NSW Innovation and Productivity Council

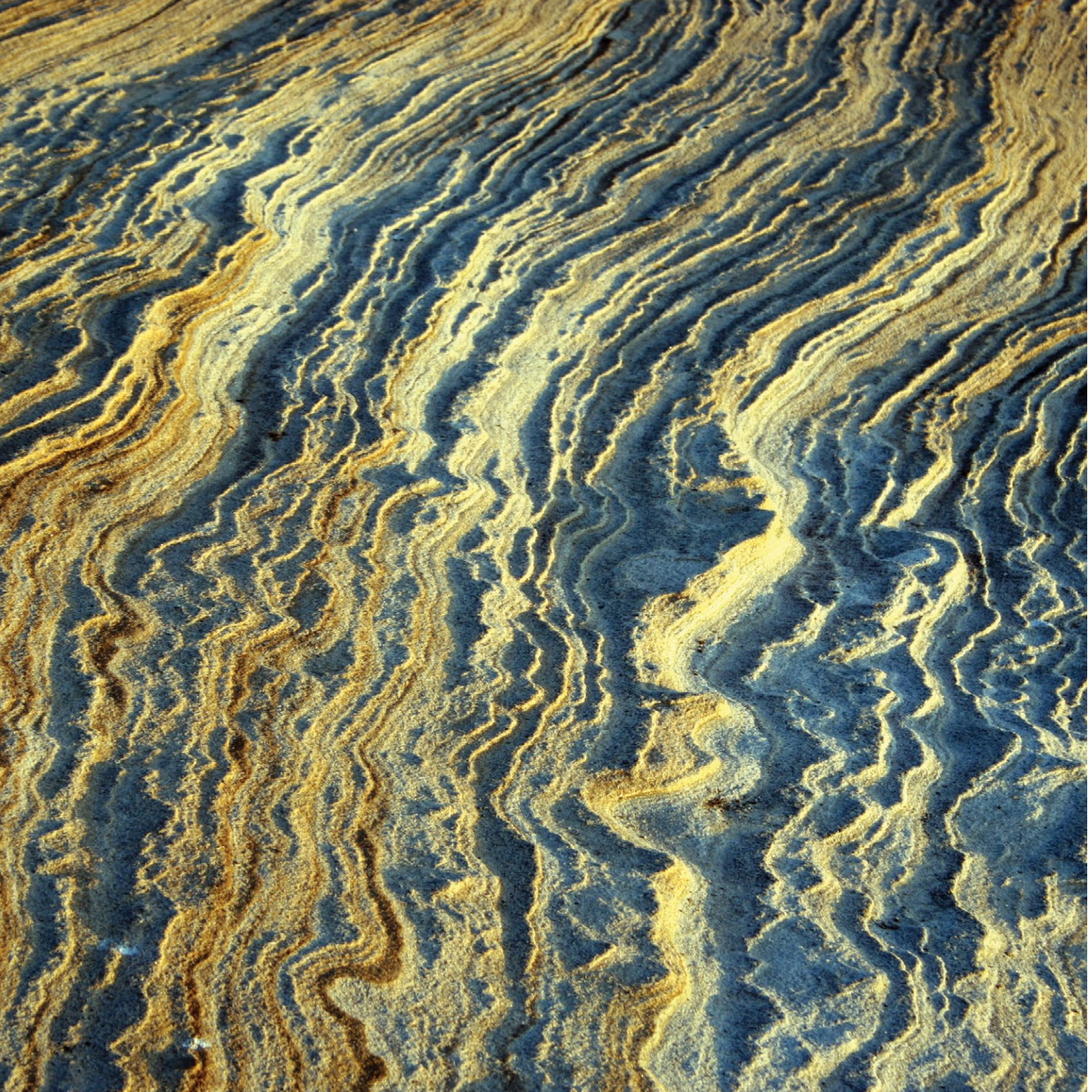
Workforce Development in Innovation Precincts

Insights from global practice and implications for New South Wales

Place-Based Innovation Series

September 2023

NSW GOVERNMENT



Acknowledgment of Country

The NSW Innovation and Productivity Council acknowledge the traditional custodians of the land and pay respects to Elders past, present and emerging.

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About the NSW Innovation and Productivity Council

The NSW Innovation and Productivity Council was established by the *Innovation and Productivity Council Act* 1996 (the Act). It advises the NSW Government on priorities for innovation-led economic development and productivity.

Council members are leaders from industry, education, and academia. Members are appointed for three-year terms, bringing a rich and diverse range of experience and expertise to the work of the Council. The current Council was appointed in 2023.

The Council's publications are independent reports and do not constitute NSW Government policy. This is consistent with the role of the Council and its object under the Act.

Further information is available on the Council's website.

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NSW Innovation and Productivity Council

Foreword from NSW Innovation and Productivity Council Champion

Welcome. I am so glad you've opened this report. It's the NSW Innovation and Productivity Council's third report on innovation precincts.

The Council is working on innovation precincts because the New South Wales economy will rely more and more on them over coming years. We know that technology-enabled industries from fintech to agriculture to cybersecurity will benefit from clustering together.

The Council's first precincts report in 2018, *NSW Innovation Precincts: Lessons from International Experience*, explored the factors that contribute to successful innovation precincts. The demand for a local 'how to' guide to support precinct development was met with overwhelming support.

Since then, our precincts have continued to evolve and mature — along with their precinct strategies. To further inform government place-based policies, programs, and investment decisions, the Council launched its *Place-Based Innovation Series* in 2022. The first report in the series, *The Role of Anchors*, explored the important role that anchor tenants play in global innovation precincts and what it means for New South Wales.

This is the Council's second report in the Series. It sets out how precincts can build the workforces they need to support companies and clusters to specialise and succeed, while benefiting their local communities.

We cannot just assume that if we build it, the right people will come; creating a precinct does not automatically create all the skills that a precinct needs. This report draws on experiences around the world to explain why innovation precincts should focus on workforce development.

Then it explains how precincts can foster the skilled and creative workforces that will drive their growth.

Live in Silicon Valley and you soon realise how the quality of the workforce drives that whole vast prosperity-generating machine. When people talk about Silicon Valley, they don't talk about the quality of San Francisco's airport, or the capacity of the Bay Area's highway system (but when I was at Stanford University, we did complain a lot about traffic on the 101). They talk of how the unique ecosystem and co-location of people and places with purpose attracts and fosters even more people with the skills (and enthusiasm) to help to drive success. And they point out how, by concentrating business and technical talent at places like Google and Nvidia, Silicon Valley attracts even more talent, in a positive feedback loop.

All New South Wales precinct leaders and governance figures face this same challenge: to construct a talent ecosystem.

New South Wales is making tangible progress in developing our people's skills, and we can do more to improve the capability, capacity, and connectedness of our workforce within the state's innovation precincts. We can further build their skills base, and we can bring more people from their surrounding communities into their local innovation economy.

This report lays out the strategies and tactics that will do it. By using them in the ways this report suggests, we can build a stronger New South Wales. I hope you find it a valuable resource to inform your thinking and actions.

Jillian Kilby
FIEAust GAICD, member,
NSW Innovation and Productivity Council

Glossary of common terms

Clustering

This occurs when interconnected businesses, suppliers and service providers gather in proximity for mutual advantage. This interdependence fosters innovation, supply chain, value chain development, and knowledge exchange. A cluster usually extends beyond the borders of a precinct but portions of it may seek to concentrate very near each other to share facilities and information.

Innovation economy

The value produced when companies turn ideas and intellectual property (IP) into new products, services, and business models. It is not one sector. It spans the parts of the economy — in established and emerging industries — that are disrupted by the impacts of new technologies, scientific breakthroughs and changing talent availability.

Innovation ecosystem

The networks, supply chains, services, finance and leadership that enable innovation to flourish and concentrate in a physical location.

Innovation precinct and innovation district

A defined geographic area to describe an urban or urbanising location that provides the physical spaces and coordination for large and small businesses, tertiary education and research institutes, technology facilities, and other producers or consumers of innovation, to come closer together. It may encompass distinct neighbourhoods and specialised areas. It is part of a wider innovation ecosystem.

These geographic concentrations of economic and innovative activity can go by different names. In NSW and Australia, the term innovation precincts have been the preferred way of describing these locations, while internationally it is more typical to use the term innovation districts, but the underlying concept and rationale is the same. In NSW innovation districts is now emerging more clearly to describe those locations that play host to multiple sectors, and which provide some coordination and services support for neighbouring areas.

For consistency across Council reports, this report continues to use the term innovation precincts, unless referring to locations which identify as a district.

Place

A physical and social setting with a distinct identity and character — often neighbourhood-sized — that plays host to a local economy of businesses and institutions, as well as the infrastructure, amenities and public spaces which serve and connect people. The access, attraction and amenity of place is an important element of an innovation location.

Workforce development

The process by which the current and future workforce is planned and trained. Spans approaches intended to cultivate talent to foster innovation — whether through education, entrepreneurship support, collaboration, diversity, and continuous learning.

Workforce programs

The specific initiatives that equip a current or prospective workforce with skills, training, and resources to support industry, career development, innovation, entrepreneurship and collaboration. They may be designed, led and financed by governments, institutions, industry partners or other agencies.

Executive summary

Innovation precincts in New South Wales can help to build the state's long-term competitive advantage. If they succeed, they will raise the productivity and resilience of a range of jobs, and drive growth and investment both locally and beyond.

Workforce will be a key component of innovation precincts' future success. These precincts rely on effective supply and matchmaking of workers into entry-level, mid-level, and senior roles for firms in high-growth industries. They also thrive on a high propensity of the workforce to take part in businesses and process innovation.

A workforce with the right skills, experience and relationships can support companies and clusters to specialise, succeed and survive periods of market disruption and technology change. This in turn can raise demand for local businesses, services, amenities and culture through spillover benefits.[1] And for local communities, workforce programs help to reduce the number of 'Lost Einsteins' and enable more people to be part of a fast-changing local economy.[2]

An intentional approach to workforce is required across the full range of priority precincts and industries in NSW. This is borne out by experience across the state and internationally. Locations that are not intentional about workforce quickly find that demand outstrips supply, companies see fewer advantages in clustering, fewer local people find the precinct open and inviting, and the social licence for innovation declines.

For precincts instead to maximise their jobs and productivity outcomes, and deliver benefits for local residents, they have to be committed, customised and curatorial towards the task of workforce development.

This report is based on a review of global and NSW-wide practice in more than 25 innovation precincts, informed by 40 interviews, 20 validated case studies, and focused desktop research. Its focus is on the particular skills needs of innovation precincts and the specific place-based approaches they require. General skilling programs are outside of the scope of this report, although they too are a very important part of the mix.

Trends in workforce approaches in global innovation precincts are introduced in Chapter 1, situating NSW precincts and workforce development within international practice. The report then examines best practices in international precincts across three key pillars (Chapters 2, 3 and 4) and discussed implications for NSW precincts. Governance roles for government and other stakeholders and common delivery models are discussed in Chapter 5. Recommendations and roles for government and other stakeholders are provided in Chapter 6.

25 innovation precincts

Informed by 40 interviews

20 validated case studies

Focused desktop research

What does workforce development in precincts look like?

Supporting workforce in a precinct can span everything from specific industry skills programs to placements for research students to enter business settings, networks that bring workers in neighbouring companies closer together, mentoring schemes to share entrepreneurship know-how, dedicated spaces that growing startups can afford, amenities that make a precinct more attractive to the talent it needs, and much more.

These kinds of workforce initiatives may be run or coordinated by precinct universities, innovation hubs, specialist consultancies, vocational training providers, government development corporations, accelerators, employer partnerships, or place management teams. They may be financed in part by members, partners and beneficiaries, and not exclusively by government.

Innovation precincts have three connected pillars for workforce interventions

There are locations across Greater Sydney, Wollongong, Newcastle and the Central Coast, as well as other activation precincts and locations in urban and regional areas that are developing intentional place-based approaches to economic development and the workforce that underpins it.

Across these NSW precincts, the workforce pipeline has renewed urgency. Precinct programs must now reach into a current and future workforce that has become more spatially distributed and digitally connected. Prospective anchor tenants are increasingly demanding both higher quality and a larger pipeline of workers. And new workforce patterns and talent scarcity require focus on how precincts foster soft skills, employee wellbeing, digital learning, tacit knowledge sharing, and 'stickiness' for talent.

Although every innovation precinct configures its approach to workforce needs in its own way, insights from interviews and research in well-established innovation precincts suggest that an expanded, best-practice approach to workforce comprises three connected pillars (see Figure 1):

1. **the workforce supply** that builds the skills base, talent mix and career pathways
2. **the workforce relationships and enterprise** that creates the networks and know-how to convert ideas into growth businesses
3. **the localised workforce benefits** for surrounding communities.

NSW precincts will need to be deliberate and consistent in organising across all three of these pillars if they are to deliver sustainable jobs and prosperity.

Figure 1 Three connected pillars of workforce interventions for innovation precincts

Pillar 1: Workforce supply

Talent development, retention and attraction is an essential ingredient in successful innovation precincts. Precincts that have seen the most success in building substantial bases of jobs and business capabilities have focused on building local talent early on in their development, in addition to attracting outside talent.

Chapter 2 looks at the spectrum of precinct skills supply interventions, some of which can be done in the short-term, and others which take longer time horizons to see precinct workforce outcomes. These include:

- programs tailored to the needs of a cluster of large employers
- programs and partnerships for a priority growth industry
- vocational training and certification programs
- apprenticeship internship and placement programs
- school partnerships and outreach.

Across NSW, there are examples of programs which span the full spectrum of skills supply interventions. Some NSW precincts have developed whole-of-place workforce development approaches that reflect their local sector specialisations. For example, there are now several instances of NSW precincts co-designing short courses with industry partners to take advantage of job opportunities in growth sectors such as aviation, artificial intelligence, advanced manufacturing, fintech, cybersecurity and climate tech.

However, many NSW locations are earlier on in their journey to develop a precinct-wide approach to workforce supply and rely more on state-wide programs to address local needs.

At the same time, many regional and urban universities have also become more engaged with local schools and community groups to develop the future talent pool, provide support for First Nations people and other underrepresented groups, and open up access to participation in formative research ventures. There are also more premium short courses and executive education available to mid-career and advanced-career professionals in sectors that face industry disruption.

As the NSW Government and partners further develop and refine their approach to innovation precincts and gain more collective clarity on each precinct's stage and specialisation, they will need to fully consider how workforce development programs become a central plank of all precincts' economic and development strategies.

Pillar 2: Workforce relationships and enterprise

Innovation precincts are not simply locations home to lots of jobs. The core mission of innovation precincts is discovery, application and commercialisation for wider public and business benefit. These tasks require specific skills which are fostered through collaboration, networks and relationships.

Fostering a high-collaboration environment is rarely easy and never automatic. Chapter 3 reviews the common strategies that precincts adopt to promote the growth of businesses and their workforce, and to foster the expertise of these companies and their propensity to commercialise and scale. These strategies typically:

- build the innovation community through programming and purposeful networking
- provide services to help businesses recruit and internationalise
- provide infrastructure, services and incubation for enterprise learning and growth.

Many NSW precincts already employ these strategies to varying degrees, and routinely provide collaborative spaces for entrepreneurs, researchers, students, and local people. They are also starting to become more proficient partners for industry associations seeking to speed up the pace of networking and skills acquisition. In some cases, the workforce training offer is at the heart of the precinct's magnetism to talent and businesses.

NSW Government has supported deliberate steps to co-locate hubs for enterprise that provide coaching, training, workshops and professional networks to founders and staff, such as the Sydney Startup Hub, Western Sydney Startup Hub, Stone and Chalk, Techstars Tech Central Accelerator, and Tech Central Scaleup Hub.

NSW Government has also taken an essential lead to bring forward the connectivity, development and investments that can trigger precincts to become largescale hubs for jobs, quality training, and unique collaborations.

However, there are further opportunities for investments in workforce relationships and enterprise which should be seen as essential complements to the core task of workforce development. Such investments should be viewed as long-term mechanisms for reducing dependence on government, and for building a stronger public-private infrastructure — one where more partners and stakeholders are involved and invested in the precinct.

Pillar 3: Localised workforce benefits

More intentional and authentic engagement of residents and civic groups is now observed as key to generating more economic opportunities in a precinct over the longer term and to help enhance the local supply of human and social capital to meet precinct needs.

Chapter 4 considers the three main practices that precincts apply to increase diversity and build a more inclusive community — one that contributes both to workforce development outcomes and wider community wellbeing:

1. community engagement in precinct decision-making
2. localised procurement systems
3. diversity, equity and inclusion goal-setting.

In NSW, state government influence and shaping of innovation precincts is proving critical at the outset. Over time it will be essential to build in mechanisms to bring other local parties to the table, not only as beneficiaries but as partners and even investors. It will also be important to involve local communities and local governments in workforce strategy and decision-making, as well as wider precinct planning.

While many NSW precincts already take a collaborative approach to workforce development and precinct planning, overall, coordination and governance could be improved (discussed further in Chapter 5).

Image: University of Sydney

Governance and delivery models for workforce development in NSW

There is wide consensus internationally and in NSW that workforce policies and programs for precincts are more likely to succeed when there is strong collaboration with partners in fast-changing industries, a strong role for universities and vocational training providers, sustained coordination with local schools, and the ability to reach into local networks of entrepreneurs, product developers and investors.

NSW Government support for workforce development in precincts is complex and usually involves numerous agencies with responsibilities as diverse as education and training, planning, infrastructure, industry development, regional economic development, investment attraction, skilled migration, and talent attraction, among others.

Over the past decade, NSW has been developing more of an integrated and whole-of-government approach to helping the workforce develop in response to industry needs. The overall direction of workforce development is positive.

Many practitioners see government departments working more in sync to support businesses looking to move to NSW to access the skills they need, existing firms which seek direct channels to training providers, and workers who rely on developing skills suitable for new role types.

Image: Scape Redfern

While these are all positive developments, NSW is still fairly early in the evolution of collaborative precinct governance, which is key to the success of workforce development in precincts over a medium-or longer-term timeframe.

Currently there is a high reliance on state government as chief funder, broker, and coordinator. Some NSW locations have already created leadership alliances with a promising level of intent and shared ownership among public, institutional, and sometimes private stakeholders.

Chapter 5 reviews governance and delivery models that have been used internationally to effectively coordinate the numerous partners and participants to deliver workforce initiatives. It also looks at different ways workforce development activities can be financed.

Recommendations

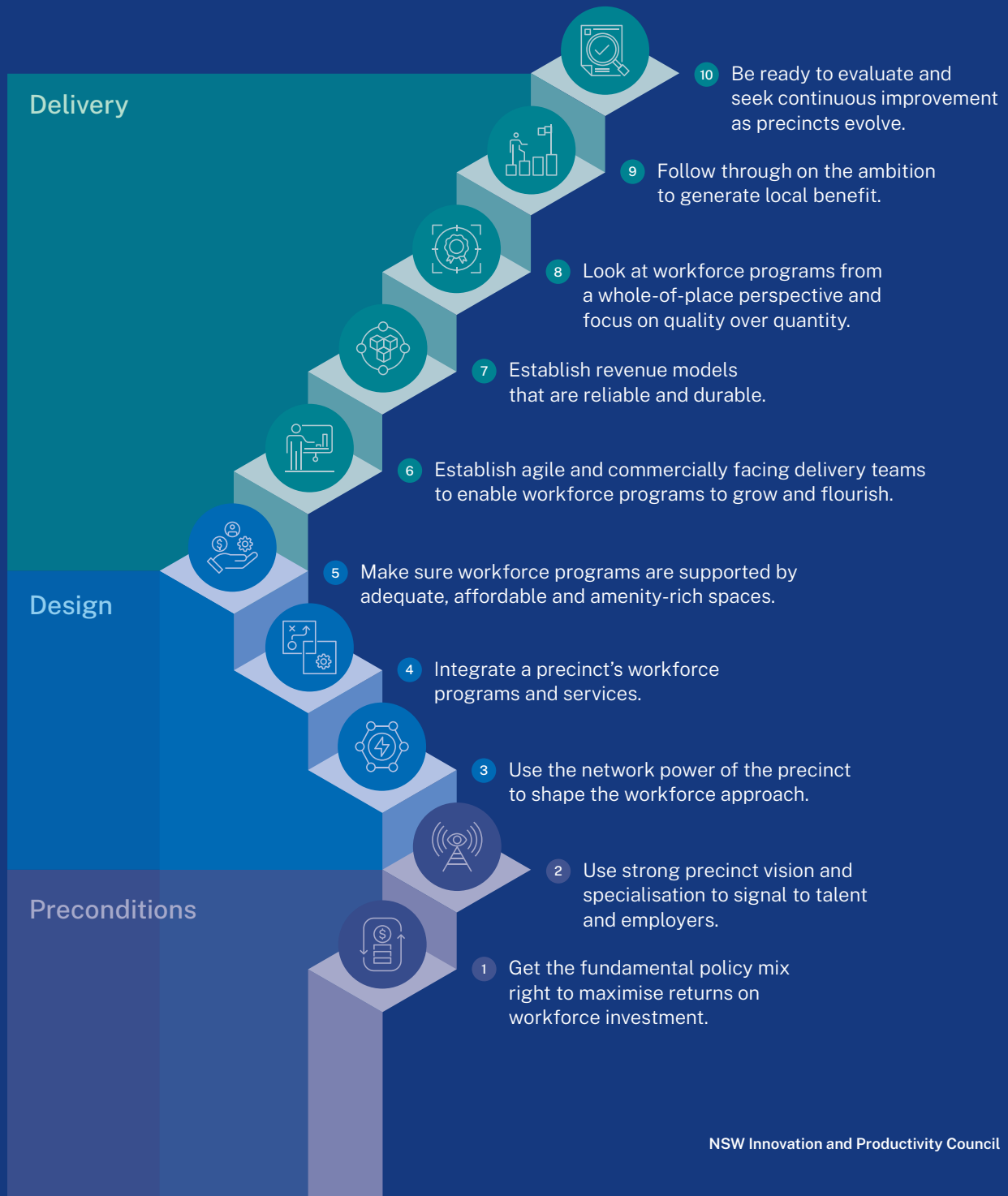
Harnessing the workforce in pursuit of a precinct's long-term economic and social goals poses distinct responsibilities for all levels of government, large employers, anchor tenants, educational institutions, training providers, precinct strategists, and investor partners.

Ten overarching recommendations are principally for the NSW Government, but they will require delivery in partnership with all stakeholders.

The recommendations acknowledge NSW precincts are at varying development stages, and all have unique characteristics, governance models and stakeholders. The recommendations are therefore best practice principles which provide general guidance and areas for focus at each stage of implementation. They are categorised as either a precondition, or considerations for the design or delivery stage.

The recommendations are provided in more detail in Chapter 6, which also highlights priorities for different stakeholders, and outlines workforce priorities for precincts at different stages of their evolution in NSW.

As NSW becomes home to more globally significant precincts, the scale and balance of inputs will change as tenants, business models, industries, and placemaking demands evolve.



Preconditions

1. **Get the fundamental policy mix right to maximise returns on workforce investment.**

   Workforce outcomes in NSW's innovation precincts will improve if the broader policy and incentive mix makes it easy to start new companies, grow them, move to the region, live close to NSW's innovation precincts, access capital, and give more people the skills they need to succeed in advanced industries.

2. **Use strong precinct vision and specialisation to signal to talent and employers.**

   This will set clearer expectations about the workforce needs and the spaces required. A credible narrative also helps set clear principles about which organisations are invited and encouraged into the precinct, and the rules of engagement around workforce development. It also provides signposts that attract future talent.

Design

3. **Use the network power of the precinct to shape the workforce approach.**

   Workforce provision in a precinct should avoid over-design by precinct leadership or government scoping. Resources should empower bottom-up leadership which enables workforce gaps and programs to be identified, designed, and delivered by the precinct's collective intelligence rather than by edict.

4. **Integrate a precinct's workforce programs and services.**

   A convening hub such as an accelerator or research centre can be a centre of gravity to coordinate resources, integrate training and create shared marketplaces. Effective programming can keep services for academic, commercial, and social innovation differentiated, and create cohesion between organisations not used to working together.

5. **Make sure workforce programs are supported by adequate, affordable and amenity-rich spaces.**

   Attracting and accommodating fast-moving talent-hungry businesses in a precinct requires the ability to adapt to an ever-changing mix of tenants, uses and spaces. The appetite of businesses and jobseekers to participate in workforce programs also depends on their confidence in being able to afford and enjoy opportunities locally.

Delivery

6. **Establish agile and commercially facing delivery teams to enable workforce programs to grow and flourish.**

   The most effective teams have flexibility to customise the support to serve SMEs, established domestic firms, incoming companies, or research-intensive universities. They have a clear remit, a grasp of commercialisation processes, and experience in international sales, and they can engage staff at all levels.

8. **Look at workforce programs from a whole-of-place perspective and focus on quality over quantity.**

   Trying to apply workforce programs in too many innovation precincts at once can sometimes result in a dilution of effort, scale, budget and attention, and unnecessary competition. Embrace a pilot approach and focus smaller numbers of participants on quality programs. Once established and well adopted, this can be scaled, models can be replicated, and services can be bundled.

10. **Be ready to evaluate and seek continuous improvement as precincts evolve.**

    Workforce programs iterate as fast as precincts evolve. Willingness to assess value for money, weigh up a program's relative merits, undergo a full evidential review, and encourage feedback and response are all important to maintaining the impact and credibility of workforce development efforts over time.

7. **Establish revenue models that are reliable and durable.**

   Workforce programs in precincts succeed when they are consistent and gain scale. Reliable funding sources are also important to beneficiaries and providers of workforce initiatives, whether the vehicle is a medium-term public investment or loan, use of real estate rental revenue, shares in successful growth companies, or an anchor-tenant-sponsored foundation.

9. **Follow through on the ambition to generate local benefit.**

   Use the energy and commitment generated from collaborative workforce planning to raise the bar for job standards and employer participation. With strong precinct governance, inclusive criteria should be embedded in lease agreements, contracts and funding grants, as shared targets and KPIs.

1

Introduction

Situating NSW innovation precincts and workforce development within international practice

Innovation precincts are increasingly recognised in NSW, as they are globally, as special locations requiring distinct suites of support and interventions.

Precincts provide opportunities for leading institutions and companies to cluster together, connect with growth businesses, build continuous collaboration, commercialise innovations, foster industry identity and develop a clear profile in the global market.

Precincts do not thrive simply because a group of companies shares a location, or because policymakers designate locations as innovative. Evidence from established and globally significant precincts world-wide suggests that their long-term public and commercial return depend on having an appealing physical character, strong and diverse relationships, and coordinated leadership among stakeholders.[3] Supporting the growth, capability and attraction of workforce for a precinct therefore requires close attention to these attributes.

