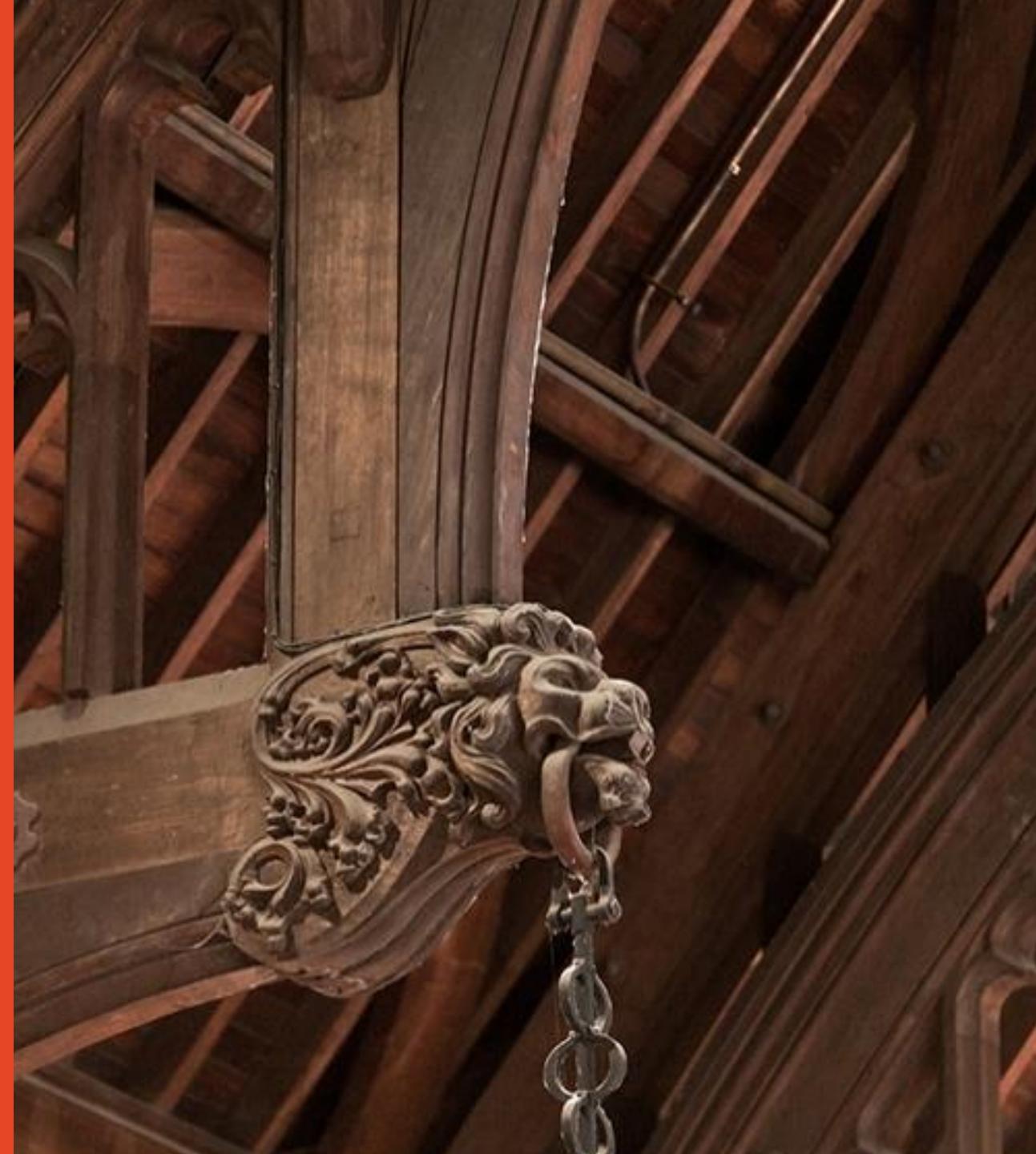


# **INFO5992 Understanding IT Innovations**

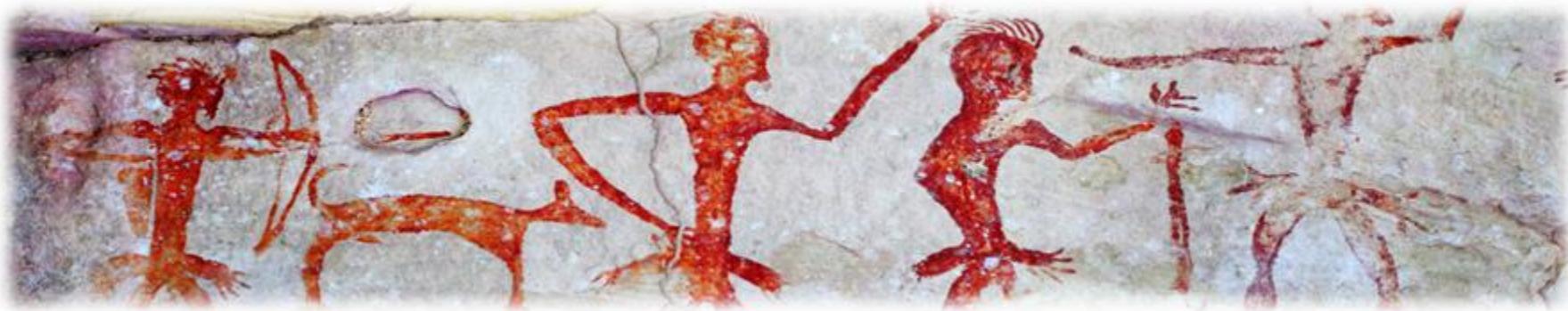
## **Week 11: Innovation ecosystems**

Semester 1, 2025



# Acknowledgement of Country

*I would like to acknowledge the Traditional Owners of Australia and recognise their continuing connection to land, water and culture. I pay my respects to the first nations people and their Elders, past, present and emerging.*



