

A vertical garden wall made of light-colored wood panels in a geometric, triangular pattern. The wall is covered with various green plants, including ferns, succulents, and leafy greens. In the foreground, a man with glasses and a white sweater is sitting at a dark wooden table, working on a laptop. The floor is made of light-colored tiles. The overall scene is bright and modern.

Creating Innovation Districts

HLM
Architects



Philip Watson
Chair, Head of Design

As we start to make sense of the fourth industrial revolution, it is clear that new ways of working and new types of partnerships require different infrastructure that will enable cities and regions to remain competitive in a global economy.

The term 'Innovation District' is used to describe a wide variety of types of development. What unites all of them is an element of collaboration between public and private sector bodies, often with a higher education institute as an 'anchor tenant'. What interests us, is the potential of innovation districts to be a new model for how we organise our communities. Not just places of work, but rich and appealing neighbourhoods where people live and relax too. The economic, social and ecological benefits of this model are huge and we are keen to explore how towns and cities can benefit from this approach.

This document considers the key drivers of Innovation Districts as a new urban phenomenon, looking at the United States in particular, and drawing on HLM Architects' current experience in this arena in the UK.

Our ambition is to help share knowledge and raise awareness of the possibilities that Innovation Districts can bring to regional economic success.

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“A new complementary urban model is now emerging, giving rise to what we and others are calling “innovation districts.” These districts, by our definition, are geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators. They are also physically compact, transit-accessible, and technically-wired and offer mixed-use housing, office, and retail.”

Bruce Katz and Julie Wagner in *The Rise of Innovation Districts: A new Geography of Innovation in America*.





Applying knowledge and expertise to help kick-start Innovation Districts in the UK.

HLM has a strong reputation in the Higher Education sector delivering world-class facilities for institutions across the UK from St Andrews to Exeter and a great number in between.

For several years now we have helped our clients explore the creation of a new breed of facilities where the brief is often less well defined than their typical development. These new facilities often have several stakeholders including local authorities and private investors alongside a University. The ambition is almost always the same: create places where research expertise can flourish, where new ideas and innovations can be shared and tested, where both new and established business can thrive, and a place that is flexible and adaptable to accommodate change. These new facilities aim to promote economic growth and their success is in part measured by their ability to act as catalyst for regeneration for whole districts. Not just workplaces but communities that nurture a new way of living too.

Here we explore the work in our current portfolio and the impact that these are having on communities and society.

Five strategies for establishing successful Innovation Districts

1 Strong Origins

Weaving in the innovation DNA of the region. The first step in creating successful innovation districts is identifying the innovation niche that sets the region apart from the rest. This might be a heritage of manufacture or craftsmanship for example.

2 Good neighbours

Specialised but welcoming. A focus or specialism of the Innovation District has been identified but adjacent complementary fields are invited in. This supporting network of different but harmonious disciplines for symbiotic relationships. These new and unexpected collaborations are an integral part of innovation for tackling complex problems or developing new technologies.

3 Rich Mix

A mixed community. As always diversity is key to a successful community. The right mix of companies, institutions, amenities and facilities should be curated. There should be a mix of pioneering newcomers, emerging businesses and mature, established anchor tenants. These in turn should be mixed with university and institutional research and development facilities.

4 No Limits

Open boundaries are central to the district ethos. Innovation Districts must be welcoming and open places. This attitude is essential to inter-business collaboration as well as being a tool for regeneration and economic inclusion.

Innovative solutions will be required for tenants with complex security requirements but they must contribute to the activation of the public realm.