1.1 Innovation precincts in NSW

Since the NSW Innovation and Productivity Council's first report on the topic in 2018, *NSW Innovation Precincts: Lessons from International Experience*, government and institutional support for innovation precincts and districts has become more prominent. The NSW Government continues to actively support the development of a number of locations, at different stages of evolution, as innovative hubs for priority industries such as defence and aerospace, agtech, medtech, cybersecurity, cleantech, and data sciences.

Across NSW there are many locations in Greater Sydney, Wollongong, Newcastle and Central Coast, as well as other activation precincts and locations in urban and regional areas that are developing intentional place-based approaches to economic development and the workforce that underpins it.

The Greater Cities Commission has been supporting the activities within and between four innovation districts:

- **Tech Central** is the largest localised concentration of technology innovation in Australia, with a diverse mix of technology-focused startups, established businesses, and venture investment congregating across six neighbourhoods. The District benefits from strong citywide connectivity, high-quality infrastructure, and a dense concentration of research, education, training and cultural institutions.
- **Westmead Innovation District** is one of the largest concentrations of health education and research capability in Australia. Oriented around four hospitals, two universities, and leading Medical Research Institutes. The District is focused on accelerating development of high growth bio industries and supporting job growth in Western Sydney.
- **Macquarie Park Innovation District** is an established 350-hectare corridor encompassing Macquarie University and the largest non-CBD office market in Australia. As the district evolves, it has the infrastructure, placemaking and services it needs to support its growth and change.
- **Central Coast Innovation District** is emerging as a hub for health and food production, anchored by Gosford Hospital, Central Coast Clinical School and Research Institute and a new university campus in Gosford. The district has large potential as a test bed for new kinds of care, wellbeing and lifestyle solutions, as well as an imperative for jobs and opportunities that are socially inclusive.

Other strategic precincts in NSW include:

- **Bradfield City Centre** is the flagship destination of the Western Sydney Aerotropolis, home to an emerging set of clusters in advanced manufacturing, aerospace and defence, and agribusiness. The location has potential for 200,000 high-value jobs in the area.
- **Parkes Special Activation Precinct** has the inland rail project as a key catalyst, with Parkes offering opportunities in freight and logistics, distribution and agribusiness.
- **Wagga Wagga Special Activation Precinct** is capitalising on the inland rail project, with focuses on advanced manufacturing, agribusiness, recycling, renewable energy, and logistics.
- **John Hunter Health and Innovation Precinct** is a major healthcare campus being redeveloped into a centre of excellence, clinical innovation, education and training.

Between them, these precincts can help accelerate industry specialisation, networked relationships, cluster development, and the wider productivity and jobs benefits these bring for surrounding communities. The information in this report is of relevance to all precincts pursuing place-based approaches to economy and innovation.

The Council's *NSW Innovation Precincts* report highlighted that in order to fulfil their potential, precincts require several economic and infrastructure prerequisites. It identified seven success factors: market drivers, competitive advantage, collaboration, infrastructure, amenity, enterprise culture and leadership. It also observed that innovation precincts vary a great deal in size, scale, development and maturity. The Council uses the following terms to describe precinct maturity: proposed, emerging, active, and globally significant.

1.2 This report's research approach

This report has drawn from examples and experiences in 25 innovation districts internationally, and more than 10 districts and precincts in NSW. It is based on more than 40 interviews and follow-ups with leaders and representatives in these locations, supported by recommended reading and desktop research as well as a wider review of latest practice in NSW and internationally.

International locations (see Figure 2) were chosen because they are widely recognised by policymakers and practitioners within their nations as leaders in terms of commercial and workforce outcomes, or in terms of policy or program innovations. These districts represent an important source of emerging knowledge, which is why this research has combined interviews and desktop research.

While the formalised cross-country evidence as to 'what works' in training and workforce development programs has been described as 'remarkably sparse' by the Brookings Institution,[4] these districts are part of a widening practitioner-led evidence base now emerging on the kinds of dedicated investment and support that governments and partners can provide to innovation-rich places.[5]

The research has intentionally taken a range of sectors, geographies and maturity stages into account in selecting international locations relevant to all NSW precincts. The report looks well beyond large metropolises, high-demand inner-city locations, and nations that are leading globally in using and developing advanced technologies. It focuses specifically on workforce development programs that are place-based or connected with a precinct.

The report considers those workforce models that have transferable value for NSW when understood in their context, and provides practical examples.

The precinct examples are listed and categorised below, borrowing from the typology developed in the Council's *NSW Innovation Precincts* report.

The 25 innovation precincts span a wide range suited to NSW's existing set of priority precincts, including:

- three 'Emerging', 11 'Active', 11 'Globally Significant'
- 14 urban, 11 suburban/rural
- nine life sciences, seven cross-sector, five digital/tech, four advanced manufacturing/other.

This research has also selected locations that span a significant range of program delivery models: where local governments, higher government agencies, universities and business take on varying roles.

The focus of insights and case studies is to provide precinct proponents and participants with practical guidance and opportunities to access further information.

The case studies, information and analysis in this report can help precinct leaders and participants to:

- consider how to design and monitor workforce programs of different types
- match to specific international experiences in comparable precincts
- weigh up the merits of different governance and financing models
- be aware of the roles and responsibilities of different parties
- be informed about some of the risks that can arise.

While this report draws on both NSW and global experiences, the experience of more established precincts around the world can provide insights and lessons for NSW's emerging precincts about the scope and the coordination of their workforce initiatives. This report looks in particular at the approaches to workforce development that sustain the success of innovation precincts over a 15–20-year period or longer. The scale of impacts on jobs and productivity often becomes more visible only over such a period.[6]

Figure 2 Global map of 25 innovation precincts, organised by sector

Source: The Business of Cities research, based on a review of comparative data on jobs and entrepreneurship, combined with site visits and interviews

1.3 Trends in workforce approaches in international innovation precincts

Workforce development has become a priority in many OECD nation economies as they seek to improve productivity growth, increase regions' economic resilience, overcome barriers to commercialising knowledge, diversify beyond incumbent sectors, and address systemic disadvantages related to skills and geography.[7]

Internationally, public policies and investments to this end focus on workforce education, skills training, and work placements to serve the current hiring and future skills needs of businesses and employers. With this approach they aim to produce a larger pool of good well-paid jobs. The target 'recipients' may be SMEs or larger established businesses.

Many of these priorities were amplified by the COVID-19 pandemic, which highlighted the risks — to businesses, governments and startups alike — of skills shortages, talent mismatches, rapidly evolving industries, automation and obsolescence. At the same time workforce programs in many nations have had to become more responsive and digitised. They have also had to be complementary to other opportunities for rapid learning such as conferences, online education, MOOCs (massive open online courses), and other extracurricular programs.

1.3 Trends in workforce approaches in international innovation precincts (continued)

More recently the advances in automation that flow from artificial intelligence (AI) are posing the possibility of major disruption to the workforce, and the displacement of certain professions. Although there is no guarantee that AI will lead to fewer jobs, it is widely forecast that some people will likely have to find new employment. This raises questions of how workforce development can upskill or reskill workers, ease workforce transitions, and ensure that wider policies and regulations do not amplify inequalities that arise from automation improvements.

Across the full range of innovation precincts reviewed and interviewed, and innovation policies more broadly in nations and regions comparable to NSW,[8] the following trends can be observed:

1.3.1 Workforce development is becoming more place-based

Recent international reviews on existing workforce development systems find that existing approaches rely on more resources and customisation. Analysts note the risks of being stuck in a low-resource, low-efficacy equilibrium where many potential beneficiaries of workforce initiatives are not reached due to gaps in funding or support for short-term courses.

Expanding existing successful programs and practices is widely recommended. These programs and practices include industry jobs programs, job counselling, on-ramp programs for hard-to-reach adults, better data systems to map fast-changing skill demands, and more pilot programs.

What is commonly advocated is flexible place-based approaches to allow new structures and models that bridge the public, private, and not-for-profit sectors, with some financial and implementation support from higher levels of government.

1.3.2 Innovation precincts rely on specific competitive advantage

Precincts thrive on specialist skills, expert know-how, available technology, flexible spaces, and an environment that is conducive to open innovation and the spread of tacit knowledge creation. Facilitating and then maintaining access to these features requires a continuous and collective effort. There is wide scope for those who lead precincts — public, private and institutional — to support the development of workforce.

Innovation precincts require a level of behaviour change for many parties, to work across conventional boundaries and share risks. The development of precincts can face many stumbling blocks — including costs, distractions, reputational issues and unmet demand — that have to be proactively managed.

1.3 Trends in workforce approaches in international innovation precincts (continued)

1.3.3 Place-based workforce approaches remain relevant despite the disruption of the pandemic and new technology

Questions have been raised that precincts' power to convene talent and foster face-to-face collaboration might be permanently eroded by COVID-19.[9] Some have anticipated the need for place-specific workforce approaches to adapt to reflect changing travel-to-work patterns.

Yet many industries — including life sciences, advanced manufacturing, and cleantech — have limited potential for remote work. As of 2023, the prevailing view internationally across more than 40 interviews is that precincts are more resilient the more that they are fuelled by high trust and face-to-face collaboration between commercial, research and education partners. Interviewees believe that this will stimulate new thinking, new business, and new projects. And there is more awareness that precincts in diverse locations have used workforce development to deliver more equitable and sustainable economic development.

1.3.4 Innovation precincts use three connected pillars to address workforce

In innovation precincts that have become active and globally significant, the supply of jobs and career pathways does not always fill a fixed and predictable number of roles. Additional interventions are needed to enable companies to grow and ideas to spread and commercialise.

Fast-scaling businesses, for example, need access to the right kinds of capital and spaces. Startups want specialist advice if they are going to expand sustainably. Established firms seeking to grow market share internationally depend on their teams' proximity to up-to-date insights that equip them to move fast towards fresh opportunities. In these and other ways, investment in the supply and capabilities of the workforce can bring more investment, draw outside talent, and make the precinct and potentially an entire region more competitive.

Although every innovation precinct configures its approach to workforce needs in its own way, there are three pillars of focus, each of which requires particular services and partnerships:

- The workforce supply
- The workforce relationships and enterprise
- The localised workforce benefits.

Across precincts with a wide variety of origin stories, there is a convergence of opinion among precinct leaders and participants interviewed that precincts have to be deliberate and consistent in organising across all three of these pillars if they are to deliver sustainable jobs and prosperity. The design and delivery of these tasks is reviewed in Chapters 2, 3 and 4.

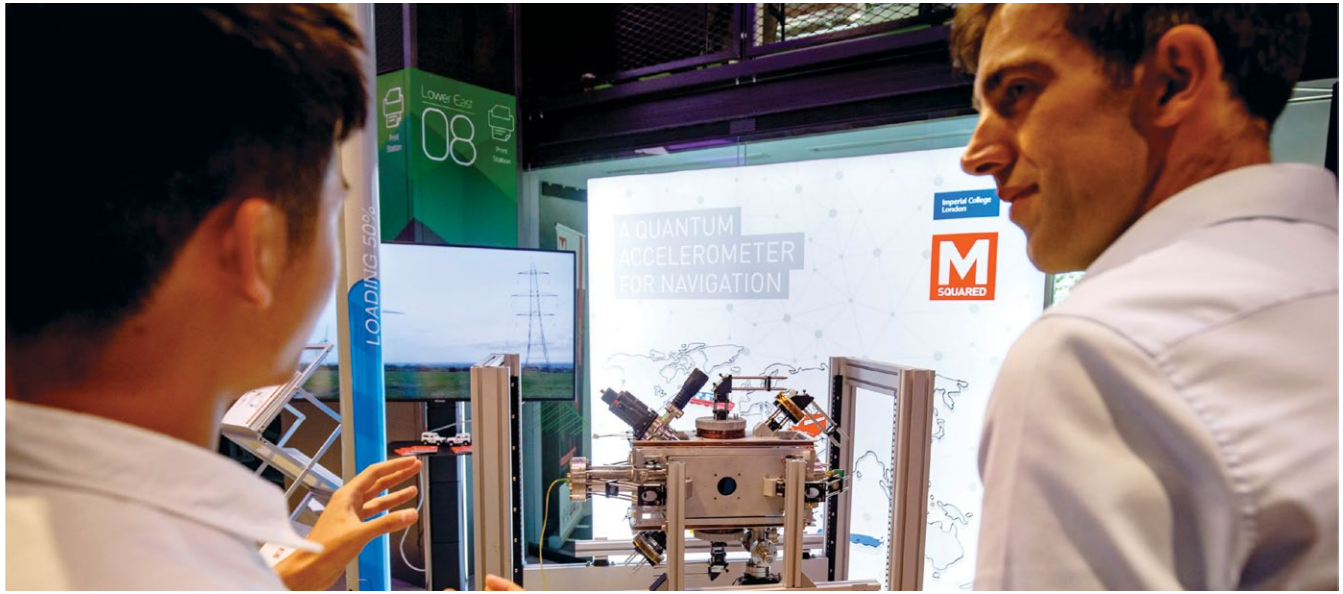


Image: © London Legacy Development Corporation

Pillar 1: The workforce supply

The core workforce mission of innovation precincts is to efficiently supply talent to support the specialised companies and fast-moving technologies and processes involved in the clusters they host.

This has over time led to more attention on talent supply gaps through better coordination with skills providers, as well as through more integrated approaches to reskilling, lifelong learning, and matching opportunities to people. In addition, innovation precincts have also developed tools to promote talent attraction and retention.

Pillar 2: The workforce relationships and enterprise

This pillar encompasses the programs and initiatives aimed at the networks and know-how to commercialise ideas and become part of fast-growing businesses. Jobs created at innovation precincts are the result of hiring by anchor businesses and corporations, and via the rapid cultivation of startups that benefit from precinct networking and support programs. These may include networking, mentorship and matchmaking help to generate a community of founders and managers geared towards enterprise.

Many of these programs aim to foster a shared appetite for risk-taking, a tolerance for failure, a norm of collaboration, and the routine socialisation of ideas. Other programs look to foster business transformation, unlocking large workforce improvement by transforming mindsets, organisational structures, strategies and priorities.

Pillar 3: The localised workforce benefits

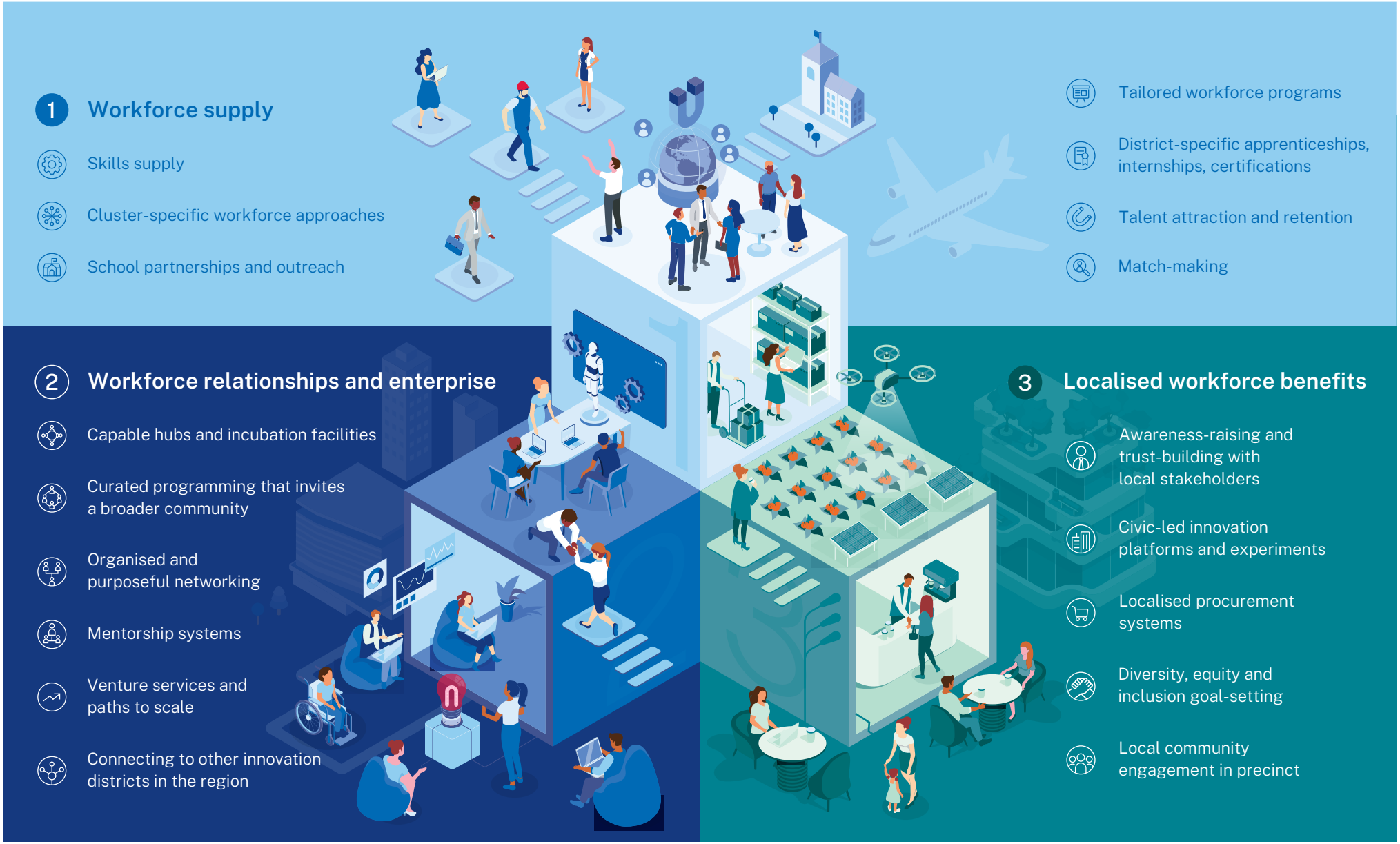
Precincts are increasingly attempting to build the capacity of local communities to be part of the innovation economy and benefit from it over the long term.

Precinct and local leaders alike now acknowledge that typical economic impacts generated by precincts have not always led to equitable outcomes, economic mobility, or effective utilisation of local enterprises and workforce. In these cases, precincts become perceived as enclaves of success segregated from wider populations.

Attention is therefore being paid to how to procure locally, innovate to solve local challenges, provide inviting amenities and open community spaces, enable more people to discover training and workforce development programs, create worker-owned businesses, partner local schools and employers, and connect local governments more deeply with community bodies.

A suite of responses adequate to the equity challenge is now a core priority of many precinct leaders and institutions. More businesses in innovation precincts are witnessing the direct business benefit of investing in these areas — including more diversity of problem-solving, greater reach to new markets, and more ability to attract and appeal to talent.[10]

Figure 3 Three workforce pillars in innovation precincts, and their constituent programs and activities



1.3.5 Precinct workforce interventions tend to expand over time

Across the experience of different precincts, there are common patterns in how workforce approaches evolve over time, as a precinct's leadership, identity and specialisation begin to take hold. Workforce demand should be expected to expand as innovation precincts (and their coordination requirements) become more mature and specialised. Some ongoing resource from governments is usually expected, alongside other inputs. In many globally significant precincts, the structure of responsibility allows the balance of inputs to change between different sectors at different stages.

1.3.6 Precinct workforce policies increasingly measure wider social and commercial benefits

Practitioners and leaders in innovation precincts observe direct outcomes which are visible, and in some cases can even be measured quantitatively. They also observe other outcomes that are more indirect, and that shape the wider economic fabric and shared services in a precinct as they evolve over five to 15 years.

No single model or methodology for innovation precincts to assess workforce impacts has become dominant. Individual precincts and their partners have often worked with local partners and advisors to evaluate workforce initiatives with new kinds of survey or data methods.

Table 1 Common evolution of workforce interventions and services

Emerging	Active	Globally significant
Initial relations with employers and institutions	Workforce and community management competences grow	Joined-up, whole-region mindset in workforce strategy
First pilot programs to test appetite and partnership	Bundled services that eliminate duplication	Connect to other precincts; replicate models
Setting up communities of practice within a precinct	Expand step-up and grow-on space, below-market rent provision	Combined leadership that draws on multiple industries and policy sectors
More access to sources of capital and finance	Durable mixed revenue models for funding the larger workforce programs	Connect fully to school and college systems in curriculum design and pathways mapping
Initial wins on local procurement, popular events, joint projects	Inter-institutional working groups across staffing levels	More ambitious initiatives; operate at the scale of the challenge
Start of a unified vision, mission, and specialisation	Building the skills to grow the precinct's international presence and profile	Independent and customised talent attraction and retention approaches
Provision of open and inviting spaces for interaction and learning	Development of more pathways for under-represented groups	Coordination of lifelong learning

Table 2 Direct and indirect impacts of mature precinct workforce efforts

Direct impacts of successful precinct workforce efforts include:	Indirect impacts of mature precinct workforce approaches include:
• larger, more specialised and visible industry clusters — with larger jobs bases and higher rates of discovery and commercialisation • more go-to precinct providers that provide essential jobs and networking services to growth companies • higher social capital: larger and deeper networks among employees and founders, and more confidence in enterprise and risk-taking • more ability to commercialise among companies and advisors, with more capital to access • more benefits to local residents from the precinct, via jobs, placements, courses, and amenities.	• return on investment in soft infrastructure (services, networking, coordination) as well in industries and physical infrastructure • increased trust and cooperation between precinct stakeholders, with shared investment and delivery • more recognition from organisations of the different elements required to deliver added social and economic value (leadership, physical environment, community-building) • an enhanced grasp of the respective roles of market activity and public policy.

1.3 Trends in workforce approaches in international innovation precincts (continued)

Direct impacts include potentially quantifiable benefits in terms of jobs. Indirect impacts are widely observed by experienced participants in innovation precinct communities; they include the propensity of stakeholders and government decision-makers to support workforce-related programs and to cooperate in their design and funding.

The most forward-thinking examples of effective impact assessment observed across more than 30 international and NSW examples:

- go further than meeting requests to supply basic jobs and/or gross-valued-added outcomes, and undertake detailed impact assessment
- ensure that measures are holistic and outcomes-based, rather than based on training inputs
- focus on commercial benefits such as tax revenues, business savings, acquisition/investment
- assess the numbers of jobs at different skill levels and how localised the beneficiaries are
- take account of substitution effects in the analysis, to ensure jobs and benefits created are not simply replacing what would have happened elsewhere
- measure progress in addressing underrepresentation
- set clear targets yet are willing to acknowledge barriers to the success of workforce programs.

These trends are explored through international and NSW case studies and other examples and illustrations in the following chapters.

2

Workforce skills and talent supply

Talent development, retention and attraction is an essential ingredient in successful innovation precincts.

Those precincts that have seen the most success in building substantial base of jobs and business capabilities have focused on building local talent early on in their development, in addition to attracting outside talent. The importance of talent is discussed in detail in the NSW Innovation and Productivity Council's report *Global Talent Wars: Learning from locations that attract the best*.

Many precincts that did not have a specialised skills focus from the outset have had to correct for the imbalance later on. They have had to do so to ensure that:

- local residents — especially those who have historically faced barriers — benefited from the growth of precincts
- precinct leadership could generate short and long-term workforce development opportunities directly linked to its employer community.

Anchor tenants can drive equitable employment opportunities by committing to local job creation commitments and leading by example, while other medium sized and smaller companies also become actively engaged. An example is paying above market rate for training to allow discounted participation for startups or public schools. Further, as part of a community of employers, precinct businesses can engage in workforce development partnerships through internships, apprenticeships and job placements.

Precincts have adopted a spectrum of near-term and long-term strategies to develop local talent pipelines. These are summarised in Figure 4 and reviewed in turn below.

"Human capital has to be part of the strategy for the ecosystem."

Yvonne Van Hest
Brainport Development, Eindhoven

Figure 4 Spectrum of precinct skills supply interventions and the time horizons for precinct workforce outcomes

2.1 Programs tailored to the needs of a cluster of large employers

Innovation precincts are home to many customised workforce initiatives, serving the precinct or partnering with existing workforce development programs to match local talent with business workforce needs. It is common for precincts now to intervene to match local residents to precinct job opportunities. This is a shift from earlier years, when precincts assumed a 'trickle-down effect' or presumed that the geographical proximity of new employment opportunities would naturally benefit local talent.

In many cases precincts are benefiting from improved city-wide efforts — involving schools, higher education institutions and businesses — to empower employers to systematically address the critical need for middle-skilled workers in major industries and create a more sustainable pipeline of skilled workers.

Durable employer-focused programs are common in precincts that are managed by an independent or city-owned development company that can majority co-fund its workforce activities from tenant revenues. Here the offer will tend to include training, dedicated intermediaries and course designers, weekly orientation events, time with recruitment experts, and free human resources (HR) assistance to smaller tenant companies.

In **New York,** a development corporation runs Brooklyn Navy Yard (BNYDC), which has been described by BNYDC's outgoing director as 'a national model for modern manufacturing growth and accessible job creation'. Among many initiatives it runs an in-house employment centre, which trains 500 local residents a year with the specific skills required by several hundred companies based on the Yard.[11]

In a growing number of precincts, real estate developers have partnered with local governments to establish skills and recruitment hubs. One clear trend is for anchor companies to provide apprenticeship schemes or work directly with universities or colleges to do so.

Precincts also rely on their local universities being fully engaged in the place mission. These universities must be positively motivated by competition and vision to offer more innovative courses in technical and entrepreneurship areas. The risk, otherwise, is that too much of the education offer does not excite or persuade the existing or future business base. The tendency to provide generic courses that deliver 'bums on seats' can sometimes deter industry from becoming part of a precinct or ecosystem approach.

Box 1

Western Parkland City—a joined-up model of education and training

Bradfield City Centre has the potential to become a leading hub in NSW and Australia for advanced manufacturing, emerging industries and R&D. Its success relies on a very hands-on approach to skills—one that gives businesses and prospective anchor tenants the confidence to invest and create jobs.

To create this success, the Western Parkland City Authority (WPCA) has developed an innovative industry-led skills model of microcredentials called the New Education and Training Model (NETM). This approach delivers small-scale packages of learning of about 40 hours each. These packages allow people to build knowledge, skills and experience in particular subject areas aligned to employer needs. The NETM aims to address identified and emerging skills gaps and accelerate the growth of high-value, advanced industries in the Western Parkland City.

Initially fully funded by the NSW Government for a four-year period, the A$37.4 million NETM pilot program will deliver 100 microcredentials to 3,000 learners. The initial program focuses on at least five rapidly evolving priority industries for the Western Parkland City: advanced manufacturing, pharmaceutical manufacturing, freight and logistics, aerospace and defence, and agribusiness.

The process can serve global corporates and local SMEs alike. It is designed for speed and industry relevance.

