



INNOVATION PRECINCTS HOW TO MAKE LIGHTNING IN A JAR



Innovation precincts seem to be springing up everywhere across the Australian urban and rural landscape, including:

- + [Western Parklands](#) in Western Sydney, designed to be an “Indo-Pacific hub for advanced manufacturing, aerospace and defence, agribusiness and pharma, freight and logistics, and health and education”;
- + a string of innovation precincts are being set up along the inland rail, including a precinct at [Parkes](#) focused on cold-chain logistics and e-waste recycling;
- + [Melbourne Connect](#), a partnership between University of Melbourne and Lendlease, is being “curated to unlock digitally driven, data enabled and socially responsible solutions to our most pressing future challenges”; and
- + as an election promise, the Federal Government is setting up a [Defence and Maritime Innovation Precinct](#) in Launceston,

to name just a few.

Why does everyone want one?

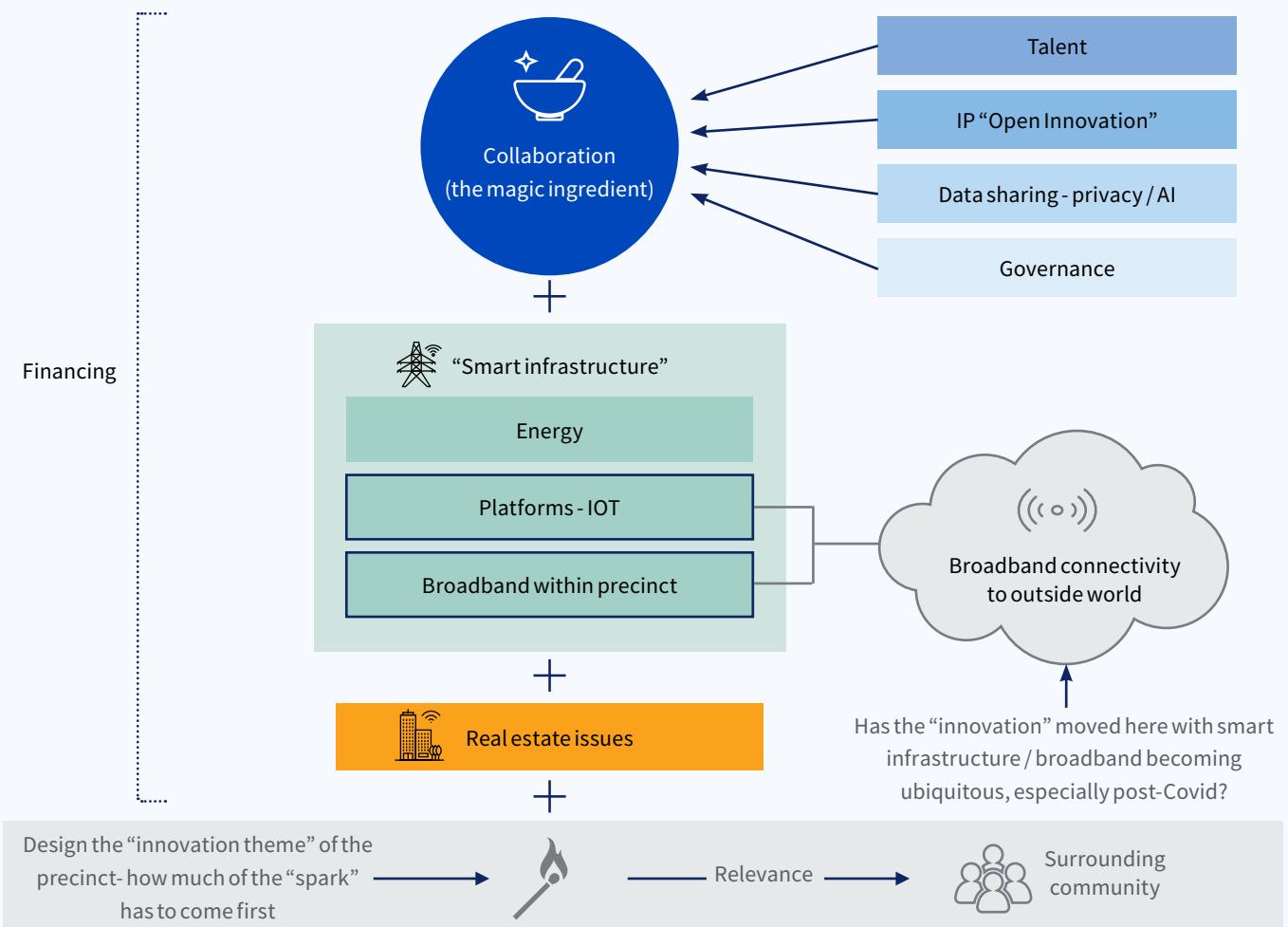
“The benefits of concentrating knowledge-intensive activities in an Innovation District are that new products and services developed within them cascade through the supply chain, where the products and solutions are then produced at scale, benefiting other support industries and suppliers.” See [Atlas of Innovation Districts](#).