# Copyright warning

**COMMONWEALTH OF AUSTRALIA**

**Copyright Regulations 1969**

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# UoS Semester Outline

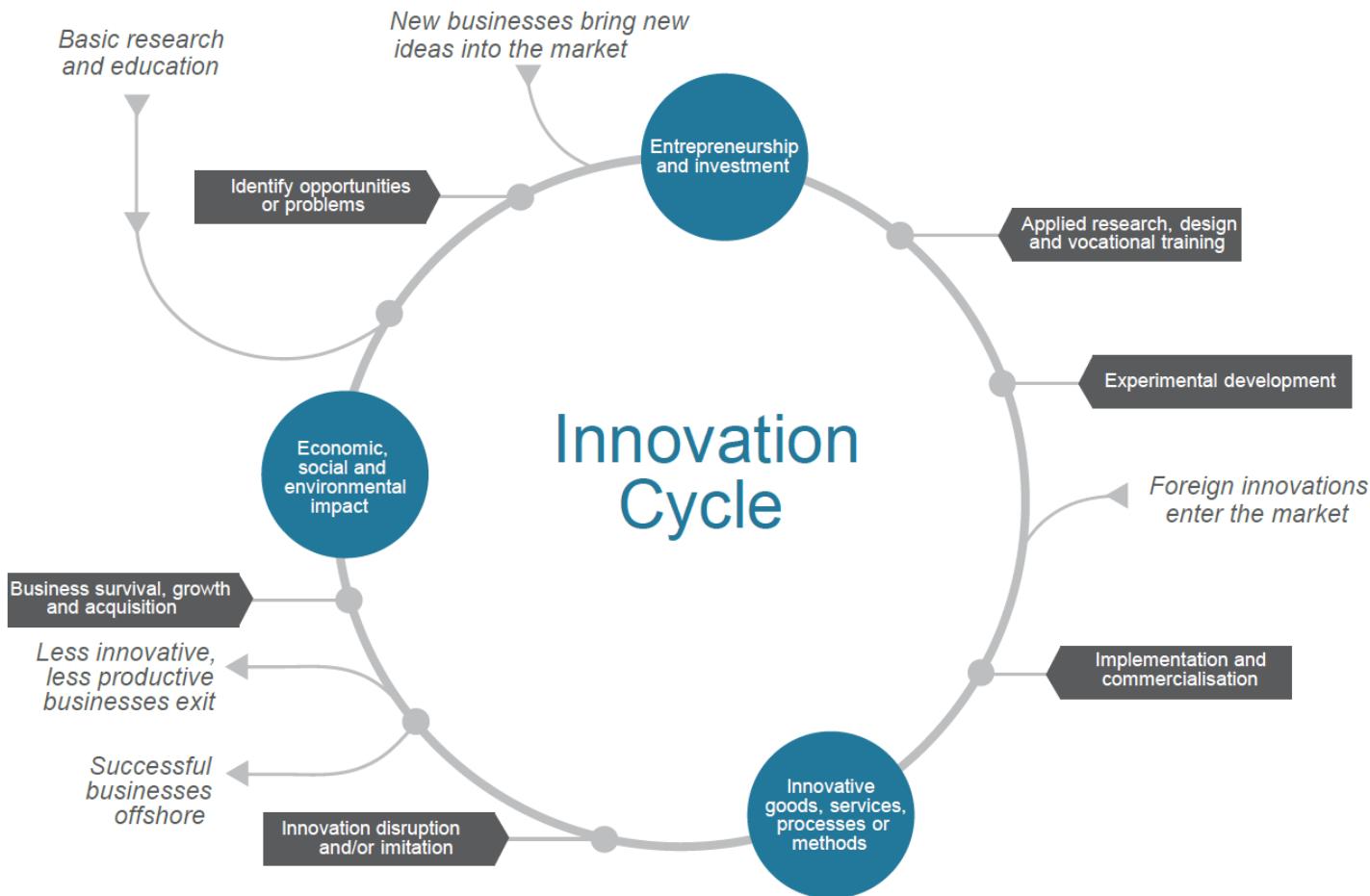
Week		Learning Outcomes	Lectures
<b>Module 1: Innovation Framework</b>			
Week 01	L01, LO2, LO3	Unit of Study Introduction, Administrivia, Definition of IT Innovation, Importance of Innovation to a Country, General Purpose Technologies, Overview of Emerging Technologies	
Week 02	LO4, LO5	Innovation Frameworks I: Dynamics of IT Innovation, Dominant Design	
Week 03	LO6	Innovation Frameworks II: Disruptive Innovation, Innovator's Dilemma, Value Chain & Value Network	
<b>Module 2: Development of Key Intellectual Property in the Modern Age</b>			
Week 04		Introduction to Open Innovation and Closed Innovation Distributed Innovation I: Product Platforms, Web APIs	
Week 05	LO7	Distributed Innovation II: Crowdsourcing, Free and Open- Source Software, Open Data	
Week 06		Distributed Innovation III: Platform Ecosystems, User Innovation	
<b>Mid semester break</b>			
<b>Module 3: Commercialisation Process and Business Strategies for Emerging Technologies</b>			
Week 07		Commercialisation I: Startup vs Traditional Companies, Lean Startup Methodology and Agile Development	
Week 08	LO8	Commercialisation II: Customer Development Process, Value Proposition Canvas	
Week 09	LO8, LO9	Commercialisation III: Innovation Management, Business Model Canvas	
		Commercialisation IV: Capital & Fundraising for IT Innovation	
Week 10	LO11, LO12	Organisational Cultures and Structures Supporting Innovation, Judging IT Innovation	
<b>Module 4: Innovation At-Scale</b>			
Week 11	LO10	Innovation Ecosystem: Silicon Valley and Australia	<i>Example</i>
Week 12	N/A	Course Review   Innovation Pitch Presentation	
Final Exam			

# Agenda

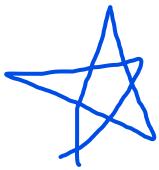
- Innovation Ecosystem – Silicon Valley (Case Study)
- Case Study – Countries learning from Silicon Valley
- Australia Case Study

# Innovation Cycle

# Innovation Cycle



# Innovation Ecosystem



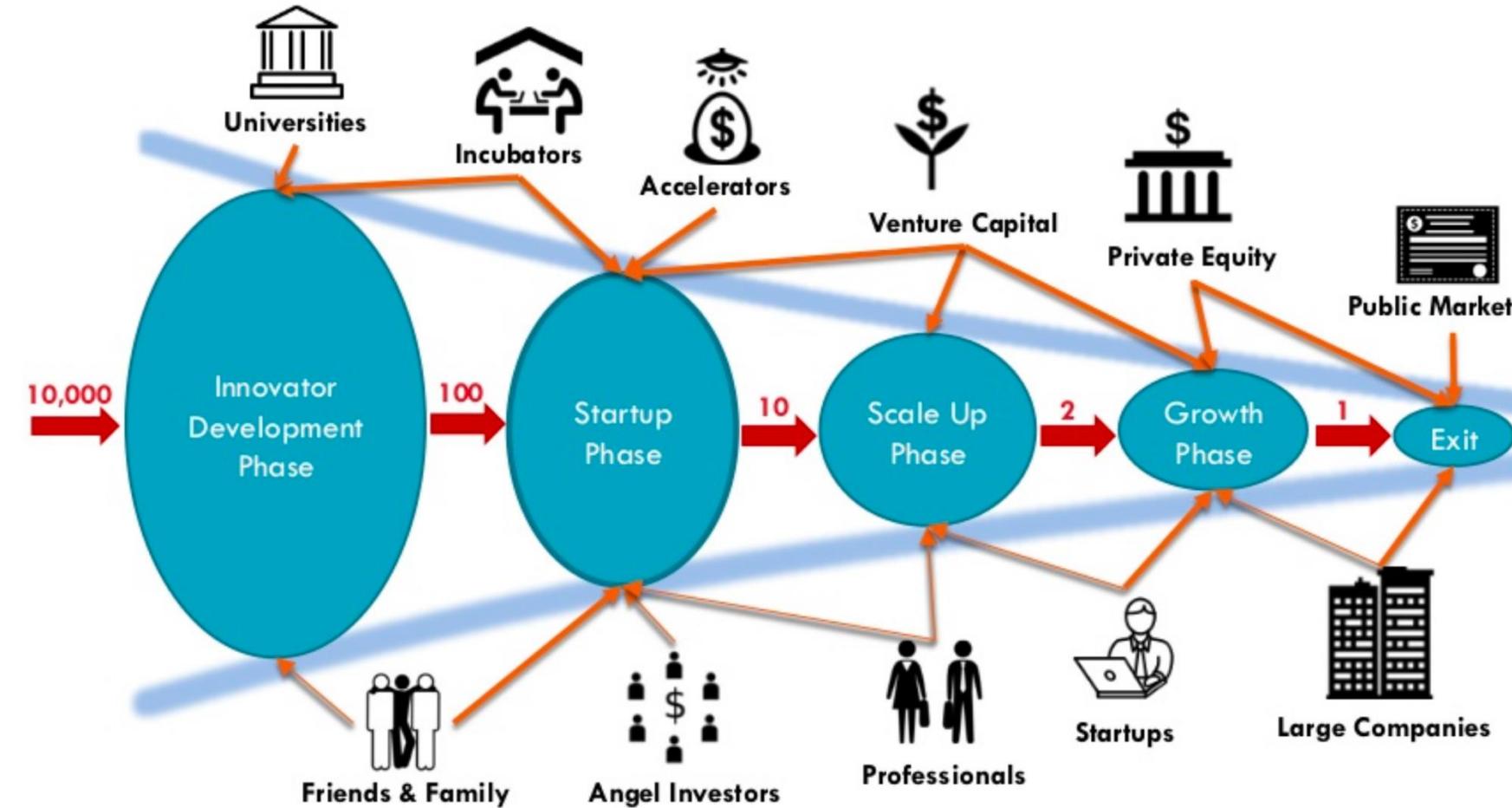
# The innovation system – what is it?

