's own AOL, which helped build Internet's very foundations. The second wave was led by businesses like Google and Facebook who built social media, search, and email products for the web, while businesses like Snapchat created apps relying on smartphones. The Third Wave will bring these developments and learnings to the "real world" and into specific industry verticals.

Regions without traditionally tech-based economies can still succeed and grow by focusing on the Third Wave. A fruit and vegetable exporting region, for example, can invest in building up a local Agtech sector. A city dominated by traditional banking or finance could position itself as a leader in Fintech.

When we assess a startup ecosystem we look for both existing and emerging areas of economic strength. We seek out latent potential or areas that are adjacent to the Third Wave of the IT revolution. Just like individuals and companies, startup ecosystems must specialize in order to advance their growth.

"Our ecosystem is still trying to figure out what we're good at. We're an ecosystem of generalists, but need to evolve into one of specialists," observed one interviewee about Melbourne. For this analysis, LaunchVic and Startup Genome identified three sub-sectors where the region is well positioned to build global competitiveness and economic value:

1. **Adtech**
2. **Biotech and Life Sciences**
3. **Healthtech**

8 Case, 2017.

Sub-Sector Strength #1

Adtech

Advertising technology, or Adtech, refers broadly to the growing range of analytics, distribution and target-marketing tools used in advertising by both publishers and advertisers. On the front-end, Adtech includes banner advertising, and mobile, social and search-engine ads, while back-end Adtech includes analytics and audience-targeting platforms. Startups in this space can expect to benefit from fast-growing spending on tools such as retargeting and real-time bidding, which have risen by billions of dollars in only a few years.

As early as 2011, Melbourne hosted Australia's inaugural ad:tech conference, establishing itself as a forerunner in the Adtech space. Several years later, Melbourne was home to nearly four dozen Adtech startups raising millions of dollars in funding. The massive success of Seek, REA Group, and Carsales.com lend themselves not only to jobs and value-creation, but also boosts credibility and talent in the Adtech ecosystem. These digital marketplace companies have provided experience to hundreds of employees, and their founders now contribute to the ecosystem through sizeable investment funds.

The new generation of Melbourne-born and bred Adtech startups include the hypergrowth mobile-ad company, Unlockd; restaurant search and rewards startup, Liven; and The Lumery, a hybrid of Adtech and marketing tech (Martech).

Unlockd

Who loves a stream of mobile-ads on their phones? Almost certainly no-one does. But what if those ads were more discreet, offered to reduce the pain of expenses like phone bills, or to pay a portion toward something leisurely like premium entertainment—all in exchange for tolerating a mobile ad or two? This is what Unlockd has, in fact, unlocked.

In 2016, the company raised US$23 million in Series B financing—a major startup investment deal in Australia. More impressively, the round was led by the Malaysian telecommunications company Axiata, and the partnership will enable Unlockd to expand into Asian markets. Founded in Melbourne in 2014, the company has already raised over $50 million, and has offices in New York and London. "While we can't disclose user numbers and turnover, what I can say is that our investors as well as our telco and media partners are very happy with the triple-digit growth we continue to show," said former Chief Executive Matt Berriman in a recent interview.

Liven

According to founders David Ballerini, William Wong and Grace Wong, people want to give to charity more than they typically do—and finding the right moment to encourage people to do so is just as important as encouraging charity in the first place. Taking it one step further, if supporting local eateries and establishments could also help people help local charities, would more people give to charity?

According to social ad-tech company, Liven, the answer is a resounding "Yes." Liven is a restaurant-discovery and rewards platform with an appealing charity component. App-users are able to earn rewards in the form of "Liven cash" for eating at participating restaurants, and are encouraged to share those rewards with charities listed on the app.

The company most recently raised $10 million in venture capital, and the company is on track to expand to the United States, United Kingdom, and a third Australian city. By applying Adtech to the often tech-neglected sector of social marketing and local business customer development, investors' appetites for Liven only seems to be growing.

The Lumery

"Data-driven" and "customer-focused" are two key phrases with which innovation-oriented organizations will be very familiar. All that plus the promise of getting there faster? It's an attractive offer—a triple-threat of sorts—on which The Lumery promises to deliver. Founded by Rajan Kumar, Ben Fettes and Simon O'Day in opposition to what they term the "buzzword approach" to Adtech and Martech, The Lumery is a collection of experts in strategy, advisory, design and execution in advertising and marketing technologies. The startup generated significant buzz in Australia's tech circles last year for its quick growth in the space of six months and it will be one to watch to gauge just how above-the-buzz it will be.

Sub-Sector Strength #2

Biotech & Life Sciences

A large sector, the Life Sciences sector encompasses startups in biotechnology, pharmaceuticals, biomedical technologies, life systems technologies, nutraceuticals, cosmeceuticals, biomedical devices, as well as organizations and research institutions that focus on R&D, technology transfer and commercialisation of such technologies and knowledge.

Australia ranks fifth in the world in terms of biotechnology innovation, and the birthplace of the country's biotech sector was Melbourne, with the discovery of colony-stimulating factors at the Walter and Eliza Hall Institute. Today, Melbourne remains the center of Australian biotech and one of the world's leading biotech hubs. The University of Melbourne, according to Times Higher Education rankings, is number nine in the world for medicine and health, and ranks 32nd in life sciences. In the innovation precinct in Parkville, around the University of Melbourne, roughly 180 local and global biotech companies can be found. Over half of Australia's publicly listed life-science companies are based in Melbourne, too, with a combined market capitalization of over $82 billion.

Eager to capitalize on the concentration of talent and innovation in the region, global pharmaceutical companies such as GlaxoSmithKline and Catalent Pharma Solutions have expanded their facilities in the State of Victoria. The federal government has helped boost the sector by establishing the Biomedical Translation Fund, putting in AU$250 million of public money into the Fund, matched by AU$251.25 million in private money, with investment overseen by a private money manager.

> "(We have) world-renowned expertise in medical research. We punch well above our weight.
>
> **Andrew Wear**
> *Director of Medical Technologies and Pharmaceuticals at Victoria's Department of Economic Development, Jobs, Transport and Resources*

A string of significant acquisitions and public listings have helped reinforce the cycle of biotech growth:

- In 2015, Spinifex Pharma was acquired by Novartis for $200 million (plus potentially $500 million in milestone payments).
- Also in 2015, Hatchtech signed a commercialization deal with Dr. Reddy's for up to $280 million, and Starpharma entered into licensing deals with Astrazeneca worth up to $450 million.
- In 2016, Cancer Therapeutics CRC agreed to a licensing deal with global pharmaceutical company Merck worth up to half a billion dollars.
- In the last four years, eight life science companies from Melbourne have gone public, with combined listing valuations of over $300 million: Ad Alta, Paradigm, Biopharma, Cann Group, Lifespot Health, Jayex, Micro-X, dorsaVI, TPI Enterprises.

Melbourne's biomedical institutions are not resting on their laurels. Roughly a billion dollars in public and private money has been invested into state-of-the-art cancer research facilities

such as the Victorian Comprehensive Cancer Center at the University of Melbourne, the Olivia Newton-John Cancer and Wellness Center, and the Monash Comprehensive Cancer Consortium. Other networks and organizations, supported both publicly and privately, also promote innovation in Biotech and Life Sciences.

BioMelbourne Network

A key driver of developments in Life Sciences is the BioMelbourne Network, a 184 member-strong network of organizations "engaged in biotechnology, medical technology, pharmaceuticals and health innovation in the State of Victoria."[1]

Candida Lobo - Health-a-Porter, Melina Chan - Startup Evangelist : Melbourne Health Accelerator. Credit: City of Melbourne, That Startup Show. Photographer: Wren Steiner, Startup Photo Library.

Founded in 2001, BioMelbourne Network focuses on connecting key sub-sector players and engaging closely with government on policy issues such as the R&D tax incentive and immigration. The organization also seeks to improve demographic diversity in regional biomedical institutions. By end of 2016, BioMelbourne had held 49 events with 2429 industry professionals, both local and international.

New Funds to Keep "The Valley Of Death" at Bay

Biomedical Translation Fund

In December 2016, the Biomedical Translation Fund (BTF) was launched by the Australian government. It is a substantial A$500 million fund, made up of a 50-50 split between Commonwealth and private sector funding. The fund's aim is to provide promising biomedical startups—those with an average annual revenue over the previous two years below $25 million—with the capital required to accelerate their growth and commercialization. The fund is overseen by three private fund managers: Brandon Capital, BioScience Managers and OneVentures.

BioCurate

What happens when two of Australia's leading biomedical universities—the University of Melbourne and Monash University—collaborate to further the gains of biotech research and development in order to discover new medicines? An historic venture between two of the world's top 10 institutions in therapeutic areas of immunology, oncology, paediatrics, neurosciences, and infectious diseases. Describing itself as a "venture catalyst," BioCurate's key objective is "to translate drug discoveries to a form which attracts investors or other commercialisation partners." With A$80 million from the universities and the State of Victoria, BioCurate is expected to generate over four times as much value in commercialization, jobs, and follow-on investments.

Medical Research Commercialization Fund

The Medical Research Commercialization Fund (MRCF) "provides dedicated investment funding to support the commercialisation of early-stage medical research discoveries that originate from its member institutes." Investment comes from private institutions, with the state government covering administrative costs. The fund is focused on IP coming out of research institutes and has been "really successful," according to Wear. As a result of this and the other funds, says Wear, "there's more capital now for biotech than there ever has been."

1 BioMelbourne website.

Sub-Sector Strength #3

Healthcare

Startups in healthcare work on medical technologies for diagnostics, monitoring, treatment and ongoing care, as well as technologies related to medical administration and costs like insurance, remote healthcare and cost-management. Since 2014, $149 million has been invested by venture capitalists into healthcare startups in Melbourne. According to the most recent tabulation by LaunchVic and StartupVic, 11% of Melbourne tech startups are health-related, making it the largest collection of startups in the city (along with the Enterprise & Corporate sub-sector). These companies pack an even larger employment punch: one quarter of tech startup employees in Melbourne work in Healthtech.

Closely related to health is sports technology. Fitting for Melbourne's title as the world's Ultimate Sports City of the past decade, the city hosts a dense collection of sports tech startups. Overall, six percent of Melbourne startups are in sports tech. Many of these companies work on health issues, including injury prevention, training, and wearable technology. They benefit from the steady stream of sporting events in the city and the knowledge and drive that accompany these events.

Healthcare startups in Melbourne, like their counterparts in life sciences, have another strong knowledge foundation to build on: universities. Monash University, in the southwestern part of the metro area, is highly ranked globally for its clinical medicine and pharmacy programs, and the region boasts a number of other well-regarded public and private hospitals and world-renowned medical research facilities. High-profile healthcare startups include:

Curo

Caring for loved ones gets more difficult as they grow older, and even more difficult with geographic distance. Problems are usually only spotted when an emergency hits. This, in Curo's view, is a healthcare inefficiency that can be cured. Designed for remote care and monitoring of the elderly, Curo works with non-intrusive household sensors and a smartphone app to help improve preventive care as opposed to reactive, emergency-response based care. The Healthtech startup, founded by Tim McDougall and Matt McDougall, closed a $1 million round of seed investment and expanded operations to the United States in October 2016.

CliniCloud

A connected medical kit designed for home use, CliniCloud was launched in 2014 and received $5 million in seed investment a year after its launch. Founders Dr. Hon Weng Chong and Dr. Andrew Lin prototyped the first CliniCloud stethoscope in 2012, winning the Microsoft Imagine Cup. CliniCloud now offers two products to bring health care into the home: a non-contact thermometer and a stethoscope.

Melbourne 360 Ecosystem Assessment

The startup ecosystem in Melbourne is on the cusp of Globalization in our Ecosystem Lifecycle Model, having moved rapidly through the Activation phase with intensive public and private investments. Now, ecosystem stakeholders need to sustain this momentum and help Melbourne startups go-global and attract more resources to the ecosystem.

Startup Genome's Science of Startup Ecosystems

In recent years, public and private decision makers around the world have devoted more resources to fostering vibrant startup ecosystems at the city, regional, and national levels. Unfortunately, these efforts have been limited by a lack of data and benchmarks. Without reliable information, decision makers are unable to focus their actions and allocate scarce resources. As a result, evidence-based action is in short supply.

To address this, Startup Genome developed a new science to precisely assess startup ecosystems, quantify their strengths and gaps, and guide action by government and local leaders. The dynamic nature of startup ecosystem development is not easy to capture, which is why adequate data has been lacking thus far. Our approach is based on primary research with over 300 organizations around the world, data on nearly half a million companies, and the participation of more than 10,000 startups globally every research cycle.[1]

The new science we developed has four main components.[2]

A. Ecosystem Lifecycle Model—precisely identifying which developmental phase an ecosystem is in helps provide the missing focus for decision makers, which enhances the impact of their actions. At each phase of the Ecosystem Lifecycle—Activation, Globalization, Expansion, Integration—different priorities are necessary and different actions need to be taken to accelerate further growth.