Put more colloquially, an innovation precinct is a structured experiment to “reproduce in a bell jar the lightning of innovation” that routinely strikes in Silicon Valley. This is not as unrealistic as it sounds because Silicon Valley itself grew out of the [Stanford Research Park](#) set up in 1951 by Stanford University’s Provost and Dean of Engineering, Frederick Terman.

So what goes into the design and operation of an innovation precinct to successfully recreate this “lightning in a jar”?

It is easier to say what an innovation precinct should not be – but often ends up being. It is not a real estate development project. It is not a business park. It is not even a science park or technology park. Or rather, it is all those things but requires much more to succeed as an innovation generator.

The following diagram illustrates the essential elements of a successful innovation precinct:



What makes a successful innovation precinct tick internally?

The “magic ingredient” of an innovation precinct is collaboration. That’s what makes an innovation precinct more than just a business park of independently operating businesses.

Everything about the innovation precinct – from the design of the “hard infrastructure” such as workspaces, the communications infrastructure and the shared technology platforms, to the design of its legal framework of governance and commercialisation, through to the more intangible “vibe of the place” – needs to promote and value collaboration.

It has been said that the most effective innovation precincts intentionally develop 3 kinds of networks to embed collaboration in their DNA: networks of talent composed of individual workers collaborating within the labour force; networks of organisations collaborating together; and networks of the physical urban environment these organizations are distributed across, which host and support the economic fabric. See [Atlas of Innovation Districts](#).

Showing its pre-COVID vintage, this comment from the Brookings Institute sums up the imagined ideal in design of the physical infrastructure of innovation precincts:

“In innovation districts, public places are created or re-configured to be digitally-accessible (with high speed internet, wireless networks, computers and digital displays embedded into spaces) and to encourage networking (where spaces encourage “people to crash into one another”). Streets can also be transformed into living labs to flexibly test new innovations, such as in street lighting, waste collection, traffic management solutions and new digital technologies.” See [‘Innovation Districts’](#)



Collaboration is easier when the would-be collaborators share a common interest, pursuit or knowledge base. Innovation precincts are typically designed around a ‘theme’. Tech Central located in the Sydney CBD with Atlassian’s participation focuses on fintech, eHealth, AI/robots and creative industries. See [NSW Government Tech Central](#).

This unifying theme should not be “pulled out of thin air”: “I have an idea, let’s do biotech”. The theme needs to build on some existing ingredients, such as an existing academic institution which already has specialisation, or by locating the innovation precinct in an area with an existing strong vertical which is ripe for digitalisation, such as the Western Australian Food Innovation Precinct in the Peel region to support “building a robust and vibrant food and beverage manufacturing sector. See [WA Food Innovation Precinct](#).

There is no clear model of governance for innovation precincts. Some precincts use a web of interlocking committees to create a scaffolding for collaboration. The Randwick Health & Innovation Precinct in Sydney renewed its governance framework in 2020. The precinct’s governance framework includes membership from ‘founding partners’ including the Sydney Children’s Hospitals Network and the University of NSW, and the collaborating partners who are taken from member organisations with key activities in the precinct. Alongside the Precinct Council sits the Executive Precinct Committee, which consists of members from the Founding Partners and leaders of the precinct’s Working Groups. The Working Groups are comprised of clinicians, researchers, educators, staff, students, consumers and community members and report to the Executive Precinct Committee. Each year, the governance is reviewed, and new working groups are created in response to the precinct’s strategic and operational needs. Together, the Precinct Council and Executive Precinct Committee provide overall leadership and coordination of the development of the precinct.