1. Businesses identify a skills gap and propose one or more microcredentials.
2. These microcredentials are then reviewed and endorsed by an advisory group of business representatives and peak bodies from priority industries. This helps to crowdsource further ideas from the business community, ensuring the micro-credentials are aligned to industry need.
3. A procurement process then opens to prequalified providers, including leading universities and training organisations (RTOs). This saves time compared to a typical tender process.
4. The successful provider then engages with the industry partner to design and deliver the microcredential, with the business given the choice as to their level of involvement, from core quality assurance and content validation, to a more expansive contribution of IP, facilities, equipment, and even teaching staff.
5. The outcomes measured focus on tangible benefits for learners and their employers.

One key advantage of microcredentials is their 'stackability'. This means they can belong to a series of related microcredentials, which can form a more flexible and curated path to larger aggregated skillsets and awards. Microcredentials interact closely with a learner's existing job and ambitions and operate as a learner-led, rather than provider-directed, mode of professional development.

The NETM model brings skills providers and businesses into more agile and innovative forms of partnership. This is advantageous, given the very specific and immediate needs of businesses in a fast-growing economy and urbanising environment. The participating larger companies view as an advantage the quality of universities involved and the close relationships that the programs enable between universities and businesses. They also see these as an incentive to commit time and resources. Word-of-mouth within and across businesses has been important to uptake. The majority of those acquiring the skills are already employed, and the credentials offer immediate outcomes and benefits.

'Traditional models of education [take] too long to train people. And we don't have that time. We are trying to do something here that is unique, which is to ask what skills the companies that come here need and then going to universities and TAFE to create the courses that are needed.'

Jennifer Westacott
WPCA Chairwoman[12]

Image: © Hatch RobertsDay © State of New South Wales Western Parkland City Authority

Box 2

University City District, Philadelphia—West Philadelphia Skills Initiative

Precinct Type

University-oriented health and education precinct

Evolution Stage

Globally Significant

Overview

Created in 2012 by the University City District (UCD), the West Philadelphia Skills Initiative (WPSI) is an intermediary that aims to match jobseekers and employers and foster relationships between local employers and residents. The Initiative emerged out of UCD's overarching mission to promote inclusive economic growth for all in the community.

How it works

- The WPSI provides bespoke programs, responding to the challenges of 'one-size-fits-all'.
- It develops programs directly with employers. It works with large established companies who offer good pathways for skills hiring. It acts like a consultancy to employers, addressing their talent needs by providing employment data analysis and assisting them with hiring processes.
- It takes on one cohort at a time, and only when there are specific vacancies to be filled by a local employer.
- It recruits from the local unemployed population those that complement the specific in-demand roles—notably those from seven local zip codes who have been unemployed for an average of 33 weeks.

Ownership and financing

The WPSI is owned by the University City District, a non-profit organisation set up voluntarily by a group of research anchor institutions, businesses and civic groups 20 years ago. The program is relatively detached from city government, with no public funding. Initiatives are philanthropically funded. The WPSI does not charge employer partners to participate, but does require a commitment to job creation. In 2022 the WPSI was chosen as a backbone partner to deliver US$23m of federal workforce funding to develop 3,000 inclusive and quality roles in the flourishing life sciences industry.

Observed impacts

Over 10 years, WPSI programs have arranged full-time employment in 20 companies for 1500 local residents. WPSI programs have garnered more successful results than public workforce programs, despite costing the same: The WPSI connected 97% of graduates to employment in 2019, compared to only 68% on average across Philadelphia's public workforce system in 2015.[13] Its success has led to the development of an independent consultancy spinout, to scale up the model and replicate it in different cities.

Image: University City District

2.2 Growth industry and cluster-focused workforce development programming

Many precincts with one or two specific industry priorities focus on the strategic development of workforce training programs as well as targeted upskilling and reskilling of local residents. This is especially common in medical professions, coding, advanced manufacturing and life sciences; it focuses on young people and adults.

A dedicated development company has been shown to help galvanise effective training programs and employer partnerships. In **Eindhoven,** 240 companies in the region came together to sign a talent and skills agreement. A 100-staff economic development company for the city-region operates several vocational training programs and partners with employers to offer on-the-job training, while its online portal, 'Together Future Proof', provides a single place for all training in IT, robotics, AI, and other job skills.

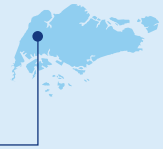
The role of research and scientific institutes is often important in scoping and scaling a precinct's cluster-specific efforts. With a fast-growing life sciences and cell and gene therapy sector, the **University City District in Philadelphia** has several life sciences focused workforce programs. They include the Wistar Institute's Biomedical Technician Training Program — a hands-on training and lab practicum, created as a partnership between local research institute Wistar and a community college.

International experience suggests that these industry-specific efforts benefit from:

- evolving into structured partnerships among employers within a particular sector or cluster
- core facilitation funding from government
- proactive partnership, including from a business chamber, regional workforce investment board, or anchor business.

Box 3

Jurong Innovation District, Singapore—Advanced Manufacturing Training Academy



Precinct Type

Brownfield advanced manufacturing precinct

Evolution Stage

Active

Overview

Based in a former industrial area far to the west of Singapore's main CBD, Jurong Innovation District has been purposefully developing a workforce development system to support its ambitions in advanced manufacturing and the sensors and robotics that underpin it.

District leaders have observed gaps in both the skills to install and repair new technologies, and in innovation skills to apply them to new problems. The precinct aims to support a whole value chain, from training institutes and academic communities that may develop innovations through to larger global names that may be customers of new products and services.

How it works

- The Advanced Manufacturing Training Academy (AMTA) is a national program office that provides curated training courses to address advanced manufacturing skills gaps. AMTA is guided by a training council comprising government agencies, industry partners and higher education institutions.
- Nanyang Technological University, located at the heart of the precinct, hosts an Industry Talent Development Program on-site. With more than 32,000 undergraduate and graduate students, companies in the area can tap on ready access to talent pipeline for internships, industry projects and job placement opportunities.
- The District has set up a one-stop Industry Connect Office so that smaller and larger businesses can access training partners.

Ownership and financing

- The AMTA Training Council is led by the former Singapore country manager of Micron Semiconductor Asia.
- Its funding comes from the National Productivity Fund.
- The district is master planned and developed by Singapore's city-owned industrial development agency, JTC.

Observed impacts

- MoUs signed with five technical, higher education institutions as well as national industrial and enterprise development agencies to develop effective educational programs.
- The wider Jurong Innovation District is on track to create 95,000–100,000 new jobs by 2040.

Image: © JTC

Box 4

Williamtown Newcastle

Defence is an example of a sector that is having to rethink the way it recruits and retains its workforce. Defence-related skills in space, AI and cyber are in great demand, and small companies often find it challenging to attract talent with the right career development offer. Deep partnerships are usually essential to create pathways to reskill and upskill and respond to the ever-changing interdependence between humans and machines.[14]

In Williamtown, a multi-partner approach between the university, the airport, and large defence players such as BAE Systems and Lockheed Martin has been emerging. The key anchor is the RAAF Base Williamtown, Australia's leading fighter pilot training base.

An aim is to use the momentum in the ecosystem to develop a high-quality workforce environment, drive more SME partner collaborations, attract and build the local workforce capability, and grow the region's world-class reputation for defence.

This involves setting up and sponsoring collaborative pilots for small companies to provide skills and solutions and raising awareness to larger industry players of collaborative opportunities and ways to shape the future workforce.[15] There is joint organisation of major conferences and events to bring together defence businesses, SMEs, advisors and investors and enable them to jointly prospect new growth areas, both for the cluster and for workforce development.[16]

A key role is played by The University of Newcastle to supply the advanced skills via degree programs such as cyber security, aerospace systems engineering and renewables. Newcastle Airport and The University of Newcastle collaborate so that students can work in a live problem-solving capacity, for example in a year-long project to find ways to upgrade the baggage handling system. To provide the ideal setting for workforce development, Astra Aerolab now aims to provide airside space for collaboration between industry, start-ups, and students.[17]

'I2N Hub Williamtown is a great space for working with defence collaborators located on base ... Base access restrictions complicate ad-hoc activities and the Hub provides a well located and resourced facility where we can get our projects moving quickly.'

Dr Karen Blackmore
Senior Lecturer, University of Newcastle[18]

Image: © Commonwealth of Australia, Department of Defence

2.3 Vocational training/ certification programs

Vocational programs delivered by or in precincts are becoming a more important part of the mix in high-growth sectors where many job opportunities do not require a degree. Some of these programs are similar in nature to Australia's vocational education and training programs. Others are structured as more of a 'microcredential' or bootcamp-style course, requiring a shorter time commitment.

Dedicated facilities for such training are a priority in many scientific precincts. For example, in 2016 the **Leiden Bio Science Innovation District** near Amsterdam opened its A$12 million BioTech Training Facility. It offers practical, hands-on training for the sector-specific workforce in a manufacturing facility. Its three laboratories and cleanrooms over 2,500 square metres provide a safe and realistic industry environment.[19]

A different but comparable initiative has also been established at the **UM Bio Park in Baltimore**. It launched a Life Sciences Institute to provide a joint associates degree with the local community college that allows local residents to prepare for high-demand STEM (science, technology, engineering and mathematics) careers.[20]

According to interviews with precinct leaders and desk research, these programs' successes are linked to:

- flexible programs
- tailoring of programs to employers' specific skill requirements
- teaching from professional trainers
- availability not only to precinct users but to regional hospitals, government agencies and academic institutions.

Employers generally value credentials from such programs. But studies have also shown that in precincts in certain sectors, employers prioritise candidates who demonstrate they can learn quickly and adapt to changing technology. These candidates also possess other non-technical skills, such as communication, time management, problem-solving, critical thinking and the ability to work well with others. For this reason, vocational programs typically blend such soft skills training with technical training. Sectors for which certificates are often required include IT and healthcare.

Recently, programs of this nature have been moved into online learning management systems, often self-guided and flexible in nature, with stackable credential options.

Box 5

John Hunter Health and Innovation Precinct, Lower Hunter—building workforce capacity across the healthcare ecosystem

Located 10 kilometres west of the Newcastle central business district, John Hunter Hospital is a major healthcare provider to the Hunter and regional and rural communities across NSW. Its emerging Health and Innovation Precinct has a strong remit to foster the ecosystem and build capacity across the operational and clinical workforce. This includes innovating at the level of training provision, creating the conditions for more clinicians to innovate, and improving the focus and co-creation of the workforce development process.

Embedding and integrating practical research in a teaching hospital is a key aspect of capacity-building. As such, the precinct's new Health Innovation Living Lab presents opportunities for researchers, students, start-ups, and industry to be more coordinated. The Lab, for example, includes the use of virtual reality to support clinician and student training. Getting more students ready for work remains a key priority, and the Lab's placement programs benefit from the university's commitment to making work-based learning as available as possible in partnership with industry.

More broadly, the Precinct plays an important role in supporting workforce capacity and to manage and implement changes in healthcare practices. It does gap analysis on the barriers to clinical innovation, and broader awareness-raising of workforce opportunities in the Precinct. Precinct leadership is also active in promoting the amenity and lifestyle offer that will enhance talent retention in the years ahead.

In addition to a focus on healthcare, John Hunter also benefits from a Multiplex Connectivity Centre, a recognised model of social procurement. This is a physical space designed to connect local jobseekers with traineeships, apprenticeships, and other long-term employment opportunities, both in the precinct and at related future construction projects. It also provides wrap-around support services and workshops for those looking for jobs or advice. There is an emphasis on engaging with disability groups, youth at risk, and Aboriginal and Torres Strait Islander groups.[21]

'Employment is the driver, but the ultimate goal is to support people to become self-sufficient and improve outcomes across a whole range of areas, such as health and wellbeing, confidence and creativity.'

David Ghannoum
Multiplex regional managing director[22]

2.4 Apprenticeship, internship and placement programs

The ambition to provide paid, on-the-job experience, often leading to full-time employment, is growing among innovation precincts. Such work can play a key role in precincts where there are mismatches between skills demands and local requirements, or where there are challenges providing employment opportunities for local communities.

Many precincts have developed programs or partnerships that provide the first job offer to local residents and prioritise apprenticeships and internships for local jobseekers, especially prioritising hiring of disadvantaged people.

Facilitating the transition between study and the workplace is key, especially in precinct locations where it is essential to retain more talent locally. Charles Sturt University in **Albury** is an example in NSW that has supported the colocation of clinical health staff (from Marathon Health) onto its campus to provide in-place workplace learning experiences. It includes placements in applied healthcare roles, and benefits from a student workforce pathway coordinator dedicated to the outcomes and student experience.

A typical model in a mature and large-scale precinct is for 100–300 interns to be matched into companies, with applications in successful programs far outnumbering places. Usually a handful of larger companies agree to participate in the program, motivated by short-term capacity needs and the longer-term desire to access talent.

Experience from examples in active and globally significant precincts indicate that:

- Apprenticeship models can successfully create cross-boundary collaborations between industry, academia and research institutes, offering in-depth training and education while providing a wage and in-demand skillsets.
- Organising a community of businesses around the notion of economic solidarity partnering helps to create better programs and communication with local residents about job opportunities.
- Coordination by well-organised and well-connected innovation hubs can provide necessary professional connections as well as hands-on training.

2.5 School partnerships and outreach

Consistent partnerships with schools in and around a precinct are becoming more of a focus in the effort to support future talent needs. Many precincts have recognised that talent needs require the development of talent for future generations, in addition to workforce development programs that meet more immediate talent needs.

NSW has important examples of workforce programs that better connect schools with local businesses in a precinct or industry. The **Regional Industry Education Partnerships (RIEP)** initiative is a key example that allows industry to engage with schools, students, careers advisers and parents in a structured way over 1–10 weeks in many locations.

RIEP programs have been undertaken in a number of NSW precincts, with 24 officers across the state connecting employers with possible apprentices, trainees and school based trainees. For example, RIEP has launched new trades and specialist industry programs to allow students in the Riverina to access apprenticeships. It has also supported the early stages of the Buraga Gul Skilling and Employment Hub in the Liverpool Health and Academic Precinct. Buraga Gul provides pre-employment construction training and skills development to meet the needs of the precinct's intensive development phase.

These partnerships rely on designated individuals (project officers) successfully engaging committed industry partners and understanding the needs, motives and mechanisms for getting businesses involved. Partner companies in this case tend to be larger domestic firms, some of them international and which co-fund initiatives. Over time the aim is to build the track record and reputation so that more industry employers seek to join partnerships.

Internationally, some precincts invest and partner in schools to teach skills specific to the growth industries of the precinct. These initiatives take three main forms:

- Adopt specialised and adaptive curricula for precinct-specific requirements.
- Relocate schools into precincts to provide a more systematic workforce chain.
- Dedicate precinct spaces and facilities to school-age children.

In **Philadelphia University City District,** a Science Leadership Academy Middle School (SLA-MS) opened in 2016 in partnership with Drexel University. This school provides a rigorous curriculum dedicated to science, technology, mathematics and entrepreneurship. Students learn in a project-based environment where the core values of inquiry, research, collaboration, presentation and reflection are emphasised in all classes. Meanwhile First Hand is an interactive STEM program targeting middle and high school students in public schools across the wider area of West Philadelphia around the district, serving a population with high levels of poverty.

Programs devised in precincts can also serve wider school and post-school communities. **Toronto's MaRS Discovery District** is working with the Future Skills Centre (a pan-Canadian initiative set up to help Canadian citizens to gain the relevant skills needed to adapt to a constantly changing labour market), the Ontario Tourism Education Corporation and a leading youth employment organisation, to support 2,000 young people in four provinces to develop skills training paths fit for future industry needs.[23] In some cases, students attend specialised lessons for half of their school week, or have part of their curricula taught by employers from precinct businesses.

Some schools have even relocated into an innovation precinct, in order to be within the ecosystem, and close to employers and higher education institutions. This makes precinct jobs and opportunities more visible to students from a young age. **Stockholm's Kista Science City** is one precinct that has pioneered an Innovation School near to innovation and science businesses.[24]

Another is the **Oslo Cancer Cluster Innovation Park** in the suburb of Ullern, where an 875-person secondary school was relocated to be fully integrated into the wider innovation spaces on site. The school even shares a canteen and a multi-purpose hall with the researchers. The school-precinct collaboration now spans 15 years.[25]

Box 6

Brooklyn Navy Yard, New York City—a technical education hub embedded in a tech precinct

Precinct Type

Inner-city advanced manufacturing and 'makers' precinct

Evolution Stage

Globally Significant

Overview

The Brooklyn STEAM Center provides on-site technical vocational education for 16–18-year-old students from nine local schools in Brooklyn, New York, alongside the 500 companies in the precinct.

How it works

- Students spend half their school hours at the centre.
- The curriculum focuses on building up key skills in five innovation industry pathways, which are chosen for their presence on the Yard: construction technology, design and engineering, film and media, computer science and IT, cybersecurity and full stack development, and culinary arts and hospitality management.
- Students build up a portfolio of work and earn industry credentials within their respective pathways.
- Students are also taught soft professional skills.
- Conference rooms, a recording studio and a teaching kitchen are available.
- The centre is intentionally located within the district and its 500+ tenants to allow STEAM students to engage in work-based learning activities and get exposure to the world of work.

Financing

Ran in partnership with nine local schools and the New York City Department of Education. The US$17m STEAM centre is around 90% funded through grants and philanthropic fundraising. Precinct representatives worked with elected officials to provide capital money to invest in the building of the STEAM centre.[26]

Impacts

As of 2023, the Brooklyn STEAM Center maximum enrollment is 340. 119 scholars graduated in the Class of 2023; 207 industry certifications were issued to this group alone.

'The old model of career technical education in a school is an old model. We had to think boldly.'

Dr. Lester W. Young Jr
Co-founder STEAM Centre, and Chancellor, Board of Regents of the University of the State of New York.[27]

Image: © Brooklyn STEAM Center, New York City Public Schools

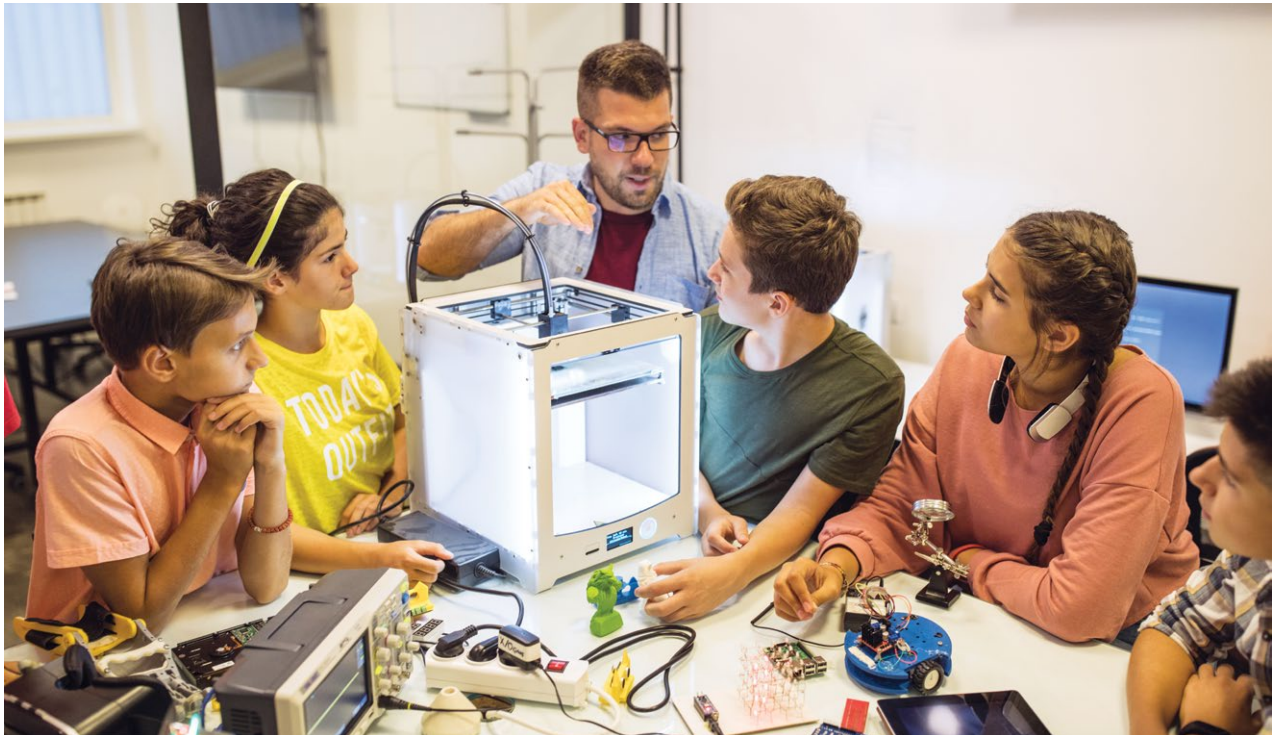
2.5. School partnerships and outreach (continued)

In these international precincts the common features of these schools are that they:

- offer multiple specialised programs, spanning not just science or digital skills, but also areas such as innovation, creative media, food and engineering
- undertake projects with in-precinct companies, universities and organisations
- incorporate short assignment-based internships where possible, including with international firms
- include assignments with international companies
- provide clear pathways and access points to consider starting a company.

2.5.1 Educational outreach programs

Some innovation precincts have proactively fostered connections with local schools through after-school or holiday programs. Others invest in providing community spaces within the precinct for young school students to directly learn about innovation techniques, to have hands-on experience with industry technologies, and to inspire creativity and foster interest in precinct opportunities from an early age.



An interesting model has been pioneered by **Cortex Innovation District** in St. Louis. The precinct has been a stakeholder in developing the Collegiate School for Medicine and Biosciences as a diverse urban magnet STEM school. A community space was created where a local children's museum provides year-round STEM camps, after-school and weekend programs, and other events for 8–15-year-old students. The precinct oversees US$500,000 of scholarship funds to finance attendance.[28]

In the **White City Innovation Campus** in London, anchor Imperial College is an example of a model run by a university anchor with some government funding. It has established a dedicated makerspace for local school students aged 14–18, designed to introduce young people to cutting-edge technology such as laser cutters and 3D printers. University staff and students run programs that teach practical and prototyping skills, as well as broader soft skills such as team-building and communication.

Box 7

Queen Elizabeth Olympic Park, London—connecting industry, education partners and the local community

Precinct Type

Suburban precinct anchored by a stadium asset

Evolution Stage

Active

Overview

In London's former Olympic Park, the precinct development corporation (London Legacy Development Corporation) and its main innovation hub, Here East, have developed increasingly systematic connections between business (media, digital, creative, esports, mobility tech), universities and schools in the four surrounding local government areas.

East Works is the name for the bundle of precinct courses and internships designed to create jobs in the sectors of construction, the built environment, digital technology, creative industries and fashion. The courses are designed with businesses, industry leaders and education partners based at the Park.

After the first five years the development corporation started to convene and systematise its programs within a single space, the Good Growth Hub. This space for businesses to connect with local talent raises the visibility of workforce development programs to both the local community and precinct-based employers. The Hub also convenes the local diverse talent pipeline for employers to access.

How it works

Courses are small-scale and include:

- Three-month digital product design training courses provide hands-on industry experience, classroom learning, and applied projects for young East Londoners.
- A 12-week in-depth training program for 20 student-cohorts residing in four local boroughs is led by industry experts on 3D printing, digital visualisation and product making.
- STEP7 offers rounds of 10–15 placements with 10 local employers for 18–30-year-olds to experience a 12-month traineeship in the creative, cultural, marketing or charity sectors, on a London Living Wage or above salary.

Over time the precinct fostered an organisation committed to addressing workforce gaps. Hobs 3D, a tenant at Here East, launched Hobs Academy in 2019, after recognising that technology skills taught in the school curriculum did not match the skills required in the workplace.[29]

Operational and financing

- The Park is coordinated by LLDC, the precinct development corporation set up to manage the area's post-Olympic legacy. The LLDC appointed A New Direction to run the Good Growth Hub, which is a dedicated award-winning local workforce provider based on site.
- The Good Growth Hub board includes local community representatives and ensures the impacts of the hub are felt outside the physical boundary of the Park.
- The Park works alongside the University College London's Institute for Global Prosperity to develop a Youth Prosperity Index that ensures the impact of the hub is accurately captured.

Impacts

- Among 1500 young people who accessed training, 900 moved into jobs.[30]

Image: © Eric Aydin Barberini, for London Legacy Development Corporation

'We've learnt the importance of building collective responsibility around strong skills programs, how to create a shared agenda that multiple partners feel direct involvement and ownership with. Also the value of a real 'front door' for these initiatives — somewhere to ground training programs that is open, welcoming and very public to help increase awareness and access.'

Emma Frost
Director of Innovation, Sustainability and Communities, LLDC

Implications for New South Wales

The NSW Government and partners are developing and refining their approach to innovation precincts, and gaining more collective clarity on each precinct's stage and specialisation. As they do, they should strongly consider how workforce development programs become a central plank of all the precincts' economic and development strategies. Within the first few years the strategic intent has to fully account for the pipeline of skills and build regular and mutually assured relationships with schools, curricula, education departments and regulators.

This process should include the capacity to maintain full outreach with precinct businesses of all kinds, especially smaller firms and producers and consumers of innovation. This will allow skills development at school, vocational and tertiary levels to align more closely with the needs of the specific industries that have momentum in the precinct.

It is especially important in smaller and lower demand precincts outside of major CBDs to be intentional from the beginning. Leaders of the precinct are right not to assume that workforce benefits will simply trickle down to existing residents from the relocation of a single R&D centre or the arrival of an anchor tenant.

Some specific implications include:

- Anchor businesses and other large employers require a different approach to SMEs. They may need dozens of people in the same role, for which cohorts of individuals can be trained. Precincts should actively explore how larger firms provide seed finance or cross-subsidise specialised training to expand access to smaller businesses.
- SMEs often benefit from low-cost and low-overhead internship and apprenticeship models, if they are confident there has been credible verification that people being placed are a suitable fit.
- Lifelong learning in the wider precinct catchment area is likely to become much more important in NSW precincts where the existing industry base is vulnerable to automation, climate transition or global competition.

To attract large-scale investment, innovation precincts and their government proponents in NSW will need to demonstrate to prospective companies that they are in a position to meet future needs as well as immediate ones. A decade or two from now, investment in the talent of today will bring more investment, draw outside talent, and make the precinct geography and potentially the entire region more competitive.

3

Workforce relationships and enterprise

Innovation precincts are not simply locations home to lots of jobs. The core mission of innovation precincts is discovery, application and commercialisation for wider public and business benefit. These tasks require very specific skills which are fostered through collaboration, networks and relationships.

