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The Future of Innovation Districts

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Where innovation takes place has changed radically over the last decade, with the rise of physical Innovation Districts across the world that bring together researchers, start-ups and corporates to work and live in open ecosystems. Our article outlines the Innovation District concept and factors for success in a post-pandemic world.

The way in which organizations innovate, and places where they are based to do this, have changed profoundly over the last decade due to two overall trends – convergence and disruption. Companies have moved away from closed innovation models to more open approaches in which organizations and places work in collaborative ecosystems and networks, forming "uncommon partnerships" between previously unrelated industries.

Enabling these partnerships is crucial as organizations look to embrace new growth paradigms. Providing the right physical location for this innovation to occur is vital. That has led to the development of the Innovation District concept. Simply put, an Innovation District (the most famous of which is Kendall Square in Cambridge, MA) is a dense geographical area of supportive economic activity focused on innovation, which is near to one or more institutes of higher education, often in an urban environment that is ripe for regeneration. Unlike traditional science or business parks, rather than simply functioning as workplaces, Innovation Districts create places where people can live, work and play 24/7, and where you can "change jobs without changing your car park".

In the new, post-COVID-19 world of work, Innovation Districts are well-positioned to thrive. Not only do they enable serendipity and foster innovation through the intensive co-location of different businesses and organizations (by offering physical space for complex supply chains such as in healthcare), but they also provide flexible, mixed-use office property with underpinning housing and entertainment offers. This makes them resilient and well equipped to grow despite the increase in virtual working – people are not only attracted to Innovation Districts to work, but also to live and access key amenities. Companies continue to benefit from a concentrated innovation ecosystem and supply chain in a single location, even if personnel are not located there full time.

To succeed, Innovation Districts need to focus on particular key success factors – or risk becoming just another business park.

Box 1: Innovation Districts and their competition

An Innovation District – sometimes referred to synonymously as an Innovation Neighborhood – is an agglomeration of economic activity that is focused explicitly on innovation and of sufficient density to achieve a critical mass in its own right, by ensuring representation from more than one part of a supply chain. It is actively managed to support the innovation imperative, but also allows the market within it to evolve to meet the needs of entrepreneurs.

Typically located in urban areas, Innovation Districts are focused on driving inter-firm linkages, collaborations and networks that are enabled and sustained by a wider ecosystem for innovation. They are usually built around large, world-renowned anchor institutions, such as universities, research institutes, and/or teaching hospitals. They offer office, residential and retail space, and sometimes access to shared research infrastructure that otherwise would not be available to a single individual business.

Innovation Districts differentiate themselves from traditional science or business parks through their urban locations, mixture of types of space, 24x7 operations and close focus on specific industries, with active management to support the right combination of tenants, networking for innovation, and close collaboration. Unlike incubators, they include a wide range of businesses across the ecosystem, from start-ups to large corporates, while they are more physically compact than potentially sprawling innovation clusters.

They lend themselves well to complex and multidisciplinary activities in areas of convergence between different sectors. Healthcare and life sciences is one such example, in which applied health innovation is being augmented by advances in materials science, robotics, telemetry, nutrition and advanced manufacturing.

Creating a successful and productive Innovation District that pulls in organizations and makes them want to stay is challenging, especially in terms of:

- **Attracting tenants:** In an environment where there are multiple competing property offers, such as lower-priced offices or science parks.

- **Time to return on investment:** For property developers, Innovation Districts are a long-term commitment that can have much slower returns than conventional property offers of offices, retail, or housing.

- **Creating diseconomies of scale:** As a District becomes larger, it also becomes more expensive for tenants and – as a result – less diverse, as smaller or less wealthy businesses are driven out of the area. For example, Silicon Roundabout in London's East End saw property prices soar and start-ups replaced by expensive housing and corporate offices.

- **Multidisciplinary stakeholder alignment:** Success requires buy-in from myriad property developers, local councils, universities, start-up founders, and the R&D departments of large, often international businesses, all of which have different priorities and expectations around risk and reward.

- **Creating a vibrant destination, 24/7:** Business and science parks often fail to fully engage with neighboring communities and shut down after office hours, becoming "ghost towns". Bringing them to life and making them a focal point is a major challenge.