B. Success Factors—using the nearly 100 metrics we capture with our assessment, we provide clarity on an ecosystem's strengths and gaps relative to the Success Factors in our Model.

C. Sub-Sector Strengths—we identify key and emerging sub-sectors in an ecosystem that provide the starting points for action and improving ecosystem performance.

D. Policy Action—based on the empirical analysis, we develop a prioritized plan of public and private actions to build on strengths and address the Success Factor gaps.

In this section, we apply this four-component framework to Melbourne.

1 See description of our methodology in the 2017 Global Startup Ecosystem Report.

2 Startup Genome, "The New Science of Ecosystem Assessment," 2018 Global Startup Ecosystem Report.

A Ecosystem Lifecycle: Melbourne Moving Rapidly Through Activation Phase, on Cusp of Globalization

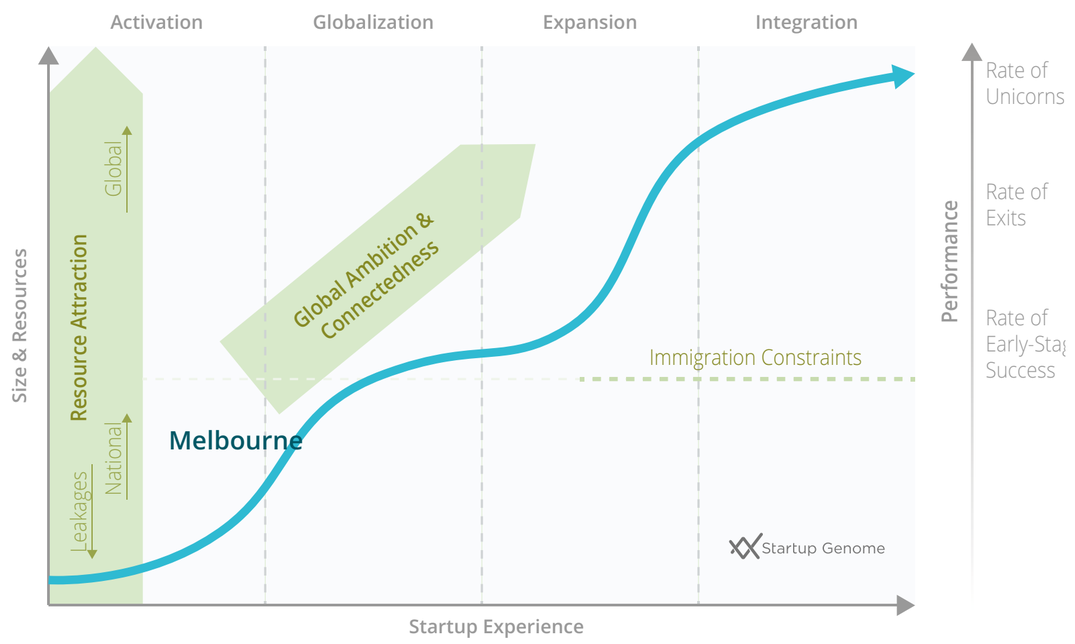
Because Melbourne has so thoroughly activated local resources to support the formation of startups, we classify the ecosystem as being in "Late Activation." On several of our assessment metrics, Melbourne is ready to Globalize and become a key hub in the global fabric of startup innovation. Focused and aggressive action will take it there.

The startup ecosystem in Melbourne has reached an inflection point.

At the end of 2017, software giant **Oracle paid $1.2 billion to acquire Melbourne-based Aconex, a maker of cloud-based collaboration software for the construction industry.**[1] The acquisition of Aconex, which was founded in 2000 and went public in Australia in 2014, was a fitting cap to a five-year period in which Melbourne's startup ecosystem grew rapidly in size and prominence. Locally, the activation of resources and energy has meant a **sixfold increase in the number of accelerators and over 900% growth in the number of coworking spaces**.[2]

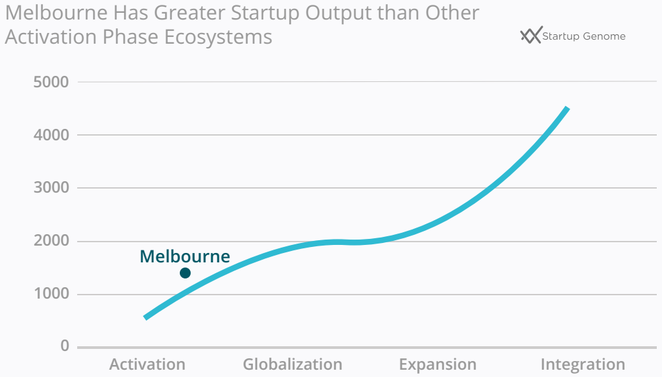
Over the last several years, more and more resources have gone into encouraging people to start companies and supporting those companies to grow. With a tremendous increase in the number of support organizations and activities for entrepreneurs, the number of startups in Melbourne has risen and there has been strong growth in early-stage funding. Consequently, the region has moved rapidly through the Activation phase in our Ecosystem Lifecycle Model (see chart).

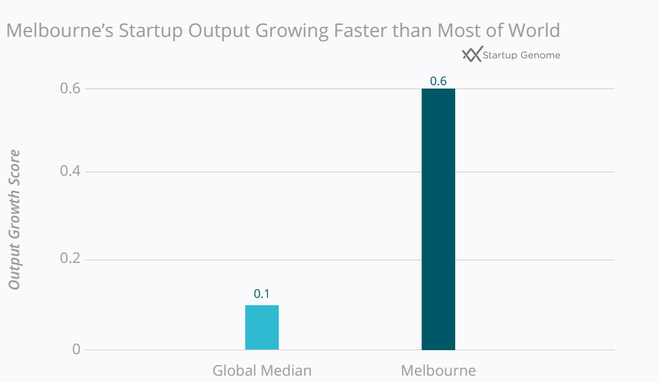
Ecosystem Lifecycle Model



1 Bloomberg, 2017

2 Knight Frank.





Now, Melbourne and the surrounding state of Victoria face a challenge common to many regions in the world: how to sustain growth and momentum and move the startup ecosystem into the next phase of Globalization. Melbourne is better positioned than most other places to avoid the "ecosystem trap"—being stuck pouring resources into Activation phase initiatives without increases in exits and scale. Instead, it may enjoy continued growth, and its experience over the next few years will carry lessons for other ecosystems.[3]

Startup Output captures the estimated number of startups in an ecosystem. Generally speaking, ecosystems need higher Startup Output (more startups) in order to enjoy faster ecosystem growth and higher performance.

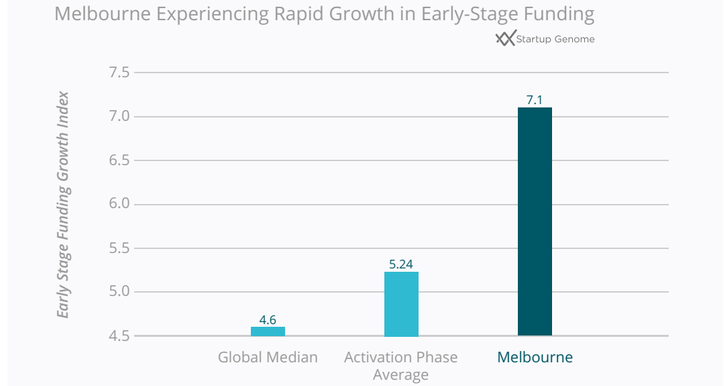
Ecosystem performance is a function of ecosystem size. The ability of a startup ecosystem to produce scaleups and exits—and thus jobs and economic growth—rises as its overall size increases. Bigger startup ecosystems generate more fast-growing startups and a higher rate of scaleups.[4]

Because of strong growth in Startup Output and Exit Value over the last few years, Melbourne has reached what we call "Late Activation." It is right on the cusp of the Globalization phase. With roughly 1,100 technology-based startups in Melbourne, its Startup Output is about twice as high as the average across other Activation phase ecosystems.

Though Startup Output in Melbourne is still shy of the Globalization phase average, momentum is strong. **According to our Output Growth Index, Melbourne has well outpaced the global median over the past few years.**

3 Stangler, 2016.

4 See the Lifecycle Model Explanation section in the 2017 Global Startup Ecosystem Report.

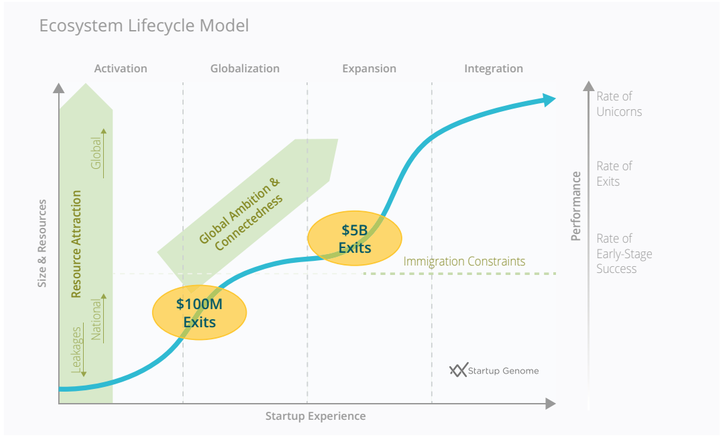


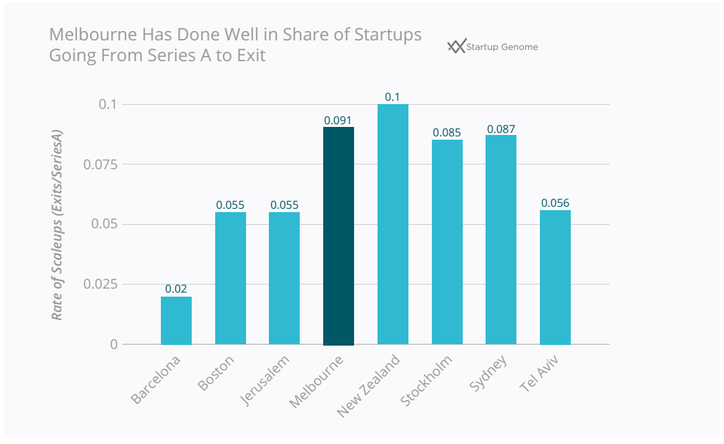
Rapid growth in the number of startups in Melbourne has helped increase the amount of early-stage funding available to startups. On our Early-Stage Funding Growth Index,

Melbourne ranks in the Top 5 for the world's strongest growth, a good indication of momentum. Although this growth is associated with the relatively smaller base it is growing from, Melbourne has also outpaced the average among comparably small Activation-phase ecosystems.

Growth in Startup Output and Early-Stage Funding is likely a result of the high levels of public and private investment into Activation phase activities in Melbourne and the State of Victoria. **Known as the "coworking capital" of Australia with roughly 170 coworking spaces in and around Melbourne.[5]** This is more than double the number in neighbouring Australian cities Sydney and

5 City of Melbourne, Startup Action Plan.





Brisbane combined. At the time of this writing, Victoria hosts more than 21 accelerators, with six more opening in 2018. Victoria also has 190 meetup groups "specifically focused on startups and entrepreneurship."[6] This gives Melbourne a level of resource availability comparable to another ecosystem at a similar phase, Barcelona, including a higher density of coworking spaces.

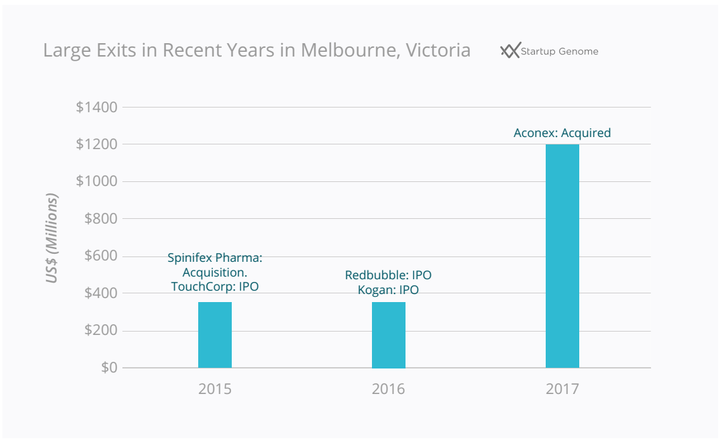
Support Organization Density	Melbourne, Victoria	Barcelona, Catalonia
Coworking Spaces per 100 Startups	15.4	11.4
Startups per Accelerator	40.7	40

Source to LaunchVic, Startup Victoria, Startup Catalonia, our data/report.