- An innovation system is **an open network of organisations** that interact with each other and operate within framework conditions that regulate their activities and interactions.
- These three components of the innovation system —
  - innovation activities,
  - networks and
  - framework conditionscollectively function **to produce** and **diffuse** innovations that have, in aggregate, economic, social and/or environmental value.

<https://www.industry.gov.au/publications/australian-innovation-system-monitor> (Oct'24)

# The innovation ecosystem – An example representation

Understand each step



The process of developing, testing and scaling innovation for sustainable impact cannot be undertaken by any one actor working in isolation

<https://www.idiainnovation.org/ecommerce-actors> (May'25)

Source: <https://www.slideshare.net/MaherHakim/building-innovation-ecosystem> (May'25)

# Case Study: Silicon Valley – Tech company density

**There are 342 tech  
billionaires around the  
world, and 84 of them live  
in Silicon Valley (2024)**

<https://www.forbes.com/sites/phoebeliu/2024/04/02/tech-billionaires-have-added-an-astonishing-750-billion-to-their-fortunes-over-the-past-year/?sh=1384b3af6d2b> (May'25)



THE UNIVERSITY OF  
SYDNEY

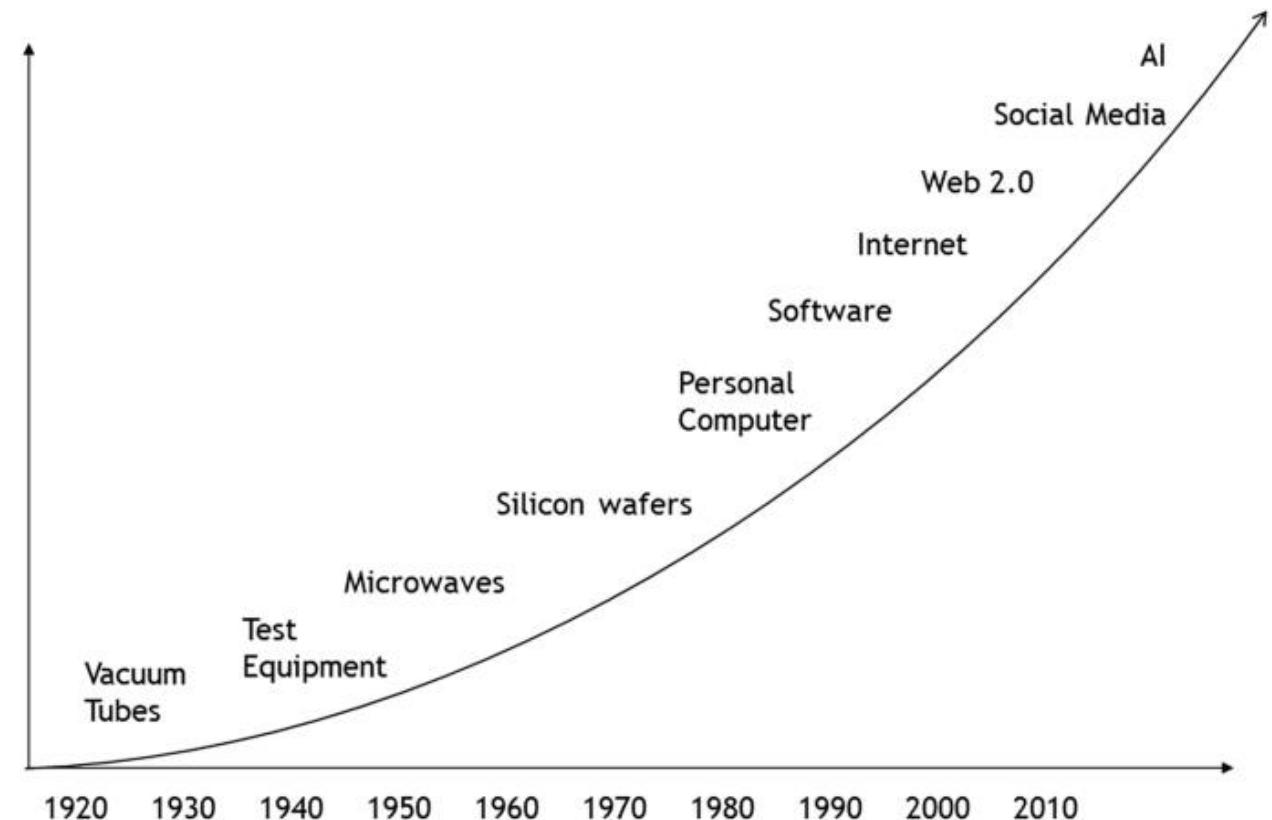


# **Some of the companies built in Silicon Valley**

- Adobe
- Airbnb
- AMD
- Apple
- Cisco
- eBay
- Google
- HP
- Intel
- Intuit
- Juniper Networks
- LSI Logic
- Nvidia
- Oracle
- PayPal
- SanDisk
- Symantec
- Uber
- Yahoo!

# Silicon Valley: Importance during phases of IT innovation history

- What factors lead to a successful innovation ecosystem?
- Silicon Valley as an example of a successful innovation ecosystem



# Factors that led to the emergence of Silicon Valley as a powerful tech ecosystem

(From Steve Blank):

- “Cold War research in microwaves and electronics at Stanford University
- A Stanford Dean of Engineering who encouraged startup culture over pure academic research
- Cold War military and intelligence funding driving microwave and military products for the defence industry in the 1950s
- A single Bell Labs researcher decided to start his semiconductor company next to Stanford in the 1950s, which led to the wave of semiconductor startups in the 1960s/70s

<https://steveblank.com/2017/05/09/innovation-change-and-the-rest-of-your-life/> (May'25)

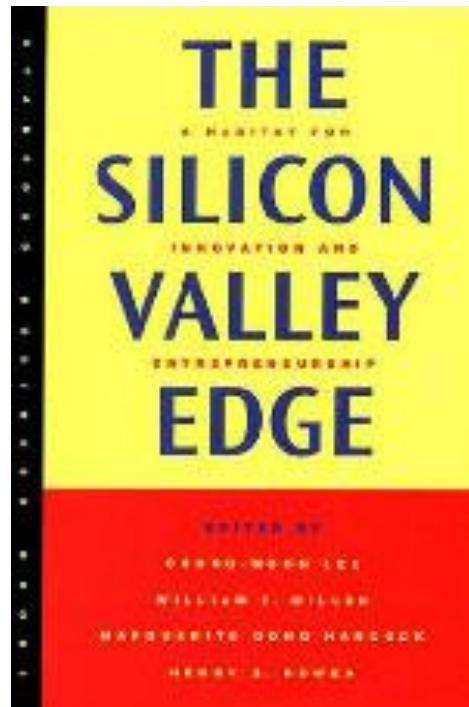
# Factors that led to the emergence of Silicon Valley as a powerful tech ecosystem (Con)

(From Steve Blank):

- the emergence of Venture Capital as a professional industry,
- the personal computer revolution in the 1980s,
- the rise of the Internet in the 1990s and finally
- the wave of Internet commerce applications in the first decade of the 21st century.
- The flood of risk capital into startups at a size and scale unimaginable initially but in the middle of the 20<sup>th</sup> century would have seemed laughable.”