Other precincts have a tighter, more limited governance structure and rely on collaboration networks developing more organically within the precinct. In September 2021, venture capital fund JVP founder Erel Margalit inaugurated a new innovation precinct in the northern Israeli town of Kiryat Shmona with a food technology theme. The precinct houses academic and research institutions, the Israeli Science and Technology ministry’s R&D centre in the Galilee, many food and agriculture-related technology companies, local authorities, and community organisations. JVP seems to maintain a tight control of the project’s governance, making decisions about new participants, financing and keeping the innovation precinct on track with its theme. See [New innovation hub to foster Israeli food tech ‘revolutions’](#).



Whatever the formal legal structure of governance, the key enabling factor appears to be strong leadership with vision: as a UK handbook on innovation precincts describes it, “the charisma, seniority, governance, finance, profile and commitment to drive disparate interests in a unified direction.” See [Hubs of Innovation: A Playbook for Place Leaders](#).

There is a tension between encouraging collaboration between individual firms participating in the innovation precinct and each of them achieving their ultimate business objective of commercialisation. Sharing along the way in development can diminish the intellectual property rights on which successful commercialisation depends at the end.

The Brookings Institute has said that innovation precincts require nurturing of an “open innovation” culture between participants:

“As the knowledge and technology driven economy grows, it is also becoming increasingly characterised by what Henry Chesbrough and others call “open innovation.” Chesbrough describes this as a process whereby companies and firms more openly generate new ideas and bring them to market by nimbly drawing on both internal and external sources. Under this new modus operandi, external sources can generate the ideas that are then commercialized internally by a firm, while internal ideas can be commercialized by external start-up companies and entrepreneurs. In other words, as Chesbrough observes, “The boundary between a firm and its surrounding environment is more porous, enabling innovation to move easily between the two.””

Bending our traditional intellectual property laws to reflect and promote an open innovation culture within innovation precincts is not a straightforward exercise.

Copyright laws are designed to protect the rights of creators (or their employers) in their works and to incentivise in the sense that

they further create by enabling monetisation of those works. Traditional copyright laws may not fit comfortably with open innovative environments such as innovation precincts where organisations or firms are coming together, and creation is occurring without a clear individual author or creator. To an extent such issues around the identity of the proper copyright owner may be able to be dealt with by way of commercial arrangements. When it comes to using and leveraging works to create future innovation, the issue of fair use of copyright works arises. In Australia, the current framework allows more limited “fair dealing” exceptions for certain types of use of works which would otherwise constitute infringement of copyright (for example for research or study). There have been some calls for the introduction of a broader US-style fair use exception, which would enable use of copyright material in circumstances that are considered “fair” (relevant factors may include whether the proposed use is new and creative, whether it is genuinely transformative, and whether it will have an adverse effect on the market for the copyright material being used). Proponents of the adoption of such a scheme (such as the ALRC) say that it promotes public interest and can assist innovation. If adopted, it would certainly expand the uses to which material developed in an innovation precinct can be leveraged as part of future creation.



But there is a bigger, trickier measure of success for innovation precincts

Governments, as the key promoters of innovation precincts, usually have a bigger objective in mind than the standalone success of the precinct. Governments tend to situate innovation precincts in economically and socially disadvantaged areas in the expectation that they will generate economic activity in the area – a “spill over effect”.

But there is criticism that innovation precincts can operate as “citadels of privilege” with little or no connection with, investment in or impact on the surrounding community. A study of US innovation precincts/districts said of those which had failed or underperformed:

“A key reason for these failures is that decision makers have lost connection with the most important element of any Innovation District: the humans who work there. If an Innovation District does not offer equal opportunities to its citizens, it will not sustain a productive ecosystem in the long run. To avoid these pitfalls it is necessary to understand how local problems affect the population.” See [Atlas of Innovation Districts](#).

The same study found evidence that innovation precincts do have a multiplier effect in generating jobs:

“Research has shown that for each innovation intensive job an Innovation District supports, it creates an average of 4 to 5 production and service related jobs. We observe a noteworthy inverse correlation between the concentration of innovation activities and a community’s unemployment level. Areas with an Innovation Intensity of around 10% have an average unemployment rate of around 10-14%; however, areas with an Innovation Intensity of 30% and above have an unemployment rate of 2-4%. The average United States community has an Innovation Intensity of less than 15%.”