In order to be at the cutting edge of new technologies and industries, precincts have to nurture the growth and collaborative mindset of leaders and staff within startups and other knowledge organisations. This may require various kinds of business education and incubation, accelerator programs, venture capital attraction, or community coordination.

Fostering a high-collaboration environment is rarely easy and never automatic. Startups experience a lot of transience, and many startups and their staff and ideas leave a precinct at short notice. The precinct must usually be prepared to provide different levels of support to SMEs, distinct from those provided to larger, more established institutions. Precincts can establish programming that creates a sense of culture and community, in turn helping to retain and attract companies. Some NSW precincts are already doing this.

NSW Innovation and Productivity Council

There are common strategies that precincts adopt to promote the growth of businesses and their workforce, and to foster the expertise of these companies and their propensity to commercialise and scale. Most of the durable initiatives have evolved not 'by design' from the formal precinct leadership itself or with substantial government scoping, but rather bottom-up from participating institutions and well-connected members of the knowledge community. Examples illustrate how such strategies have been applied to:

- build the innovation community through programming and purposeful networking
- provide services to help businesses recruit and internationalise
- provide infrastructure, services and incubation for enterprise learning and growth.

Table 3 Strategies and lessons on promoting business growth in precincts

	Example precincts	Common observations and lessons
Building the innovation community through programming and purposeful networking	Leiden, KQ London	• enabled by community-builders and expert independent teams • effective when engaging downwards 'through' organisations engaging staff with similar roles • senior leadership of the institutions is usually essential.
Providing services to help businesses recruit and internationalise	Paris-Saclay, BlueGate Antwerp, Barcelona 22@	• usually requires consistent and resource-intensive support, often sponsored by State/national governments • relies on strong working relationships between a precinct team and the wider investment and marketing agencies for a city, region or state.
Providing infrastructure, services and incubation for enterprise learning and growth	MaRS Toronto, Kista Science City Stockholm, Downtown Kitchener Waterloo	• success of independent highly commercial teams, with hands-on management and training • bundled services provided by a primary hub • differentiation and customisation between services for academic, commercial, and social innovation, but avoiding silos.

3.1 Building the innovation community through programming and purposeful networking

Fostering a tight innovation community is a key component of successful precincts. Community-building is a foundational element of a precinct, given that the success of precincts is dependent on strong relationships and the localised cross-pollination of ideas, innovation and startups.

As much as community-building and networking can flourish organically in such a high-density and creative environment, community-building does require deliberate fostering to ensure that members of the precinct community build social capital and share tacit knowledge through curated experiences.

Programming within precincts helps to foster relationships between sectors not inclined or used to working together — for example, industry and universities. This often leads to spin-offs and more responsive talent development.

The five trends in workforce programming we observe are:

1. highly organised growth-focused network building
2. shared exchange of knowledge, services, goods and opportunities
3. curated programming that invites a broader community
4. encouraging international innovation hubs and accelerators to set up locally
5. connecting innovation precincts across a region.

3.1.1 Highly organised growth-focused network building

Precincts can organise local stakeholders around mutual interest and shared growth strategies. These take the form of larger business clubs and networks and dedicated working groups.

Enlisting and motivating small and medium digital tech companies in these networks is often a challenge in an innovation precinct, given limited resources and urgent priorities. In precincts such as **Kista Science City in Stockholm,** a 150-company business network run by the non-profit precinct foundation is viewed as essential to building community feeling across B2B companies situated in the precinct. Its success has come from over a decade of minimum monthly network meetings, speed networking events, and expanded involvement from nearby large companies which provide guest lectures and workshops.

Box 8

Leiden Bio Science Innovation Precinct, Amsterdam Region—purposeful mini-communities for the workforce

Precinct Type

Healthcare precinct shifting from science park to innovation district

Evolution Stage

Globally significant

Overview

The Leiden precinct, halfway between Amsterdam and The Hague, has established itself as one of Europe's leading life science precincts. At a workforce level it benefits from collaboration communities, designed to increase collaboration between all parties, from SMEs to larger corporates.

How it works

Key features include:

- an 'access to human capital' community dedicated to connecting talent with employers.
- a one-stop-shop for companies to access legal, strategic and general management advice and customised incubation functions.
- multi-disciplinary consortia that help companies to access project grants.

Over the last five years universities, businesses and local government have come closer together to commit to the physical transformations, the amenities, the clustering, and more specialised incubator programs. This has helped to create a globally significant innovation precinct.[31] Among the next steps up to 2030 are: to create more alignment among HR professionals in different firms, so to preserve more talent in the ecosystem; and to create stronger lifelong learning options.

Ownership and financing

The precinct is run by Leiden Bio Science Park Foundation, an independent non-profit foundation (see also Box 20). A business partnership association representing nearly all companies continues to sit on the Foundation's board, now joined by the former Campus Lead of Johnson & Johnson (the precinct's largest company).

Observed impacts

The precinct has grown to more than 22,000 jobs and is on track for 30,000 jobs. External investigation by the Leiden-Leiderdorp Audit Committee has found that over the past decade, the precinct's development has brought the city jobs growth above the regional average. Every euro spent by local government has achieved a return on investment of two euros.

'The growth engine can falter if there is not enough talent to facilitate growth. This threatens to become a major bottleneck. A challenge that we can only face with companies, educational institutions and governments working together to solve. The implementation of this agenda also requires involvement and commitment of many.'

Joeri van den Steenhoven and Ida Haisma
Leiden Bio Science Park[32]

Image: © Leiden Bio Science Park Foundation

3.1 Building the innovation community through programming and purposeful networking (continued)

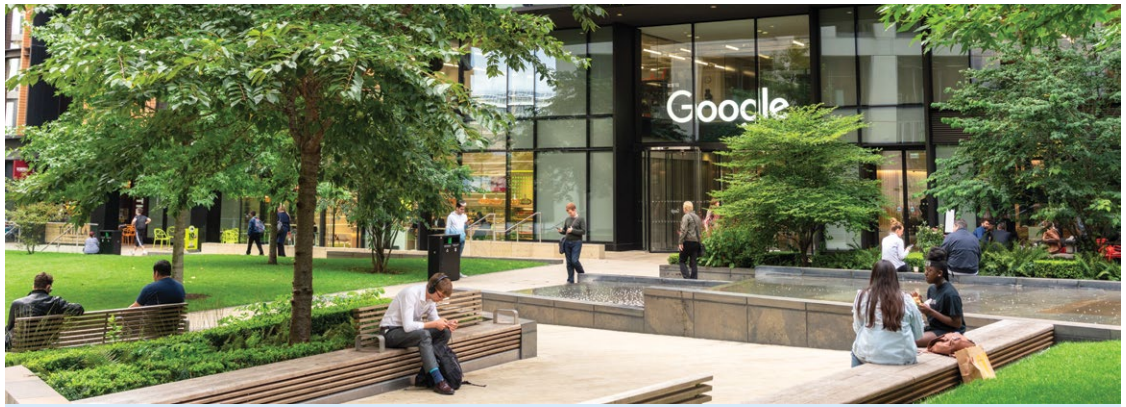
3.1.2 Shared exchange of knowledge, services, goods and opportunities

Precincts often coordinate and centralise resources that exist within the precinct community to establish an exchange of ideas, business opportunities and partnerships.

Many precincts have observed that it is beneficial to create:

- a single 'marketplace' where companies and knowledge institutes can search for and find shared equipment that is available for partner use
- working groups of HR managers and educational institutions to monitor links between curricula, add new special subjects, and help startups to learn about mutual human resource needs.

The **Knowledge Quarter** (KQ) in London is a prime example of this approach (see Box 9).



Box 9

Knowledge Quarter, London—knowledge exchange through a membership model

Precinct Type

Inner city quarter

Evolution Stage

Active

Overview

In London, the success of the Knowledge Quarter comes from its robust programming, designed to ensure knowledge exchange, and from its membership model, which fosters relationships at all levels of member organisations.

How it works

- KQ curates events and programming to foster connections, and to achieve productive partnerships, fruitful networks and creative collaborations.
- Precinct working groups are formed specifically for each new project, to steer knowledge sharing and strategy. These priorities are shared at annual steering group summits and consolidated into projects.
- Professional networks provide meeting points for particular job functions, such as public relations and policy. They provide spaces for peers to meet, share best practice and benefit from external insights.

Ownership and financing

KQ and its projects and working groups are supported through the annual dues of its 100+ members, with partnership fees ranging from A$1000 to A$40,000. In its first five-year cycle KQ received no government funding. KQ is self-organised by a small management team and is governed by a board of 10 member organisations, which includes two local councils and two universities.

Observed impacts

Initial research focused on the measured ability to reduce the costs of collaboration, and on producing cultural and long-term value by creating trust between local actors.

3.1.3 Curated programming that invites a broader community

The sections above have explained how precincts can create programming tailored for existing companies and institutions, and grow local startups. But a precinct can also elevate its brand and attract new talent, companies and ideas through a diverse and broad-based programming model that brings visitors and non-tenant stakeholders to the precinct. Universities can also be the drivers of these activities.

In the **Cortex Innovation District** of St Louis, universities have jointly established a cybersecurity consortium. Its mission is to facilitate academic collaboration on research, events, and grants, and filling cybersecurity jobs in the region. Two universities share space, one university coordinates content, and the precinct assists with the programming.

In the **White City Innovation** Campus in London, Imperial College has created a hackerspace for the university's wider network of student and staff innovators. Electrical and mechanical engineering workshops, with state-of-the-art technology, digital modelling spaces and lab facilities, test out designs and prototypes, with resident university fellows and ex-entrepreneurs on site to offer mentorship.

Box 10

Tech Central, Sydney—collaborative partnerships to invite a wider community

As a precinct located directly south of Australia's largest CBD and home to three world-class universities, Tech Central benefits from an exceptional scale and concentration of education and skills provision in and around the precinct. Yet it also faces distinctive workforce pressures. Talent is scarce in its fast-growth technology sectors. Innovation often takes place at the convergence with other sectors, creating demand for hybrid skillsets.

The precinct also faces barriers to talent attraction and retention. Costs of living and working near the precinct are high, and the international competition in high-paying industries creates a continuous risk of brain drain among its student base.

As a result, the precinct has recognised the need to encourage colocation and create centres of gravity that can connect the entrepreneurial and scientific communities in its sectors. To this effect it has prioritised the flagship facilities, collaborative workspaces and inclusive outreach. It aims to attract global talent and investment, and at the same time provide diverse local communities with genuine points of connection and workforce points of entry.

Tech Central's flagship infrastructure to drive workforce collaboration and signal to future talent include:

- **The Quantum Terminal** has been designed as a new location to anchor the Sydney Quantum Academy. This new collaboration space brings together bespoke lab spaces, shared and private workspaces for companies of up to 30 employees, and large event spaces to showcase and build awareness of the broader quantum space. The Academy sees four universities working together, supported by an initial $15.4 million from the NSW Government. It focuses explicitly on producing future quantum technology leaders and attracting global talent.
- **The National Space Industry Hub** aims to coordinate the satellite and space industry in NSW. Led by Cicada Innovations, it works in close collaboration with other nearby industry space players, and provides laboratory space, training and state-of-the-art facilities. In its first 12 months of operation, the hub secured 10 resident enterprises.
- **UTS and Navantia's Joint Institute** integrates engineer training with commercial R&D activities. Formed by Sydney-based university UTS and Spanish state-owned shipbuilding company Navantia, the Institute is designed to promote activities to a broader audience. A new visitor space will showcase digital technology for the naval industry at UTS's Ultimo campus.[33]

These new spaces also provide homes for workforce programs designed to help local students to gain experience in market research, pitching and commercialisation, and also access direct internships or employment. Examples include:

- The Quantum Terminal's quantum hackathon helped more than 50 PhD students to solve quantum-inspired optimisation challenges and network with industry players.[34]
- Navantia has funded new facilities to test and prototype innovative engineering solutions and will provide internships and graduate employment to UTS students. In return, UTS provides access to its research expertise and access to future maritime engineering talent.

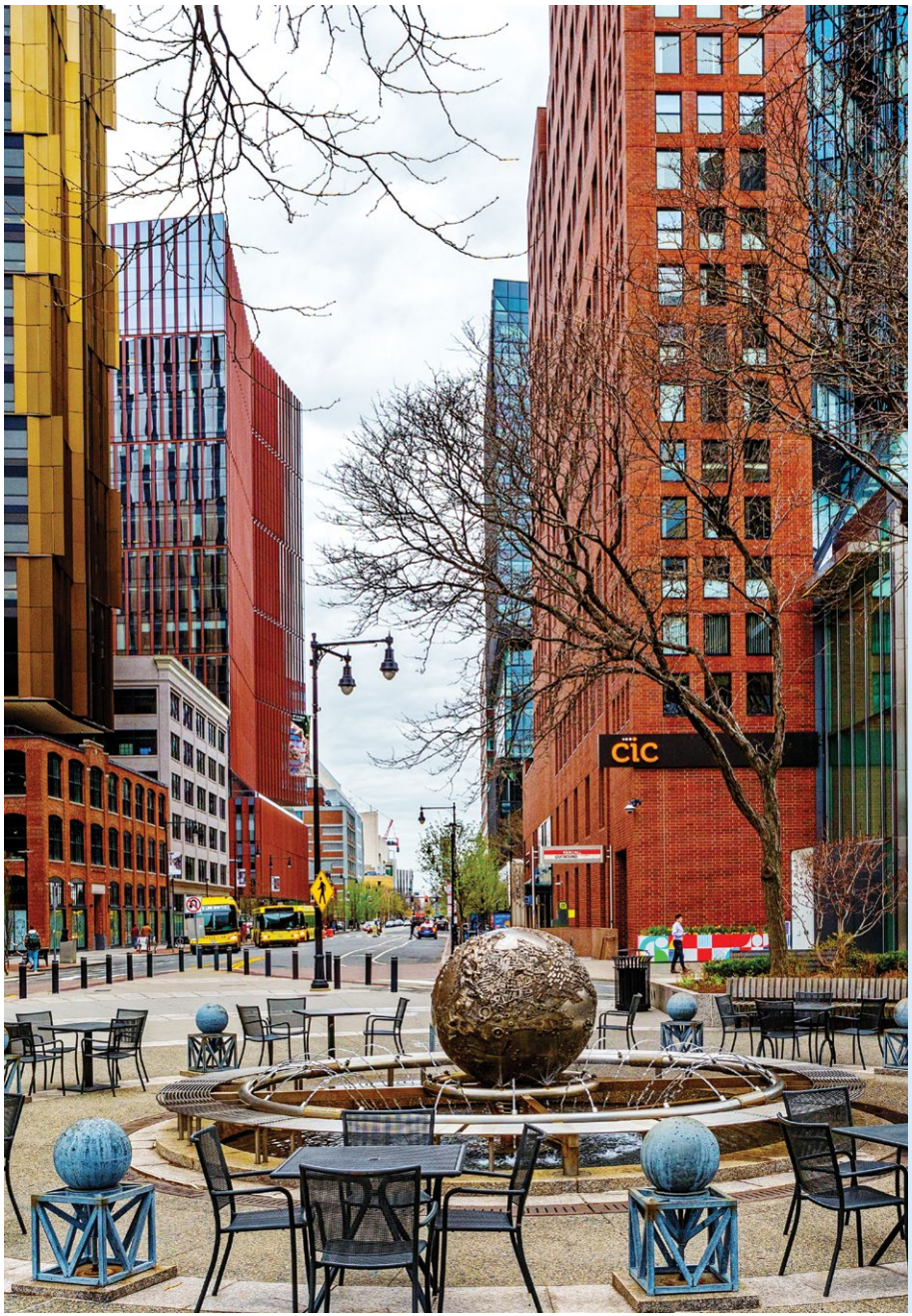
'We need academia, government and industry to work collaboratively on potential use cases across all industry sectors where quantum technology could deliver significant advantages. The new Quantum Terminal space in the heart of Sydney will also allow us to bring these groups and like-minded people together to help spark innovation.'

Peter Turner
CEO, Sydney Quantum Academy[35]

3.1.4 Encouraging international innovation hubs and accelerators to set up locally

The global expansion of the most successful community/co-working/accelerator models is an important influence on workforce enterprise in many innovation precincts. Among the leading examples are Techstars and Cambridge Innovation Center (CIC), both now based in NSW (see below), as well as Factory and Startupbootcamp.

Techstars, a prominent US-origin and Europe-origin ecosystem connector, has supported more than 20 companies to go on to be valued at over $1bn. It is growing its international presence in cities and locations where it spots opportunity in the market. In early 2023 it identified **Tech Central** as one of these locations. It agreed to join the precinct to help provide both access to capital and mentorship to local early-stage startups in AI, fintech, advanced manufacturing, cloud computing, cybersecurity, climate tech and creative tech.



Box 11

Cambridge Innovation Center—a workforce networking model

Cambridge Innovation Center (CIC) is an example of a highly experienced and globally replicable co-working and ecosystem networking model. CIC was founded as a realestate company in 1999 by two MIT students in Kendall Square precinct in Cambridge, Massachusetts. It now operates in nine locations: five in the United States and three internationally (Warsaw, Tokyo, and Rotterdam).[36] Through its partnership with Venture Café, it also operates in Sydney and three other North American cities. Like others it offers collaborative office space, often with wet lab space for life sciences companies. But it adds value primarily by connecting specific parts of the ecosystem.

CIC does not base its location decisions solely on real estate markets. Instead, it analyses ecosystems closely and seeks the presence of a diversity of sectors that bring creativity and foster an environment where companies in different sectors can collaborate. CIC works in contexts where, as interviewee and former CIC Executive Director in Philadelphia Sally J. Guzak has explained, the 'money, ideas and talent are there, the universities are keen, but something is missing, maybe they are not collaborating, or not in one district or area.'[37] CIC has typically chosen to expand in places where investors have more appetite for real estate and where the value of investing in startups is less well understood.

Since 2019, the Cambridge Innovation Center has been active in Sydney through Venture Café.

The centre's primary programming partner, Venture Café provides value through its frequent networking and its convening of weekly interaction and free civic events. In Sydney, these include:

- pitch nights
- one-on-one sessions on, for example, patent strategies or emotional awareness
- Thursday gatherings that attract those from beyond the incubator.[38]

The CIC model has widely recognised distinctive elements:

- It delivers a level of access to mentors, investors and diverse entrepreneurs.
- It provides attention to industry needs and visibility. In Philadelphia, CIC established a program with local institutes to expose more people to life sciences, especially college students.
- It fosters community entrepreneurship, encouraging ideas to flourish among groups in the precinct and surrounding area that are often underserved and underdeveloped.
- It promotes shared objectives. CIC leaders have noted that in order to build meaningful relationships in a precinct around workforce it is important to create projects with shared goals and agreed deadlines. CIC's curatorial work is based on a collaborative ethos of leading players within each precinct.

3.1.5 Connecting innovation precincts across a region

Many cities and regions are working on building leadership and knowledge networks between their innovation precincts.

The aim here is to build know-how and collective visibility, develop common approaches to skills and inclusion, and identify complementarities in terms of how the precincts choose to specialise, to avoid duplication or unnecessary competition. Leadership and knowledge networks are common when such groups convene five to 15 innovation precincts, such as the UK Innovation Districts Group, which now has 12 members spanning eight cities of different sizes.[39] Some cities and regions have convened many more groups where they adopt a lower threshold of size or eligibility.

The NSW Government has started to play an important role to both connect and convene innovation precincts across the Six Cities Region, and support common development of economic strategies, stakeholder engagement, and governance processes.

Box 12

Campus Amsterdam, Amsterdam—an open network for precincts to share know-how and attract talent

In Amsterdam, the University of Applied Sciences drove the creation of Campus Amsterdam, an open regional knowledge network of over 60 innovation areas and campuses (see Figure 5).[40]

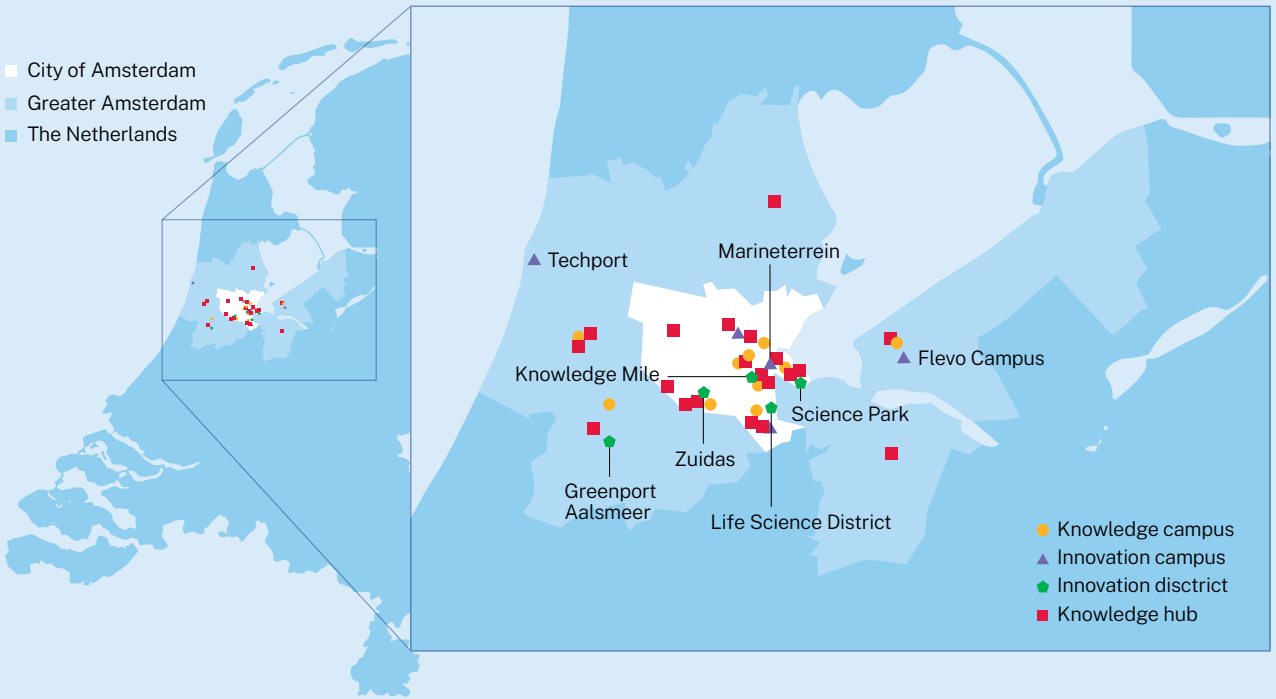
The Campus Amsterdam initiative benefits from €90,000 a year of City of Amsterdam investment in the network to explore where more connections and synergies are possible. The network includes regular conferences, site visits, campus development strategies and living lab approaches, where different peer groups of innovation precinct 'types' come together and apply learnings and ideas.

The collaboration model recognises that the campuses are essential to both the attraction of companies and talent, and the linking of local firms into strong ecosystems of knowledge and purposeful workforce development.

'Campus Amsterdam can also help to improve the profile of the region as a whole, at home and abroad, as a hotspot for startups and scale-ups with a wide range of dynamic environments.'

Bas Beekman
Director of StartupAmsterdam[41]

Figure 5 Map and typology of campuses networked across Greater Amsterdam



Based on the Business of Cities research, adapted from Campus Amsterdam. Note map is not exhaustive.

3.2 Services to help businesses recruit and internationalise

Precincts typically support local businesses in accessing staff, gaining visibility in wider markets, and generating interest and investment from new job-producing companies. These services are both an important and an underestimated engine of workforce development.

NSW precincts seeking to incorporate these services into their development strategy can consider the following popular tactics:

- **Create a one-stop shop for precinct businesses and prospective investors.** This can be very important in advertising to small and hard-to-reach companies that services and support are on hand, and in connecting investors to IP and investable opportunities. Experienced and globally significant precincts such as **22@Barcelona** have decided to set up a technical office or 'one-stop shop' to make business support transparent and visible.
- **Assistance with commercialisation, patents and licensing.** The **MaRS Discovery precinct** in Toronto is one of the most comprehensive precinct providers of market intelligence to local firms. This intelligence helps firms guide interactions in the labour market and to assess market opportunities. University librarians are located on site at MaRS and regularly disseminate industry reports to identify current market opportunities and competition, and to inform pitches to potential investors. By providing direct access to local R&D and legal experts for precinct-based companies, they help more companies to set up, retain and recruit staff and then focus on growth.
- **Technology transfer offices.** Larger precincts with significant R&D functions often develop combined technology transfer offices that connect public research with innovation companies. Such offices provide researchers with support for the development of research projects into startups, assisting with the registering of licenses and patents and connecting projects and expert researchers to entrepreneurs.

Paris-Saclay, the largest precinct in the Paris region by size and public investment, has produced a number of initiatives through this office. With the newly merged university (Paris-Saclay University), it has established a single web portal connecting SMEs and researchers in the precinct. The portal allows entrepreneurs and startups to search for expertise, research, and equipment at over 300 labs and technology platforms in the precinct.

As part of this model, the most promising startups come under the wing of a management board of 10 startup leaders. Each leader is required to devote two hours per month, alongside a dedicated community manager. 'This process pushes us to meet our peers' explained entrepreneur Valérian Giesz. The community is supported by local governments, the merged Paris-Saclay University, and many other investor and incubator alliances.[42]

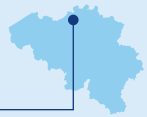
International experience suggest that these kinds of initiatives are especially effective at producing businesses where there is:

- a clear economic development governance at the city or state level that can provide awareness of the go-to contacts and facilitators in a given innovation industry
- adequate grow-on space within or immediately adjacent to the precinct that is able to arrive on time
- a whole spectrum of business sizes, especially in specialised science sectors.

It is often the case that the precinct provides a level of focus, invitation and accessibility that is invaluable in serving business know-how among earlier stage companies.

Box 13

Blue Gate Innovation Precinct, Antwerp—back-office support to facilitate startup growth



Precinct Type

Sustainable port innovation precinct

Evolution Stage

Emerging

Overview

Since the initial idea in 2001, Antwerp's Blue Gate has become one of the most significant emerging innovation precincts in the chemical sector in Northern Europe. After receiving the site for free from previous landowners, the regional and city governments saw an opportunity to both diversify the region's economy and demonstrate its commitment to the Sustainable Development Goals in a single location.

How it works

- The precinct has developed dedicated support to help young startups in the chemical industry succeed and overcome the challenging growth stage known as the 'valley of death'.
- Inside the precinct, incubator BlueChem's three-person management team helps companies focus on their growth by providing back-office support including ensuring meeting rooms and facilities are impeccably run and managed. BlueChem also leads on matching and partnership.

Image: Lodevermeiren, CC BY-SA 4.0

- The early success of BlueChem has come from splitting the real estate management from the innovation responsibilities.