With these challenges and issues in mind, Arthur D. Little and Steer Economic Development (Steer-ED)[1] have benchmarked and engaged with some of the world's most successful Innovation Districts over the last few years to identify the practical and tangible success factors to establish, grow and sustain a productive District for both developers and tenants. We spoke in depth to a range of successful Districts (Figure 1) and are grateful to these organizations for sharing their views. We also drew our work with a range of global innovation centers in France, Malaysia, Singapore, Chile and the Middle East, as well as with start-up accelerators and developing regional university-led innovation clusters in Japan.

1. Formed in Autumn 2016, Steer Economic Development (Steer-ED) was established to build on The Steer Group's capabilities in transport and movement, and enhance its offer by diversifying into adjacent economic development areas such as infrastructures, enterprise, science and knowledge, skills, and low carbon. Steer-ED focuses on national, sub-national, regional, and local-level economic development, and has partnered with Arthur D. Little over several years to deliver projects within the innovation and economic development domains. https://www.steer-ed.com/

Figure 1: Leading Innovation Districts benchmarked by Arthur D. Little and Steer-ED in recent years

The essential fundamentals of an Innovation District

Successful Innovation Districts possess the same common characteristics that provide the building blocks on which they and their tenants can develop and thrive:

- **Access to talent and research outputs from one or more leading universities.** Major institutions can hold significant marketing value, particularly those that are "research intensive". The highly renowned Karolinska Institute was one of four major institutions critical to the success of Stockholm Science City and its ability to attract major companies in the life sciences space. Kendall Square benefits from close proximity to MIT and Harvard.

- **Good transport connectivity** and flow of people around the District itself. For example, Kendall Square has a metro stop located within the District that can serve tens of thousands of people each day, enabling accessibility by foot.

- **Flexible accommodation to live, work and play,** normally facilitated by a central location and wide-ranging amenities operating 24/7. The Station F campus in Paris has become a destination in its own right thanks to its high-quality food offering, which is open to the public.

- **Proximity and density.** Innovation Districts must be located in areas of sufficient population density such that a critical mass can be achieved to drive the District's success. Being situated at the heart of Manchester (UK) will be a key feature of the recently announced £1.5 billion ID Manchester Applied Innovation District, the development of which Arthur D. Little and Steer-ED have supported over the last two years.

- **Access to the services of innovation.** The most active Districts include not just the "innovators", but also the professional services that they need to scale, including legal, finance (traditional and equity), accounting, and marketing.

However, there is a huge difference between what makes an Innovation District **functional** and what makes one **successful** in the long term. Underpinning these fundamental characteristics are eight key success factors (KSFs) that ensure that they are truly world class and differentiated in terms of attracting high-caliber talent, building a thriving community of businesses and, ultimately, becoming a success in terms of financial returns, jobs creation and, more critically, social cohesion.

What is crucial to understand is that these factors go beyond the property offer – setting the direction of the District and how the ecosystem within the physical buildings is created and curated is equally as important. Failure to understand this risks the District not delivering value to tenants and becoming merely another mixed-use development, rather than world class.