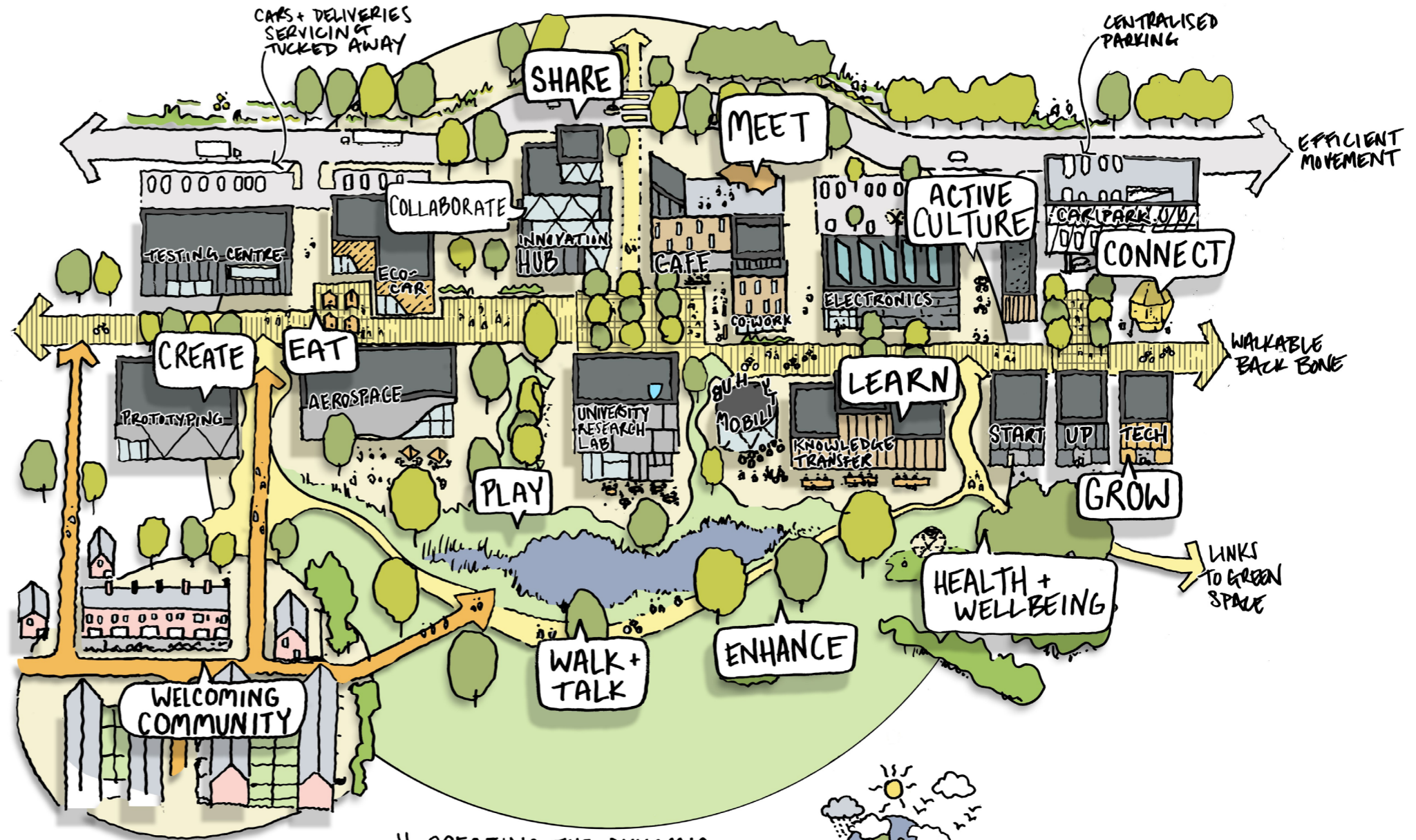
5 Active Culture

Curation of events and spaces. A busy calendar of events and public programming is often overlooked in the operation of Innovation Districts. A mix of work, cultural and leisure events and activities will establish an active and interesting place outside of the 9 to 5 day.

“Creating the Innovation Ecosystem!” Placemaking for the fourth industrial revolution.