Ownership and financing

BlueChem has a public-private shareholder model based on deeply shared interests which contributes to a long-term approach. A federation of chemical companies owns 51%, with the other 49% split across three public entities and an umbrella innovation cluster. Shareholder finance is part capital, part 30-year loan.

Observed impacts

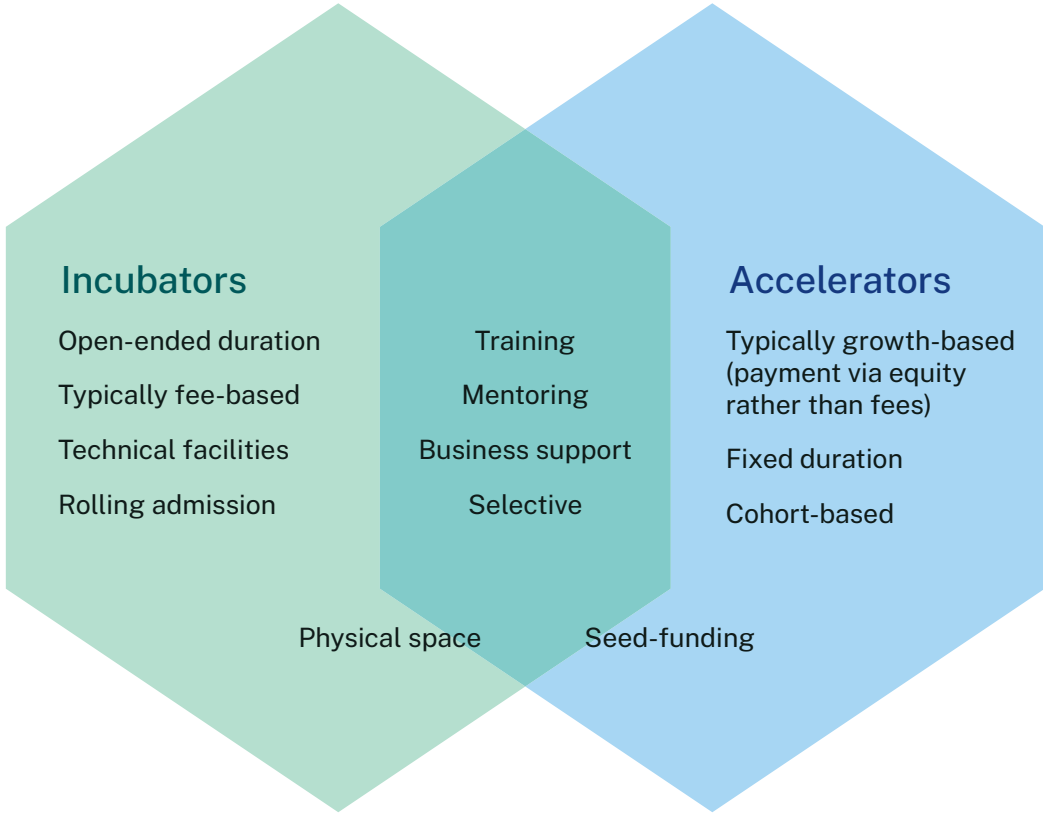
The precinct has successfully and steadily cultivated small businesses during a protracted remediation of land in a complex setting. It has attracted two major logistics anchors, Amazon and DHL.[43]

3.3 Precinct support for business growth, incubation and acceleration

Incubators are a well-established way to provide startups with management training and shared office space to nurture their growth and maturation. Precincts and the institutions within them are increasingly hosting specialised incubators with specific sector knowledge and management skills.

Meanwhile accelerators play a key role in providing fixed-term, cohort-based support and providing intensive mentorship, education and funding support.

Figure 6 Differences and overlaps between innovation incubators and accelerators



Source: Bone et al. (2019) adapted from Dempwolf, Auer and Fabiani (2014)[44]

Global evaluations of incubators and accelerators in innovation precincts

Studies internationally suggest that incubators in general are fairly successful both at growing firm employment and sales, and at filtering the best-quality business ideas. Not all incubators or accelerators are equally successful. Overall success appears to be strongly shaped by the quality of the non-monetary services that an incubator provides. That in turn points to the calibre and importance of community-building and networking in a given precinct.

The available data suggests a number of relevant findings:[45]

- More firms tend to survive at incubators and accelerators that host only firms from a specific sector.
- Affiliation with universities seems to help companies gain access to the networks and reputation to secure venture capital funding, grow revenue and expand employment.
- The longer they incubate, the less likely firms are to get funded, become independent, or be acquired.
- Incubation programs perform better when they proritise their goals and tailor their design and hands-on support to desired outcomes.

3.3 Precinct support for business growth, incubation and acceleration (continued)

Rather than invest in generic incubators or persist with models suitable for previous phases of development, innovation precincts have started to update their approach to supporting companies. For instance, firms may:

- expand or diversify existing services, as Waterloo has done with its Velocity incubator (see Box 14)
- recognise they need a dedicated incubator with more robust timeframes and inputs (see Box 8)
- attract expert international incubators or community co-working suppliers (see Box 11).

Box 14

Downtown Kitchener Innovation Precinct, Greater Toronto—customised incubation in collaboration with a university

Precinct Type

Quarter

Evolution Stage

Active

Overview

In the successful Twin-Cities of Kitchener-Waterloo, near Toronto, the incubation by and with the University of Waterloo has evolved over two cycles to become more segmented and customised.

How it works

- In 2008, the university began to foster a community of entrepreneurs by offering them a place in residence. There have been no fees to participate, and no equity taken from startups. At the same time Velocity was set up outside the university, with dedicated workshop and lab space for early-stage startups. Three times a year, early-stage startups compete to receive C$50,000 of investments from the Velocity Fund.
- Over time, the university's on-campus provision became a 'pre-incubator' for students with entrepreneurial aspirations, while the other half of the program within the nearby emerging innovation precinct of Downtown Kitchener sharpened its focus on incubating high-potential startups, regardless of any connection to the university.
- After the first 10 years, the precinct was restructured into two bundles of services so as to continue nurturing high-growth tech companies in its Downtown Kitchener precinct. The pre-incubation is designed as a pipeline from the university campus to the in-precinct incubator, based at the heart of Kitchener alongside the main hub of Communitech.
- The restructuring took place so that the very successful in-precinct commercial programs did not cast too much of an intimidating shadow over student entrepreneurship.
- University operations support much earlier-stage ideas to explore an initial business process, while the precinct services support dedicated founders. The university half is supported by a network of 12 coaches, previous or current founders serving a few hours a week. The coaches engage closely with business advisors working in the commercial in-precinct Velocity space.

Ownership and financing

The program has been co-funded by federal, provincial and city governments as well as by the university.

Observed impacts

Velocity companies have a four-year survival rate of 66%, compared with the US average of 48%. More than 400 companies have been incubated, raising more than C$4.3bn and creating more than 5,000 jobs.[46]

3.3 Precinct support for business growth, incubation and acceleration (continued)

Some leading health and education precincts have recognised that they need a dedicated incubator tailored for startups and scale-ups in the life science and health sectors. **Leiden's Bio Science Innovation District** has based an incubator on the Harvard Healthcare Innovation Cycle methodology. This is because the precinct found general incubators insufficiently attuned to the growth stage requirements and the specific global networks and market trends in the sector. The 12-month program features coaching from experienced entrepreneurs from within the precinct.[47]

Nearby, a dedicated incubator at Amsterdam Center of Entrepreneurship sits alongside specialised workspaces and is a major driver of **Amsterdam Science Park's** strong reputation in the ecosystem.

For others, especially in mixed urban areas, precinct incubators and accelerators are applying an equity lens when recruiting companies, to ensure diversity and foster more equitable opportunities for local, minority and women-owned startups. To this end:

- **Brooklyn Navy Yard** launched an equity incubator in 2021.
- **Cortex Innovation District** has set up an Equity in Entrepreneurship Collective among institutional partners and innovation centres to ensure that systems for entrepreneurs are equitable across race and gender.
- **Philadelphia's** LaunchLane Accelerator within the city's Science Center helps tech-enabled startups to transition from prototype to sales and customer acquisition.

Image: Amsterdam Science Park. Swimmerguy269, CC BY-SA 3.0

Effective strategies include:

- blind application process to de-bias the selection process
- shorter courses focused on the schedules of participants and on sales and customers
- precinct partners providing shared resources
- direct targeting of underrepresented groups
- peer-to-peer networks to connect with those on a similar trajectory.

In **Austin Capital City Innovation District,** the small precinct leadership team has set up a free impact accelerator program in combination with the teaching hospital and the public healthcare provider, as well as large banking and real estate companies and the city government. This accelerator has been established to work with nine ventures at a time over 11 weeks, focusing on strategies for low-income residents to access living wage jobs. Five hundred workers are in training, being trained or have been placed in jobs via the first cohort of the accelerator.

One of the most advanced examples is the American Underground Hub in the **CBD of Durham,** North Carolina. Here, partners such as the non-profit precinct leaders (RTP), Google (through the Google for Startups initiative), the Chamber of Commerce, and four universities support programs for Black-led startups that have a high-growth and scalable model, helping them to grow from an initial product. Support encompasses hands-on training, networking, fundraising and now virtual memberships. Forty per cent of American-Underground-based companies are led by a woman or by people of colour. More than 3500 new startup jobs have been created and US$400 million has been raised in funding by the incubator's companies since 2014.[48]

Box 15

Kista Science City, Stockholm—restructuring incubation to cater for local startup needs

Precinct Type

Suburban ICT/health and education precinct

Evolution Stage

Globally Significant

Overview

Kista Science City in Stockholm is an example where leaders recognised at a certain point in its evolution that more was needed to prepare young companies to access capital.

Until the late 1990s the precinct had no institutional support system for startups at all. Analysis found that the many companies 'did not communicate with each other enough' and the precinct 'had not invested enough in networking, cross-pollination and peer learning between companies.'[49]

Initially an incubator was established as part of the effort to commercialise university research. In the second cycle of Kista Science City, after a wider financial crisis, the city-wide accelerator organisation STING recognised the need to develop a whole funding ecosystem under one roof—incubator, business angel network and seed fund. Members of the delivery team have entrepreneurial backgrounds and work to ensure that the quality of companies primed for investment is very high. As former precinct CEO Ake Lindstrom explained, the City of Stockholm 'doesn't get overly involved. They trust what we are doing as long as we deliver.' [50]

Over time the services have been restructured to service the needs of startups across the city and especially along the innovation corridor between Kista and the CBD.

How it works

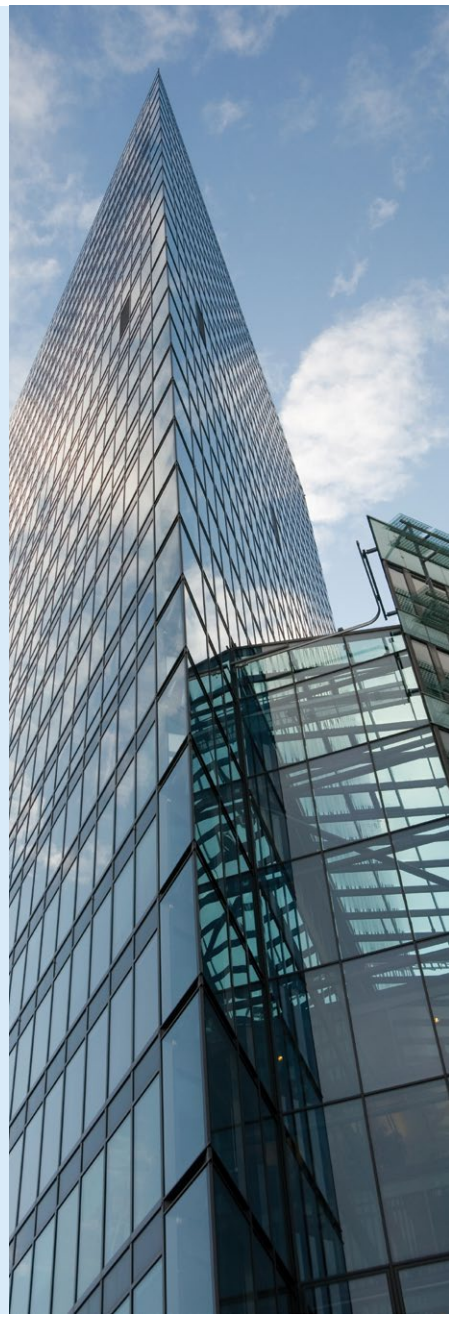
- The Pre-incubator Business Lab is designed to help the teachers, researchers and students of the University to establish their own businesses in Kista. It provides 12 months' support (six months free), infrastructure, advisors and business coach, and access to other services.
- Three unique coaching programs are available for startups, curated for the specific stage of growth of their participants. These are a 'test drive' course for startups in the earliest stage of development, an 'incubate' course for those with longer development cycles and an 'accelerate' course for the scaling up of launched products.
- Incubated companies receive free co-working office space, with meeting rooms, conference rooms and events spaces, for six months.
- There are three rounds of startups (10–12 companies) per year in its incubator program.
- Business accelerators are available for digital workers in existing companies who want to commercialise their ideas or innovations.
- Programs are delivered in small annual cohorts of only 25 companies, selected from among 300 applicants.
- Startups have access to approximately A$75,000 worth of pre-seed funding from Sting's own investment company, Propel Capital.
- The Business Lab offers access to multiple coworking spaces across Stockholm at up to a 50% discount.

Financing and ownership

Funding comes from Electrum, a precinct-specific foundation established by anchor tenants Ericsson and ABB and the City of Stockholm. Most of the functions have been outsourced and are performed by private service providers. External providers contribute both experience and financing (through options sold in successful growth companies).[51]

Observed impacts

STING has helped more than 300 startups since 2002, with a combined valuation of more than €2 billion. Startups assisted through the accelerator are very successful, with 69% still active and growing, compared with a city-wide startup survival rate of less than 10%. STING's investment company has invested in more than 110 companies since 2014.[52]



Implications for New South Wales

Investments in the ability of businesses and their staff to collaborate, network and develop commercial know-how should be considered essential complements to the core task of workforce development.

Precincts that have prioritised and integrated these activities have shown significant impacts on two dimensions:

- long-run demand for jobs from successfully expanded businesses
- the wider workforce's ability to contribute to the innovation economy.

These impacts are most likely to occur in NSW precincts where market drivers and competitive advantage are already well established — for example, Tech Central.

Investments in workforce relationships and enterprise should be viewed as long-term mechanisms for reducing dependence on government, and for building a stronger public-private infrastructure — one where more partners and stakeholders are involved and invested in the precinct. Such investments inevitably do not lead to universal successes, as business potential will not always materialise. Yet purposeful networking and theme-based programming creates organic, unexpected connections and partnerships that NSW precincts should try to harness, capture and retain.

Given the current maturity of these approaches in NSW precincts, it is important to consider:

- Relationship-building is key to precinct formation and must often be curated and guided. It should not be left entirely to chance. Precincts can task a dedicated resource with coordinating these relationships — usually one to two people working with the precinct manager or leadership alliance.
- Precinct-builders should avoid building relationship channels exclusively in silos organised by seniority, size or sectors. Look to bring together stakeholders of various backgrounds on an even playing field, as this helps to democratise the precinct and this in turn stimulates more cooperation.
- Investments in networking should ideally do more than just focus on 'bonding capital' (which links together tight communities of practice). Investments should also focus on 'bridging capital', which connects people in a precinct to widening circles of relationships, and thus helps clusters grow stronger and more resilient to disruption.
- Look to engage, enrol and empower a larger share of a precinct's smaller organisations, and encourage these networks to become co-owned and self-sufficient.
- An individual precinct should not expect all the convening activity to take place within its boundaries. It should actively engage with and complement whole-city or whole-region platforms that may provide more valuable sources of visibility and connections in certain sectors that are more spatially distributed.
- Networking and programming have to be developed with a close eye on the precinct's space, affordability and amenity, and with attention on the mix of spaces and uses in the precinct.

4

Localised workforce benefits

More precincts are taking note of the need to engage beyond the core ‘innovation’ stakeholder groups and become much more inclusive and truly engaged in the workforce outcomes of their communities.

More intentional and authentic engagement of residents and civic groups is now viewed as key to generating more economic opportunities in a precinct over the longer term and to help enhance the local supply of human and social capital to meet precinct needs.

Precinct leadership teams have been experimenting to incorporate the voice of local residents and representatives. That can help to ensure that skills gaps are addressed, and that future workforce programs are appropriately inclusive and culturally sensitive.

There are three main practices that precincts are applying to increase diversity and build a more inclusive community — one that contributes both to workforce development and wider community wellbeing:

1. community engagement in precinct decision-making
2. localised procurement systems
3. diversity, equity and inclusion goal-setting.

4.1 Community engagement in precinct decision-making

Better mechanisms for involving communities in the precinct direction are viewed as a critical component of building an inclusive innovation ecosystem. But this does not mean that it is easy.

Methods for including community residents and civil society actors will depend on the governance structure of a precinct. For precincts that are governed by a development corporation, the board of directors and related advisory boards are ideal bodies to include community participation and voice.

Precincts driven by local government can organise community meetings to receive input. Many health and education precincts, for example, require very substantial engagement with local authorities, health care providers and larger institutions, as well as the communities they serve.

Three distinct models for delivering this approach have emerged:

1. Inviting multiple sectors to coordinate precinct redevelopment and delivery.
2. Bottom-up co-designed community engagement.
3. Community informed.

Image: Creative Commons Monterrey, CC BY 3.0

4.1.1 Inviting multiple sectors to coordinate precinct redevelopment and delivery

In Monterrey, Mexico, the precinct **DistrictoTec** has developed a 'co-responsibility model' around the Technologico de Monterrey university. The model is the product of collaboration with local partners, authorities and residents.[53]

DistrictoTec started with the intention of co-creation during the renovation of the University campus and surrounding neighbourhoods. It has evolved into a highly participatory process engaging urban planners and people engaged in arts, sports and recreation, among others. Collaborative meetings and engagement are built into the fabric of decision-making.

4.1.2 Bottom-up co-designed community engagement

Precincts such as **London's Knowledge Quarter (KQ)** have developed a member-led model. This includes a sliding scale for annual dues, based on the employee size of each member, with special rates for nonprofits.

The egalitarian model allows for an inclusive structure and widespread engagement. Its community engagement sub-group focuses on sharing precinct experiences with the local community and building relationships with local charities and schools.

As the Quarter has grown, efforts have increasingly focused on helping residents from the local communities to access the new opportunities that arise from redevelopment; part of its 2025 strategy is to embed local communities in the precinct.

Efforts to ensure local community engagement and a meaningful contribution to the local areas are reflected in plans to appoint a KQ youth champion, place a central community member on its steering group, and to explore ways to incorporate pledges for inclusivity and community engagement within member agreements.

4.1.3 Community informed

Cleveland's Health Tech Corridor is an example of a precinct that did not start with the goal of equitable growth and inclusion from the outset but is now putting these values into action.

Precinct leaders realised that major economic disparities persisted in the surrounding neighbourhoods despite the Health Tech Corridor's growth. The Tech Corridor is now prioritising inclusive design practices and engaging the local community, both through multiple advisory boards and through the inclusion of local residents in decision-making bodies.

For example, four community residents were part of the group that selected Wexford as a developer for a future project. Other stakeholder groups meet regularly to receive updates and provide feedback and input on a variety of local projects.[54]

Box 16

MaRS Discovery District, Toronto—scaling up inclusive workforce programs

Precinct Type

Inner city healthcare and technology precinct

Evolution Stage

Globally Significant

Overview

MaRS (short for Medical and Related Sciences) is a nearly 20-year-old innovation hub based in Toronto's dense CBD-fringe innovation precinct (see Chapter 5 for full details). It has excelled as a provider of education services to a variety of recipients, many of which have gone on to become regionwide and nationwide platforms.[55]

A youth employment initiative originating in MaRS has become nationally significant. Mystartr began as a small-scale collaboration between employers in MaRS. An initial US$4 million public funding helped create 23,500 jobs for young people between 2017 and 2022, with a much higher retention rate than those outside the program. Mystartr then became Canada's only national employer-led coalition for young employment. It helps to connect under 30-year-olds with employment opportunities through programs such as guaranteed interviews, mentorship programs and Youth Advisory Councils.[56]

MaRS continues to develop new initiatives for inclusive workforce development. One such initiative, the Indigenous Youth Employment Program, engages Indigenous elders to understand and address the distinctive challenges faced by young Indigenous workers. Similarly, MaRS provides a digital platform to simplify the job application process for young people, and those facing job disruption, in the precinct.

To date, the platform has enrolled 9,500 young people. Data collected is shared with businesses, academics and regional government to help address barriers to employment in future policy and partnerships.

MaRS regularly hosts challenges and competitions on inclusive workforce development. For example, the MaRS and CIBC Inclusive Design Challenge aims to crowdsource innovative solutions to increase workforce participation for people with disabilities.

The result of MaRS' work on inclusive workforce development is not only visible in job numbers, but also in Toronto's track record of assisting high-impact startups with major market traction in the health, cleantech and fintech sectors.

In 2020 alone, MaRS supported ventures raised $2.4 billion and generated $1.5 billion in revenue.[57] More than 22,000 jobs have been attributed to MaRS-supported services and ventures. MaRS's success is viewed to have slowed and even reversed the brain drain of leading Canadian innovators to Silicon Valley. The most visible challenge in recent years is to ensure that startup IP and capability is retained locally.

Image: Christie Spicoluk, CC BY-SA 3.0

4.2 Localised procurement systems

More precincts, especially in denser, more inner-city and multi-sector environments, are starting to set supplier diversity procurement goals and requirements to contract local providers, including smaller businesses and those owned by minorities or women. In addition to driving demand, growing the utilisation of such firms is most successful when it supports capacity-building activities for growth stage businesses, matchmaking opportunities, and assistance with access to capital and back-office support.

Precincts rarely set up initiatives themselves. The models that are emerging include:

- **Several anchors agreeing to a shared procurement approach.** In **Philadelphia,** Anchors for Growth and Equity is a partnership between the region's major research provider, the City of Philadelphia and more than a dozen Philadelphia-area institutions. They seek to increase local purchasing by large institutional buyers, in order to grow local businesses, strengthen the local economy, create jobs, and build wealth.[58]
- **Social procurement.** **Auckland's The Southern Initiative** takes a social community approach to the economic development of the sub-region, with social procurement built into strategies such as building a bus station with Auckland Transport.[59]

- **Prioritising local construction jobs.** In **St Louis, Cortex Innovation District** leaders work with developers and contractors on district construction projects to meet and exceed goals for contracting with minority-and women-owned businesses and deploying a diverse workforce. They also participate in ongoing city and regional discussions related to construction enterprise and workforce goals to support entrepreneurs that are equitable across race and gender.

Relevant success factors include:

- effective intermediaries which can support supplier diversity, and are able to provide practical advice and support to buyer members
- clear targets and accountability.

4.3 Diversity, equity and inclusion goal-setting

While most precincts have prioritised the attraction of global talent and international diversity, many are now also developing programs and priorities to engage historically disadvantaged populations as part of the precinct community.

Contracting and workforce participation goals are part of this conversation. Some precincts that receive government funding are required to meet a standard of supplier and workforce hiring diversity goals.

An initial step for precincts is to establish contractual and hiring prioritisation and goal-setting within the precinct community, moving the needle beyond construction-related opportunity. Several precincts are considering establishing local hiring goals for members. Others are actively engaged in discussions with local anchors about economic opportunity programs.

Getting local institutions to agree to such goals is not an easy process. It is best achieved when local anchors commit to diversity as a goal and work together to be the drivers of such efforts. Agreement is less likely when firms are asked to meet a mandate that they may feel threatens them.

Diversity, equity and inclusion committees are also aiming to ensure values are monitored and put in practice in a precinct governance structure. Two examples are the **Cleveland Tech Corridor** Diversity Community Connections Committee and **Boston's Kendall Square** Association Diversity, Equity and Inclusion Learning Community. Both have a shared cross-precinct leadership commitment to improve workplace and racial equity. The aim of such committees is typically to provide executive leaders, HR members and managers of the innovation precinct with the scalable tools to expedite change in their organisations. Short 10-week programs provide expert-led classes, small group discussions and peer-facilitated group meetings focused on helping participants and their companies adjust to and implement new norms.

'Setting goals has to be a collaborative process to gain the real buy-in that's necessary to seed change on very stubborn issues. Taking the time to listen and understand what the business needs and barriers are is essential; effective target setting comes out of this demand-led process.'

Emma Frost
Director of Innovation, Sustainability and Communities,
London Legacy Development Corporation

Box 17

Chattanooga Innovation District, Tennessee—initiative to promote digital inclusion

Precinct Type

Inner city

Evolution Stage

Active

Overview

Tech Goes Home, a digital-equity initiative, was launched to coincide with the introduction of the Innovation District in Downtown Chattanooga in 2015, to promote digital inclusion. The program helps connect typically underserved groups of the population to the precinct and encourages them to proactively engage in its opportunities.

How it works

- Tech Goes Home offers 15 hours of digital literacy training for low-income residents, teachers and students.
- It provides access to subsidised hardware, such as a Chromebook or iPad for $50, as well as access to low-cost home internet.
- Events, including the graduation ceremony, are held at the Edney Building, a central hub of the district.
- It helps individuals access scholarships at local coding schools.

Ownership and financing

The program is run by The Enterprise Centre, a non-profit economic development partner of the Chattanooga city government. The innovation district began by receiving an annual budget of US$540,000, 60% of which was from city and county government.[60]

Observed impacts

The program has served more than 4,500 residents and distributed 3,000 devices to program participants. This initiative has been so successful that many other spin-off projects have been launched by the city government and other non-profit organisations.[61]

Box 18

Westmead Innovation District—skills and talent interventions to accelerate economic and innovation outcomes

The Westmead Innovation District is anchored by four major hospitals, two co-located universities and nine medical research institutes.

Located within the Central River City, the district is characterised by an increasingly skilled workforce. Scientific, IT, engineering and health skills have deepened significantly from 2016 to 2021, with nearly 90,000 residents (28% of the total Greater Sydney population aged 20-34) holding science, IT, engineering and health postgraduate qualifications.

Since 2016 the district has created an additional 2,384 jobs, representing 12% job growth, primarily in the healthcare and social assistance sector.[62]

With an accelerated infrastructure delivery program of new health, education, transport and public domain delivery and key innovation ecosystem interventions, the district employment base could grow to over 47,000 by 2041 contributing $6.8 billion annually in GVA.

Access to local capabilities and talent is a key priority for companies looking to relocate to or expand in the District. They require a highly specialised skillset, such as Good Manufacturing Practice (GMP) trained staff, clinical trials staff, skilled technicians and physicians. Existing skills shortages in specialised sectors are a significant barrier to this opportunity.