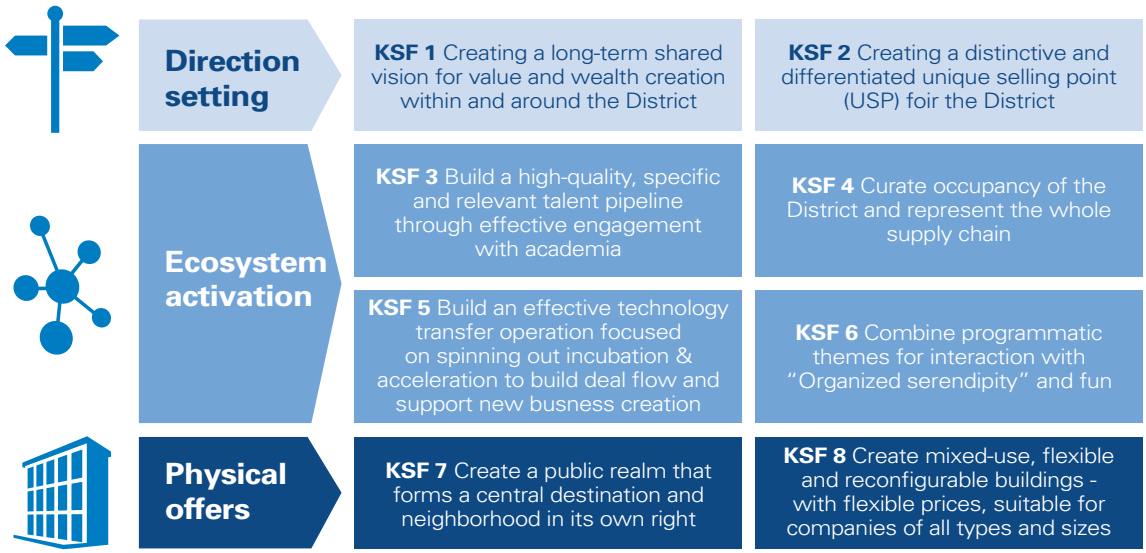

Figure 2: Key success factors in developing an Innovation District

Direction setting

KSF 1: Creating a long-term shared vision for value and wealth creation within and around the District

The greatest challenge in founding an Innovation District is obtaining alignment between multiple different stakeholders on what the District is trying to achieve. This is challenging because the value and wealth created are generally realized over a longer term compared to those of a conventional property development of retail, housing or offices, from which a quicker return can be made through property sales and rentals. This value is manifested not only in higher financial returns, through premium property rentals and other economic outputs such as company creation, intellectual property licensing and venture capital investment in new start-ups and spinouts, but also in broader value and wealth creation. These include jobs creation and knowledge generation, and wider socio-economic impacts such as health and well-being, engagement with local communities, environmental sustainability, and skills and learning.

It is key here to to obtain buy-in from all types of stakeholders – research-intensive companies, local government, universities and property developers – on what a 10–20-year Innovation District vision should entail. Stockholm Science City is an excellent example of how this can be achieved by creating joint accountability and trust through defining the responsibilities of each stakeholder, regularly course-correcting vision delivery, and ensuring overall leadership by the university, with full support of the city municipality and other stakeholders. This vision does not stand still – it evolves over time to deliver on the overall objectives of the District.

Good Innovation Districts do not operate in isolation, and instead work in harmony with their immediate and wider surrounding functional economic geographies to ensure the open flow of organizations and people in and out of the District. They also engage with potential external stakeholders at the point of inception to help this permeability take place. For example, the Station F campus in Paris engaged with start-ups from the outset to identify key attractors and develop a place that could best meet the needs of its future occupants and foster innovation. Similarly, Kendall Square started out by engaging the venture capital community to establish funding mechanisms to support and attract start-ups.

KSF 2: Creating a distinctive and differentiated unique selling point (USP) for the District

To be successful, an Innovation District should initially be focused on a specific domain, providing a point of differentiation to attract tenants and then sustain occupancy. At the same time, this focus needs to be recognized and understood in the market. For example, the MaRS Innovation District in Toronto, Canada has particular strengths in fibrosis.

This point of differentiation, however, need not be static. Kendall Square maintained a focus on biopharmaceuticals for many years, but steadily evolved this USP by bringing in a complementary offer in artificial intelligence. This approach brought new organizations such as Boeing to the cluster, which otherwise would have not been attracted to a life sciences-focused District.

Box 2: Kendall Square, located in Cambridge, Massachusetts, was born out of the neighboring Massachusetts Institute

Kendall Square, located in Cambridge, Massachusetts, was born out of the neighboring Massachusetts Institute of Technology (MIT), in an area that was partly occupied by an abandoned industrial complex. It has since become one of the world's most successful and renowned Innovation Districts. MIT is well known for industry partnerships and the commercialization of the abundant ideas generated at the university. It is therefore well suited to its role as an anchor institution to Kendall Square, providing the knowledge component to the District. This, in combination with a smart and targeted urban development plan through construction projects that are both architecturally attractive and well connected, has provided a major draw to high-caliber talent and businesses alike. Kendall Square has become a major center for innovation in biopharmaceuticals and artificial intelligence, with companies from across the full biopharmaceutical value chain co-located to work at the cutting edge.

Ecosystem activation

KSF 3: Build a high-quality, specific and relevant talent pipeline through effective engagement with academia

The availability of talent is one of the biggest draws for tenants to an Innovation District – but it must be relevant and world class to encourage businesses to establish themselves in close proximity. The Jeff Bezos of the world are a key attractor. The talent pipeline must also be specific and related to the District's USP. Availability of "computer scientists" is not sufficient; instead, the presence of "X" data scientists in "Y" disciplines is a more relevant lure.

The main source of this talent pipeline is the universities or other higher education institutions embedded in, or in close proximity to, the District. Obtaining buy-in and alignment from universities on a District-relevant talent pipeline can

be difficult, as it requires senior academics to change their focus from one that covers publications, research funding, and curiosity to one that advances working directly with companies.