But the mantra of ‘jobs, jobs, jobs’ can obscure some difficult questions about the net economic benefit to the surrounding area: are these new jobs, or existing jobs that have been relocated, and where do the people who fill the jobs come from?

As noted above, the ‘theme’ for an innovation precinct should build on an existing knowledge or skill set, and that can mean drawing together into the precinct existing institutions or units which were scattered across the urban area. Understandably, many of the jobs created in the precinct, at least initially, may be jobs which already existed and have been relocated from elsewhere. The challenge is to grow beyond those relocated jobs.

Innovation precincts require highly skilled workers. While there are service and support roles which can draw on lower skilled workers from the surrounding community, finding higher skilled employees will be more of a challenge because lack of educational opportunity is usually a feature and a cause of disadvantage in that community. The innovation precinct will fail to live up to its “spill over” objectives if the higher skilled workers commute from better off, better educated parts of the city.

In its review of the international experience of innovation precincts, the NSW Innovation and Productivity Council recognised that “[i]n many regions or precincts within regions, local start-ups have a comparatively low record of achieving success or scale. This can reflect a lack of aspiration, management capability, business planning, or international experience.” See [NSW Innovation Precincts: Lessons from International Experience](#). Just as the workers commuted from elsewhere, so too did the start-ups.

There is a view that even if an innovation precinct heavily depends on commuting skilled workers that over time there will be a “knowledge spill over” into the local community. This is because business and social networks which fan out from the innovation precinct generate learning opportunities through the flow and diffusion of knowledge, which enhances innovation and productivity in the surrounding community. Entrepreneurship and innovation by osmosis, as it were, between the innovation precinct and the surrounding community.



A study of the Australian Technology Park in inner Sydney found little evidence of “spill over” effects in local communities:

“There is some evidence of knowledge flows via entrepreneurship and spin-offs in the ATP and some evidence of knowledge flows via relationships with clients and suppliers in Surry Hills. This is restricted to a number of conditions and not widespread. There was little evidence of the other mechanisms of knowledge spill overs within both case study precincts. The role of knowledge spill overs in driving localisation economies is overstated, and therefore the extent to which knowledge spill overs are driving industry clustering is limited. The forces behind clustering at this scale are therefore much more likely to be related to property market dynamics.”

See [SGS Economics and Planning](#).



Putting it more bluntly, gentrification had a bigger impact than the spill over effects from the ATP.

Overseas approaches suggest that there needs to be a more structured, well-resourced commitment by the innovation precinct to raise the skill and entrepreneurship levels of the surrounding community. The Illinois State Government and the city of Chicago are establishing a health precinct in South Chicago, a historically disadvantaged area with high unemployment, low job skills and chronic health problems. The project applies the ARC (Accelerate, Redesign, Collaborate) model developed by Israel’s Sheba Hospital, which combines leading edge hospital services and community care with an incubator and accelerator programs for start-up health tech companies. See [Bronzeville Lakefront](#). The Chicago ARC will be running skill development programs to train up people from the surrounding community in the tech skills needed, at least at entry and mid-level, by the health tech firms setting up in the precinct.

But “spill over” probably requires a deeper bond between the innovation precinct and the surrounding community. If the innovation precinct is not to look like a sci-fi domed city dropped in their surroundings, the community needs to feel that the purpose or theme of the innovation precinct is relevant to the challenges the local community is facing. Just as a shared purpose can create collaboration between workers and firms within the innovation precinct, so too a shared purpose between the precinct and the community can create commitment, collaboration and relevance, in both directions.

The challenge is finding a common purpose between an innovation precinct as the epitome of a shiny high performing, knowledge-based economy and a disadvantaged area systemically trapped at the opposite end of the economic and social scale. Sheba’s South Chicago project has as an objective to improve community wide health outcomes, which are substantially below other parts of the city by:

“focus[ing] on equal access and outcomes...a health equity accelerator will partner with community organizations and initiatives to unlock the benefits for residents, scaling solutions and best practices across Illinois and the United States.”

Here in Australia, the [Moree Special Activation Precinct](#) is one of the innovation precincts being developed along the inland rail and it will focus on logistics and agriculture. Moree has a large disadvantaged indigenous community. A key objective of the Moree precinct is Gamilaroi empowerment - economic development should support empowerment of the local Gamilaroi community through jobs and business opportunities. The governance of the precinct provides for these to be Aboriginal led initiatives.