Westmead has to convince talent that it is an attractive location to work and, increasingly, to live as on-site residential development accelerates. This means focus on the quality of amenities to socialise, and the unique quality of training available.

Industry leading training facilities are key to attract and train medical talent. One new facility, for example, integrates virtual reality into healthcare settings to realistically simulate high risk scenarios for clinical trainees and students. Becoming a leader for workplace integrated learning is part of the District's brand and attraction strategy.

The core workforce challenge for Westmead relates to how it translates the deep pools of knowledge and research expertise into a large base of industry-ready skills and capacity. To do this it has had to anticipate and accommodate the workforce requirements that will accompany the arrival of biotech businesses. This relies on careful mapping of core specialisations, and the kinds of job requirements specific health technologies are likely to generate.

Regular engagement with business and experts in the next generation biomedical and health technologies are key to informing targeted skills investment including incentives and programs for employers and its workforce.

Westmead has a long-term view of workforce that benefits from the large and diversifying tertiary student programs by two of Australia's largest universities—The University of Sydney and Western Sydney University. Both are executing major plans for District expansion.

The workforce development opportunity is partly to bring students, researchers, academic leaders, and industry closer together more consistently and foster a creative ecosystem—through co-location, interdisciplinary teaching, and full exploration of how to integrate research, education and clinical services to accelerate breakthrough innovations.

Implications for New South Wales

Support for local communities to take part in the jobs and place benefits of an innovation precinct should typically be seen as fundamental to the workforce outcomes and program endeavour. Planning levers should be utilised to make it possible for innovation precincts across NSW to be inclusive.

Community involvement in workforce programs also benefits from involvement in decision-making. In NSW, state government influence and shaping of innovation precincts is proving critical at the outset. Over time it will be essential to build in mechanisms to bring other local parties to the table, not only as beneficiaries but as partners and even investors. This helps members of the local community to fill some of the diverse jobs which an innovation precinct generates. It also helps them to help shape more inclusive opportunities.

It will be important to involve local communities and local governments in workforce strategy as well as wider precinct planning. Otherwise, the risk is inadvertently to stymie innovation, erode the support for the precinct, and reduce the potential capacity of the precinct to absorb high levels of workforce demand in its priority sectors.

Among the trends to consider:

- When government is a major investor, businesses, developers and community may not be as nimble in their approach. This may be tied to government's funding restrictions, its slower pace, and its lower risk tolerance.
- When government isn't involved enough, the precinct may lack financial resources for infrastructure; power will then rest with those who have more financial resources, and may not either involve the community or be equitable.
- When government is involved, but is not much of an investor, other stakeholders (for example landowners or master-developers) have more influence. They will likely lobby government. It is important that local community interests remain a priority in this process.
- When power is shared by more or less equal investors, including government, funding from each may be directed to a range of different priorities. These should include creating full links with communities to participate in the innovation precinct's growth. This ensures all such priorities can receive ample attention.

Community capacity-building in an innovation precinct has long-run benefits. It tends to rely on the ability of leadership, responsibility and governance to change over time, so that it remains neither too top-down nor too reliant on bottom-up processes. Anchors and major tenants should ideally also hold a strong interest; they can bring resources as well as employment and procurement opportunities to the table. Usually it will be important that anchor roles and responsibilities retain close links to the community — and that an overall sense of empowerment and belonging to the precinct grows and spreads over time.

5

Governance and delivery of workforce interventions

Numerous partners and participants in innovation precincts in New South Wales and globally observe that to be successful in meeting longer-term growth ambitions there must be an effective ability to coordinate workforce initiatives.

This inevitably brings into focus how precincts are run and led. Successful workforce development over a medium-or longer-term timeframe is rarely detached from the strength of precinct governance.

The model for who delivers and coordinates workforce programs for innovation precincts — across all three pillars observed in Chapters 2, 3 and 4 — can vary due to the specific circumstances of each precinct:

- Workforce development may be delivered by large institutions who are based in or near precincts, or by government agencies who recognise the value and importance of a precinct.
- Dedicated precinct organisations also deliver bespoke workforce initiatives on behalf of businesses or target groups. Usually there will be more than one kind of activity being delivered from which a precinct will benefit.
- At the same time there will be a wider whole-of-government approach to skills development and talent attraction/retention policies, which is outside the scope of this paper.

Ensuring all these agendas are joined up and coordinated is a key task for those who lead a precinct.

Typically, the most favourable and enduring programs are supported by strong precinct leadership and are delivered within a wider context of consistent economic strategy for the city, region or state. Precinct leadership that is collaborative and which has authority is crucial in being able to deliver workforce approaches that respond effectively to market trends and meet business needs.

NSW is fairly early on in the evolution of collaborative precinct governance. There is a high reliance on state government as chief funder, broker and coordinator. Some locations (such as Tech Central, Westmead and Macquarie Park) have created leadership alliances with a promising level of intent and shared ownership among public, institutional and sometimes private stakeholders. In the regional precincts, best practice governance arrangements for eco-industrial parks are also being investigated. For example, the Regional Growth NSW Development Corporation is completing an options analysis of international best practice to inform how precincts will be governed in the short, medium and long term.

Different kinds of steps forward can be seen elsewhere in NSW — for example, in the approach to the attraction and retention of talent for Special Activation Precincts such as Parkes and Moree. In these and similar locations there is an important need to connect businesses to the right skills and programs, build up a local affinity to the precinct, and patiently create trust between companies and marginalised communities.

This requires long-term efforts where partners consolidate and co-fund to deliver more impact. To this effect the Regional Growth NSW Development Corporation is coordinating skills and workforce pathways in each Special Activation Precinct, which allow local skills providers, local councils, Training Services NSW and local universities (among others) to come together and provide training that meets the needs of businesses in each precinct.

Wholesale governance development for all of NSW's precincts is unlikely in the short-term. As a minimum, for precincts to bring forward the combination and sequencing of skills, placemaking, promotion and community support over a 10–20-year period requires a high level of coordination between different government delivery entities — including state government departments, development corporations and local governments.

There is no 'ideal' governance model for NSW precincts to adopt that will definitively secure the strongest jobs and workforce outcomes. Precinct leaders and participants in both NSW and the global examples consistently observe the need to allocate adequate capacity to workforce and ecosystem-building.

'Our team of expert professionals offers our visitors a more cohesive, inclusive experience at Communitech.'

Susan Brockhus-Strickler
Director, Building Operations and Tenancy, Communitech, Downtown Kitchener, Waterloo

5.1 Delivery models

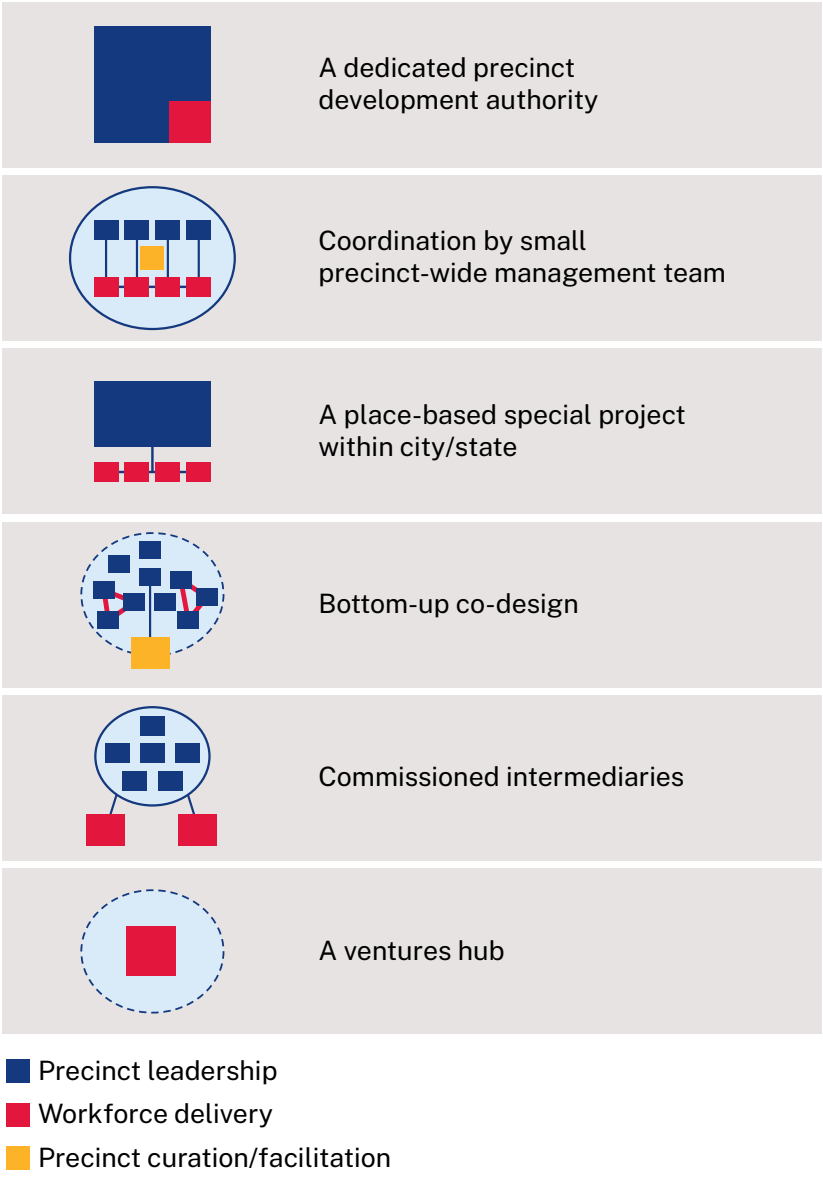
Across the different innovation districts reviewed internationally, there are six core models that inform how workforce is designed and implemented. These governance models span everything from highly formalised and fully resourced development agencies to leaner management teams coordinating closely with others inside and outside the precinct, and to bottom-up and membership-driven approaches.

These models are not entirely discrete. The size and shape of governance evolves over time and it is common to plan ahead for it to do so. For example districts seed-funded and managed by government often evolve into more collaborative models where multiple organisations are part of the leadership, and whose programs benefit from several sources of funding. For locations in NSW, the aspects and advantages of different models reviewed below should be viewed less as hard choices and more to provide insights as to how to sequence and sustain an effective governance over time.

The models reviewed below are:

1. a dedicated precinct development authority
2. coordination by a small precinct-wide management team
3. a place-based special project within city/state
4. bottom-up co-design
5. commissioned intermediaries
6. a ventures hub.

Figure 7 Delivery Models in Innovation Precincts



Source: The Business of Cities research

Precincts and their advocates do not typically choose their preferred model through a discretionary selection process. Most often the model they use will originate to some extent in previous patterns and experiments in place governance, combined with the specific aims, timing and context at the time the precinct was established. It is also common for precinct models to evolve over time as jurisdictions and partners become more confident in what is possible.

The factors that shape the adoption of governance models that affect workforce development include:

- The longevity and the status of the main anchor institution(s) in the precinct play a role. Those with a long-established primary campus tend to be more likely to devise and design workforce solutions with which other businesses engage. They also tend to take the initiative in interactions with state and local government.
- In a discrete site such as a port, airport, greenfield zone, or event park, a government usually inherits a substantial stake and plays a more active role as investor and decision-maker.
- Governance models are also shape by the scope within the wider governance system to create a more politically insulated third-party development agency with significant powers, financial tools, and licence to engage with all skills providers and other related government departments.
- The character of locally based organisations also influences governance models. Institutionally rich and culturally endowed precincts are typically more likely to develop bottom-up member-based models that encourage the involvement of SMEs and community groups.
- Businesses which have acquired the confidence and track record often take a lead on place-based agendas, in order to attract investment and talent. This mindset can benefit from experience with business improvement districts, with urban regeneration processes, and with operating in other markets globally where the civic roles of business are more commonplace.

In this chapter we review each model in turn, in relation to their workforce delivery programs.

Image: Darling Square

5.1 Delivery models (continued)

5.1.1. Model 1: A dedicated precinct development authority

In innovation precincts that are seen as special projects with catalytic potential, governments often create a semi-autonomous development authority. This authority manages not only the precinct's physical development but also its softer community and workforce aspects.

These softer aspects are especially valued when a precinct is going through a large transformation that requires coordination of new infrastructure, resilience, new schools, housing, and/or social uplift. This model allows for consistency in approach towards workforce design and engagement, and usually offers a vehicle for government part-funding for the first five to 12 years.

This is the case in examples such as **Paris-Saclay**, **London's Queen Elizabeth Olympic Park**, and **New York City's Brooklyn Navy Yard**. In each of these cases, the development body has a role in coordinating the development of the cluster. The development body's board may feature city or higher-level government departments.

This model confers some capacity advantages when it comes to workforce and the level of engagement required with schools, policymakers and smaller firms. In some cases, this model can also make it harder for precincts to move quickly and may create politically complex and compromised choices about specialisation, branding and program recipients.

Image: © Jason Hawkes, for London Legacy Development Corporation

Box 19

Brooklyn Navy Yard, New York City—a dedicated development authority delivering workforce solutions for a district of urban manufacturing

The Brooklyn Navy Yard is a mission-driven urban manufacturing and technology hub, home to more than 500 businesses and employing more than 11,000 people.

The precinct is managed by the Brooklyn Navy Yard Development Corporation (BNYDC), a 200-person non-profit development corporation. It has its own workforce development department and has the scale and calibre of staff to mediate connections between on-site businesses, educational institutions and residents of surrounding neighbourhoods. This model was set up at the outset to help revive the socially deprived and physically disconnected area around the Yard.

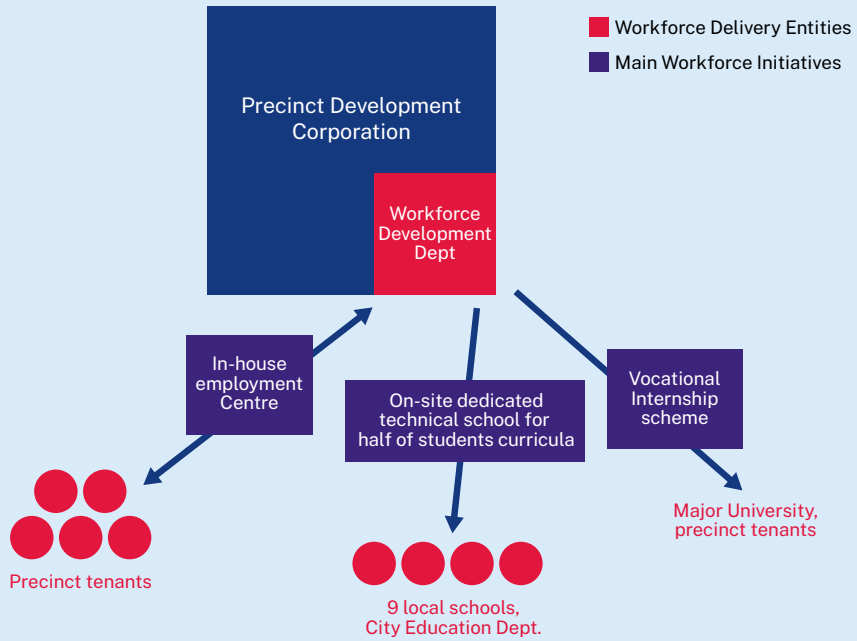
From a workforce perspective, BNYDC focuses both on overcoming local barriers to employment and on building longer-term systems to support small businesses and their talent pipelines.

BNYDC is the landlord of the precinct and operates as a real estate developer and property manager that reinvests tenant rent into programs. It leverages this role to ensure that companies have talent recruitment that is locally oriented. BNYDC uses lease renewals and incentives to ensure that businesses have good local hiring practices through its on-site employment centre.

The Workforce Development department works closely with the Business Support Services Group to help companies grow and find value in local talent. For example, the Business Support Group develops complementary programs that provide human resource and business growth assistance to smaller tenant companies. Since 2017, the group has worked alongside the employment centre to specifically understand employer needs that can then be translated into training.[63]

It has been essential to invest in sustained relations with local community leaders, including elected officials and social housing providers in local postcodes. The precinct has fostered close relationships both with the public college system, so that it can match interns with precinct companies. An advisory council including more than 30 businesses at the Yard has helped to customise the on-site technical vocational high school facility design and the curriculum, as well as offer guest lectures and provide internship opportunities for students.[64]

Figure 8 Delivery model in Brooklyn Navy Yard



5.1 Delivery models (continued)

5.1.2. Model 2: Coordination by a small precinct-wide management team

A leaner alternative to a high-capacity development agency is a collaborative governance structure fostered by a smaller (3-20 employees) precinct-wide team. This has often proven effective both in encouraging partners to jointly devise workforce programs, and in creating dedicated structures to look after them.

In **Stockholm's Kista Science City** and **Cleveland Health Tech Corridor** this governance model takes the form of a foundation set up by tech firms, real estate companies, research institutes, and city and state government. In these precincts the model has enabled a one-stop shop whose services span individual coaching, expert networks, connection to financiers, and low-cost premises and facilities.

A similar model also arose in the midwestern US city of **St. Louis.** Cortex is a innovation coordinator that unites large real estate development partners with anchor institution sponsors in a challenged city centre location. It applies workforce development to the whole chain of innovation, discovery, commercialisation and business growth, in areas such as cybersecurity. The small community team has ensured that training programs support applied R&D, piloting, technology transfer and the ability to retain existing business locally. St. Louis is surrounded by higher-productivity cities.[65]

'What an innovation district, such as Cortex, can do is be a key constituent and advocate for education and training that is relevant to the business sector mix within the district … The other means for Cortex to impact education and workforce development is through the fundamental placemaking activity of the district — working to create a modern live/work/play/learn environment that is attractive to employers and the highly talented individuals they seek to recruit.'

TEconomy Partners
The Regional Impact of the Cortex Innovation Community, 2019[66]

Image: Paul Sableman, CC BY-SA 2.0

Box 20

Leiden Bio Science Innovation District, Amsterdam Region—a small public-private leadership team

Leiden shows the benefits of public-private design and decision-making for programs, in a context where anchor companies see the benefits of being in a high-profile precinct.

The precinct itself is run as a non-profit foundation; its new formal structure was set up in 2018. The precinct management team itself is small—approximately 7 staff—and strong cooperates with the higher-level economic development agency. Of its leadership capacity, 25% is devoted just to supporting and connecting businesses and organisations.

Three groups each contribute approximately €300,000 to finance the foundation: local government, knowledge institutions, and entrepreneurs. Over the period from 2011 to 2019, Leiden local government mainly funded spatial development (€11.4m) and management and maintenance (€9.5m).[67] Public investment from higher levels of government is primarily set aside for community-building and communication functions rather than physical infrastructure.

A board of six members advises the foundation, with two seats each for the private sector, research institutions and local governments.

This board acts as an interface, connecting to others and preparing documents and fostering trust among newcomers. Precinct leaders and local impact assessors see the board as having fostered the right dynamics for public-private partnerships, avoiding excessive decision-making by government.

Over the past 10–15 years, a public-private partnership association representing nearly all companies in the precinct has played an important role in workforce design and delivery. A recent evaluation by an external audit committee observed the benefits when there are 'clear interim objectives' and avenues to 'regularly discuss progress with the board'.[68]

Precinct leaders interviewed note the value in Leiden having a very clear unique selling point for the precinct. The precise sub-sector-specific ecosystem requirements are human capital, space, IP protection, incubation times, mix of companies. Leiden communicates this specialisation tightly.

Precinct leaders also observe the benefit of the precinct's access to the entire value chain, from fundamental research to trials, manufacturing, and care. For sectors such as life sciences, a wide mix of educational institutions within precinct boundaries can be beneficial; the precinct offers everything from vocational instrumentation training to lab technician qualifications and higher degrees.

Figure 9 Illustration of delivery model in Leiden Bio Science Park

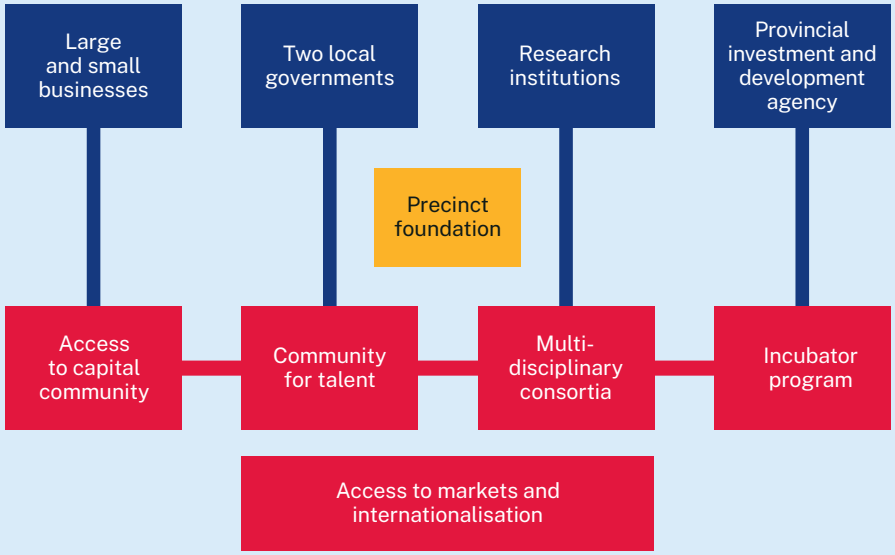


Image: © Leiden Bio Science Park Foundation

5.1 Delivery models (continued)

5.1.3. Model 3: A place-based special project within city/state

In some cases, the workforce strategy for a place is run and managed as a place-based strategy from within citywide or state government. These examples arise when there is a clear and complex social need to target workforce programs to particular communities, which may require more joining-up among departments responsible for social development and economic development.

A typical approach is to create a small, dedicated team within a government department to act as a coordinator and broker (rather than an operator), which reports to a steering group including political representatives. A common aim is to come up with new procurement and policy approaches that can engage hard-to-reach parts of the workforce system.

Global research and interviews suggest that this model can focus resources but sometimes make it hard for workforce initiatives to ride out changes in political leadership. A core task is often to provide ongoing confidence and consistency in the contributions that workforce-related projects make to the precinct's wider economic and infrastructure development.

Box 21

Auckland Council, Auckland—The Southern Initiative

Established by the amalgamated Auckland Council in 2014, The Southern Initiative (TSI) is a place-based innovation and jobs program. It has principally focused on long-term transformation to improve the economic wellbeing of residents in a deprived and diverse area in the south of Auckland.

It is an example of a program that had to adapt through changing political and economic circumstances over time to become more nimble in enabling innovation through partnership. Rather than looking at individual schemes and judging just on narrow job outcomes, it learned to use its role within citywide government to drive effective procurement and diversity strategies for institutions engaged in the area and created larger effects on jobs and inclusion. Its model benefited from the traction and credibility of government to form larger partnerships.

In its second phase, TSI functioned more as an innovation team within government to demonstrate ways to set in train more partnerships between the local area and other groups. TSI steadily built up a portfolio of initiatives focused on jobs equity, early years, public sector reform and using indigenous knowledge. One area of success was bringing together data scientists and policy innovators within central government, who co-design and test more impactful workforce-related policies and programs. Another was enlisting business, universities, social enterprises, philanthropists and service delivery organisations so that diverse businesses could more easily become suppliers.

The intention has been to 'provide a valuable demonstration of the role that local government can play both as a local anchor institution and as a partner in systems-transformation'.[69]

TSI had some success from recruiting 'social entrepreneurs' with the mindset and expertise to embed social procurement in government policy. It has prototyped relationships with secondary schools, and created a youth lab, Te Taiwhanga Rangatahi.

The Auckland Co-Design Lab was also funded by TSI and central government Treasury to provide a neutral space to explore the case for jointly addressing complex barriers to workforce participation.

Overall, the shift to a more self-organising governance with strong peer-to-peer support networks, is instructive for other place-based workforce policies set up by government.

Image: Ingolfson, Public domain, via Wikimedia Commons

5.1.4. Model 4: Bottom-up co-design

Around the world, many notable precincts — such as **Boston Seaport** and **Paris-Saclay** — have been creatures of government. Others have evolved from the appetite of a small number of neighbouring organisations to collaborate. These precincts, often in already built-up inner-city areas, are not designated by a state or city government. They agree to start delivering services to each other incrementally, building trust among formerly siloed organisations and piloting different kinds of joint working for social and human capital development. They often benefit from the ambiguity and flexibility of less tightly defined precinct boundaries and sectors.

An innovation precinct with a strong membership can become the effective 'translator' of a wider city's talent attraction and development activities. This is the case for **Barcelona's 22@ District** in the post-industrial area of Poble Nou. Once the core development and infrastructure work was largely complete over a 15 year period, a business association 22@Network BCN emerged strongly from the bottom-up to convene more than 240 members.

These 240 members span the full range of companies, startups and knowledge partners. Two-thirds of them are now in the district's catchment area, and the rest span the city-region. The network acts as a key partner and advisor to public-private workforce initiatives such as Barcelona Digital Talent, which combines access to mentoring, (re-)training and information. The precinct also hosts the city's main digital academy training facility, MediaTic, with a capacity for 3,000 enrolments; precinct member companies are active participants.[70]

Box 22

Knowledge Quarter, London — an inclusive membership model

Knowledge Quarter (KQ) in London's King's Cross area has taken a relationship-led approach to innovation. Its partners span more than 100 scientific, research, business and cultural institutions. A key factor in KQ's success has been its focus since the outset on encouraging knowledge exchange between the workforces of partner organisations, and with the local community.

KQ has a very distinctive membership model. It is organically grown and self-organised by a small management team, and is not led by a developer or government. It is governed by a board of 10 member organisations which include, two local councils and universities. Knowledge sharing and network building is encouraged throughout the entire community, not just at the senior level of member organisations. The precinct is managed by a small team which can leverage the entire network for resources and knowledge.

This governance model has enabled an agile and iterative approach to creating precinct-wide working groups. One outcome is a set of knowledge banks that all members can access. These raise awareness and co-reliance at several levels of workforce seniority, including researchers, HR professionals, marketers, and others. KQ's workforce-related projects and working groups are entirely funded through membership fees.

Part of KQ's success is its strong engagement with local and central government. This engagement stems from its commitment to inclusive outcomes locally, and from its reliance on external funding and support for key audits and initiatives.

It has strong day-to-day relationships with local government. Two local councils have representatives on the board of directors that governs the KQ consortium. They give insights into the priorities of local communities and provide partnership and funding for placements and apprenticeships programs.

'As a "network broker" we circumvent a "tragedy of the commons" situation when it comes to the creation of place-based human capital and soft infrastructure.'