<https://steveblank.com/2017/05/09/innovation-change-and-the-rest-of-your-life/> (May'25)

# Silicon Valley: Importance of the innovation ecosystem



## The Silicon Valley Edge: A Habitat for Innovation and Entrepreneurship

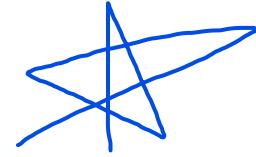
By Lee, Miller, Hancock and Rowen (2000)

How does Silicon Valley work? Why here and not somewhere else? Although many accounts chronicle the story of Silicon Valley through the lives of important entrepreneurs or companies, these are insufficient to answer the compelling questions of how and why the Valley works. This book argues that the Valley's sustaining edge arises from factors that go beyond any individual or single company. Rather, the Silicon Valley edge stems from an entire environment, or habitat, honed for innovation and entrepreneurship.<sup>2</sup> This habitat has developed endogenously over time, co-evolving with generation after generation of new firms and new technologies.

[The Silicon Valley Edge: A Habitat for Innovation and Entrepreneurship | Stanford Graduate School of Business \(May'25\)](#)

# Why is Silicon Valley a successful innovation ecosystem?

1. Strong research-driven universities (with endowments)
2. Globally experienced repeat entrepreneurs
3. Sophisticated risk capital
4. Social capital
5. Knowledge sharing
6. Tolerance for risk-taking
7. Creative destruction
8. Constructive failure
9. Positive aggregate returns
10. Supportive government policy



# 1. Strong research-driven universities (with endowments)

- Endowment: Approx US\$36.5 billion (Aug. 2023)
- Fundraising: Approx > US\$1 billion per year



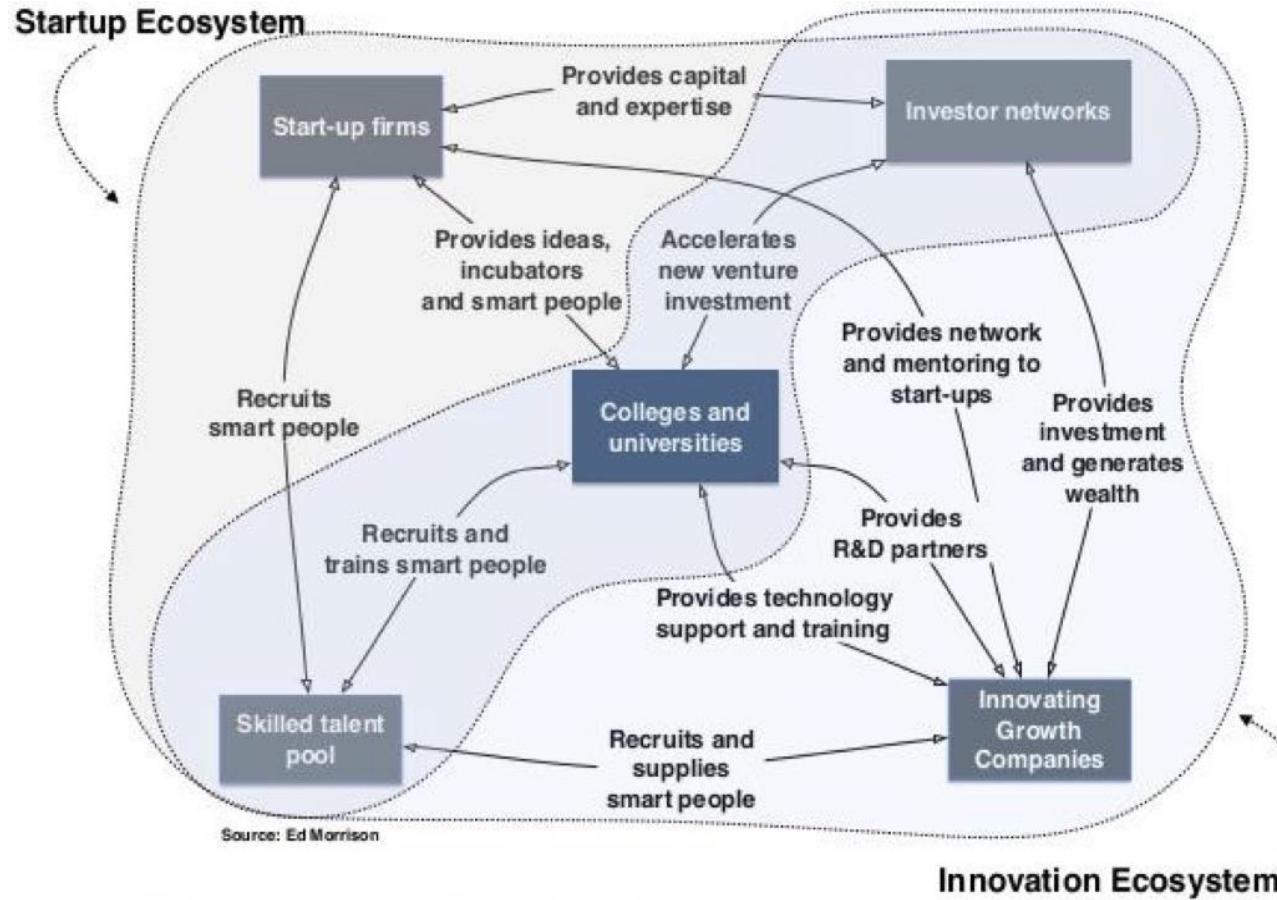
<http://stanford.edu>  
**Stanford University**



<http://berkeley.edu>  
**University of California Berkeley**

<https://facts.stanford.edu/administration/finances/> (May'25)

# University Operate Within Ecosystems



<http://www.slideshare.net/edpro/strengthening-purdue-innovation-ecosystem>

# Stanford Bio-X Interdisciplinary Initiatives Seed Grants Program (IIP) Seed Fund

- IIP awards are given to teams of faculty with **early-stage, high-risk ideas** that traditional sources could not fund.
- Stanford Bio-X awards approximately \$4 million every other year through two-year seed grants. **The current two-year grant level is \$200,000 per project.**
- The first seven rounds of IIP awards (starting in 2000) **resulted in over \$270 million** in external funding awarded to the university.
- **This tenfold return on investment by the IIP awards** has supported hundreds of graduate students and post-doctoral fellows, resulted in hundreds of publications and dozens of patents filed, and accelerated the pace of scientific discovery and innovation.



[Seed Grants | Welcome to Bio-X \(stanford.edu\)](#) (May'25)

# USyd's Industry & Business Partners

Partnership\_

## Industry and business partnerships

### Sharing expertise to solve problems

We connect our leading researchers and students with industry, business and government partners. We're working with our partners to tackle issues ranging from climate change to mental health.

### Why partner with us?

We have both the experts and facilities to accommodate your research and development (R&D) needs.

When you partner with us, you'll work with people who are leaders in their fields, and have the ability to solve some of the greatest challenges faced by industry, businesses and government.

You'll also have access to our state-of-the-art equipment and facilities.