The proliferation of coworking spaces and accelerators and other support organizations helps explain why the City of Melbourne's "Startup Action Plan" emphasizes the city's "wide variety and diversity of events" and the "welcoming, willing and supportive community."[7] The increase in volume has been accompanied, in some cases, by an increase in quality: the Melbourne Accelerator Program, at the University of Melbourne, was ranked in the global top 10 among University Business Accelerators two years ago.[8] Melbourne is a leading example of how, through dedicated resource allocation, an ecosystem can move through Activation, increasing the number of startups and thus the opportunity for further growth. The question now is, **can Melbourne make the leap from Activation to Globalization?**

6 Mapping Victoria's Startup Ecosystem.
7 City of Melbourne, Startup Action Plan.
8 UBI Ranking, 2015.

To do that, Melbourne needs more "triggers": large exits that act as inflection points in an ecosystem's development. At the Activation and Globalization phases, acquisitions and initial public offerings over $100 million are desirable triggers. To move from Globalization to Expansion, exits of over $1 billion in value are needed.



Larger and more frequent exits trigger a higher level of Resource Attraction (entrepreneurs, investors, and talent) and create a deeper pool of Startup Experience in an ecosystem. These help create a virtuous cycle of more startups and more startup success.

Over the 2014-16 period, Melbourne enjoyed a relatively high Rate of Scaleups, the share of companies that received Series A round funding going on to exit. This is partly a function of size: smaller ecosystems, with fewer startups, can often have a higher rate (see chart).[9]

9 Globally, for example, the average Rate of Scaleups in Activation phase ecosystems is 10%, versus 4% in the Globalization phase.

Rate of Scaleups is calculated for the 2010-14 period, by looking at the total number of Exits in an ecosystem and comparing it to the total number of Series A funding rounds.

Melbourne needs to sustain this Rate of Scaleups and increase Startup Output, while generating exits of larger size. More startups will help generate more scaleups, and those scaleups need to get acquired or go public at bigger valuations. This will increase the growth and overall performance of the entire ecosystem, leading to even greater success among startups. **Over the last five years, in fact, Melbourne has generated five exits over $100 million.** This is a strong and steady record of triggers—though Sydney has averaged at least 2 per year for 5 consecutive years—and Melbourne needs to sustain and increase it.

Based on recent trends, Melbourne may experience more large triggers over the next few years. Property Exchange Australia, an eight-year-old company located in the Docklands, an area near central Melbourne, raised a large round of financing in 2017 and is widely expected to go public soon at a valuation of over $1 billion.[10] And 99designs, an on-demand design marketplace, relocated its headquarters in 2017 from San Francisco back to Melbourne, where it was originally founded. The stated reason for the move was to position the company to go public on the Australian Securities Exchange (ASX) soon.[11] Other startups also appear to have strong exits on their horizon.

10 Crossroads 2017.

11 Nguyen, Forbes.

The following section analyzes, through Startup Genome's Success Factor Analysis, the Strengths that Melbourne can build on in order to sustain growth in Startup Output and generate more exits that will trigger further growth. After that, we turn to the Gaps that stakeholders in Melbourne's ecosystem need to address.

B
Success Factor Analysis: Strengths and Gaps in the Melbourne Ecosystem

Strengths in Success Factors: Global Connectedness and Global Entrepreneur Attraction

Our analysis of Success Factors looks at what explains overall ecosystem performance. We take each factor in our model, assess the ecosystem on it, and benchmark the ecosystem against other ecosystems around the world for that factor. This helps decision makers and stakeholders in an ecosystem gain clarity about where their strengths and gaps are, and where actions can be best targeted.

Melbourne Startups Have Good Global Connectedness

For a startup ecosystem to move into the Globalization phase, it needs to globalize in a number of ways. An ecosystem can experience solid growth, as Melbourne has, in the Activation phase by drawing mostly on regional—or "organic"—resources. To keep growing, however, an ecosystem needs to attract "inorganic" resources: people, ideas, and capital from outside the immediate region. A key way to globalize in this way is to build Global Connectedness, which refers to the relationships that founders in one ecosystem have with fellow founders elsewhere, especially in the world's top-performing ecosystems. If a founder in Melbourne can reach out to a founder she knows in Silicon Valley or London and share knowledge, ask for an introduction, or receive assistance with a particular challenge, that relationship establishes a Global Connectedness link.

> "In Melbourne there is a strong spirit of doing innovative, profitable work with a focus on social impact. The focus [in Melbourne] is on starting businesses that will have a positive impact on the world, while being incredibly profitable and scaling globally.
>
> Bonnie Shaw
> *Strategy & Knowledge Manager, City of Melbourne*

Taken together, these links make up a strong determinant of startup success and ecosystem growth, as demonstrated by our 2017 Global Startup Ecosystem Report.[1]

Global Connectedness quantifies meaningful relationships that exist between startup leaders and how they were developed. We focus especially on connections with the world's top ecosystems. Global Connectedness brings Global Know-How into an ecosystem and leads to greater Global Market Reach.

1 Startup Genome, 2017 Global Startup Ecosystem Report.

For an Activation phase ecosystem, Melbourne fares well overall on our measures of Global Connectedness, outperforming the global median on each.

On the key measure of Global Connectedness—the average number of connections per founder to the top seven global ecosystems—Melbourne outdoes the average among Globalization phase ecosystems. On average, startup founders in Melbourne report having one-third more connections to peers in top ecosystems than the Globalization mean. Corroborating this empirical finding, nearly every person we interviewed for this report has some sort of global connection, especially experience working overseas in a top ecosystem.

For an ecosystem on the cusp of Globalization, this is a strong position to be in. In the next section, looking at Gaps in the ecosystem, and in the Actionable Insights section at the end of this report, we look at ways that Melbourne can build on this Global Connectedness to enable further growth.

Melbourne Attracts Founders and Talented People from All Over the World

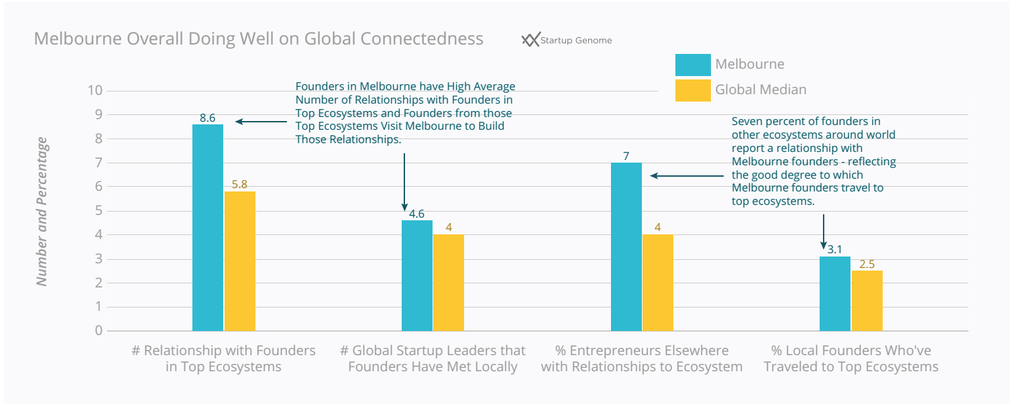
Reflecting its strong level of Global Connectedness, **Melbourne has already demonstrated a strong gravitational pull among founders and talented people from other parts of the world.** This likely reflects the city's reputation for a high quality of life—having been named the world's "Most Livable City" for seven years in a row—as well as growing recognition about the quality of the region's startup ecosystem.

When we look at the share of software engineers and founders who were born in another country, Melbourne is far ahead of the global median on both and holds its own against other ecosystems that are more advanced.

Some of this may reflect how many people come to Melbourne from another country as children, or remain in the city after attending university. Melbourne has a massive student population of roughly 225,000, and 15% of them are from other countries. A large proportion of immigrant students does not necessarily lead to a large number of immigrant founders. The attractiveness of Melbourne for entrepreneurs is confirmed when we look at how many of today's Melbourne entrepreneurs report that they relocated to the city specifically for the purpose of starting a company. Here, Melbourne displays impressive strength in Global Entrepreneur Attraction.

When looked at on a percentage basis, Melbourne is even more impressive. One in four entrepreneurs in Melbourne moved there

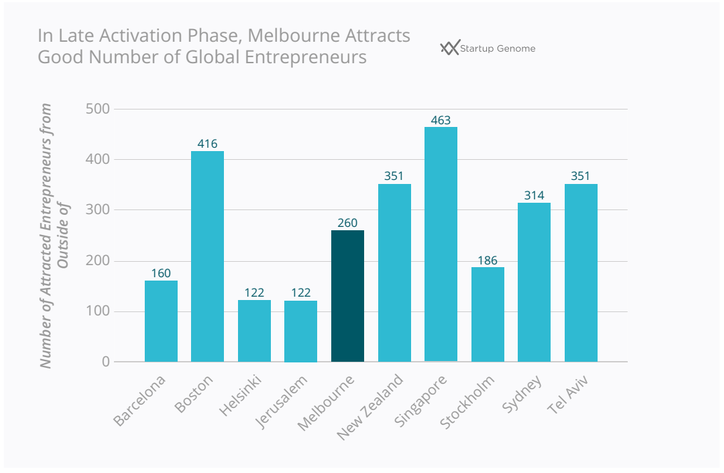
> "The network of business builders is growing rapidly through the number of expats returning home after having built a business and more exploratory trips being made by local entrepreneurs. This network is vital in helping founders solve the problems that they'll need to in order to create a business.
>
> Rohan Workman
> *Entrepreneur, former director of Melbourne Accelerator Program*

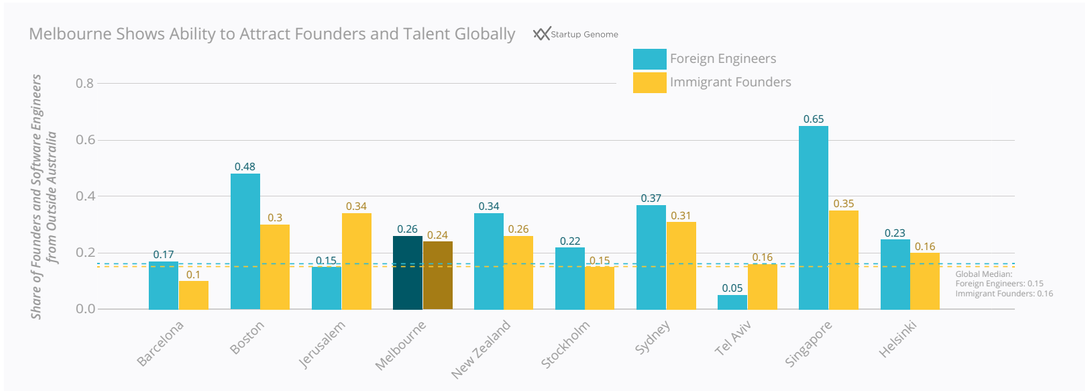


The Success Factor of Global Connectedness includes four variables: (1) Average number of relationships that founders in an ecosystem have with founder in top 7 global ecosystems—this is the most significant and predictive variable; (2) Number of global startup leaders that founders in each ecosystem have met locally; (3) Percentage of founders around the world that report a meaningful relationship with founders in a given ecosystem; (4) Percentage of founders in ecosystem who have traveled to top 7 global ecosystems: Silicon Valley, New York, London, Singapore, Shanghai, Tel Aviv, and Berlin.

from another country specifically to start a startup—one-third higher than the global median.

For a startup ecosystem at the inflection point between Activation and Globalization, Melbourne has a strong foundation of Global Connectedness and Global Entrepreneur Attraction from which to build. However, like any ecosystem, even those that are more developed, there are important gaps in Melbourne that hold the potential to boost growth if properly addressed.

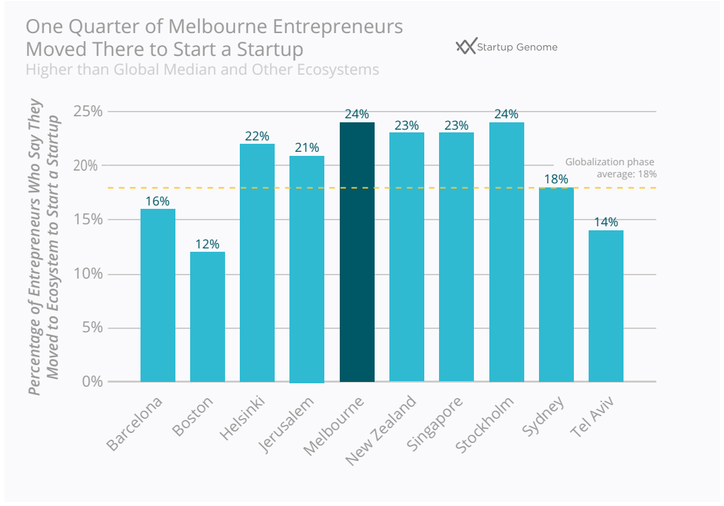




Gaps in Success Factors: Early-Stage Funding, Global Market Reach, Global Know-How, Resource Attraction

Melbourne has been through a startup frenzy before. The city—and the entire country of Australia—endured the dotcom boom and bust of the 1990s just as other countries did. Twelve years ago, in the wake of that carnage, Melbourne entrepreneur Martin Hosking proclaimed: "Australian venture capital is dead, and I can't think of a truly successful Australian company from Internet 1.0 that succeeded on a global basis."[2]

Today, as it turns out, three of Melbourne's largest public technology companies emerged out of the dotcom era. REA Group, Seek Limited, and Carsales.com, with combined market capitalization of around $20 billion, were all founded in the mid-1990s and went public between 2003 and 2009. All three made the 2017 Forbes list of the 100 Most Innovative Growth companies in Australia. Hosking himself went on to found Redbubble, which went public in 2016.