Jodie Eastwood
CEO, KQ London, interview

5.1 Delivery models (continued)

5.1.5. Model 5: Commissioned intermediaries

Delivering quality workforce programs fit for the needs of innovation precincts is a scarce capability. Professional teams have often emerged out of these experiences, and have been commissioned to deliver services that support the workforce needs of institutions and large companies in a precinct, and then more broadly.

Two examples are **Greater Houston's** pioneering UpSkill program and **Philadelphia's** Science Center. According to interviews with senior management in charge of workforce programs, these have had success supporting workforce needs within a specific precinct when:

- They combine efforts to address both the 'flow' (skilling) and 'stock' (upskilling and reskilling) aspects of the workforce.
- They meaningfully engage the leadership of precinct companies.
- Effective training in technical and soft skills is provided.
- They partner with business leadership groups such as a chamber of commerce or business improvement district, especially to gather up-to-date business intelligence.
- Employers from the same industry are mobilised to understand sector needs.
- They provide wrap-around support to cohorts, that address known barriers to participation, such as transport, childcare, and the need for income while in a training program.

Box 23

Cornell Tech, New York City—scaling programs to be hosted by peer universities

Innovation precincts anchored by universities can often become devisers and hosts for high-quality independent and professional programs that can scale for impact like businesses.

Cornell Tech is a specialised applied sciences and engineering campus on Roosevelt Island, an easily accessible campus one subway stop from Manhattan in New York City. It aims to reinvent research and graduate education for the digital age. One unique initiative established on campus in 2016 in partnership with the largest public university system in the United States, City University of New York (CUNY) is Break Through Tech (formerly known as WiTNY) which works at the intersection of academia and industry to propel women and non-binary students into computing degrees and tech careers.

The Break Through Tech AI program takes place over 11 months, which includes a skills-based curriculum that teaches Machine Learning Foundations.

Image: © Break Through Tech

Students then use their learnings in the AI studio and portfolio development portion of the program, where participants work in teams to tackle real-world challenges from leading companies, including Verizon, Google, American Express, JPMorgan Chase, Pfizer, and more.

Students also participate in mentorship sessions, where they are matched with professionals in their field who help mentees build their network, prepare their portfolios, practice for interviews, and cultivate their workplace skills.

In 2022 Break Through Tech received more than US$26 million from investors and foundations to formally launch the program and expand to institutions in Boston and Los Angeles. In 2023 the AI Program has a virtual option and by 2025 it expects to reach 1,500 undergraduate women per year to be the next generation of leaders in AI. This represents approximately 10% of all women graduating with an undergraduate degree in computer science across the United States.[71]

5.1.6. Model 6: A ventures hub convening workforce programs for a wider precinct

Across inner-city high-demand precincts and suburban lower-demand or greenfield precincts, there are now several examples where an innovation hub plays a key workforce role — as a community-builder, as a deviser of original workforce programs, and as an intermediary with government.

This model quite commonly arises where a precinct lacks a tightly defined or designated boundary. Or it can arise where a hub in or near a university or business district gains pre-eminence through the experience and capabilities of its originators and staff.

Effective and well-managed hubs usually do well at honestly auditing what the precinct's workforce strengths and weaknesses are. They recognise the value of hardware and infrastructure, but they focus more of their efforts on the operating system and management team that provides services to workers, founders and prospective talent. They pay attention to what companies are doing, see what mix of businesses and institutions should be fostered, and look to reduce barriers to local businesses hiring staff. It is common in these precincts for a large cluster of SMEs to be encouraged to flourish, rather than the precinct relying primarily on a 'hero' anchor employer.

'We facilitate collaboration, and of course it is hard because everyone is busy. Being physically embedded is not enough. Our operating system is not about creating digital tools. Instead we have relationships. We ring up all the leaders, and tell them "I've got this amazing company. You should speak to them." True value creation is about whole life cycle, what it creates, building loyalty.'

Gavin Poole
CEO, Here East, interview

Image: Here East, Olympic Park, London. Matt Brown, CC BY-SA 2.0

Box 24

MaRS Discovery Precinct, Toronto—an independent innovation hub supporting a precinct

The MaRS hub originated in Toronto's university and venture capital community. It benefited from more than a decade of consistent government investment to build it into the city's leading driver of enterprise, job creation, networks and innovative workforce programs.

MaRS was set up in the early 2000s as a registered charity. It was governed by a 14-person board of directors, including the president of the University of Toronto, and led by an entrepreneur CEO. Its mode of operation has been to bridge the gap between the expertise of affiliated hospitals on the one hand, and the investor and business communities on the other.

MaRS funds itself with a mix of corporate sponsorship, private donors and revenue from tenants and events held inside its main facility. After 20 years, it has grown from one building to three in neighbouring locations. With expanding capacity, its yearly revenue has passed C$50 million.

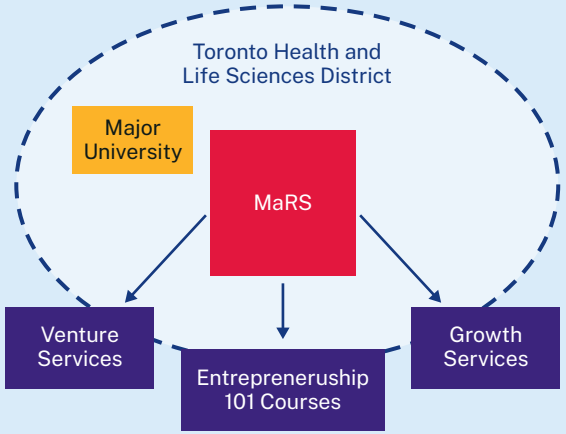
Both state and federal governments have supported MaRS. Each provided C$20 million of matching funding during the initial fundraising. Over 15 years, the provincial government of Ontario continued to provide tactical support to help MaRS ride market cycles, while the Canadian Government invested in infrastructure.

Reviews of MaRS' operating model continue to find that it is an indispensable model for convening university expertise with investors, corporates and startups. It provides workforce programming, networks and insights (see Chapter 3).

Within the broader governance of Toronto's innovation ecosystem, MaRS has evolved into the place where ventures, investors, policymakers and other public partners come together. Provincial and Canadian Government reviews of innovation policies and programs routinely consult MaRS as a key source of insight. MaRS' networks have been recognised as an essential conduit for new public workforce or technology adoption initiatives. MaRS also works closely with local government on zoning and commercial taxation frameworks.

Image: Chjovans, CC BY-SA 3.0

Figure 10 Illustration of delivery model in MaRS Discovery Precinct



Insights and common lessons from the different delivery approaches

For workforce skills, relationships and community-building, the most effective precinct governance models tend to be those that combine significant public investment and commitment with a strong licence for specialist hubs and educators to lead, innovate and iterate.

Table 4 Advantages and disadvantages of different delivery models

	Common precinct preconditions	Advantages	Common observations and lessons
A dedicated precinct development authority	Well-bounded precinct with significant government backing; project with special designation and long-term focus.	Capacity advantages — ability to mobilise larger anchors, schools and institutions.	Can be overly prescriptive; more politicised around costs and beneficiaries; complexity of wider precinct specialisation or branding.
Coordination by a small precinct-wide management team	Clear cluster identity; strong relationships between public, private, local-state; business and real estate see long term returns.	One-stop shop range of workforce and scaling services; durable programs; whole-chain and whole-lifecycle approaches.	Relies on high calibre of facilitators and community managers; risks of prioritising existing incumbents.
Led by a government 'place' department	Experienced and change-making precinct leadership; strong community dimension and deprivation/skills agenda. Embedded social enterprise culture.	Government teams have traction and credibility to lead localised procurement and diversity strategies; peer-to-peer support.	Onerous accountability and monitoring demands; initiatives must be long-term; sometimes harder to calculate impacts.
Bottom-up co-design	Multi-industry precinct; institutions take the lead; limited pre-existing precinct governance; looser government involvement.	Experimental; iterative; incrementally pilots joint working for social and human capital development.	Limited revenue base for larger initiatives; faces challenges ensuring buy-in of largest anchors; economic specialisation.
Commissioned intermediaries	Mature coalition of government, business and universities; strong demand drivers and some predictable workforce/enterprise needs.	Bespoke programs, attuned to talent needs; high accountability; potential for whole-region replication.	Less incentivised for full-spectrum local impacts; may slant towards large institutions.
A ventures hub	Hub's commercial know-how widely seen as superior to alternatives; thin layer of whole-place governance.	Highly professional, private sources of program revenues; highly responsive to business and capital.	Securing government support in setup stages; may have limited relationships with wider precinct structure.

5.1 Delivery models (continued)

This positive equilibrium is common in Model 1 (precinct development agency) if workforce development resource is well protected and there is adequate trust in third-party commissioning and delivery. It is also favourable in Model 5 (commissioned intermediaries) and Model 6 (ventures hub) if clear parameters are established between government and providers about how workforce programs should deliver wider impacts over time. Model 4 (bottom-up co-design) has a lot of promise for certain workforce activities but often needs additional mechanisms to achieve scale.

Across these different models, precinct-specific workforce approaches tend to gain scale, buy-in and effectiveness when:

- There is recognised precinct leadership with some permanent capacity to pay attention to workforce development issues and needs.
- The precinct leadership has sufficient roots in the community to maintain a focus on workforce development, equity and local benefit as an innovation precinct evolves — and the leadership views schools and training providers as continuous partners.
- New institutions avoid the trap of becoming 'command and control' centres, and maintain clear channels with others providing training, education and business services.
- There is enough operational freedom for the precinct leadership to adapt the workforce financing and delivery models when the needs of firms within a precinct change.
- Workforce delivery gains benefits from advisory and feedback mechanisms from a diverse mix of businesses. Surveys or other forms of regular feedback help to ensure the formats, price points and scale of workforce provision are fit for purpose. Capacity and investment in strong relationships with school and community leaders has been viewed as essential in more economically diverse precincts.
- High-trust relationships with anchor tenants or institutions allow proper understanding of their workforce issues and responsibilities and allow discovery of the circumstances in which they could upgrade or localise their workforce approach. Data-driven teams can demonstrate to these anchors how a precinct is engaged around workforce issues.
- A high level of two-way communication exists between the recognised 'leaders' of the precinct and the organisations, underpinned by shared projects and easy-to-use platforms.

5.2 Financing workforce development activities

The ways of financing precinct services that support workforce development vary greatly. Even in many successful locations, they continue to be fragile and based on effective demonstration of impact to companies, institutions and upper-tier governments. One senior leader of a successful workforce development program in Canada explained in interview:

'Our biggest headache is the sustainability of the model and the momentum of the work we do. The complexity of what we do and how we need to fund it takes a lot of our time.'[72]

If there is a clear governance structure with established funding models, the cost of some programs may be borne by the precinct in some way. Some precincts charge a fee to businesses which receive the program. Some precincts are funded by governments, at least in part; those governments may tie funding to specific programs or may fund the precinct governing body which runs programs as they see fit.

Several alternative funding models are visible in leading innovation precincts:

- **Use of real estate revenues to support partnership** is important in large developer-led and public-led locations. In **Brooklyn**, the public development corporation (BNYDC) funds its workforce development initiatives through tenant rent and grant fundraising. Its on-site employment centre is 75% funded through operational rent and 25% through grants, and its internship programs is entirely funded through operational rent.

- **Membership dues can support the governance/ consortium structure.** Voluntary participation in a membership structure has worked well in precincts where there are a number of large institutions, such as the 100+ member **KQ in London**. Here the membership dues vary by organisational size, and no one member's vote counts more than any other. Members may sign up voluntarily to benefit from a shared pool of resources, develop a unified voice, and support their staff to develop more bridges with local organisations and more affinity to the precinct.
- **In a business improvement district model,** an annual assessment is collected to provide shared services. This system is used in precincts such as **National Landing** in Washington, D.C. This precinct is home to the new second Amazon headquarters and is being actively explored by a number of districts in North America and Europe as a way to generate reliable revenues. This system usually carries a compulsory commitment, unlike voluntary membership models such as **Philadelphia's University City District**.

Observations on effectiveness, limitations and applicability to New South Wales

The quality of relationships between precinct stakeholders is one of the critical components driving the overall success of a precinct. These are shaped in large part by the character of the place governance and whether they encourage the flow of ideas, partnership-building, negotiation, and deal-making.

Ultimately, precincts that manage to distribute formal and informal influence among multiple stakeholder groups tend to be more successful in the long run at devising workforce programs that are tuned in to the current market, the long-term vision and the scale of partnership needed.

Governance for many innovation precincts in NSW is quite nascent yet starting to coalesce.

Macquarie Park is an example where a leadership group has been established. Connect Macquarie Park Innovation District is a stakeholder-led not-for-profit Association that presents a unified voice for the district.

Meanwhile the Westmead Alliance has evolved over the last 10 years to acquire influence including a focus on job creation, talent attraction, purposeful clustering and quality place development.

More recently, Tech Central is another example with an Interim Leadership Group established that features representatives from two state government agencies, two local governments, two universities and two industry representatives. The group is focusing on the funding and design process for a more formalised governance, which will include collaborative pilot projects on workforce through subcommittees.

The basis for committed collaborative governance is also taking shape in other locations.

With regards to optimising NSW precincts' workforce outcomes:

- Look to carve out governance structures that create some impetus and incentive for businesses and universities to lead and propose agile workforce alternatives. Expectations about the 'rules of play' and the way organisations engage with shared objectives should be tested from the start.
- An ideal model may use a blend of devolved public funding, matched with private contributions to an independent operational delivery team.
- Look to create an advisory board or similar function featuring a diverse mix of businesses (at least 1-2 SMEs, nonprofits and community bodies), and ensure all programs are being conceived with them in mind. Develop some competences to engage credibly and sensitively with community leaders (elected officials, charities, public housing residencies) and align priorities.
- Government should facilitate and encourage precincts to share workforce development knowledge in regular and digestible formats, especially if precinct governance become assymetric across NSW precincts.
- Allocate some capacity for precinct management budgets to be spent on the relationship management exercise with anchor tenants, so as to permanently ascertain the state of the workforce need. Similarly with SMEs, cost-efficient in-person surveys and check-ins should keep track of the willingness to engage with different kinds of workforce program at different price points and levels of commitment.
- Look to co-sponsor the collection of innovative data on talent flows and skills, through alternative platforms and methods.
- A dedicated workforce development department may be effective, if it retains very clear channels with those providing business and venture services, and with educational institutions both within its boundaries and beyond.
- Precincts are only likely to achieve equitable workforce outcomes through intentional programming and policies. Leadership of precincts must keep equity, community wealth and workforce development as core objectives throughout the maturation of an innovation precinct.

6

Opportunities for NSW precincts and partners over time

Innovation precincts have the potential to create resilient, high-quality jobs and industry capabilities that raise an area's overall productivity and performance.

Successfully achieving these outcomes, however, can often take 15–20 years to deliver. Decisive impacts on clusters, technology and enterprise development, and the wider jobs and productivity these generate, requires governments to take a long-term view.

Yet many precincts are still often evaluated in narrow jobs and gross-value-added metrics over year-on-year time frames. The impact of an *innovation* precinct is best appraised using broader measures: whether it produces critical mass in a signature industry, hosts popular services to fuel the growth of more companies, helps organisations to adapt to new business models, achieves high levels of local reinvestment, and builds a strong local and international reputation.

Harnessing workforce in pursuit of a precinct's long-term economic and social goals poses distinct responsibilities for all levels of government, large employers, anchor tenants, educational institutions, training providers, precinct strategists, and investor partners.

For NSW precincts to maximise their jobs and productivity outcomes, and deliver benefits for residents, there needs to be a committed, customised and curatorial approach towards workforce development across the full range of priority precincts and industries. There is a need for fit-for-purpose, place-based approaches, however care is obviously needed not to duplicate what is already being successfully delivered to address a clear need.

Creating streamlined pathways for precinct businesses to engage and training providers to be commissioned, is also essential to the speed and confidence necessary to meet skills needs in emerging industries. Programs can often be short-term in nature, leading to confusion in the market as to what is available and how to access them.

As NSW becomes home to more globally significant precincts, the scale and balance of inputs will change over time as tenants, business models, industries, and placemaking demands evolve.

Over the next decade, NSW innovation precincts have very significant potential to:

- Establish themselves as the major drivers of good high-value and inclusive jobs in the State.
- Translate workforce development strategies into full ambitions to raise the enterprise and innovation capacity in global industries.
- Become magnetic destinations for talent, thanks to the overall opportunity and amenity presented.
- Mature into locations whose deep talent and experience-base generate the jobs, rather than relying on the jobs and employers in order to then recruit and equip the talent.
- In global rankings, raise the overall innovation and talent performance of both Sydney and NSW.

The NSW Innovation and Productivity Council makes 10 overarching recommendations (Section 6.1). Recommendations are principally for the NSW Government, but they will require delivery in partnership with all stakeholders.

This chapter highlights opportunities and roles for three different groups of stakeholders: for NSW Government and public policymakers, for place leaders and precinct champions, and for employers and institutions in an innovation precinct (Section 6.2).

This chapter also discusses how precinct workforce development can be adapted over time, and outlines priorities for precincts at different stages of their evolution in NSW (Section 6.3).

6.1 Recommendations

The NSW Innovation and Productivity Council makes 10 overarching recommendations. Recommendations are principally for the NSW Government, but they will require delivery in partnership with all stakeholders.

The recommendations acknowledge NSW precincts are at varying development stages, and all have unique characteristics, governance models and stakeholders. The recommendations are therefore best practice principles which provide general guidance and areas for focus at each stage of implementation. They are categorised as either a precondition, or considerations for the design or delivery stage.

While all recommendations are relevant for every workforce pillar, the below table observes which pillars they are especially applicable to.

Table 5 Recommendations and key pillars

Recommendations	Pillar 1 Workforce supply	Pillar 2 Workforce relationships and enterprise	Pillar 3 Localised workforce benefits
1	•	•	•
2	•	•	
3	•	•	•
4		•	
5		•	•
6	•		
7	•		
8	•	•	•
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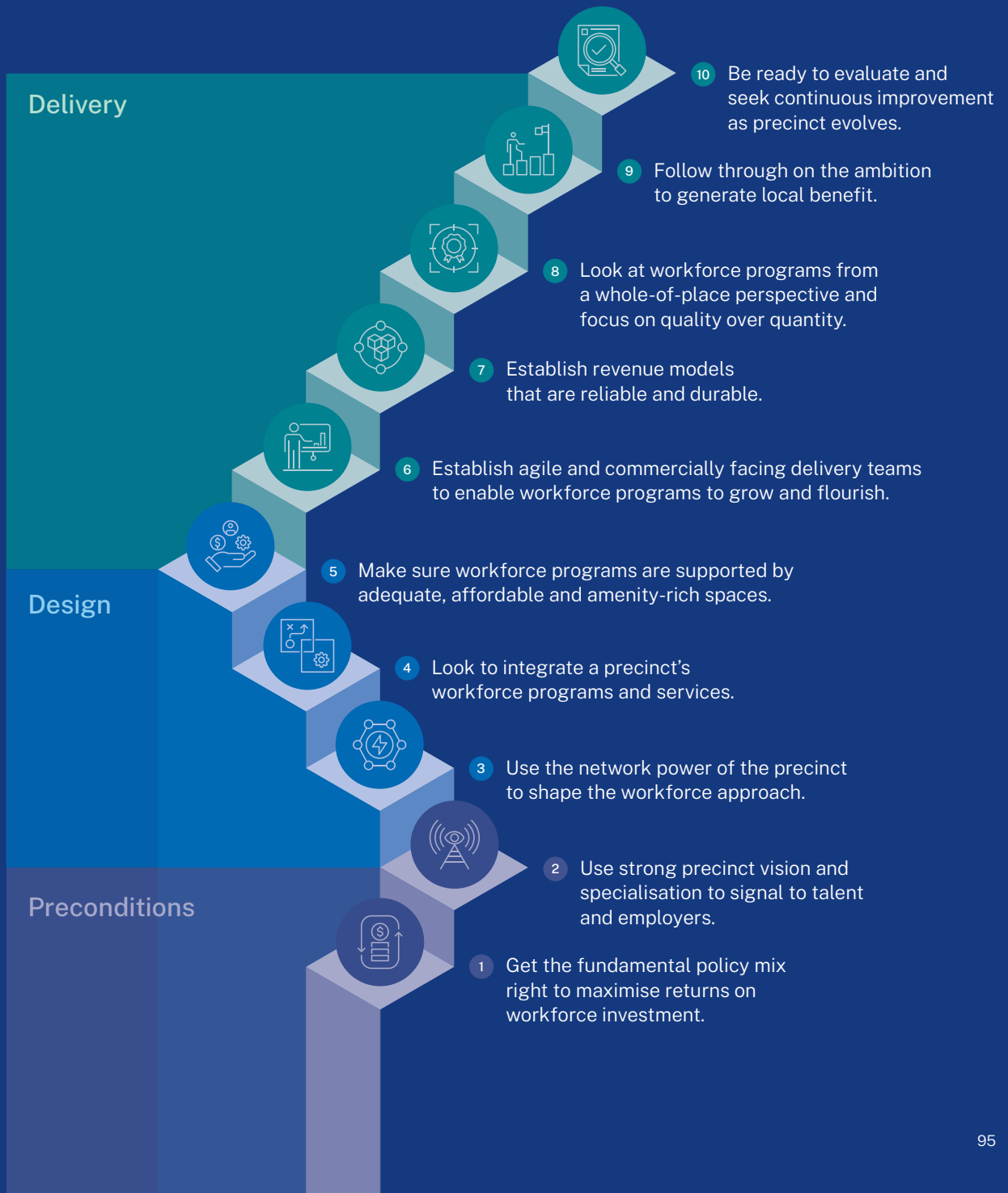


6.1 Recommendations (continued)

Preconditions

1. Get the fundamental policy mix right to maximise returns on workforce investment.

Workforce outcomes in NSW's innovation precincts will improve if the broader policy and incentive mix makes it easy to start new companies, grow them, move to the region, live close to NSW's innovation precincts, access capital, and give more people the skills they need to succeed in advanced industries.

This means continuing to reduce barriers to enterprise — within startups, existing companies, universities and research institutions — and proactive policies to diversify workforce backgrounds in different industries.

More locations in the cities and regional areas of NSW need to further develop the ingredients conducive to attracting and retaining an innovative workforce: liveability, connectivity, density, vibrancy, shared spaces, cultural institutions, innovation launchpads, etc. With these fundamentals in place, the returns on workforce investment can be higher.

Priorities for NSW will include how to provide an environment for new companies to relocate and generate much-needed sources of new jobs that can retain and attract talent, for instance, in Parkes, Wagga Wagga, and Moree Special Activation Precincts.

2. Use strong precinct vision and specialisation to signal to talent and employers.

This will set clearer expectations about the workforce needs and the spaces required. A credible narrative also helps parties to agree from the outset on clear principles about which organisations are invited and encouraged into the precinct, and about the rules of engagement around workforce development.

Being clear about the precinct's identity and role in the wider ecosystem also helps foster the external profile that signposts and attracts future talent. Workforce programs rely on strong communicational alignment across the precinct, local governments, regional agencies and departments of Australian and state governments.

Priorities for NSW will include how to bring forward flagship inner-city precincts with the scale, brand and concentration to absorb many more diverse and inclusive jobs in advanced technology sectors and associated services, such as Tech Central.

Precincts across NSW will also benefit from future support and resourcing, including more effective and localised workforce demand mapping, underpinned by more up-to-date and innovation-relevant classifications of businesses, jobs and skillsets. The precinct's vision should be informed by audits of precinct skills requirements and capacity. Precincts need the ability to accurately track the specific industry niches around which they need to organise workforce initiatives. Workforce provision should be scoped strategically for the future, not just for immediate requirements, including anticipating needs for specific technologies and preparing bespoke courses accordingly.

Design

3. Use the network power of the precinct to shape the workforce approach.

Workforce provision in a precinct should avoid over-design by designated precinct leadership or via higher-level government scoping. Attention and resource should empower the bottom-up leadership of employers, institutions, providers, key faculty, and entrepreneurs. These can help establish close bonds within communities of practice and connect people into wider and more unexpected relationships. These then enable workforce gaps to be identified by the precinct's collective intelligence rather than by edict.

Deep networks encourage partners to establish new joint programs of upskilling, recruitment, networking, and local procurement which benefit from economies of scale and combined insights. With a dedicated initial resource of at least two to three staff, precinct leaders can foster these relationships and programs, and make it possible for local benefits to be enshrined.

Many international precincts also create large collaborations for workforce design and deliver. This is a principle that could be more widely adopted by NSW precincts that rely on public and academic teams partnering with larger groups of industry partners in response to observed gaps. The ambition should be to co-design, co-fund and create some shared commitments. Structuring and resources from governments are usually important, especially at the start.

4. Look to integrate a precinct's workforce programs and services.

Often a convening hub — for example, an accelerator or research centre — can act as a centre of gravity that coordinates the resources available to integrate training and create shared marketplaces to access equipment and information.

Effective programming by a main hub can keep the services for academic, commercial and social innovation differentiated and attractive, and at the same time create a sense of culture, cohesion and community between organisations not used to working together.

An integrated approach may perhaps evolve into a single workforce development precinct team, which maintains continuous relationships with its various partners.

Priorities for NSW will include how to improve the jobs and innovation spillovers of public health and education institutions, and prudently match technology skills with the needs of nascent business clusters, such as in the Westmead Innovation District.

5. Make sure workforce programs are supported by adequate, affordable and amenity-rich spaces.

The ability to attract and accommodate fast-moving talent-hungry businesses in a precinct depends on a whole development process that adapts to an ever-changing mix of tenants, uses, space typologies, and placemaking preferences.

The appetite of businesses and jobseekers to participate in workforce programs also depends on their confidence in being able to afford and enjoy opportunities locally.

Precincts across NSW will benefit from future support and resourcing to enable more strategic integration between workforce programs and a precinct's collaborative spaces and formats that can foster high trust between organisations and social 'glue', as well as the underpinning liveability, culture and appeal of the precinct as a place.

6.1 Recommendations (continued)

Delivery

6. Establish agile and commercially facing delivery teams to enable workforce programs to grow and flourish.

Such teams often benefit from arm's length independence and dedication to the quality of programs and companies they support. The most effective teams have some flexibility to customise the support to serve SMEs, established domestic firms, incoming talent-hungry companies, or research-intensive universities.

They also have a clear remit, a grasp of commercialisation process, experience in international sales, and a willingness to engage senior leadership and different levels of staff.

Precincts across NSW will benefit from future support and resourcing for more delivery teams and dedicating more programs to easily connect precinct businesses to creditable training providers, and less dependence on one-size-fits-all programs that cannot take into account each precinct's distinctive economy, demography or culture. This includes expanding custom precinct workforce programs with speed and dexterity to reach time-poor small and medium enterprises and experienced insiders, support the skills required at the interface between multiple sectors, and programs that prioritise soft skills.