**Make an enquiry**  
Contact the engagement team  
→



- Offers:
  - Experts
  - Testing
  - professional services

<https://sydney.edu.au/about-us/engage-with-us/industry-and-business-partners.html> (May'25)

## 2. Globally experienced REPEAT entrepreneurs

Eg Elon Musk



Twitter



TESLA



THE  
**BORING**  
COMPANY



### 3. Sophisticated Risk Capital



ANDREESSEN  
HOROWITZ

Sophisticated venture capital



Sophisticated angel investors  
Eg Ron Conway

"With us and many other angel groups, Y Combinator startups get moved to the top of the list automatically." – Ron Conway

Sophisticated corporate investors

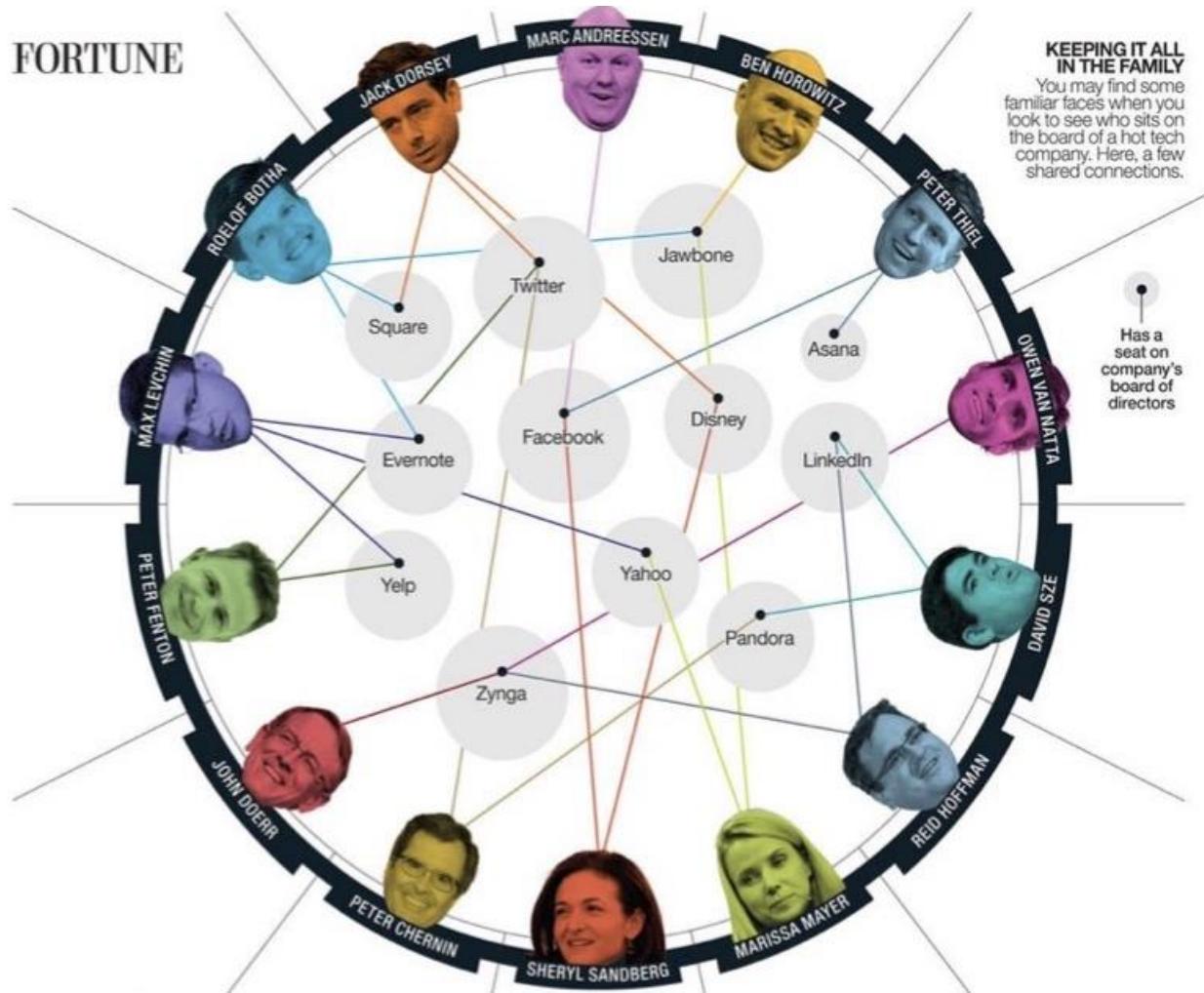


Sophisticated stock exchange

1/3 of all venture capital investment in USA is invested in Silicon Valley (SV has < 1% of US population)



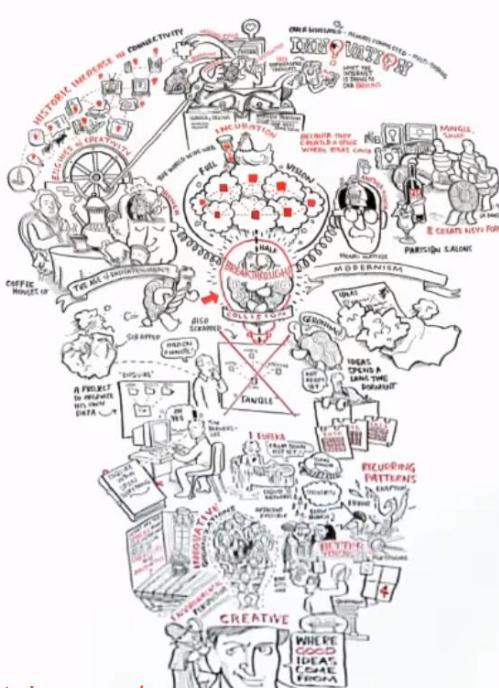
## 4. Social capital



“Some call it an ecosystem; others call it incestuous. In Silicon Valley every prominent player is just an adviser, an investor, a co-founder, an acquirer, or a director away from another. It’s an industry worth trillions that operates like a small town.”

## 5. Knowledge Sharing

- Meetings and Forums
- Expertise in every corner
- Giving back to the community
- Liquid Network



[https://www.youtube.com/  
watch?v=NugRZGDbPFU](https://www.youtube.com/watch?v=NugRZGDbPFU)

## 5. Knowledge Sharing – Accelerator for startups

- Nearly 5000 startups so far (since 2005)
- >100 new startups per year
- Market cap of companies > \$80b
- Startup founders come back to mentor later founders
  - Community of > 3000 founders



<https://www.ycombinator.com/>



"Y Combinator is the best program for creating top-end entrepreneurs that has ever existed."

***Marc Andreessen***, General Partner, Andreessen Horowitz

## 5. Knowledge Sharing – Accelerator for startups

- Ycombinator startups include:
  - Reddit (#7 most visited site in the world)
  - Dropbox (>500m users)
  - Airbnb (> \$30b valuation)
  - Scribd (>80m active readers)
  - Stripe (> \$5b valuation)
  - Docker
  - Pebble, etc.



Figures as at May 2017

## **6. Tolerance for Risk Taking**

- Entrepreneurs take risks by taking on ambitious missions
- Employees take risks by working for unproven startups
- Banks take risks by lending to unproven startups
- Attorneys take risks by doing pro-bono work
- Property owners take risks by offering accommodation to unproven startups

# Example: Jawbone

## After burning through \$1 billion, Jawbone's Hosain Rahman has raised \$65 million more

1 day ago Connie Loizos

<https://techcrunch.com/2019/05/11/after-burning-through-1-billion-jawbones-hosain-rahman-has-raised-65-million-more/> (May'25)

Not everyone gets a second chance in Silicon Valley. Entrepreneur Hosain Rahman has been given many more than that. Though his last company, Jawbone, which produced wireless speakers and Bluetooth ...