The innovation economy provides a pathway to unlocking game-changing, transformational economic potential. A mix of economic, networking and physical assets combine to produce an ‘innovation ecosystem’ where collaboration and interaction produce new ideas leading to economic growth. HLM’s placemaking approach is central to creating a hotbed for these activities:

- 1 Clustering – Bringing together symbiotic businesses, institutions and start ups.
- 2 Third Spaces – Communal facilities for meeting and chance encounters. Space for the four C’s. These might be cafes, super lobbies, event spaces, public squares, parkland, a bench!
- 3 A Walkable Back Bone – with a ‘string of pearls’ – a series of small public spaces. Creating links between people and businesses.
- 4 The Power of Nature – creating links to green space. Good for health and wellbeing, great for ideas.
- 5 Welcoming in the surrounding neighbourhoods – improving economic inclusion. Open boundaries for access to jobs, training, schools outreach programmes and services.
- 6 A Curated Calendar – Events throughout the year. STEAM festivals, talks, street markets, coding contests, parties...



“CREATING THE DYNAMIC INNOVATION ECOSYSTEM!”



The Innovation District, South Yorkshire: The region's greatest opportunity to deliver transformational economic development.



HLM were commissioned by Sheffield City Council and a leadership group made up of Rotherham Borough Council and South Yorkshire Mayoral Combined Authority to create a Spatial Vision and strategy for the Innovation District in South Yorkshire.

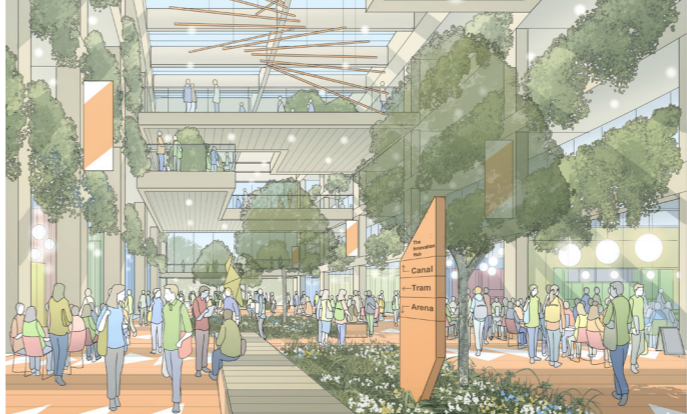
The aim of the Innovation District Spatial Vision and Strategy is to define how the four campuses can be unified into one coherent place and create the supportive physical environment for a dynamic innovation ecosystem greater than the sum of its parts.

The Spatial Vision and Strategy was produced alongside a review of the district's innovation capabilities and a targeted innovation focussed skills, training, and business support plan.

Together they will enable the innovation District to realise transformational economic growth to benefit the local community, the wider region and beyond.