The solution here is to showcase the benefits to the knowledge base of working with the District, from one academic leader to another. For example, demonstrating that research in quantum technology can be relevant to Microsoft – and, hence, attract more repeat business and academic funding – can quickly change the minds of even the most recalcitrant academics. Innovation Districts can also act as a recruitment pipeline for new graduates, which helps to attract and inspire increasing numbers of students, along with their university research focus domains. They, in turn, bring new business ideas and, ultimately, money – a success found at the Cortex Innovation District in St Louis, MO. However, throughout, the "university must remain a university" – a repository for "big brains" that serve as the magnet for talent and businesses in the first place by generating world-class innovation.

KSF 4: Curating occupancy of the District and representing the whole supply chain

Although it may seem perverse to turn down prospective tenants, the selection of companies to be part of the cluster is important to determine the District's direction. For example, over time Kendall Square has been able to achieve representation of the full biopharmaceutical value chain within the District through careful selection of potential occupants. In turn, this has further increased demand for businesses to locate within the District.

In addition, the mix of sizes of occupants within the District is important to maintain attractiveness and provide the optimum conditions for innovation to occur. Typically, an Innovation District maintains a blend of start-ups, corporations and research institutions relevant to its USP. Corporations, for example, like to be around start-ups due to their energy, access to cutting-edge technology, propensity for quicker innovations, and availability of talent.

KSF 5: Build an effective technology transfer operation focused on spinning out, incubation and acceleration to build deal flow and support new business creation

Proximity to big brains at a world-class university is critical, but just as critical is extracting knowledge from them. To support the flow of knowledge and talent from the universities associated with an Innovation District, a successful technology transfer operation must be established, supported by an effective industrial liaison function at universities. This is to avoid the possibility of core university functions being "distracted" by the District, which could impact their research and teaching excellence. Rather than seeking IP royalties from one-off patent license deals, the goal is the delivery of long-term value creation through company establishment and growth.

Leading Innovation Districts thus benefit from specific support to push technology and create spin-offs from academic institutions, as well as access to start-up acceleration initiatives, and ultimately sources of Series A and B venture capital funding, further downstream. This can often be initiated by national or regional governments, or by universities themselves. Toronto Innovation Acceleration Partners (TIAP), formerly known as MaRS Innovation, provides an example of a unified offer of technology transfer, creating deal flow across the whole ecosystem. It plays a key role in supporting technology transfer through covering the cost of IP protection, investing in business development and funding projects to get past the point of commercial inflection and beyond to commercial reality. Station F offers start-up support along a similar journey, in the form of its Founders Program for early-stage start-ups, Fighters Program for entrepreneurs from underprivileged backgrounds, and Partner Program for those in growth phase. In addition, technology transfer is not limited to start-up creation. In Japan, there are an increasing number of cases in which large "anchor" companies and universities work with local governments in a specific city to strengthen capability and build innovation supply chains through rezoning, land provisioning, and funding incubation and acceleration support.

Box 3: Innovation Districts as catalysts for developing regional cities: Hiroshima University and Mazda

In Japan, where the population is declining and concentrating into the greater Tokyo area, regional regeneration is a major component of the national agenda. Multiple projects have been launched by local governments to boost collaboration between companies and universities in Innovation Districts in smaller cities outside of the capital. In Hiroshima Prefecture, Hiroshima University is working with Mazda, an automotive company, and the local manufacturing ecosystem to build focused capability in the digitization of manufacturing. Supported by local government, this approach has created a new competency cluster to build capabilities in the local industrial supply chain and train the next generation of engineers.

KSF 6: Combine programmatic themes for interaction with "organized serendipity" and fun

The social engineering aspect of a successful Innovation District is also of pivotal importance, in order to create opportunities and environments for like-minded individuals to "collide" and form new and differentiated ideas. Good practice is to create a robust programming schedule, such as a "soft landing" program for new environments, trade missions to support international expansion of tenants, and presentations from keynote speakers District tenants want to hear from, as achieved at the Netherlands Innovation Quarter.

These initiatives are complemented by activities that allow collaborations to self-form and progress. The Cambridge Innovation Center's Venture Café model excels at this and has been deployed at the Cortex Innovation Community as an initiative known as "The Gathering", a weekly event that brings together tenants, academics and the wider community. Over 75 percent of participants at The Gathering come from outside the District, creating an outward-facing entity that transcends the geographical boundaries of Cortex itself.