[Jawbone Health](#)

# 7. Creative destruction – Creating new Businesses while destroying old ones

## S&P 500 Churn Over the Past Decade

Sample companies that have entered and exited the index since 2002

### Entered the index:



### Exited the index:



S&P 500 index is a stock market index of companies listed on Nasdaq and NYSE

<http://www.aei.org/wp-content/uploads/2014/01/Churn.jpg>

## 8. Constructive Failures



EO Personal Communicator (originally by Go Corp)

Failed in market but staff went on to form:



## 9. Positive Aggregate Returns

- Many failures, so need large successes
- For example,
  - In 1997, Benchmark invested \$6.7M in eBay. In 1999, this was worth \$5b
  - Peter Thiel, Facebook's first big investor, has sold off most of his stake, turning his initial \$500,000 investment in 2004 into more than \$1 billion in cash in 2012

<https://money.cnn.com/2012/08/20/technology/facebook-peter-thiel/index.html> (May'25)

## **10. Supportive government policy**

**For example:**

- Stock options are not treated as taxable income until exercised
- Flexible labour laws
- Tax incentives to encourage new ventures
- Large Govt/defence R&D funding

# Learnings from Silicon Valley

# Replicating Silicon Valley

- Many cities worldwide have tried to replicate the success of Silicon Valley, which includes a complex mix of factors.
- While different cities offer some of the critical ingredients for replicating Silicon Valley's success, it's worth noting that each has its unique strengths and challenges.

1. **Strong research-driven universities**
2. **Repeat entrepreneurs**
3. Sophisticated risk capital
4. **Social capital**
5. Knowledge sharing
6. Tolerance for risk taking
7. **Creative destruction**
8. **Constructive failure**
9. Positive aggregate returns
10. Supportive government policy

# San Francisco and the Bay Area

- This region is home to some of the world's most successful technology companies, including Apple, Google, Facebook, and Uber. It has a highly educated workforce and a thriving startup ecosystem.



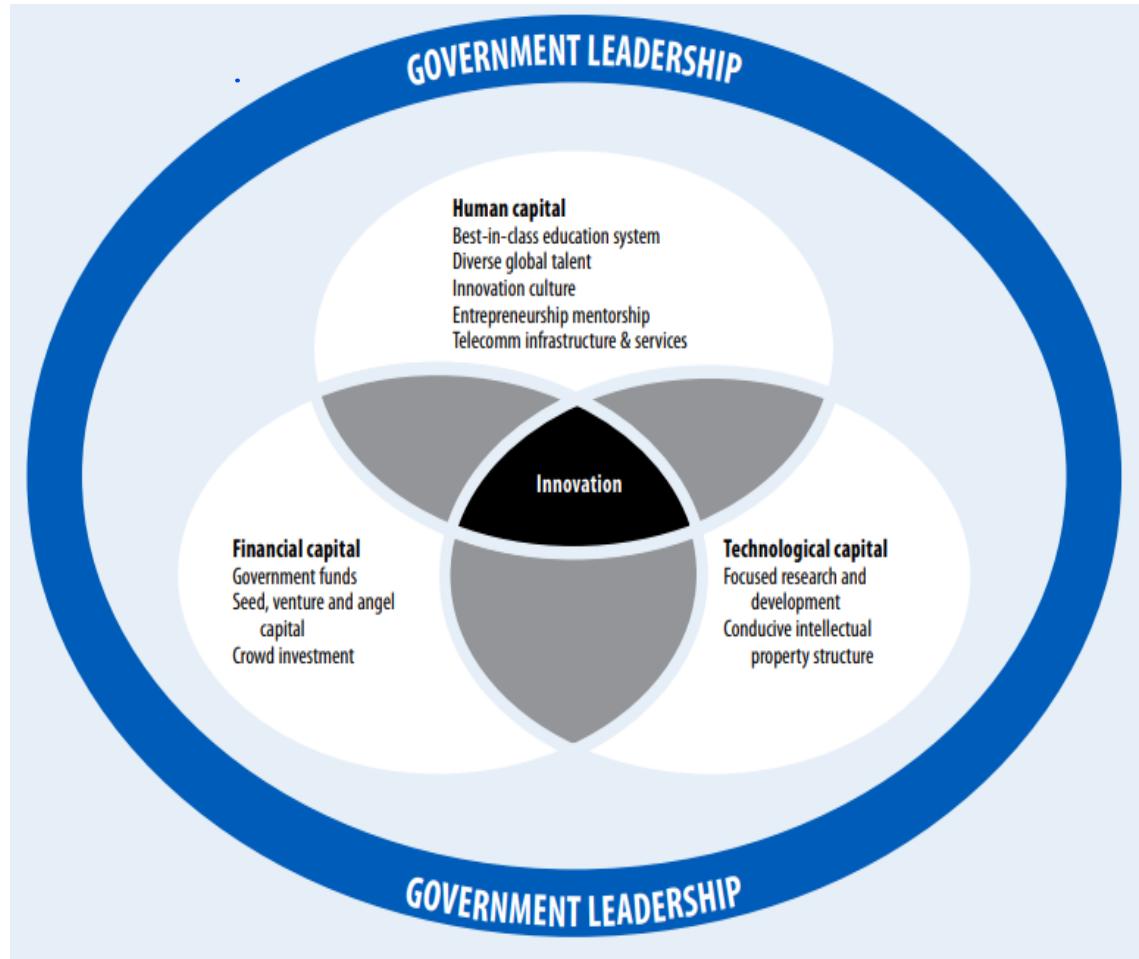
[These Bay Area-Based Tech Companies Pay Millions In Property Taxes \(bisnow.com\)](#) (May'25)

## San Francisco and the Bay Area

- Access to capital: Leading venture capital firms that provide early-stage funding to startups. The region has a robust network of angel investors and seed funds.
- Skilled workforce and research capacity: A highly educated workforce, with many graduates from the region's top universities, including Stanford and UC Berkeley. The region also attracts talent from around the world, with many immigrants.
- Culture: A long history of creating new industries, from semiconductors to social media, constantly looking for new opportunities to disrupt traditional business models.

# UAE “Innovation Eco-System”

- The three pillars of the innovation ecosystem are human capital, financial capital, and technological capital.
- The UAE is actively working to promote innovation through policies and targeted initiatives aimed at developing the human element of the ecosystem while also addressing the key enablers of the human factor: the requirements of financial and technological capital.



## Beijing and Shanghai

- Huge domestic market: China has a huge and rapidly growing domestic market, with over 1.41 billion people - a massive opportunity for companies in the technology sector, especially those that cater to consumer needs.
- Access to capital, Highly skilled workforce, Government support, Strong research institutions

## Summary

- Healthy ecosystems are important for innovation
- Successful areas (e.g. Silicon Valley) are successful because of the ecosystem, not just the people and companies
- We can learn from successful innovation ecosystems (and the Australian government is putting in place changes to improve the Australian ones)
- There are lots of people who are able and willing to help in the ecosystem, so always feel free to ask for help

# **Australia's Innovation Ecosystem**



THE UNIVERSITY OF  
**SYDNEY**

# Navigating the Ecosystem

## Sydney Trains Network



- T1 Learning**
- T2 Accelerators & Incubators**
- T3 Venture Capital**
- T4 Australian Startups**
- T5 Emerging Technologies**
- T6 Industries**