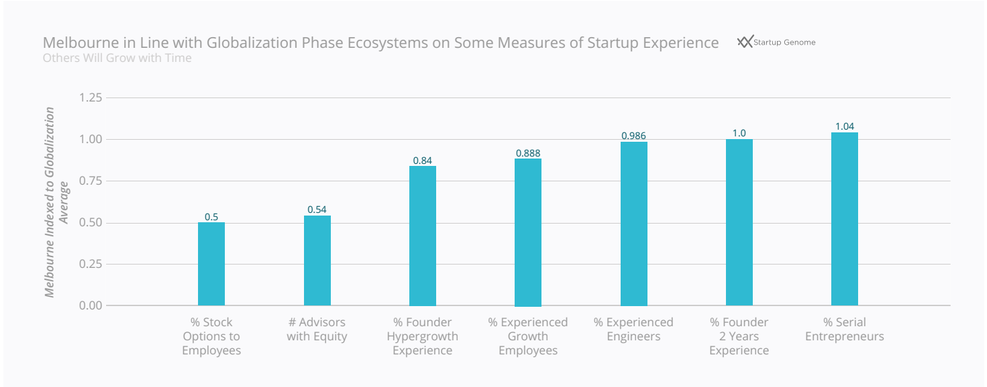


These companies also illustrate an important dimension of the current startup ecosystem in Melbourne: its relative lack of "maturity." This was the word we heard most frequently through our interviews in terms of what Melbourne currently lacks and what could derail the ecosystem's forward momentum.

Global Entrepreneur Attraction captures the number of entrepreneurs in an ecosystem who reported in our survey that they moved to that ecosystem from another country to do a startup.

2 Ryan (2006).

The startup community here is still "small," "young," and "very concentrated." This means that "everybody helps everybody," but it also means that Startup Experience is low.



Startup Experience, a Success Factor in Startup Genome's assessment model, refers to the pool of tacit knowledge and experience that founders can access in an ecosystem. When we compare Melbourne's level of Startup Experience on several measures to Globalization phase averages, the picture is not surprising. Melbourne is close to the Globalization average on some dimensions of Startup Experience, and not close on others.

Melbourne's pool of Startup Experience will deepen and improve as a function of time and more development. In a 2017 survey of Victorian founders, 50%reported that they had previously started a business.[3] Among these serial entrepreneurs, nearly one-third founded a company that was eventually acquired (see table).

Previously Founded a Startup That …	Percent of Melbourne Respondents Who Answered "Yes" to Having Previously Started a Company
… Was Acquired	30
… Went Public	1.5
… Closed	62

3 Mapping Victoria's Startup Ecosystem.

Among the larger sample of Victorian founders, LaunchVic and Startup Victoria report that 8% previously worked at a startup that reached a valuation above A$100 million.[4] It appears as if only a handful of current startup founders have emerged from REA Group, Seek, and Carsales.com. A common pattern in many vibrant startup ecosystems is that an "entrepreneurial genealogy" develops, as employees from one generation's successful startups become the founders, investors, and mentors to the next generation and so on. This genealogical pattern characterizes, for example, the thriving startup ecosystems in Boulder, Colorado, and New York City.[5]

There is no "just right" threshold where this pattern kicks in, and in Melbourne perhaps it will develop in time. As one investor observed of Melbourne, "it's too young of an ecosystem to have that multi-generational experience develop among investors." Already, however, two current founders have come out of Aconex, the

4 Mapping Victoria's Startup Ecosystem.
5 Stangler 2013; Endeavor Insight.

Startup Experience captures the pool of networks and Know-How that startups can draw on in an ecosystem. We measure it by looking at exit values in recent years and by several measures of the experience level of founders and their usage of leading startup practices.

construction software firm acquired by Oracle in December 2017. Encouragingly, one-quarter of founders in Melbourne report that their mentors and advisors have worked at startups with $100 million-plus valuations. [6]

But, several interviewees expressed the same concern: what will happen when some of today's startups fail and investors don't make their expected return? Is there enough resilience in the ecosystem to maintain growth and focus, and turn the resulting Startup Experience into a regional asset?

Addressing ecosystem gaps will help build this resilience and sustain current growth trends.

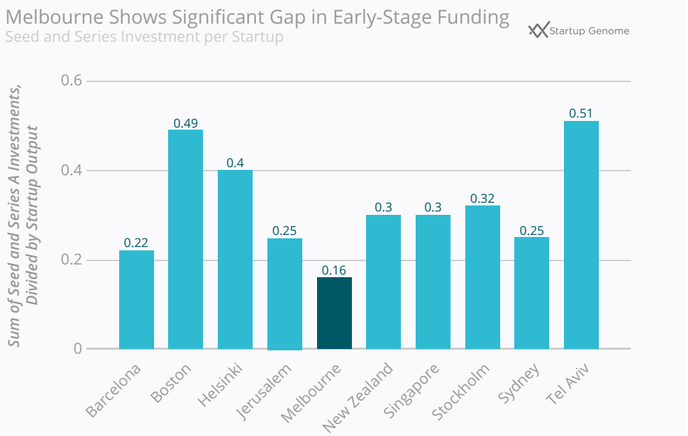
According to Startup Genome's assessment of Melbourne, the Success Factor gaps facing the ecosystem are normal for the Activation Phase. The region needs:

- More Early-Stage Funding
- Greater Global Connectedness to have greater Global Market Reach
- More Global Know-How and Ambition

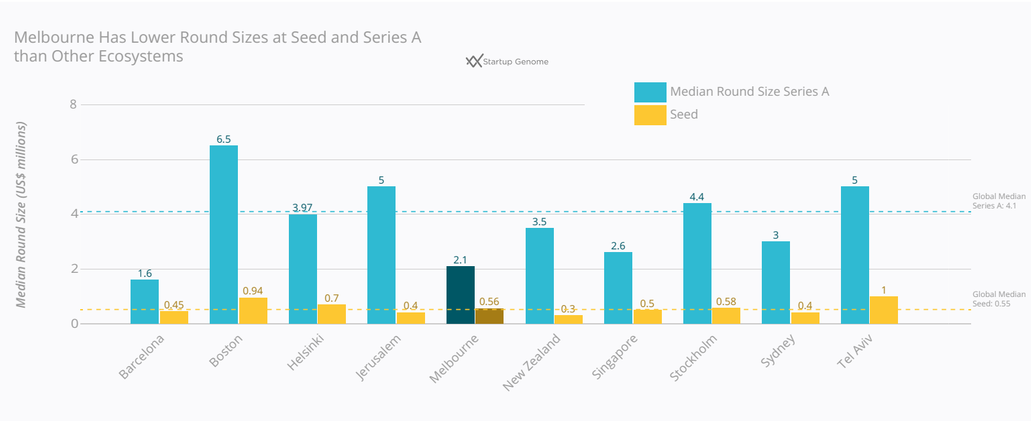
6 Mapping Victoria's Startup Ecosystem.

Melbourne has an Early-Stage Funding Gap

A startup ecosystem, especially one at Melbourne's developmental stage, can never have enough early-stage funding. It is not necessarily surprising, then, that Melbourne has what one interviewee called "an acute capital gap at the earliest stage." According to our data, over the last few years, Melbourne has had a lower level of available early-stage capital than every other comparison ecosystem in this report (see chart).



By our calculations, this adds up to an annual early-stage funding gap of roughly US$66 million per year in Melbourne. Likewise, median funding round sizes in Melbourne tend to be smaller: while seed rounds are roughly at the global median in terms of size, Series A rounds are about half the size of the global median (see chart).



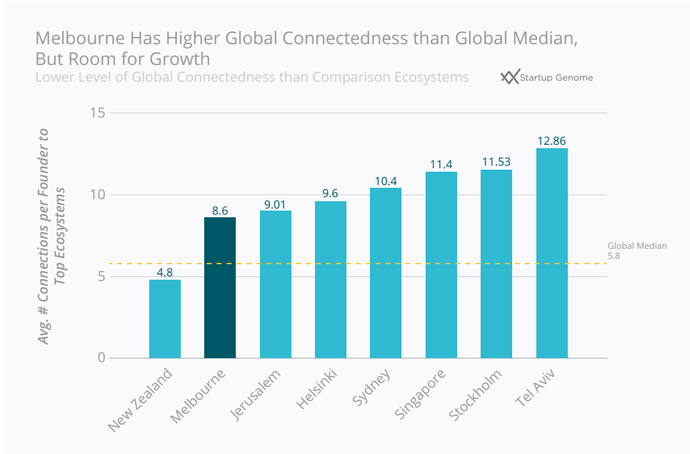
According to our preliminary analysis, a lower proportion of startups in Melbourne get seed funding than in other ecosystems. While more analysis is needed here—and data availability is a key challenge—this preliminary finding is corroborated by interviews. "We need to see capital being spread out into the ecosystem," said one person. One-fifth of startups that receive seed funding in Melbourne go on to obtain a Series A round of funding. While higher than Sydney, this is considerably lower than places such as Stockholm, Boston, Barcelona, and Tel Aviv.

In addition to the sheer amount of early-stage capital accessible to startups, our interviews also raised concerns over "a real capability gap in angel investing." The amount of early-stage funding matters in an ecosystem but no less important is the know-how and sophistication among early-stage investors. We address this in the Actionable Insights section below.

Build on Global Connectedness to Increase Global Market Reach

Melbourne's level of Global Connectedness—particularly the number of relationships that founders have to their peers in top ecosystems—is strong for an Activation phase ecosystem. But, Melbourne's Global Connectedness needs to grow. Compared to other small, globalizing ecosystems (see chart), there is ample room for growth in Melbourne's Global Connectedness.

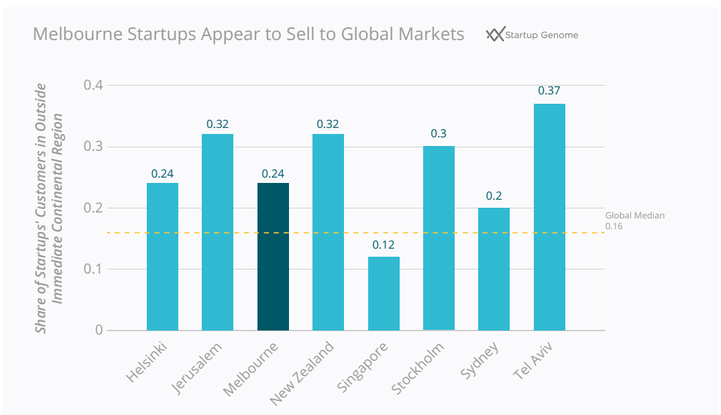
The principal effect of a higher level of Global Connectedness is what we call Global Market Reach: the extent to which startups in

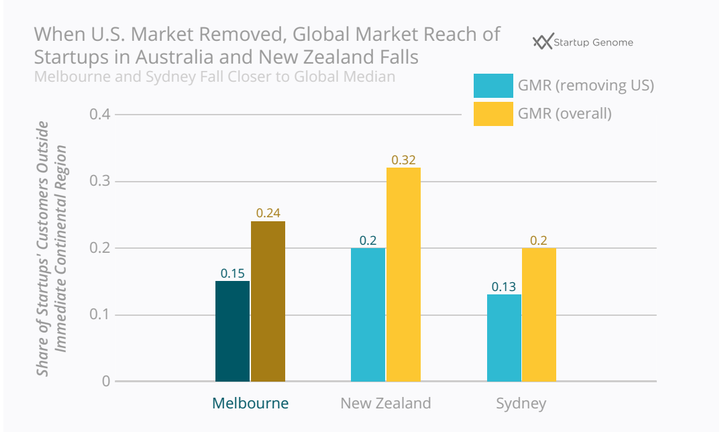


To measure **Global Market Reach** in an ecosystem, we look at the average percentage of customers that startups report selling to outside of the immediate region. Startups in Europe, for example, may sell to foreign customers in other European countries, but Global Market Reach captures how extensively they sell outside of Europe. Higher Global Market Reach means faster growth rates for startups.

a given ecosystem sell to global customers outside the immediate continental region. In general, Melbourne startups need greater Global Market Reach, particularly to markets that are **not** the United States.