Where's the money coming from?

While governments are an important source of funding for innovation precincts, the NSW Innovation and Productivity Council has correctly cautioned about over-reliance on public funds:

"Precincts that rely on significant funding from public sources may be vulnerable to shifts in political control or policy priorities. An over-reliance on public funding can also point to a lack of demand in the market and risks to the commercial viability of the precinct."

The challenge for private financing is ironically generated by some of the very features which are central to the success of the precincts, namely the varied risk and return appetites of the key stakeholders. The key components of an innovation project when financed on a standalone basis outside the context of an innovation precinct carry a very different risk profile to each other. Physical infrastructure such as buildings, telecommunications networks and energy infrastructure when built by themselves tend to be regarded as low risk when attached to simple concession or offtake contracts, and are therefore attractive to traditional infrastructure investors such as superannuation funds. The start-up firms are high risk however, and therefore rely on venture capital and angel investors – at the other end of the investment world from infrastructure investors.

So what happens when you put them together in an innovation precinct? In Australia, we have spent the last decade or so 'de-risking' infrastructure plays, for example by separating vertically integrated utilities into NetworkCos and ServCo's to isolate the different risk profiles. An innovation precinct does the exact opposite – combining infrastructure with high risk users on whose success the infrastructure investors depend for a return (potentially with some financial safety net from a government). Key to the success of these arrangements (regardless of the presence or absence of a government safety net) is the consortium relationship. Are there common social,

economic or educational objectives which the stakeholders are collectively committed to? Against an overriding context of open collaboration, what is the core role or obligation of each stakeholder in respect of the overall precinct, and what control, responsibility and incentives (or returns) are individually tied to that role, and in what circumstance? Successfully translating these thematic ideas to an appropriate governance structure for the precinct (and its project structure) will be critical.

In this sense, again back to the Chicago ARC project, the successful consortium includes a real estate developer, a venture capital fund and the Sheba Hospital.

There is a further tension between collaboration of project participants and the traditional focus on risk allocation and responsibilities in construction projects; a feature which remains prevalent in the construction industry in Australia. The conservative and risk-adverse approaches in the procurement and development of new construction projects produces a tendency to look to assign responsibility to others where a problem arises, which discourages collaboration and delivery of best-for-project solutions and triggers drawn out and complex dispute procedures rather than resolving the underlying problem. If a culture of open innovation is a key ingredient for success of innovation precincts, a shift in this traditional mindset is required. An increased focus in risk-sharing, as opposed to risk allocation, project delivery and contracting models is an obvious place to start; and the onus is on industry to drive this shift with continued support and funding from relevant government agencies.

The purpose of the theme of an innovation precinct can also be relevant to how the financing is structured. The NSW Government has been innovative in structuring both health, educational and social housing PPP deals to measure and reward non-financial or social outcomes. A similar model could be applied to innovation precincts to incentivise building the bonds with the surrounding community through education and skills training, local employment outcomes and even local health outcomes.

What impact will COVID have on innovation precincts?

There seem to be opportunities and risks post COVID for the concept of innovation precincts, well summed up by a UK report:

"The pandemic is redistributing how innovation takes place. Companies, institutions and entrepreneurs have been embarking on unprecedented adoption of new technologies and practices, pursuing new kinds of flexibility in where and how they operate. The forced acceleration of digital means that high productivity industries and firms are likely to depend on a blended version of proximity – physically and virtually. How and where the UK accommodates these new trends and supports more people, companies and communities to adapt to them will be key to fostering overdue productivity improvements nationwide and in turn underpin an inclusive recovery.

At the same time demand for place innovation is amplified. As an agent of change, COVID-19 has produced more appetite for new products, improvised solutions and common endeavours to tackle big societal challenges, translated into the hardware and software of places. How to simultaneously heal scarred urban economies, reinvent the revenue model of industries, reimagine mobility systems, decarbonise built environments, and enhance the way places and services are managed, is now a profound priority." See [UK Innovation District Knowledge Quarter](#).