Stop  
Interchange  
Interchange  
**End of line**



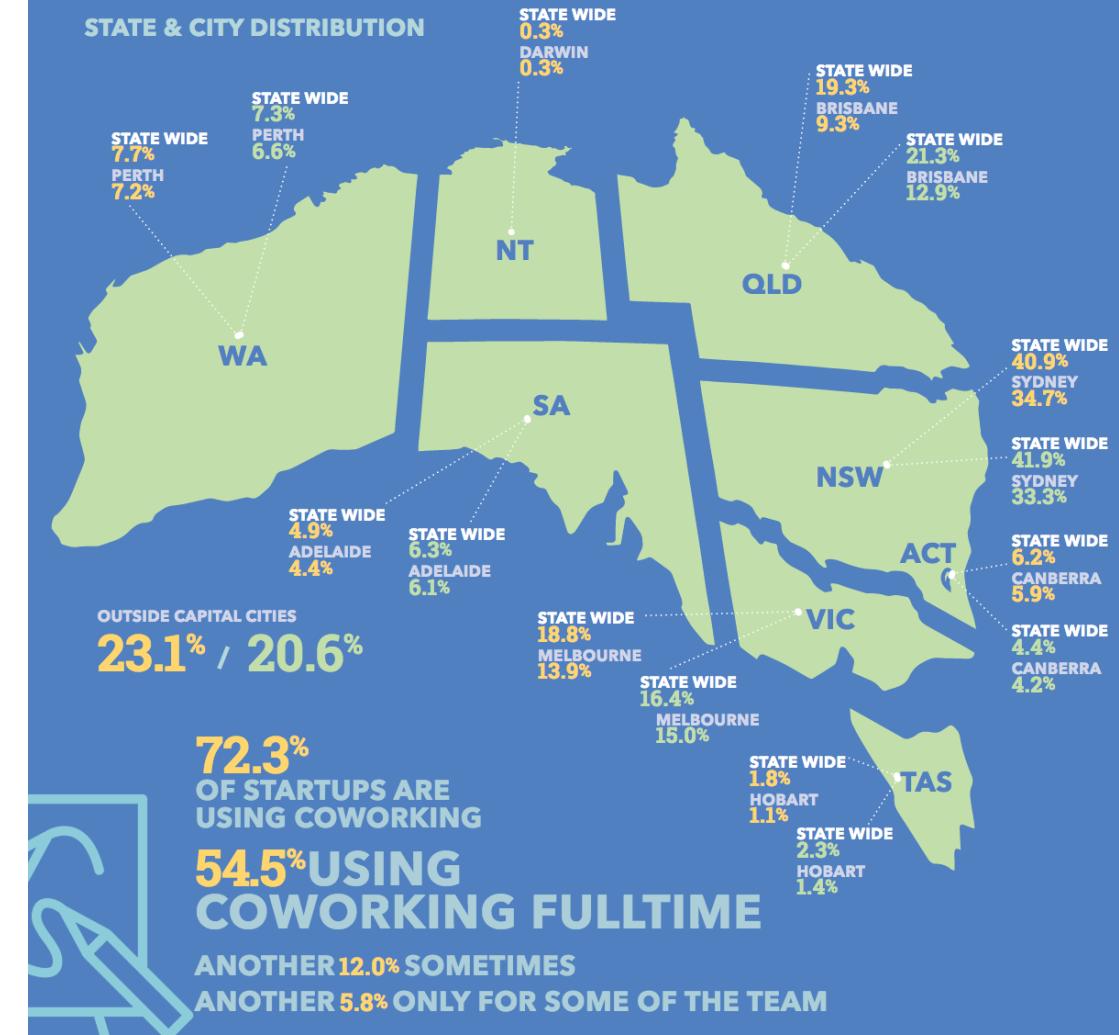
# The Australian Startup Ecosystem

- The 2018 Startup Muster report is the fifth annual report from Startup Muster, highlighting the progress, challenges and opportunities in the Australian startup ecosystem.



## WHERE ARE THEY? FOUNDERS & SUPPORTERS

### STATE & CITY DISTRIBUTION



# Founding team profile

Who and what was their experience?

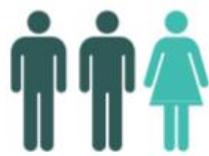
Average age of startup by survey year (months)