As reported in Mapping Victoria's Startup Ecosystem, a fairly high share of startups in Melbourne and Victoria report that they export their product or service. Two-thirds say they are selling overseas, and this is corroborated by our data showing that startups in Australia (and New Zealand) are able to reach overseas markets.





Exporting, however, is not the same thing as targeting global markets. As shown in Mapping Victoria's Startup Ecosystem, only one-third of startups in Melbourne and Victoria say their main customer base is outside Australia.[7] This indicates that, while Melbourne startups may make a foreign sale every so often, they may not be aiming to reach global markets by working on globally-relevant problems. This is what we mean by Global Market Reach: early-stage startups that are globally-focused (with a majority of customers based outside of their country) see their revenue grow much faster—2.1 times faster for B2B startups—than those that favor local customers.[8] This means that Global Market Reach (GMR) during the early stages of Customer Development is essential for the production of scale-ups and exits that trigger ecosystem growth and ultimately, economic growth.

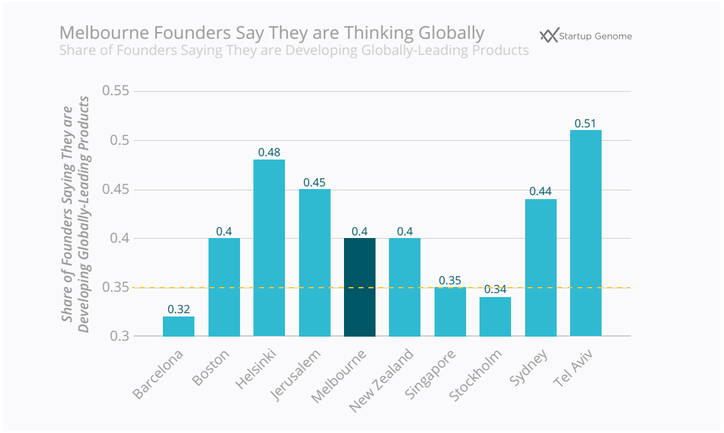
Global Market Reach must also be truly global. As with export numbers, selling mostly to one overseas market will limit startup growth. In part because of a shared language and a strong history of connections, the United States is the top overseas market for Australian startups.[9] If we take out the United States from Melbourne's GMR metric, the numbers are less impressive. China may be the second-largest export destination, but it appears as if Melbourne startups (as well as their peers in Sydney) have not yet penetrated Asian markets in a meaningful way.

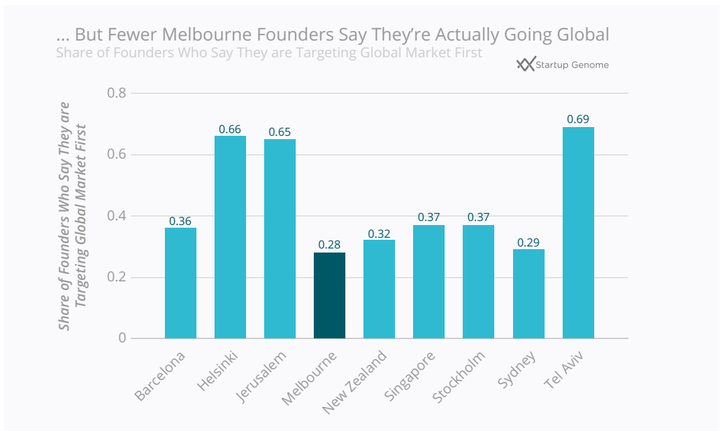
As one interviewee observed, "In Melbourne you have a decreased chance of building very large businesses, but an increased chance of building nice-sized, fine companies. We don't historically have experience with [Silicon] Valley-type entrepreneurship." In its Startup Action Plan for 2017-21, the City of Melbourne acknowledges that the ecosystem needs "improved access to international connections, particularly in Asia."[10] Technology companies recognize this need as well: when Fintech company TouchCorp merged with Afterpay in 2017, both Victorian companies acknowledged that international expansion was a major goal of the merger.[11]

Melbourne Needs More Global Know-How and Ambition Among Founders

Global Connectedness helps create greater Global Market Reach because it helps expose founders to global innovation markets, global customers, and problems that are globally relevant. Startups need access to Global Know-How, which they get by connecting to the global fabric of knowledge, ideas, people, organizations—they can identify market trends, adopt new ideas about company-build-

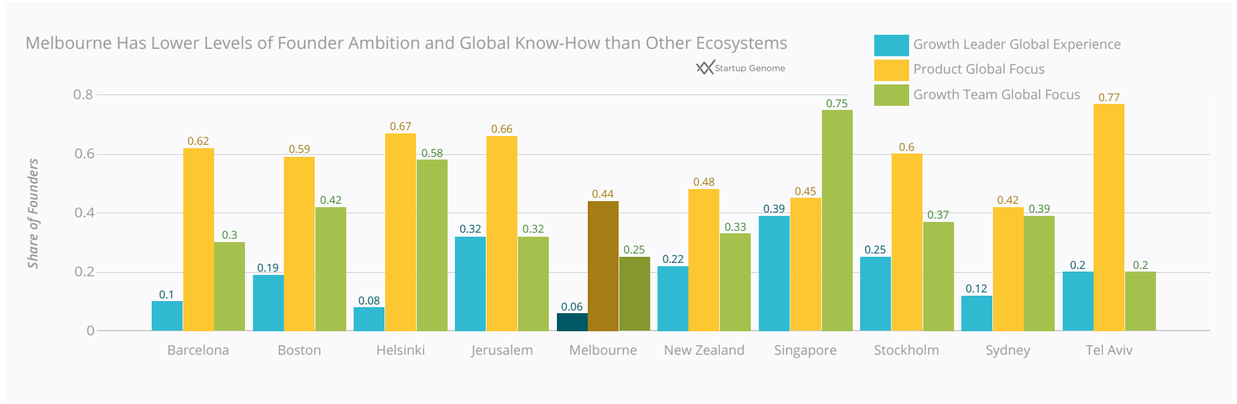
7 Mapping Victoria's Startup Ecosystem.
8 See, for example, our report on the Waterloo region.
9 Mapping Victoria's Startup Ecosystem.
10 City of Melbourne, Startup Action Plan.
11 Victorian Connection.





ing, or reach out and ask for help from founders elsewhere. The knowledge that founders need is not only found in their own ecosystem. The nexus of this global fabric is in the top startup ecosystems, especially Silicon Valley, New York City, and London, because they constitute global markets of innovation where startups from all over the world compete and interact with customers at the global frontier of innovation.

But, founders in an ecosystem also need the ambition to go global, and they need to aim for global markets. According to our survey results, founders in Melbourne say they are developing globally-leading products.



However, a much smaller share of Melbourne founders say they are actually targeting the global market first with their products.

Similarly, on our other measures of Founder Ambition and Global Know-How, it appears as if Melbourne's ecosystem is lagging.

Many of our interviewees highlighted this as an area Melbourne needs to improve on:

- "The cultural drive and intensity to build new things isn't here in the same degree as elsewhere."
- "People here are not thinking of the global marketplace right away."
- "Founders need to be looking more global in their approach."

In the Actionable Insights section, we highlight ways that public and private actors in Melbourne can help raise Founder Ambition and get more founders connected to global markets. As discussed above, Melbourne is in a strong position for an Activation phase ecosystem when it comes to Global Connectedness—the challenge now is to increase that and translate it into Global Market Reach and global ambition.

The foregoing analysis of Success Factor strengths and gaps can help build consensus in the local community, and orient everyone toward a clear action plan of what needs to happen next and in what order. In Section 4, we make specific recommendations based on the gaps as to what is required to take Melbourne into the Globalization phase.

C
Key Sub-Sector Strengths

As we discussed in the third section of the report, the Third Wave of the Internet opens distinct opportunities for every region of the world to capitalize on existing sector and industry strengths of its economy.

When looking at an ecosystem and identifying the innovation sectors and sub-sectors (which may parallel industry verticals) where they have the most potential to build their new economy, we look for signs in the past and present that show both existing strengths and latent potential. For each specific sub-sector, these signals are quantified by assessing the emerging startup cluster, related legacy industries (like the traditional banking sector when assessing Fintech), as well as the production of intellectual property and talent by institutions of higher education.

For this report, LaunchVic and Startup Genome identified three sub-sectors where the region has potential to build global competitiveness and economic value: (1) Adtech, (2) Biotech and Life Sciences, and (3) HealthTech.

A well-defined ecosystem strategy will include making special allocations of resources to the startup ecosystems building around each of those high-potential sub-sectors. This will be further discussed in the next section.

Road Ahead

> There is strong alignment on the desired outcome: make Victoria (and Australia) the destination of choice for startups, innovative companies, and investors from around the world.
>
> Rachael Neumann
> *Investor, Mentor, and Entrepreneur in Melbourne*

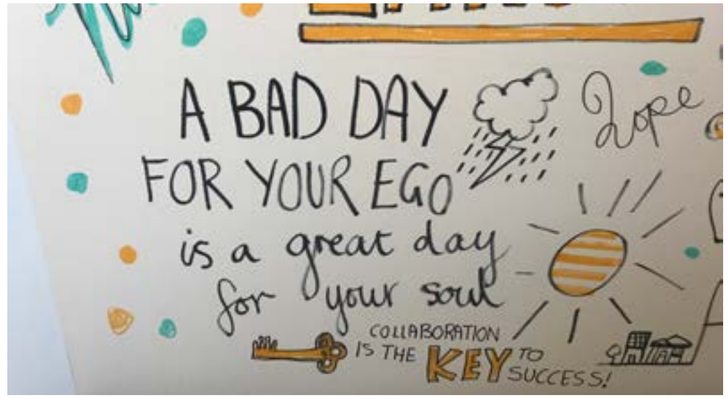
There is consensus, in Melbourne and across Australia, that an improved environment for entrepreneurship is vital for the region's future prosperity. In 2015, the national government allocated A$1.1 billion to a National Innovation and Science Agenda (NISA) in an effort to improve the country's global performance on innovation and research. The Victorian government created LaunchVic and charged it with spending A$60 million to improve the overall capability of the regional startup ecosystem. These efforts stem, in part, from a national concern over what will happen to the Australian economy when the mining and property development sectors lose steam, and partly from the global fear over the future of job creation in Australia.[1]

Startups are central to this work, and the consensus among public and private organizations—and everyone we interviewed—is that **the future performance of the Victorian and Australian economies depends on how well startups are supported. This is achievable with greater investments in growing the size and increasing the performance of startup ecosystems, and Melbourne is leading the way.**

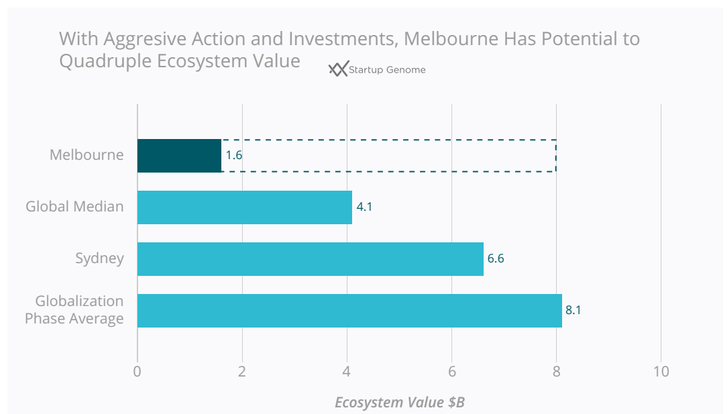
With the right mix of actions taken at the right time—targeted at the Success Factor gaps identified here— Melbourne should be able to at least double, or potentially quadruple, its ecosystem value. This will create broader economic and social benefits for the entire region and the country.

Based on our assessment, Melbourne's biggest priorities in closing or reducing gaps should be to:

- invest aggressively to close the early-stage funding gap
- increase Global Connectedness to increase Global Market Reach
- leverage sub-sector strength in Biotech and Life Sciences



Wall at CreativeCubes.co. Credit: Startup Genome.



1 Crossroads 2017.

Actionable Insight #1

Support New Angel Groups and Increase More Public-Private Cooperation to Increase Early-Stage Funding

Within the next three years, double the amount of seed funding invested in startups

Support the formation of new angel groups

The early-stage funding gap in Melbourne—which we estimate at $66 million per year—is compounded by a relative lack of structured angel networks. Angel groups not only make higher-quality investments that are better for startups but also provide a good entreè for high-net worth individuals from other sectors (see next item). A key goal of the new angel groups should be to increase deal flow and diversification among existing angels. As one interviewee put it, angels need to "take a zero from the amount and put it on the number (of deals)."