Physical Offers

KSF 7: Create a public realm that forms a central destination and neighborhood in its own right

Successful Innovation Districts are destinations where people want to live, work and play and that can operate on a 24/7 basis. Many successful Districts have one or a few central common areas, with associated shared spaces, within a few minutes' walk of one another, which act as collision spaces for occupants to interact with people they wouldn't ordinarily meet.

Boeing at the Cortex Innovation Community has designed its workspace to allow collaborations to self-form and progress. Employees use the communal kitchens that are shared with start-ups, rather than relying on its internal catering. Others have physical assets that create a reason for people from outside the District to visit them. For example, Kendall Square is host to the MIT Museum and the MIT Press Bookstore. Station F's food court occupies one-third of the site and is open to the public.

KSF 8: Create mixed-use, flexible and reconfigurable buildings – with flexible prices suitable for companies of all types and sizes

As a District grows larger and more successful, it also becomes more expensive, and rising rents can often drive out more diverse and creative businesses. Instead, successful Districts offer highly flexible property offers, with different sizes and prices. It can be possible to offset the rents of smaller businesses by charging more to anchor tenants through intelligent cross subsidies – Kendall Square managed to raise rental prices for larger companies by 12 percent per year, as cheap rent did not attract bigger companies – instead, it was proximity to sources of talent that drove occupancy. Effective "meantime" uses for older or more dilapidated buildings can help to achieve this. Building 20 at MIT is a prime example. This temporary World War II-era structure provides a combination of cheap rent and flexible, adaptable

accommodation, exactly meeting start-up needs. Over 55 years, occupiers of the "Plywood Palace" created radar technology, microwaves, the concept of hacker culture, early cryogenics, particle accelerators, the first video games and The Bose Corporation.[2]

Flexibility is also important for a hybrid digital/physical model, wherein, post-COVID-19, workers are unlikely to return to the office full time. However, being able to offer the physical infrastructure required by an ecosystem (such as laboratories and small-scale production facilities in precision medicine), along with housing and 24/7 amenities, gives Innovation Districts an advantage over traditional science parks when it comes to ensuring vibrancy and occupancy.

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2. Source: Massachusetts Institute of Technology. "MIT's Building 20: 'The Magical Incubator'", Infinite History MIT. https://infinitehistory.mit.edu/video/mits-building-20-magical-incubator

Insights for the executive

Based on the key factors for realizing a successful and sustainable Innovation District, executives, university leaders and local government officials embarking on creating, operating and locating in such a District should focus on the following:

Government and university leaders:

- *Focus is key:* There needs to be a clear focus on a core subject area for the District to successfully attract the right mix of start-ups and larger corporates required to foster innovation.

- *Promote a world class proposition:* Districts need to be founded on renowned, high-class and differentiated research from a world-leading institution. Otherwise, they will not cut through in a crowded and increasingly noisy marketplace.

- *Involve local government:* In a post-COVID-19 world with greater government involvement in business, municipalities can support Innovation Districts through rezoning, land provisioning, easing regulation, and catalyzing incubation and acceleration support for start-ups as required.

- *Go beyond the physical:* Enabling innovation requires more than state-of-the-art buildings. Create opportunities for "organized serendipity" that mixes people and ideas to drive innovation.

- *Orchestrate and evolve:* Bring together disparate stakeholders, spark off new and innovative thinking from their diverse perspectives, and unite them behind a long-term plan, course-correcting it and keeping it relevant to global trends as you move forward.

- *Make it simple for businesses:* Create a one-stop shop for potential tenants of all sizes, providing them with everything they need to join and grow within the District.

Businesses:

- *Have affinity with the Innovation District:* Ensure that the USP of the District you choose to locate in is a close match to your own innovation aims, and don't solely be guided by geographic factors.

- *Embrace the opportunities:* Innovation Districts are open ecosystems – ensure your teams understand this and immerse themselves fully in the activities and mixing process that drive modern innovation.

- *Locate the right teams in an Innovation District:* Don't move your corporate HQ to a District – instead, send a relevant subset of your innovation/R&D teams that will benefit from the opportunity.

- *Take an active part in steering the future course:* Everyone involved in the District is responsible for its success – use your skills and knowledge to help the ecosystem develop, but without seeking to dominate, and contribute to shaping its vision.

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