The central rationale of innovation precincts is physical proximity – the ‘water cooler effect’ on a precinct-wide basis. The Brookings Institute provides the classic pre-COVID statement of the proximity effect:

"The proximity effect is significant. Recent research conducted by Gerald Carlino and Robert Hunt found the clustering of R&D labs to be by far the “most significant” at very small spatial scales, such as distances of about one-quarter of a mile. They also discovered the clustering effect to quickly dissipate with distance, concluding knowledge spill overs to be “highly localized.” Isaac Kohane and several colleagues at Harvard Medical School found that even working in the same building on an academic medical campus makes a difference for scientific breakthroughs; “Otherwise, it’s really out of sight, out of mind.”"



A study of the Shoreditch innovation area in London (Silicon Roundabout) almost said “it’s all about the cafes”:

"Workers use multiple settings to work in a complementary way, suggesting a reconfiguration, and extension, of the “workplace” in these industries. Producing and meeting exhibit a strong attachment to a base, usually the office or residence, revealing some of the constraints on remote work; the office is not yet obsolete, even in digital production. However, ancillary spaces play a critical role in complementing the base and supporting workers’ needs. The coffee shop, the pub or the park are more than spaces for pursuing creative lifestyles; they are part of a complex network of spaces that are used, and essential, for digital production." See [The Extended Workplace in a Creative Cluster: Exploring Space\(s\) of Digital Work in Silicon Roundabout](#)

The COVID experience has blown away many of the previous views about “the constraints on remote work”. Most of us would acknowledge that we have been surprised by how much collaboration we have been able to maintain by video meetings and other remote working techniques. It is clear that the “new normal” will be a “hybrid” environment.

There is also talk of migration away from cities, especially by knowledge-based workers, to live in regional and rural areas.

There has also been a major shift in telecommunications infrastructure. Innovation precincts used to be islands of high capacity, high speed fibre to the premises broadband surrounded by, as Communications Minister Paul Fletcher called it, the “wired brown land” of barely broadband copper. If you were a knowledge worker and you wanted to work on a bandwidth hungry project, innovation precincts were your natural workplace.

Now thanks to the 4G and 5G networks deployed by the private carriers and the National Broadband Network funded by taxpayers, high speed broadband is available across urban and much of regional Australia. This infrastructure has made WFH possible during COVID.

So, have models which depend on agglomerating businesses such as innovation precincts been overtaken by WFH? The decentralisation of Silicon Valley, which was already underway pre-COVID due to high property prices, has accelerated as a result of COVID. The tech companies are following the talent by branching out from their Silicon Valley bases, such as Apple. See [Apple Looks Beyond Silicon Valley to Improve Recruitment and Retention](#).



Post-COVID, innovation precincts could evolve in three ways:

1

As knowledge workers seem to be amongst the most enthusiastic about hybrid working, innovation precincts will need to reshape themselves to this new reality. As pre-COVID innovation precincts were designed from the ground up around the principle of physical proximity – down to people bumping into each other the streets and cafes of the precinct – this redesign will need to start with a re-evaluation of the amount, shape and use of the physical infrastructure and spaces.

2

Making use of the more widespread availability of high speed broadband, smaller agglomerations of firms and knowledge workers may emerge – ‘digital clusters’, including increasingly in regional and rural Australia. Who knows, Byron Bay may develop a more creative digital cluster than its current cohort of social media influencers. This trend was already have been underway pre-COVID. A recent UK Government report into the fintech industry noted that “the image of fintech is stuck in Shoreditch, an area of East London populated by start-ups and coffee shops catering to the mythologised young laptop entrepreneurs of “Silicon Roundabout”... [but] the UK fintech success story is not confined to London, but spread across the UK in ‘clusters’, notably where financial services and technology domain expertise, STEM skills/ academia and investment capital are present.” As digital clusters are situated more closely within the local community, the “spill over effects” may be more apparent. However, the UK report also noted that these digital clusters suffered from a lack of scale on their own and that there needed to be a framework for them to pull together:

“Rather than vying to compete with one another, these clusters need to form a more collaborative web in order to strengthen connectivity. This would subsequently power fintech success across the country, and internationally, boosting the position of the UK in one of its fastest growing industries. After all, this isn’t about Manchester competing with London, but Manchester competing with Barcelona, Frankfurt, or even Sydney.”

See [The Kalifa Review of UK FinTech](#).

3

Rather than digital clusters substituting for larger innovation precincts, a “hub and spoke” model may emerge. To some extent, the CSIRO already acts as a hub for 5 or more innovation precincts across Australia. See [CSIRO Global precincts and national centres](#).



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