Raise the level of investor know-how

The good news is that there is no apparent shortage of capital in Melbourne and Victoria, thanks to the resource and real-estate booms. The key issue is connecting that capital to the startup community and educating investors on what it means to invest in startups. This knowledge gap is certainly not unique to Melbourne. In many regions across the world, there are pools of "old money" or fortunes made in more traditional sectors. Individuals holding this wealth are often keenly interested in supporting startups, but the risk-return profiles they have experienced in other sectors do not apply to startups. Existing efforts to get these investors into startups are, according to an interviewee, "setting them up to lose all their money" because instead of a high-volume investing strategy, these investors are directed toward only a few startup investments. A new program devoted to increasing investor know-how will increase the amount of early-stage capital and improve outcomes for startups.

Double the amount of Series A investments in Melbourne and Victoria

Create a new public-private venture fund

"A monumental disaster." This is what one interviewee said of an early attempt nearly 20 years ago to create a public-private co-investment fund that would support entrepreneurship. The shortcoming of that early initiative was a violation of one of Josh Lerner's guiding lessons in Boulevard of Broken Dreams: if a public venture fund is established, investment decisions should not be made by public officials.[2] Fortunately, there is a better model that already exists in Victoria. The Medical Research Commercialization Fund (MRCF) focuses on translating university research into commercial outcomes: it aggregates private capital, with the state government covering administrative costs, and is overseen by a private money manager. This should be a model for other technology-based sectors in Melbourne, including those powered by software.

Create a new fund of funds directed toward attracting more global investment

Across Australia startups have demonstrated the ability to attract international funding. Investors from China, the United States, and Malaysia, among others, put money into Victorian startups in 2017. What appears to be happening, though, is that Melbourne startups "tap out capital pools here and go overseas" when they attempt to raise Series B and C rounds, said one interviewee. That isn't a bad thing, but, according to our interviews, local money should also be part of those deals.

2 Lerner, 2012.

At the same time, Australian investors need to be making more investments outside the country to help build Global Connectedness (see Actionable Insight #2). A new fund of funds focused specifically on enhancing connectedness at the Series A stage would help globalize the Melbourne investment landscape and fuel larger-sized rounds for the best companies.

Create specific pathways to encourage serial founders to become investors in next generation of startups

Work with existing venture firms and create new programs if needed

Several interviewees pointed out that the VC landscape in Melbourne and Victoria is still predominantly populated by people with experience in banking and private equity. That's valuable experience and knowledge for the ecosystem in general, but "we haven't seen founder-VC proliferation here" as in other ecosystems. There are "few VCs with founder experience: how do we accelerate that?" Existing venture firms could be encouraged, or incentivized, to bring serial tech founders into their decision making processes and help educate the partners. Public and private leaders in the ecosystem should also speak out more about the need for this kind of know-how and experience among venture investors.

Actionable Insight #2

Shift Support Organizations to Global Focus to Make Melbourne a Global Ecosystem

Melbourne, as a Late Activation stage ecosystem, has a good level of Global Connectedness. This is likely related to its large population of international students and the number of people who have spent time working in other countries, especially the United States. This Global Connectedness, however, has not yet translated into a higher level of Global Market Reach. To generate triggers for further ecosystem growth, Melbourne needs startups to go global.

Increase Global Connectedness for Greater Global Market Reach and Ambition

Move support organization activities from Activation to Globalization Focus

Public and private organizations in Melbourne have done a commendable job of activating local resources: there are more organizations than ever that exist to help founders and startups, as well as plenty of activities and events. This has resulted in higher Startup Output for Melbourne. Now, support organizations must focus on Globalization objectives, and this should be a dedicated part of their missions. This will require different funding techniques (public and private), mission reorientation for different organizations, and new types of partnerships. At programs such as the Melbourne Accelerator Program, located at the University of Melbourne, global links to Asia already exist through alumni networks.[3] Such networks should be strengthened and brought into close connection with other ecosystem programs.

Ensure that a new, global accelerator is also locally connected

LaunchVic is in the process of recruiting a global accelerator program to establish a regional location. This will be a major milestone for the startup community. In Startup Genome's assessment of accelerator performance for one of our Members, we found that the only positive effects of accelerators for startups and the ecosystem came from a global accelerator, not local ones. The most significant impact was on the ecosystem's level of Global Connectedness. This will help raise the level of global ambition among Melbourne founders. To ensure that these effects spread through the ecosystem, public and private organizations must make sure that new, global accelerator establishes strong connections to existing local activities.

Continue to increase international component of events such as Melbourne Knowledge Week, Pause Festival, and the Digital Innovation Festival (DIF)

In Startup Genome's research on Global Connectedness, we have found that international conferences can provide a tremendous boost to an ecosystem in terms of founder-to-founder connections across the world.[4] However, there must be an intentional effort to help foster those connections; simply holding a conference is insufficient. While there is already a "Startups" theme at Melbourne Knowledge Week—put on each year by the City of Melbourne and partners—event organizers should reach out to entrepreneurs from other countries and invite them to attend. Sessions should be devoted to helping build these connections.

3 Katie Liddicoat and Sarah Gundlach, MAP, interview.

4 Stangler, 2017.

Expand existing opportunities for startups to reach global markets

Ensure that export support is easy to use (and known) by startups

The Export Market Development Grant, a federal government initiative, reimburses young companies 50% of their global opening costs. According to some people, however, startups don't take advantage of it as they should, in part because the program "is not well marketed toward startups—not marketed or tailored to them." This marketing gap is common to many government programs around the world.

Actionable Insight #3

Focus on Increasing Startup Growth and Success in Life Sciences and Health

The State of Victoria has tremendous strengths in life sciences and health, and should focus on leveraging these to generate more startup success and growth in these areas. As outlined in the 2018 Global Startup Ecosystem Report, every startup ecosystem needs to focus on a handful of key sub-sectors. Few places can excel at more than that. By focusing while at the Activation phase and moving toward Globalization, Melbourne can achieve major economic gains. With an increasing amount of public R&D and private investment into these areas, the region is poised for growth, especially through startups. Focused actions will help accelerate this growth, and will allow Melbourne to continue to compete with other hubs—such as Boston.

Improve the transfer of knowledge from universities and research institutions into the broader ecosystem

Test liberalization of intellectual property policies to facilitate commercialization

Commercialization of research is the principal way in which knowledge moves from the lab to the marketplace. For startup activity around biomedical research and health to grow stronger in Melbourne and Victoria, the commercialization process appears to be in need of improvement. Overall, several of our interviewees expressed frustration with regional universities on this score, observing that it is very difficult to "get these deals out the door" and that once they are 'out the door', it is hard to deal with burdensome terms over intellectual property ownership. We suggest experimenting with more open IP approaches: the objective should be getting discoveries into the marketplace, not maximizing royalties. Various universities around the world (including one in Victoria) have tested ways of doing this. A standardized term sheet with clearly-defined terms of ownership, for example, is one way to start. Universities and research institutions that take a more open and collaborative approach to IP tend to reap more rewards than those that are closed and combative.

Create more opportunities for industry-university-research collaboration

Millions of public dollars—from the state and national governments—are flowing into Life Sciences and Health, yet this has had no apparent effect on collaboration. Out of 29 OECD countries, Australia ranks 29th and 27th respectively on the percentage of small firms, and percentage of large firms, collaborating with universities on innovation.[5] Perhaps this is related to the IP difficulties discussed above. Whatever the reasons, it needs to be addressed. Some of our interviewees observed that regional universities, while excelling at research, are not doing enough to expose researchers (both faculty and students) to research with commercial application. Universities should open their doors wider to industry, whilst industry should create ways for university researchers to embed within their work processes.

5 Australian Innovation System Report 2017.

Acknowledgment and Partners

A project like the Melbourne Startup Ecosystem Report can only be realized with an enormous effort from both the project team and external supporters. Several partners have invested significant resources into the project. Numerous advisors, founders, investors, and industry experts have given us access to their knowledge, networks, and time because they support our vision and wanted to move their ecosystem and the whole startup sector forward.

This section serves to express our deep gratitude and appreciation towards anyone who made a contribution to make this project possible.

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Survey Participants and Interviewees

Thanks to the more than 10,000 survey participants and the approximately 275 interviewees—startup founders, investors, leaders of accelerators, incubators and startup hubs, and policy-makers—all over the world who trusted us by sharing their confidential information and expert knowledge with us. By providing us with reliable quantitative data and insights, they created the basis and the heart of our research.

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Thank you for your support! And thank you to the Startup Photo Library for selected images used here.

Partners and Collaborators

Global Partners

Global Entrepreneurship Network (GEN): Operates programs in 170 countries that foster cross border collaboration between entrepreneurs, investors, researchers, policymakers, and entrepreneurial support organizations to fuel healthier start and scale ecosystems.

CrunchBase: Everyday investors, journalists, founders, and the global business community turn to CrunchBase for information on startups and the people behind them.

Dealroom.co provides data-driven intelligence on high-growth companies.

Orb Intelligence: Business Information for B2B Marketing and Sales. Orb provides company information and smart algorithms as a service to marketing software vendors and B2B agencies.

Angel Resource Institute provides education, training, mentoring, and information on best practices in the field of angel investing to improve connections between angel investors and entrepreneurs.

Tech Nation (formerly Tech City UK) empowers ambitious tech entrepreneurs through growth programmes, digital entrepreneurship skills, a visa scheme for exceptional talent and by championing the UK digital sector through data, stories and media campaigns.

QCC: The QCC Conference is a two-day annual event, alternating between Quebec City and Toronto, that supports the development of a buoyant private market investment ecosystem, in Canada and internationally.

Fingerprint for Success studies attitudes and motivations of entrepreneurs to learn what separates them from the rest of the population and help entrepreneurs and business owners succeed.

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Tel Aviv, Israel

Tel Aviv Global

Toronto-Waterloo, Canada

MaRS Discovery District

Communitech Corporation

Vancouver, Canada

Vancouver Economic Commission

BC Tech Association

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Ecosystems by alphabetical order

Amsterdam, Netherlands

Health Holland

Holland Fintech

StartLife

Atlanta, United States

Advanced Technology Development Center (ATDC)

Atlanta Tech Village

Engage

Enterprise Growth Institute

Entrepreneurs Organization (EO)

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Foresight

Lifesciences BC

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To reward participants of our online survey, multiple great companies agreed to offer huge discounts on their product:

Mixpanel's mission is to help the world learn from its data. It tracks user interactions with web and mobile applications and provides tools for targeted communication with them.

Gusto's mission is to create a world where work empowers a better life. By making the most complicated business tasks simple and personal, Gusto is re-imagining payroll, benefits and HR for modern companies..

ChargeBee is a PCI Level 1 certified recurring billing platform for subscription based SaaS and eCommerce businesses. It handles all your crucial workflows from lead to ledger with power packed integrations that include Salesforce, Xero, Quickbooks, Avalara, Slack, among others.

ZipRecruiter provides a platform to hire and get hired. They have helped over 1 million businesses and 100 million job seekers find their next perfect match through partnerships with the best job boards on the web, curated email alerts, award-winning mobile apps, and one of the most sophisticated job search algorithms in the space.

Methodology, Sources, and References

To research this report, we relied on Startup Genome's proprietary database of almost half a million companies, our survey data covering over 12,000 ecosystems leaders across the globe, and several 1-on-1 interviews with entrepreneurs and ecosystem leaders in Melbourne. Moreover, LaunchVic brought their extensive and deep knowledge of the Victoria and Melbourne community to the writing of this report.

We also relied on our Global Startup Ecosystem Report 2017 and the methods there. In the following pages, we cover methodology and data sources for key elements of the Global Startup Ecosystem Report and the research done exclusively with a focus in Melbourne. For the complete methodology, data sources, and references in our Global Startup Ecosystem Report 2017, please see: startupgenome.com/report2017. For an overview of our Science of Ecosystem Assessment, see the 2018 Global Startup Ecosystem Report.

The Startup Genome quantitative data infrastructure includes data on over 1 million companies, nearly 100 ecosystems, and survey data from more than 10,000 startup executives across the globe—the Voice of Entrepreneurs.

Below is a description of the main datasets that make up this data science infrastructure:

Startup Genome proprietary data:

- Interview of 100+ Experts
- 2017-2018 Startup Ecosystem Survey with more than 10,000 participants
- CrunchBase: global dataset on funding, exits, and locations of startups and investors
- Orb Intelligence: global dataset on company information
- Dealroom: global dataset on funding, exits, and locations of startups and investors
- Local partners (accelerators, incubators, startup hubs, investors):
  - list of startups
  - list of local exits and funding events

In addition to quantifying several aspects of startup sub-sectors across the world, we are undertaking a major research effort to qualitatively understand each and every of the sub-sectors and ecosystems we cover on this report.