Number of people in founding team



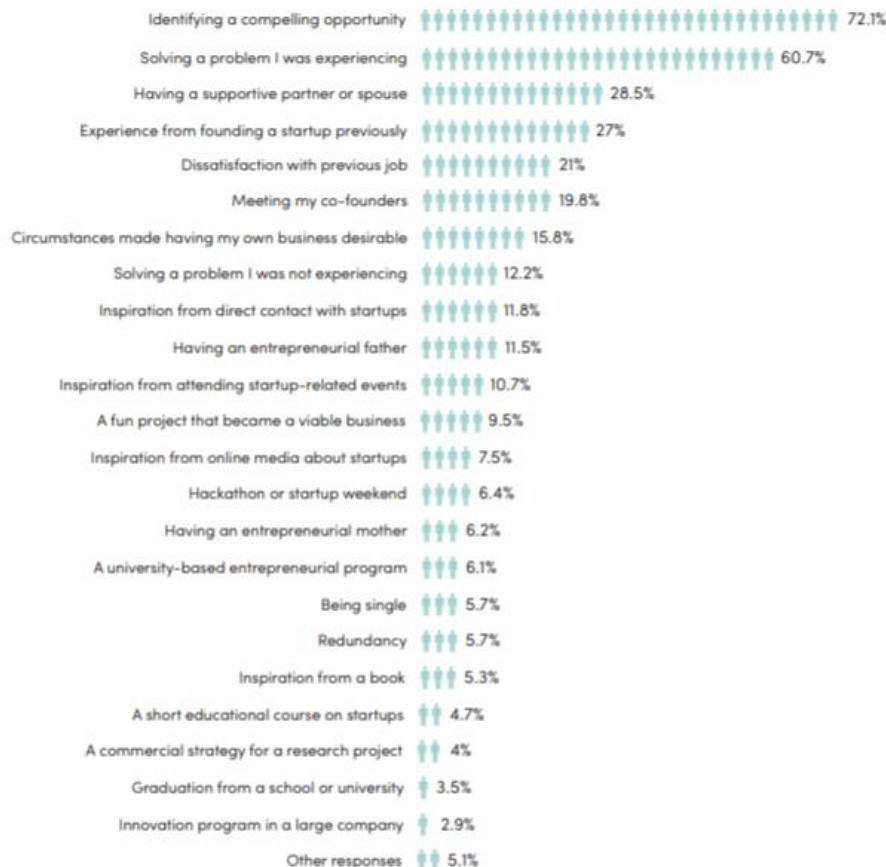
Startups with female founders



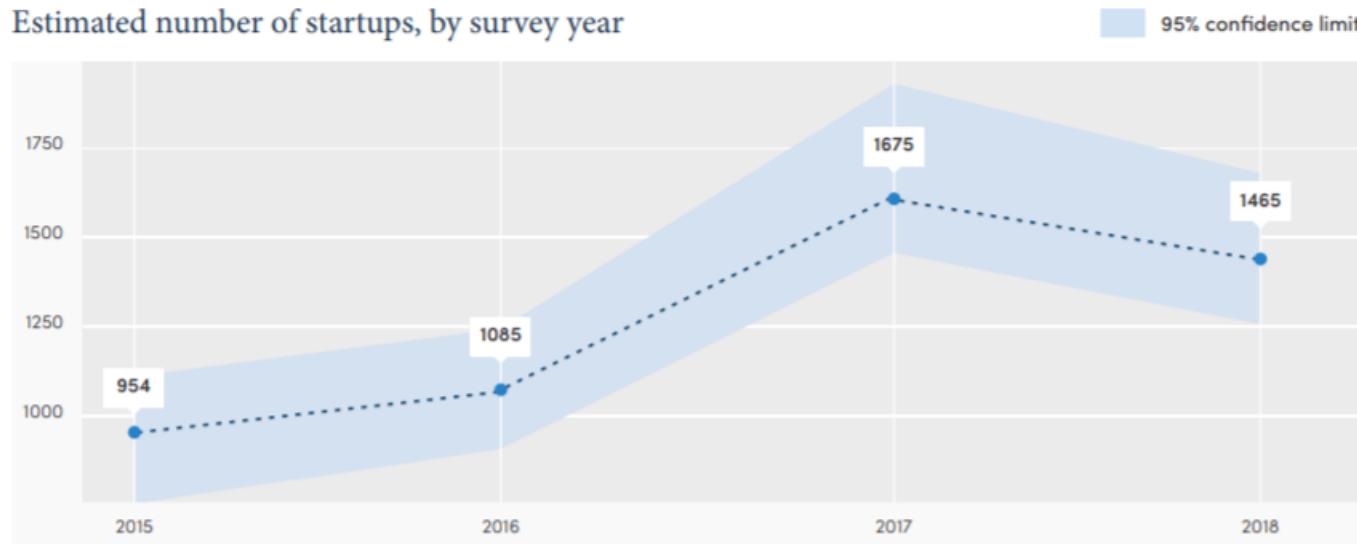
31.0%

Of startups have one or more women on the founding team

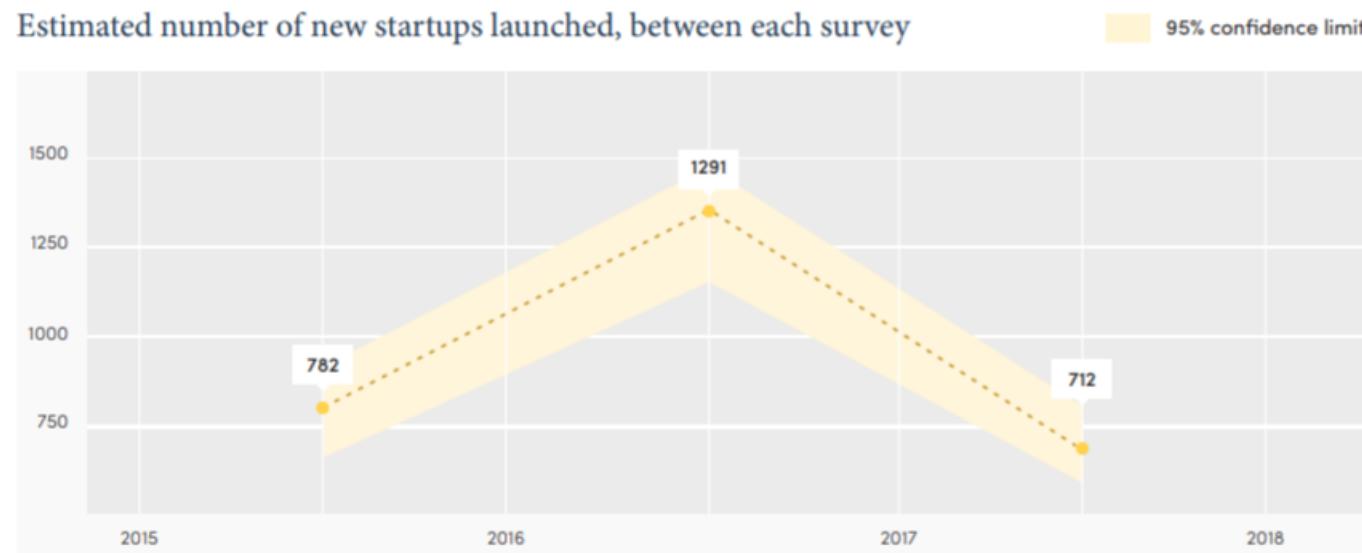
Events critical to founding a startup



Estimated number of startups, by survey year



Estimated number of new startups launched, between each survey



<https://www.startupmuster.com/>

## ... so draw on the ecosystem



# Some of Sydney's innovation ecosystem

- Co-working spaces: eg

- Fishburners, <https://fishburners.org/>
- BlueChilli, <https://www.bluechilli.com/>
- Stone & Chalk, <https://www.stoneandchalk.com.au/>
- Sydney Startup Hub - Investment NSW



- Collaborative ecosystem
- building a diverse and inclusive community of operators, founders and partners, powering early-stage entrepreneurs to learn and grow.

## Some of Sydney's innovation ecosystem

- Government programs: e.g. R&D Tax Incentives
- Universities
- Government-funded research organisations, e.g.
  - CSIRO (including Data61) <https://www.csiro.au/>
- Established companies doing software/hardware development (Atlassian, Google, Canon, Optiver, Dolby, Freelancer, Canva, etc.)
- Hackerspaces, etc

# Industry innovation – We are boosting innovation in Australian businesses and building competitive industries.

## Business innovation grants and initiatives

---

Our department administers programs and initiatives that support research, entrepreneurship and commercialisation.

### Boosting Female Founders (BFF) Initiative →

We help women entrepreneurs grow their startups in national and international markets through the BFF Initiative.

### Business Research and Innovation Initiative (BRII) →

BRII grants encourage businesses to develop innovative solutions to government challenges.

### Cooperative Research Centres (CRC) Grants →

CRC Grants support medium to long-term collaborative research for up to 10 years.

### Cooperative Research Centres (CRC) Projects grants →

CRC Project grants support short-term collaborative research for up to 3 years.

### Entrepreneurs' Programme →

The Entrepreneurs' Programme gives businesses access to advice and grant funding.

### Industry Growth Centres →

Industry growth centres are driving innovation, productivity and competitiveness in 6 key growth industry sectors.

### Research and Development (R&D) Tax Incentive →

The R&D Tax Incentive stimulates business investment in R&D through tax offsets.

### Venture capital →

We provide venture capital tax benefits to encourage investment in innovative early-stage businesses.

## Support for specific Tech sector

Five key strategy areas to promote further growth and innovation in the industry. The strategy aims to:

- support industry in commercialising research and development
- grow exports and attract investment into the NSW medical technology sector
- support skills development
- improve connectivity and collaboration within the NSW medical technology industry
- improve the business environment.



[Medical technology - Industry sectors \(nsw.gov.au\)](http://Medical%20technology%20-%20Industry%20sectors%20(nsw.gov.au).pdf) (May'25)

# Microsoft for Startups Pegasus Program

- Microsoft is extending the Startup Founders Hub, its self-service platform that provides founders with free resources, including Azure credits, with a new incubator program called the Pegasus Program.

## Dedicated to your growth

Boost your customer acquisition with access to an exclusive engagement program.



### Unlock deal opportunities

Tap into Microsoft's 40+ years of enterprise experience to connect with customers across verticals. Our team of industry veterans will help you navigate the sales processes, with a proven track record of helping startups succeed.



### Go-to-market with Microsoft

Connect to Microsoft sales channels where you can sell your solution to thousands of top Microsoft customers. We also provide support through the go-to-market process, from account targeting strategy to co-marketing.



### Bolster your tech team

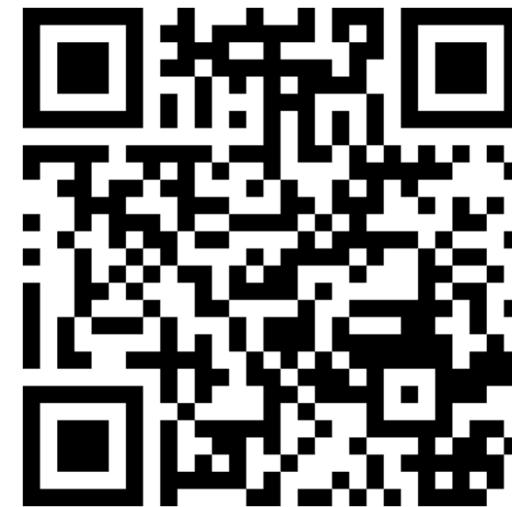
A dedicated Cloud Solutions Architect (CSA) supports your technical success and helps you leverage the best of Microsoft technology. Your CSA will help get your product optimized for production-grade deployment, ensure your tech is enterprise-ready, and provide the technical resources needed to accelerate your business, including prioritized access to Azure's AI offerings.

## What makes Sydney a good candidate to become the Silicon Valley of Australia?



<https://www.menti.com/al8yuiqm5p3o>

## What changes are needed in Sydney to make it the Silicon Valley of Australia?



- <https://www.menti.com/alpcpkpznead>