7. Establish revenue models that are reliable and durable.

Workforce programs in precincts succeed when they are consistent and gain scale. Whether the vehicle is a medium-term public investment or loan, the use of real estate rental revenue, shares in successful growth companies, or an anchor tenant-sponsored foundation, a regular and reliable funding source is attractive for both the beneficiaries and providers of workforce initiatives.

After an initial five-to 10-year cycle, successful workforce models should aim for minimal public funding. A pathway to sustainable revenue generation should be designed into the operational model from the outset.

Achieving these ambitions will likely require sound precinct governance, underpinned by a strong culture of partnership, authentic shared vision and reliable resourcing to help workforce initiatives to gain scale, credibility and reach.

8. Look at workforce programs from a whole-of-place perspective and focus on quality over quantity.

Trying to apply workforce programs in too many innovation precincts at once can sometimes result in a dilution of effort, scale, budget and attention, and unnecessary competition. Care is needed not to duplicate existing services already being successfully delivered. Prioritise activities in precincts where some of the profile, appetite and coordination already exists.

At the start, embrace a pilot approach: focus smaller numbers of participants on quality programs with tracked impact over time. Once established and well adopted, this can be scaled, models can be replicated, and services bundled. Plan for successfully road-tested workforce programs ultimately to connect and convene many precincts across NSW.

Priorities for NSW will include how to rapidly assemble the industry skills in greenfield precincts that are servicing a fast-growing employer base and population, such as in Bradfield and the broader Western Parkland City.

9. Follow through on the ambition to generate local benefit.

Strengthening pathways for local people to become part of the precinct workforce helps to achieve lasting community impact and cohesion. Alongside efforts to in-source talent, many precincts can establish norms of local procurement, school-employer partnerships, and job initiatives that generate permanent dialogue with local leadership and community spokespeople.

Ensure that workforce development principles that are adopted early on by the precinct leadership are then applied to subsequent processes of engaging, recruiting and negotiating with companies.

Use the energy and commitment generated from collaborative workforce planning to raise the bar of expected standards of jobs and employer participation. With strong precinct governance, inclusive criteria should be embedded in lease agreements, contracts and funding grants, as shared targets and KPIs.

Create visibility and ownership of the workforce ambitions among the high-profile organisations in the precinct, to encourage positive peer pressure to participate and to create a mandate for change.

Precincts across NSW will benefit from future support and resourcing to make more use of the precinct's convening power to influence corporates on their own workforce plans, and to enlist industry partners collectively, to achieve economies of scale and avoid fragmentation.

10. Be ready to evaluate and seek continuous improvement as precincts evolve.

Workforce programs iterate as fast as precincts evolve. Be willing to assess value for money, weigh up a program's relative merits, undergo a full evidential review, and encourage feedback and response. All these are important to maintain the impact and credibility of workforce development efforts over time.

Evaluation and continuous improvement should be cognisant that patient timeframes are required to assess broader, long-term workforce outcomes. Short-term jobs targets are usually incompatible with the task of cluster-building in a precinct that will deliver long-term sustainable competitive advantage.

6.2 Opportunities and roles for governments and key stakeholders

There are distinct steps that are recommended for precincts at different stages of their journey, and specific responsibilities for governments and business.

For NSW Government and public policy

NSW Government has become much more joined-up in its promotion and coordination of workforce development. It has also taken a welcome and essential lead to bring forward the connectivity, development and innovation investments that can trigger many precincts to become very large-scale hubs for jobs, quality training, and unique collaborations. There are further opportunities to:

- **Ensure that the overall business and innovation climate is as favourable as possible for talent attraction and enterprise-led job creation.** Local and international evidence suggests that NSW's policy, regulatory and immigration settings can improve. Once the infrastructure investments, pro-entrepreneurship policies, incentives to commercialise, and industrial specialisation strategies are fully in place, then jobs and workforce approaches in an innovation precinct are much easier to optimise.
- **Stimulate the talent pipelines in sectors where NSW needs to be ready.** For skills where there are specific precinct-led requirements and limited market training provision (such as cybersecurity specialists, health tech applications, and hydrogen engineers), the NSW Government should provide initial stimulus to undertake (and share) specific growth sector and skills forecast analysis, and to fund training industry partnerships and programs.
- **Encourage and enable others to lead.** Avoid being viewed as the sole investor and arbiter; this can lead other parties to lack engagement and confidence and feel they do not have skin in the game. Encourage businesses, developers and community to feel able to lead. Offer collaborative support to develop workforce programs and address barriers together rather than use targets as a vehicle for scrutiny. Commit consistent co-sponsorship and welcome matching medium-term commitments from organisations in both the public and private sector.
- **Create dedicated capacity and budget for coordination,** rather than treating these tasks as voluntary or optional add-ons to existing staffing. Precincts rely on individuals hired specifically to connect the innovation community, build up the habits of dialogue, and encourage shared approaches to talent and workforce.
- **Ensure the approach to investment attraction by government and partners is fully aligning to workforce needs.** Negotiate the arrival of anchor companies into precincts so that they subscribe to relevant existing programs and commit to using them. Use new investment to enhance the wider identity of the precinct to attract talent, entrepreneurs, visitors, and students. Ensure these investments are supported by the creation where necessary of new training and development programs with other partners in the precinct to address critical skill needs.
- **Establish appropriate roles for local government and intermediaries.** Many NSW precincts need local government and TAFE support and cooperation — especially in locations with less experience doing workforce development with an innovation lens.
- **Measure what matters.** The impact of an innovation precinct must be measured by more than just jobs and gross-value-added metrics over year-on-year time frames. Consideration should be given to whether the precinct produces critical mass in a signature industry, hosts popular services to fuel the growth of more companies, helps organisations to adapt to new business models, achieves high levels of local reinvestment, and builds a strong local and international reputation. The framework to assess workforce-related programs and contracts with potential anchors should also look to include performance indicators such as local employment, payment of a fair living wage, opportunities for upward mobility, and employment practices that effectively target under-represented groups.

For place leaders and precinct champions

NSW innovation precincts are gaining a new generation of campus managers, industry board members, local government ambassadors, educators with a renewed 'place anchor' mindset, and experienced entrepreneurs looking to give back. As the precincts embark on devising and then executing their economic and jobs strategies, these place leaders can influence the precincts' cohesiveness around workforce and demand high standards of integration and communication.

- **Raise the capacity of the local ecosystem to partner on workforce initiatives.** Fostering and auditing this ecosystem — the quality of networks, the willingness to lead, the climate of innovation, and the areas of long-run competitive advantage — is often an essential first step. Ignoring this is a common and costly oversight. Identify the catalytic individuals with the address books and the 'get up and go' to convene and champion workforce agendas and establish a strong platform of data and evidence. Foster the culture of collaboration, not only senior within leadership, but at multiple levels of member organisations and across departments such as HR and marketing.

- **Build workforce programs around real specialisation.** Workforce programs succeed when there is confidence and certainty about what kind of precinct niches and ambitions to pursue, grounded in the wider area's DNA and expertise. They are less able to galvanise partners when they consist of generic propositions that do not raise local enthusiasm. This can be difficult if a precinct has been established or accelerated by an external incentive, deadline, or infrastructure opportunity. Once the specialism is well established, consider if some schools, training providers or incubators should be relocated or co-located to provide a more complete workforce chain.
- **Invest in the place.** The quality and variety of amenities, public spaces, facilities, schools, housing, leisure, culture and services are foundational to a precinct's appeal, reach and stickiness to a current and future workforce. For diverse communities in and around a precinct, the place has to be inviting rather than intimidating in order for workforce programs to be discovered, enrolled in, and converted into longer term jobs.
- **Embed social value in every contract and lease opportunity.** Apply an equity and diversity lens to the design of programs for recruiting companies, providing space, procuring services, and building a talent pipeline. Ensure training cohorts address known barriers to participation, such as transport and childcare. Explore the lifelong learning opportunities in the wider precinct catchment area.

6.2 Opportunities and roles for governments and key stakeholders (continued)

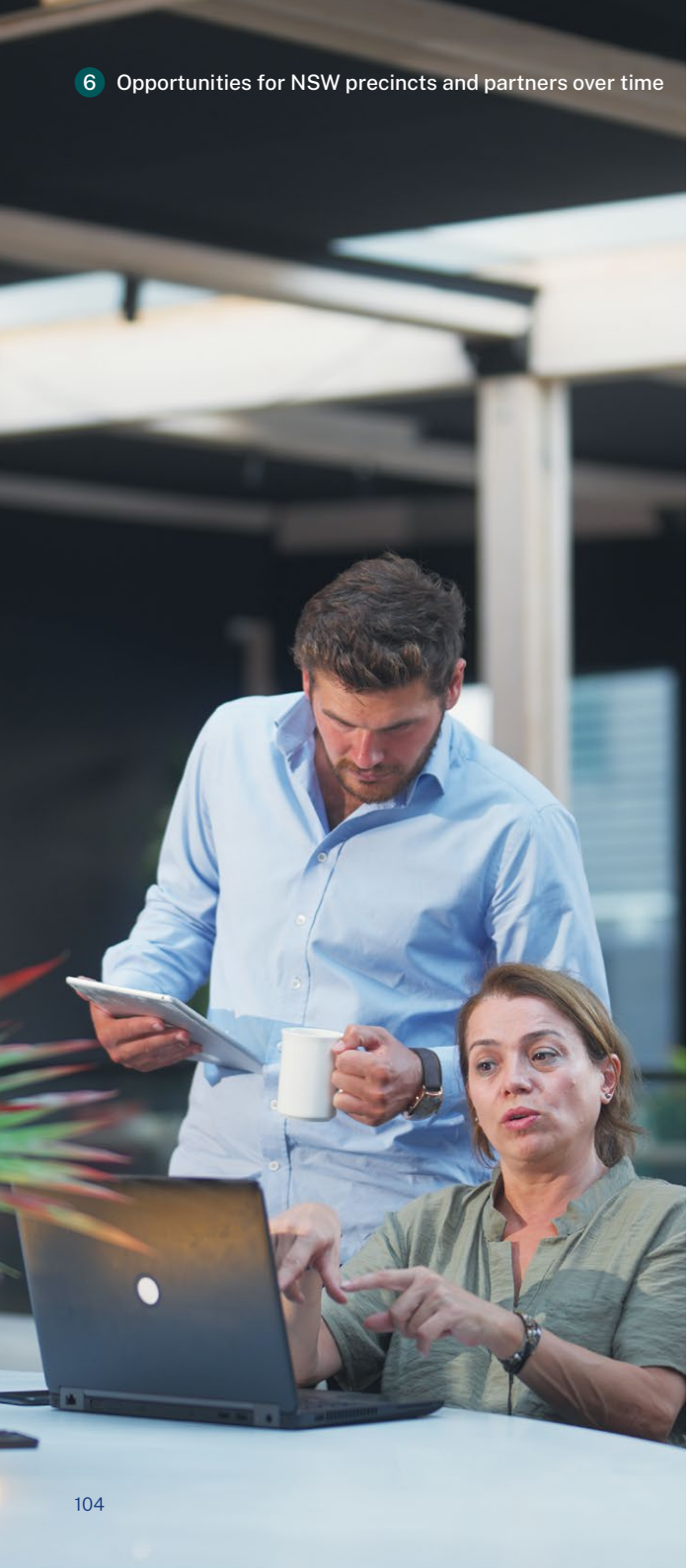
- **Consider setting up a precinct 'one-stop-shop'** to make the support and opportunities available to businesses and jobseekers visible and transparent. Such an office can aggregate intelligence on the labour market, industry trends and real estate, for the benefit of local companies and talent. It can also improve the channels of access to local experts, public research, and lab space. These will thrive when well-coordinated with state level agencies and large skills providers.
- **Share success stories.** Communicate the progress and positives across the precinct and beyond. This helps build the precinct's identity and confidence in the programs available. Build a light 'celeb profile' around those people who have been through successful skills development programs (especially those with locally grown talent or diverse backgrounds). Use strategic clustering around themes (young people, neurodiversity, gender etc): adopt a campaign-type approach to aggregate programs and amplify activity by giving it more profile and momentum.
- **Ensure that local community engagement comes front and centre.** Precincts in economically diverse locations must prioritise the task of raising awareness, aspirations and access to training and job opportunities, often to individuals and groups who may have little inclination to participate. Communities and their ambassadors/representatives can be enlisted to provide special insight into how jobs and training programs should be chosen, designed and expanded. Genuine and sustained engagement with schools and colleges and universities is essential to build good links with the local community (via families, parents and youth workers).

- **Be prepared for roles to evolve.** At the start a precinct workforce strategy will need to focus on relationships — not only with local players but with schools, curricula, education departments and regulators. As the precinct moves from Emerging to Active, leaders will wish to demonstrate added value in terms of access to networks, knowledge banks and services. They will need to scrutinise diligently the cost-effectiveness of workforce interventions relative to other incentives, and the risk of displacement effects. Gradually, start to partner with other program providers in the wider region where this may expand scale, reach or expertise. Later on, it is usually key to ensure succession programs are well managed and to keep the inclusivity of workforce development as a core precinct objective.

For employers and institutions in an innovation precinct

NSW innovation precincts rely on their largest employers and tenants to become active and willing agents of workforce development, even at the same time as these organisations have their own mandates and time horizons. In recognising the benefits of participating in workforce programs of real place-enhancing calibre, these stakeholders should:

- **Be willing to coordinate.** Start by seeking continuous rather than sporadic relationships with precinct managers and innovation hubs. Work with others in the same industry to assess and communicate skills needs. Support the initiatives that form connections into wider circles of companies and expertise. Institutions may also propose the development of member-based services to support current staff development (for example secondments or work placements).
- **Be prepared to co-invest where scale creates workforce advantage.** Usually, workforce initiatives in innovation precincts are financed in part by members, partners and beneficiaries, and not exclusively by government. Larger firms in particular can consider participating in a flexible longer-term arrangement where they seed-finance specialised training that may have positive spillovers on smaller businesses. As a community of employers, precinct businesses can engage in workforce partnerships through internships, apprenticeships and job placements.
- **Increase responsiveness to industry needs.** Workforce providers including universities, need to complete the transition to offering additional technical courses that are designed and delivered flexibly, in tandem with industry partners. Micro-credentialling will need to become more credible and a safer route for young people to take. Providers will need to be responsive in retiring micro-credentials once they become mainstream and continually creating new ones.
- **See the potential in procurement.** Offer procurement resources and opportunities for local and diverse SMEs. Consider agreeing to a shared procurement approach to increase local purchasing by larger buyers — for example, on materials or hospitality. Explain choices transparently and accountably.
- **Demonstrate commitment and put skin in the game.** Be open to signing a talent and skills agreement with the precinct governance/authority that opens avenues for on-the-job training, and joint programs and portals within an industry. Participate in advisory boards to guide workforce design and encourage them to be diverse. Identify current or former staff, or expert clients or counterparts, who are well placed to participate in upskilling, reskilling, and programming initiatives.
- **See potential as a beacon of change in the industry.** Drive equitable employment opportunities by committing to local job creation commitments and leading by example and encourage medium sized and smaller companies to become actively engaged. Establish dedicated spaces for students to access technologies and skills. These actions can raise collective standards in an industry-specific precinct and demonstrate to others the shared allegiance to a precinct.



6.3 Adapting precinct workforce development over time

The NSW Innovation and Productivity Council has previously identified four discrete stages of precinct development.[73] Most NSW precincts are at Emerging Stage. Some are at the Planning Stage, and a small number have reached the Active Stage, with ambitions to become Globally Significant. Whether leading one precinct or coordinating several, it is important to tailor workforce programs to a logical sequence of steps to support each phase of evolution.

1. Planning Stage: Commit to the fundamentals of precinct success from the outset

Workforce ambitions rely on a shift from supply driven to demand driven approaches in the way the precinct's economic development and its priority sectors are conceived. In the Planning Stage, build on existing strengths and specialisations and be mindful about the calibre of international competition and aware of the appeal other locations may offer to talent. This will help to guide the scope and viability of workforce development. Precinct leaders should:

- **Ensure the precinct's claimed specialisms are truly distinctive** and benefit from a credible narrative and shared vision. Look for alignment with the wider area's innovation brand and heritage.
- **Position the precinct and its advantages decisively** on the national and international stage to build the precinct's visibility to relevant talent and job-seeking businesses. Techniques should include in-person outreach.
- **Build in as much flexibility as possible into the development process** to let the precinct adapt the mix of tenants, uses, space typologies, and placemaking environment to reflect fast-changing circumstances. This will ensure workforce capacity can respond to future demand.
- **Work out the levers and relationships necessary to influence long-term education pathways,** in particular via schools and colleges. Discover how these institutions may need to be adapted to and engaged with through a long period of commitment.

What to watch out for

- Don't assume that the initial scoping of the proposition can afford to postpone the collaborative conversations about workforce needs over the next 10-20 years.
- Finding room to look at workforce as more than just skills but also business cultures, place attachment, and barriers to enterprise.
- Neglecting the opportunity to consult with those who are familiar with the workforce pool expectations of international companies and investors in the priority sectors.

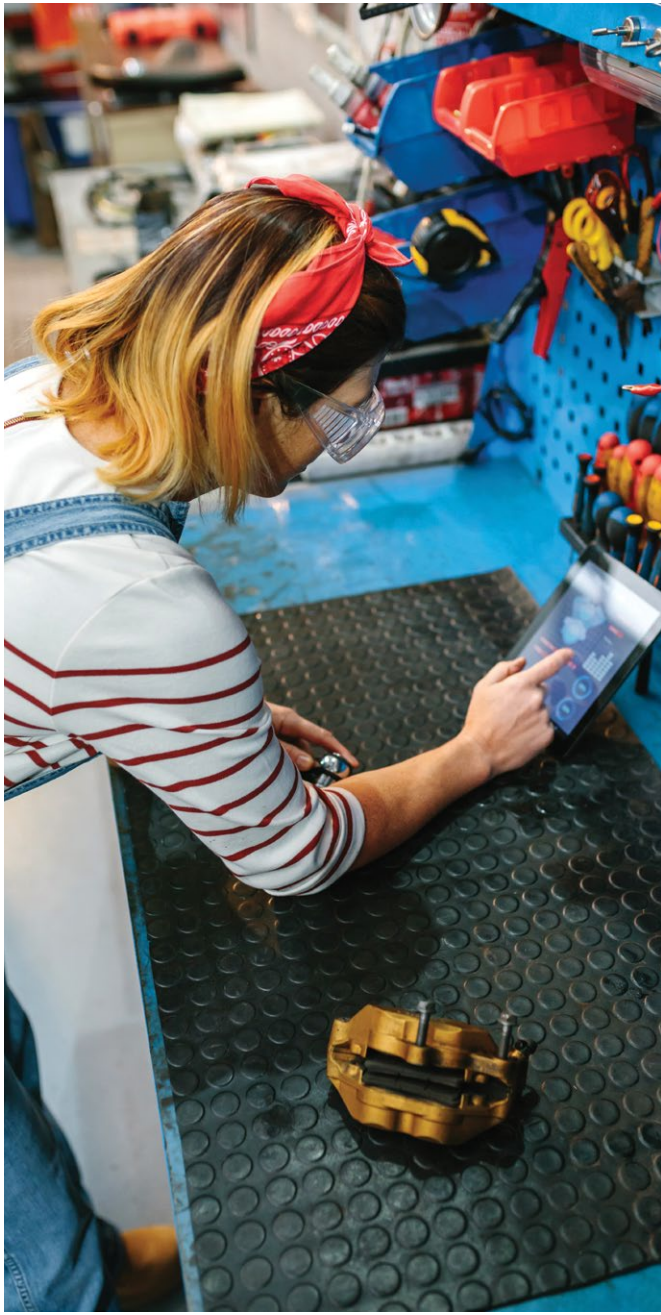
2. Emerging Stage: Address workforce issues head on

At this stage, there are immediate needs to start servicing the skills requirements of incoming firms and established businesses. Build flagship activities and locations to signal to talent and business, locally at first and gradually outside the immediate market. At the same time, understand and where possible engage with the base of enterprises to establish their constraints and unmet aspirations. Mapping the current and possible levers is therefore necessary. Key tasks include:

- **Thoroughly engage existing employers** to gauge current and future workforce needs.
- **Identify the locations able to host incubation programming,** ideally in a visible location that can become a centre of gravity.
- **Build in locally inclusive workforce mechanisms.** This means working to ensure that local businesses and people are viewed as beneficiaries and participants in planning, procurement, social impact, and civic challenges.
- **A relationship and leadership audit** can be used to assess the appetite for and participation of the largest firms and institutions in innovative workforce activities. Are there champions and connectors? Identifying who will champion, inform, and potentially co-fund initiatives is key.
- **Build a community advisory board** or other kind of community engagement strategy. This may include ensuring adequate diversity and inclusiveness in the precinct governance and its terms of reference (for example, committing to pay community organisations or representatives for their time). Create a wider network of community organisations and champions that goes beyond those formally engaged.
- **Establish structures to drive programming, real estate development and community engagement.** Consider making data-sharing obligatory for programs receiving public funding.

What to watch out for

- Establish workforce roles and responsibilities clearly among government, community and organisational leadership to reduce bureaucratic hurdles and misunderstandings.
- Ensure the community clearly understands decisions they can impact.
- Don’t overpromise on workforce potential in the early stages. Manage expectations on time and scale.
- Be diligent about the relative cost-effectiveness of different interventions, the most efficient use of public money, and how workforce support compares with other incentives.



6.3 Adapting precinct workforce development over time (continued)

3. Active Stage: Get design and execution right

At this stage there may be several thousand specialist private sector jobs concentrated in the larger NSW precincts, and many more roles servicing the growth of these advanced sectors. The pace of innovation in workforce programming, testing, outreach, and mobilisation is usually at its highest.

- **Speed up the flow of information for existing workforce and gain business confidence.** Create maps that visualise the skills, the capabilities and the networks and relationships, both for the internal ecosystem and for external profiling. Create shared knowledge banks for all precinct partners to add to and use. Create signage and physical signals of precinct to foster belonging and transparency about who is based where. Establish purposeful working groups that engage different departments and role types. Ensure high entry standards of initial SME cohorts to ensure quality control and build demand.
- **Build up the capacity to lead on workforce development.** Precinct management teams need dedicated, continuous, and specialised capacity for business development, workforce and community. This may often be part-funded by government for the first five or more years. Hubs and one-stop shops are important and should be considered carefully. Consider attracting or inviting global incubation expertise.
- **Initiate collaborative workforce development programming,** ideally in partnership with existing providers. Create independent capacity to audit the programs.
- **Maintain a strong decision-making mix.** A healthy public-private dynamic in decision-making is usually essential to the agility of precinct programs. Look for a vibrant mix that reflects the changing character of the precinct, and engage organisational leaders who possess a strong familiarity with workforce needs.
- **Consider colocation and complementary strengths.** It is important to prioritise the colocation of like-minded institutions with complementary specialisms within a precinct, across management, technology, medicine, science and other domains. Ideally look to accommodate a breadth of educational and training provision to support diverse skillsets.
- **Focus on program durability.** Most precincts that see benefits sustain programs over a decade or more. After the first four-to six-year cycle, successful workforce models in most precincts usually look to use less than 50% public funds in their financing. Anticipate potential gaps early, and support successful programs to ride the cycles if financial challenges appear unexpectedly.
- **Encourage workforce coordination across key precincts** and among the precinct leadership organisations, as a way both to develop workforce capability and make more opportunities visible, and also to create a strong group of connectors across precincts who can solve and innovate together.

What to watch out for

- Where possible, workforce programs should be based on a competitive or selective process to identify possible operators. They should be continually reviewed and updated.
- Training programs should train towards jobs in precincts with employer engagement and commitment.
- Precincts should invest in pilot programs and strong research to assess any displacement effects of precinct-specific work programs from other parts of the city.

4. Globally Significant Stage: Scale over time as profile and demand grow

By this stage, clusters are mature and have spread out into new niches. Several anchors in priority industries have become household names and may be very substantial precinct occupiers and brand-shapers. There are likely to be significant knock-on effects on workforce demand in other locations around the precinct and much further beyond.

Risks of complacency can rise, due to presumptions that tried and tested workforce models will continue to deliver. Priorities turn to how to ensure the infrastructure, housing and amenity can attract and retain the talent that has assembled. Attention from across NSW, Australia and the rest of the world will focus on what can be shared and scaled from this precinct in terms of workforce experiences.

- **Apply successful models to a wider range of new tenants and precinct businesses.** Engage key organisations in the precinct around how to adapt existing programs, targets and innovations for their circumstances and constraints.
- **Recognise the spillover benefits on the wider economy and its profile.** Workforce programming within the precinct can start to have positive effects on the coherence of messaging in international markets by encouraging more institutions to tell the same story. It can also have positive effects on the wider competitiveness of the region.
- **Keep checking what's needed,** what's working and what's not. Continue to hone the models and change the programs when needed.
- **Scale what works to neighbouring precincts and beyond.** Workforce challenges will nearly always exceed precinct scale. Cross-precinct knowledge-sharing and platform-building is essential, as is institution-building across a wider area or city.

What to watch out for

- Avoid inadvertently catering exclusively to incumbents.
- Avoid stakeholder complacency and status quo bias and continue to work at the leading edge of data and collaboration tools.
- Ensure intermediary organisations gain more staffing and finance as needed to carry out their mission in proportion to the enlarged scale of the precinct.
- Provide long-term and whole-of-life talent strategies to support a more diversified talent base (diversified by age, income, and experience) across the region.

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List of report case study boxes, figures, and tables

Case study boxes

Figures

Tables

Abbreviations

AI	Artificial intelligence
AMTA	Advanced Manufacturing Training Academy
AU	American Underground
AUAS	Amsterdam University of Applied Sciences
BNYDC	Brooklyn Navy Yard Development Corporation
BTT	Biomedical Technician Training
CBD	Central business district
CIC	Cambridge Innovation Center
HR	Human resources
IP	Intellectual property
JHHIP	John Hunter Health and Innovation Precinct
KQ	Knowledge Quarter
LBSP	Leiden Bio Science Park
NTU	Nanyang Technological University
PAGE	Philadelphia Anchors for Growth and Equity
R&D	Research and development
RGDC	Regional Growth Development Corporation
RIEP	Regional Industry Education Partnerships
ROI	Return on investment
SME	Small and medium enterprise
STEM	Science, technology, engineering and mathematics
TAFE	Technical and Further Education (technical education colleges/institutes)
TSI	The Southern Initiative
UCD	University City District
UTS	University of Technology Sydney
VET	Vocational Education and Training
WPCA	Western Parkland City Authority
WPSI	West Philadelphia Skills Initiative

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