- This qualitative research effort includes:
- Reviewing hundreds of research reports, media articles, and books
- Interviewing over 100 experts on the topic, for both sub-sectors and ecosystems

Gathering qualitative insights and free form text from an over 10,000 founders and startup executives surveyed directly by Startup Genome

We use the knowledge gathered from this qualitative research effort to inform trends described on the report, review the methodology framework, and identify nuanced and forward-looking insights that the data alone could not give.

Key Terms and Definitions

Startup

Steve Blank defines a startup as a "temporary organization in search for a repeatable and scalable business model". We use this definition to look across sectors and sub-sectors, including software, hardware, health, energy, and others.

Ecosystem

Defined around the concept of a shared pool of resources, generally located within a 60 mile (100 km) radius around a center point in a given region, with a few exceptions based on local reality.

Startup Sub-Sector

Defined as a subset of startup ecosystems along the main innovation sectors: Tech/ICT, Life Sciences, and Cleantech. Because some are horizontal in nature, we stayed away from using the term "vertical". These sub-sectors are areas in which startups are applying innovation and carving out new areas of economic activity often distinct from—although sometimes related to—legacy industries (e.g. AI, which doesn't have a well-defined related industry, and FinTech, with the related Financial Industry).

Ecosystem Lifecycle Factors

Combined with some of measures from our Success Factor Model, Ecosystem Lifecycle Factors measure different dimensions of a startup ecosystem. These allows us to determine the phase of development in which the ecosystem is in -- Activation, Globalization, Expansion, or Integration.

Resource Attraction: captures the extent to which entrepreneurs move to an ecosystem to start a startup and how many startups relocate to an ecosystem. Increasing Resource Attraction at the national and global levels is an important determinant of an ecosystem's growth rate.

Startup Leakage: measures the percentage of startups that, in our global survey, reported leaving a certain ecosystem. A low score on Startup Leakage indicates that few startups have left that ecosystem in favor of another one.

Triggers: Triggers are the externally impressive exits and high startup valuations that spark a sharp increase in Resource Attraction, driving the growth of an ecosystem and its evolution to the next phase of the Lifecycle.

Success Factor Model

Our principal analytical tool, this measures different dimensions of what supports the performance of local startups. We look at 10 Factors: one measuring actual performance with 9 Success Factors associated with performance, each comprised of sub-factors and metrics.

Performance: A combination of leading, lagging, and current indicators that capture economic outcomes in a startup ecosystem.

Funding: The level and growth of early-stage funding, looking at both access and quality.

Market Reach: How well startups in a given ecosystem are able to reach customers outside their country and the immediate continental region.

Global Connectedness: How well founders are meaningfully connected to founders in other ecosystems, with a focus on the world's top seven ecosystems.

Resource Attraction: The gravitational pull of an ecosystem in drawing in entrepreneurs and startups from elsewhere.

Startup Experience: The depth and diversity of the pool of prior startup experience in an ecosystem.

Talent: Measures the accessibility, quality, and cost of software engineering expertise.

Founder: success factors related to the startup founder, under his or her control, or internal to the startup as opposed to external (a function of the ecosystem)

- **Founder Mindset:** Attitudes and preferences that align with success. See related ecosystem science article for more.
  - **Founders with Entrepreneur Mindset:** startup founders that closely matched the validated profile of successful early-stage entrepreneurs along five attitudes tested: Initiation, Reflection + Patience, Breadth, Depth, and Structure.
  - **Founders with Business Builder Mindset:** startup founders that closely matched the profile of successful business builders (late-stage entrepreneurs) along the five attitudes Tested.
- **Founder DNA:** The background, experience, ambition, and motivation of local founders.
- **Founder Know-How:** A multi-variable assessment of founder knowledge of key startup methodologies such as Steve Blank's Customer Development and Eric Ries' Lean Startup.

  - **Theoretical Know-How:** a sub-factor of Founder Know-How capturing theoretical knowledge of key startup methodologies.
  - **Practical Know-How:** a sub-factor of Founder Know-How measuring a behavior demonstrating knowledge of key startup methodologies was put into practice.
- **Founder Go-Global Strategy:** measures whether a startup is going global from the outset or first targets its local market, and whether its customer acquisition team is located, targeted, and skilled to succeed.
- **Founder with High Ambition:** Founders who expressed all of the following attributes: Total Addressable Market of $30 billion USD or more; developing a globally-new, or one of the globally-leading or niche products; and the mission to change the world, get rich or create a great product.
- **Founders with Experience in Sub-Sector:** founders who considered their graduate or postgraduate degree to be directly relevant to their startup.

Local Connectedness: A multi-variable assessment of the local community, including sense of community, relationships, and collisions between founders, investors, and experts.

- **Sense of Community Index:** a sub-factor of Local Connectedness capturing the degree to which founders informally receive help from investors, experts, and fellow founders.
- **Number of Relationships Between Founders:** number of quality relationships between local founders, where they know each other and can call upon the other for help "this week".
- **Collision Index:** a sub-factor of Local Connectedness capturing the number of events founders recently participated in and the number of collisions with startup community participants.

Organizations: Measurement of the quantity and quality of organizations, programs, events, and other activities is being conducted with support from the Kauffman Foundation.

Sector and Sub-Sector Definitions

Below are our definition for each startup sub-sector analyzed here. Note that sub-sectors are not mutually exclusive nor comprehensive—some startups are in sub-sectors we did not consider.

In addition, at least from patents, the data shows a clear tech convergence. Technology like AI software are increasingly interrelated, and we expect a similar convergence over time across sub-sectors.[1]

For more detail, including in our machine learning classification of sub-sectors, please see our Methodology section. For more coverage on each sub-sector, please see their respective sections in the report.

Advertising Tech (Adtech)

Advertising Tech captures different types of analytics and digital tools used in the context of advertising and marketing. Extensive and complex systems are used to direct, convey, or monitor advertising to target audiences of any size and scale.

Advanced Manufacturing & Robotics

Advanced Manufacturing involves smart technology to improve traditional manufacturing of products and/or processes. Robotics is the science and technology of robots, their design, manufacture, and application.

Agriculture Tech (Agtech)

Agriculture Tech captures the use of technology in agriculture, horticulture, and aquaculture with the aim of improving yield, efficiency, and profitability through information monitoring and analysis of weather, pests, and soil and air temperature.

Artificial Intelligence, Big Data & Analytics AI, Big Data & Analytics refers to an area of technology devoted to extracting meaning from large sets of raw data, e.g. often including simulations of intelligent behavior in computers.

Blockchain

Blockchain is a decentralized data storage method secured by cryptography. Cryptocurrencies are one of many innovations utilizing the blockchain. Companies building their product/architecture on top of this decentralized and encrypted technology are defined as blockchain companies.

1 European Patent Office, 2017.

Cleantech

Cleantech is comprised of sustainable solutions in the fields of Energy, Water, Transportation, Agriculture, and Manufacturing that including advanced materials, smart grids, water treatment, efficient energy storage, and distributed energy systems.

Consumer Electronics or Home Electronics (includes Wearables, Smart Devices)

Consumer Electronics or Home Electronics are electronic or digital equipment intended for everyday use, including smart devices used for entertainment, communications, and home-office activities as well as other wearables.

Cybersecurity

Cybersecurity is the body of technologies, processes, and practices designed to protect networks, computers, programs, and data from attack, damage, or unauthorized access.

Education Tech (Edtech)

Education Technology refers to an area of technology devoted to the development and application of tools (including software, hardware, and processes) intended to redesign traditional products and services in education.

Fintech

Fintech aims to improve existing processes, products, and services in the Financial Services industry (including insurance) via software and modern technology.

Gaming

Gaming involves the development, marketing, and monetization of video games and gambling machines, as well as associated services.

Health and Life Sciences

Health and Life Sciences uses digital technology to maintain or improve health via the diagnosis, treatment, and prevention of disease, illness, and injuries.

Metrics Covered on this Report, by Success Factor

Performance

Startup Output measures the estimated number of startups in an ecosystem. Generally speaking, ecosystems need higher Startup Output (more startups) in order to enjoy faster ecosystem growth and higher performance.

We calculate an **Exit Value Growth Index** by capturing the value of exits over a two-year period in order to smooth uctuations. Rapidly growing exit values capture attention from founders and investors from around the world and establish a track record of success.

Market Reach

To measure **Global Market Reach** in an ecosystem, we look at the average percentage of customers outside the country or continent.

Startups in Europe, for example, may sell to foreign customers in other European countries, but 'Global Market Reach - Out of Continent' captures how extensively they sell outside of Europe. Higher Global Market Reach means faster growth rates for startups.

Global Connectedness quantifies quality relationships that exist between startup leaders. We focus especially on connections with the world's top ecosystems, the ecosystems that are at the nexus of the global fabric of knowledge, ideas, people and organizations. Global Connectedness brings Global Know-How into an ecosystem and leads to greater Global Market Reach.

Travel Connections show how many relationships of founders were formed by traveling to top ecosystems, whereas Local Meeting shows how many people from other ecosystems made connections with startups in a given ecosystem. The latter is a good indicator of the strength of conferences and events in the ecosystem attracting other people to come and visit.

Globally-Leading Product metric reports the percentage of start-ups in an ecosystem who say they are developing a completely new product for global markets. This is an indicator of Founder Ambition, and is influenced by the degree of Global Connectedness in an ecosystem, i.e. to what extent startups tap into the global knowledge allowing them to develop a new business model or technology–and know it actually is new.

Our metric on **Targeting Global Market First** reports the percentage of startups in an ecosystem who are going global immediately or targetting the United States or the United Kingdom, markets where, more than anywhere else, startups from all over the world compete. This is an indication of Founder Know-How in terms of Going Global and Customer Development strategy.

Resource Attraction

Resource Attraction captures the extent to which entrepreneurs move to an ecosystem to start a startup and how many startups relocate to an ecosystem. Increasing Resource Attraction at the national and global levels is an important determinant of an ecosystem's growth rate.

Startup Leakage measures the percentage of startups that, in our global survey, reported leaving a certain ecosystem. A low score on Startup Leakage indicates that few startups have left that ecosystem in favor of another one.

Startup Experience

Startup Experience captures the pool of experience startups can draw on in an ecosystem. We measure it by looking at several metrics indicating the experience in and around the founding team and scaling experience in the ecosystem.

Our measure of **Experienced Growth Employees** captures how many employees working in customer acquisition (growth) roles at startups have at least two years of prior experience working in startups.

Startup Sub-Sector Performance Assessment

The purpose of the Startup Sub-Sector Performance Assessment is, first, to identify local Startup Sub-Sectors that already perform above average and, second, to identify locational advantages that support certain Sub-Sectors or may translate into internationally competitive Sub-Sector Performance in future. For each sub-sector, the overarching goal of the analysis is to identify patterns that make for relative success in the global comparison. Ultimately we want to inform the development of Sub-Sector strategies prioritizing one to three attractive Sub-Sectors, focusing enough resources to become globally competitive in these Sub-Sectors and drive ecosystem growth.

The Startup Sub-Sector Strengths Analysis focuses on the following aspects:

Startup Sub-Sector Analysis

Assessment of the startups that belong to one of the Startup Sub-Sectors with a special focus on their performance and overall attractiveness.

Existing Market & Legacy Industry Analysis

Identification and assessment of existing markets and potential legacy industries that are related to the startup sub-sector.

Talent & Knowledge Analysis

Assessment of university infrastructure and output that feeds talent and expertise demand of the sub-sector.

Startup Sub-Sector Analysis

We measure the Performance and the relative the different Startup Sub-Sectors (e.g. Fintech, Cybersecurity, Biotech) on a Global Level as well as on an Ecosystem Level. The Sub-Sector Performance Analysis is based on our Startup Ecosystem Assessment Model and examines the following factors, qualitatively and quantitatively. Due to data availability, some factors can only be evaluated at the global level.

Startup Output

- Estimate of the number of startups that are active in the Sub-Sector
- Startup Output Growth over the last 5 years

Exits, Unicorns & IPOs

- Number of all Startup Exits in the Sub-Sector & Exit Volume
- Sub-Sector Unicorns in Existence and their Valuations
- Analysis of Startups per Sub-Sector that went public
- Growth Rates for all of the above over the last 5 years

Funding

- Assessment of Total Funding per Sub-Sector: Number of Funding Events & Total Funding Amount
- Examination of High Growth Startup Development (Series B+)
- Growth Rates for all of the above over the last 5 years

Sub-Sector Founder Dynamics & DNA in relation to other Sub-Sectors:

- Founder Ambition, Go-Global Strategy & Global Connectedness of Sub-Sector Founders
- Prior legacy industry expertise of founders

Local Support for the Sub-Sector

- Accelerators with formal focus on the Sub-Sector
- Events with focus on the Sub-Sector
- VCs with formal focus on the Sub-Sector

Existing Market & Legacy Industry Analysis

In order to get an idea of the potential of the different sub-sectors we analyze the Market Size of related traditional industries. Example: For Adtech we have looked at the market for traditional Advertising & Marketing.

These are evaluated quantitatively and qualitatively, as applicable. qualitatively and quantitatively. Due to data availability, some factors can only be evaluated at the global level.

Related Market Size

- Identification of the relevant market segments that are linked to the sub-sector
- Analysis of the market size,market growth and future predictions (e.g. based on Market Cap, Sum of Sales, etc.)

Furthermore we are identifying and analyzing Legacy Industries that are related to speci c Startup Sub-Sectors (e.g. Financial Services Industry for Fintech).

Related Legacy Industry

- Identification of the relevant legacy industries that are linked to the Sub-Sector
- Analysis of the market size, market growth (e.g. Annual Revenue, People Employed, etc.)

The long-term goal is to identify Local Industry Strengths and to find out if and how they translate into higher Startup Sub-Sector Performance.

Talent & Knowledge Analysis

We apply our validated Talent sub-factors (Access, Cost, and Quality of Talent) to the different Startup Sub-Sectors. Additionally, we are going to put a special focus on Universities and Colleges, looking at local concentration of specific degrees or research focuses, qualitatively and quantitatively. Due to data availability, some factors can only be evaluated at the global level.

Universities & Colleges

- Specialized Degrees
- University Rankings
- University Graduates Analysis
- Research, Patents & Academic Citations
- Academic Awards & Nobel Prizes

Startup Classification Methodology

A foundation of this report is the classification of companies into the Sub-Sectors covered by our research. To build this foundation, we relied heavily on a combination of top-down and bottom-up clustering techniques and state-of-the-art machine learning algorithms.

In a nutshell, we followed a 4-step approach that led to the classification of companies as it is used throughout this report:

1. Clustering of tens of thousands of companies based on tags provided by our main data partners Crunchbase, Dealroom and Orb Intelligence
2. Identification of clusters of sufficiently large size within the innovation economy
3. Improved labelling of companies based on company descriptions to reduce tagging errors (e.g. tags often included misleading buzzwords)
   a. Manual labelling of a random selection of 10k+ companies
   b. Automatic labelling of companies based on frequent and useful tags within each of the clusters
4. Iterative sub-sector classification until our accuracy standards were met (see below for standards)
   a. Predictive machine learning algorithms based on natural language processing of company description texts provided by our data partners
   b. Manual review of false positives and false negatives to improve labels for next iteration

This semi-automated and iterative approach allowed us to move fast while still achieving high accuracy scores. More specifically, we required every predictive model to meet the following criteria:

- Recall,[2] Precision,[3] and F1 Score:[4] 0.85 or higher;
- ROC - AUC Score:[5] 0.9 or higher.

Additionally, to ensure the high quality of our classification process, we are going to add a manual review process following the 80-20 rule to make sure the largest and most successful companies.

To research this report, we relied on Startup Genome's proprietary database of almost half a million companies, our survey data covering over 12,000 ecosystems leaders across the globe, and several 1-on-1 interviews with entrepreneurs and ecosystem leaders in Melbourne. Moreover, LaunchVic brought their extensive and deep knowledge of the Victoria and Melbourne community to the writing of this report.

We also relied on our Global Startup Ecosystem Report 2017 and the methods there. In the following pages, we cover methodology and data sources for key elements of the Global Startup Ecosystem Report and the research done exclusively with a focus in Melbourne. For the complete methodology, data sources, and references in our Global Startup Ecosystem Report 2017, please see: startupgenome.com/report2017. For an overview of our Science of Ecosystem Assessment, see the 2018 Global Startup Ecosytem Report.

2 Recall: proportion of actual positive values found by the classifier.

3 Precision: proportion of positive predictions that were indeed positive.

4 F1 Score: Harmonic mean between Precision and Recall.

5 ROC-AUC Score: Area under the ROC; score contrasting true positives v. false positives, from 0.5 (random model) to 1 (perfect model).

Data Sources and References

We have focused our efforts on collecting measurable and verifiable information from startups and investors, local ecosystem partners, and third-party sources..

Primary Data Sources

In alphabetical order

Startup Compass Inc. (2015). The Startup Ecosystem Report 2015 Survey [Database].

CrunchBase (2017-2018). Crunchbase.com Database [Database]

Dealroom.co BV. (2017-2018). Dealroom.co Database [Database]

Orb Intelligence Inc. (2017-2018). orb-intelligence.com Database [Database]

Startup Genome LLC (2017). StartupGenome.com Database [Database]

Startup Genome LLC (2018). StartupGenome.com Database [Database]

References and Other Data

"93,000 Jobs and $1.6BN Economic Boost Created by Victoria's Online Marketplace Startups. LaunchVic, 24 Jan. 2018, https://launchvic.org/news_items/latest/a-review-of-melbournes-digital-marketplaces.

"About BioCurate." BioCurate,

http://biocurate.com/about-biocurate/

"40 Top Melbourne Startups To Watch." The Martec, www.themartec.com/insidelook/40-top-startups-melbourne.

"Afterpay and Touchcorp Merger Paves the Way for International Expansion." The Victorian Connection, 28 Jan. 2018, connection.vic.gov.au/afterpay-and-touchcorp-merger-paves-the-way-for-international-expansion/.

Andreessen, Marc. "Why Software Is Eating The World." The Wall Street Journal, Dow Jones & Company, 20 Aug. 2011, www.wsj.com/articles/SB10001424053111903480904576512250915629460.

"Australian Innovation System Report 2012." Collaboration Performance | Australian Innovation System Report 2012 | Department of Innovation, Industry, Science, Research and Tertiary Education, industry.gov.au/Office-of-the-Chief-Economist/Publications/Policy/AustralianInnovationSystemReport/AISR2012/chapter-5-links-and-collaboration/collaboration-performance/index.html.

"Australia 2030: Prosperity through Innovation." Department of Industry, Innovation and Science, industry.gov.au/Innovation-and-Science-Australia/Australia-2030/Pages/default.aspx.

Australia, Business Insider. "Mobile Ad Startup Unlockd Just Raised $30.8 Million Series B to Expand into Asia." Business Insider, Business Insider, 24 May 2017, www.businessinsider.com/mobile-ad-startup-unlockd-just-raised-308-million-series-b-to-expand-into-asia-2017-5.

Brander, James, et al. "The Effects of Government-Sponsored Venture Capital: International Evidence." 2010, doi:10.3386/w16521.

Case, Steve. The Third Wave: an Entrepreneur's Vision of the Future. Simon & Schuster Paperbacks, 2017.

Contributor, et al. "Dot-Com Survivors Downunder." Anthill Online, 21 Feb. 2010, anthillonline.com/dot-com-survivors-downunder/.

"Could Listing on the ASX Be for You?" Blog | Deloitte Australia, 10 Jan. 2018, blog.deloitte.com.au/is-listing-on-the-asx-for-you/.

"Crossroads 2017." StartupAus, startupaus.org/document/crossroads-2017/.

Endeavor Insight, "NYC Tech Map," http://nyctechmap.com/.

European Patent Office, "Patents and the Fourth Industrial Revolution," December 2017, http://documents.epo.org/projects/babylon/eponet.nsf/0/17FDB5538E87B4B9C12581EF0045762F/$FILE/fourth_industrial_revolution_2017__en.pdf.

Foley, Brett, and Matthew Burgess. "Oracle Clinches A$1.56 Billion Deal to Buy Australia's Aconex." Bloomberg.com, Bloomberg, 17 Dec. 2017, www.bloomberg.com/news/articles/2017-12-17/oracle-agrees-to-buy-australia-s-aconex-for-a-1-56-billion-cash.

"Global Liveability Has Improved for the First Time in a Decade." The Economist, The Economist Newspaper, 16 Aug. 2017, www.economist.com/blogs/graphicdetail/2017/08/daily-chart-10.

Heath, Michael. "26 Recession-Free Years Hide a Darker Picture for Australia." Bloomberg.com, Bloomberg, 2 Oct. 2017, www.bloomberg.com/news/articles/2017-10-02/miracle-economy-turns-mediocre-as-policy-drift-drags-australia.

Lerner, Josh, and Brian Watson. "The Public Venture Capital Challenge: the Australian Case." Venture Capital, vol. 10, no. 1, 2008, pp. 1–20., doi:10.1080/13691060701605538.

Lerner, Joshua. Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed - and What to Do about It. Princeton University Press, 2012.

"Mapping Victoria's Startup Ecosystem." Startup Vic, LaunchVic, and dandolopartners, 2017, https://startupvictoria.com.au/Startup_Victoria_-_Ecosystem_Mapping_Report_2017.pdf.

"Melbourne's Co-Working Culture." Knight Frank, www.knightfrank.com.au/research/melbournes-co-working-culture-february-2017-4438.aspx.

"Most Innovative Growth Companies." Forbes, Forbes Magazine, www.forbes.com/growth-companies/list/#tab:rank.

"Next Stop for Rome2rio as It Graduates from Cockroach Startup – Global Travel Brand for A to B, with Everything in Between." WIT, 28 Nov. 2017, www.webintravel.com/next-stop-rome2rio-graduates-cockroach-startup-global-travel-brand-b-everything/.

Nguyen, James. "Why This Startup Left Silicon Valley And Moved Back To Australia." Forbes, Forbes Magazine, 4 Dec. 2017, www.forbes.com/sites/nguyenjames/2017/11/29/why-99designs-moved-from-silicon-valley-back-to-australia/#557d712c4160.

Office of the Chief Economist, Department of Industry, Innovation and Science, "Australian Innovation System Report 2017," 2017, https://industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-Innovation-System.aspx.

Peterson, Lucas. "In Melbourne, a Thriving (and Mostly Free) Art Scene." The New York Times, The New York Times, 13 Jan. 2017, www.nytimes.com/2017/01/13/travel/melbourne-new-zealand-street-art-scene.html.

"Rankings." UBI Global, ubi-global.com/rankings/.

Shu, Catherine. "Oracle to Buy Construction Collaboration Software Maker Aconex for $1.2B in Cash." TechCrunch, TechCrunch, 17 Dec. 2017, techcrunch.com/2017/12/17/oracle-to-buy-construction-collaboration-software-maker-aconex-for-1-2b-in-cash/.

"SportBusiness Ultimate Sports Cities Awards 2016: New York City Triumphs at SportAccord Convention." SportBusiness Group, 20 Apr. 2016, www.sportbusiness.com/sportbusiness-ultimate-sports-cities-awards-2016-new-york-city-triumphs-sportaccord-convention.

Stangler, Dane, "Path-Dependent Startup Hubs," Ewing Marion Kauffman Foundation, 2013, https://www.kauffman.org/what-we-do/research/2013/09/pathdependent-startup-hubs-comparing-metropolitan-performance-hightech-and-ict-start-up-density.

Stangler, Dane. "The Ecosystem Trap." Ewing Marion Kauffman Foundation, 18 April 2016, www.kauffman.org/blogs/growthology/2016/04/the-ecosystem-trap.

Stangler, Dane. "Why Global Events Like Web Summit Matter For Startup Success." Forbes, Forbes Magazine, 7 Nov. 2017, www.forbes.com/sites/danestangler/2017/11/04/why-global-events-like-web-summit-matter-for-startup-success/#-64f8e51e6476.

Startup Photo Library, That Startup Show, http://startupphotolibrary.thatstartupshow.tv/.

"Startup Action Plan 2017-21." City of Melbourne, www.melbourne.vic.gov.au/business/doing-business/startups/Pages/start-up-action-plan.aspx.

"Startup Muster 2017 Annual Report." Startup Muster, 2017, https://www.startupmuster.com/reports/Startup-Muster-2017-Report.pdf.

Stensholt, John. "Envato: the Most Profitable Start-up You Haven't Heard Of." Financial Review, Financial Review, 26 Oct. 2016, www.afr.com/technology/envato-the-most-profitable-startup-you-havent-heard-of-20161025-gs9xm6.

"Strategy a Clarion Call to Action." InnovationsAus.com, www.innovationaus.com/2018/01/Strategy-a-clarion-call-to-action.

"Victorian Startup Investment Snapshot." LaunchVic, and dandolopartners, November 2017.pdf, https://launchvic.org/news_items/reports_archive/victorian-startup-investment-snapshot.

Wilkinson, David. "Australia's Dismal, Bottom-of-Pack Performance in University-Business Innovation." Financial Review, Financial Review, 31 July 2015, www.afr.com/technology/australias-dismal-bottomofpack-performance-in-universitybusiness-innovation-20150730-gio3x8.

"The World's Most Liveable Cities." The Economist, The Economist Newspaper, 18 Aug. 2016, www.economist.com/blogs/graphicdetail/2016/08/daily-chart-14.

Startup Genome

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