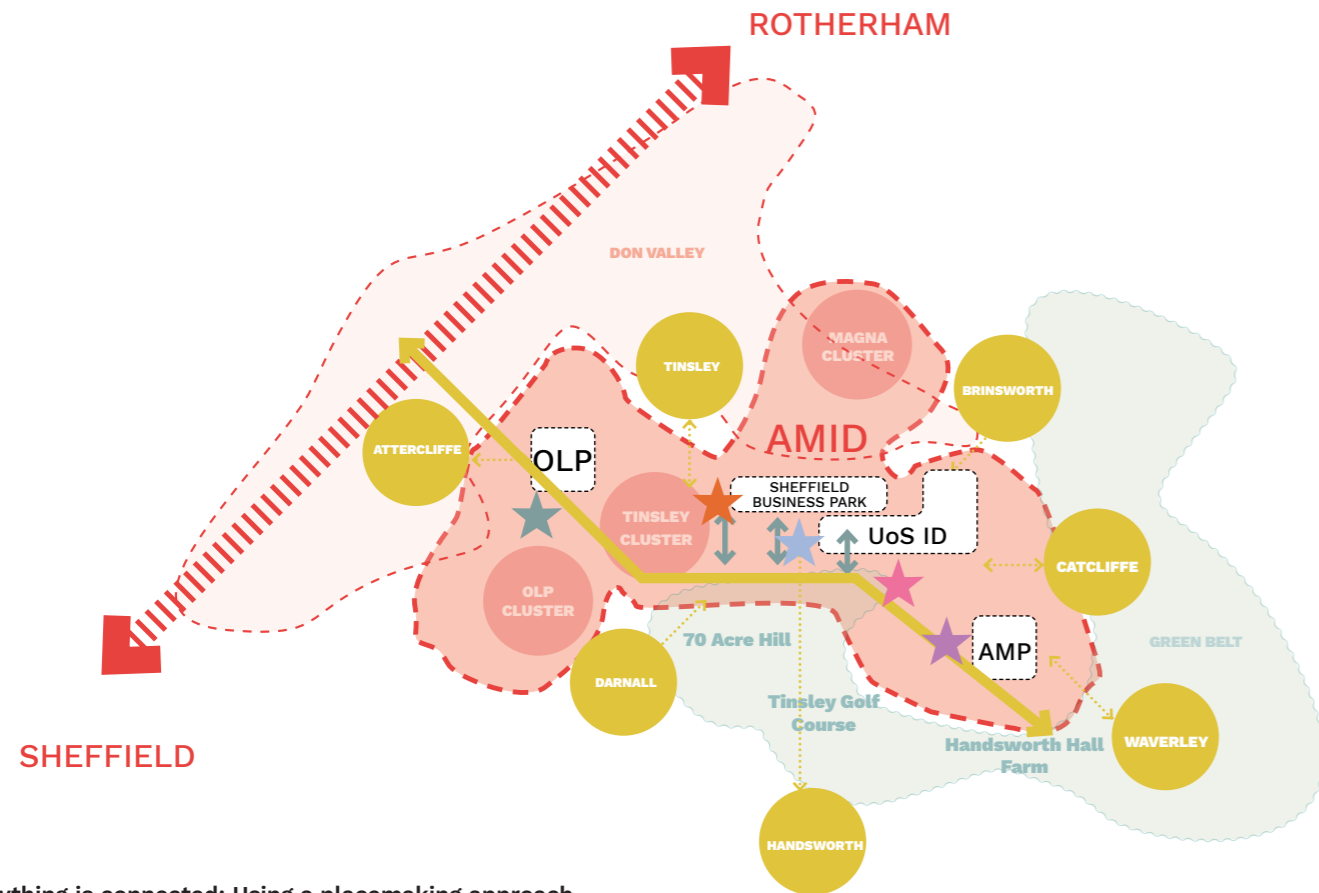
Masterplan for a unified Innovation District with a single spatial identity



Innovation with the power to transform

The Innovation District's vision describes how we think about the people we are attracting and educating, the ideas we are nurturing, the businesses we are supporting to grow and compete, and the vibrant place we are creating. It is a shared, collective narrative, aligned with the District's anchor institutions, partners, and businesses.

We bring together technology, people, business, research, and industry, connecting across specialisms, to solve market and societal challenges, re-imagine sectors and engineer a smarter, greener, healthier, and better connected future for our people, our places, and our world.



Everything is connected: Using a placemaking approach to unify The Innovation District



A roadmap for a dynamic, world-renowned innovation ecosystem

The purpose of the Spatial Vision and Strategy is to define the vision and development strategies for future development within The Innovation District and surrounding expansion sites. Opportunities and interventions within the four campuses are identified alongside, placemaking principles and design guidance. The Spatial Vision & Strategy also guides transport infrastructure improvements. The integrated vision and strategy ensures future development positively addresses climate change, inclusive growth and improve health and wellbeing.



A tool for sustainable and inclusive growth

Potential audiences of the Spatial Vision & Strategy include investors and developers offering the assurance of an overarching plan. Local Authority audiences will use the document to guide future delivery plans for the area and support funding bids. Providing a tool to shape and promote regeneration in the surrounding neighbourhoods. All with a goal of driving sustainable and inclusive innovation-led growth.

‘This is a place where we’re not just imagining a better future, we’re already making it.’

National Manufacturing Institute Scotland, Scotland

The National Manufacturing Institute for Scotland (NMIS) will provide support for manufacturing businesses, help to attract investment, and connect all of Scotland's engineering universities and colleges.

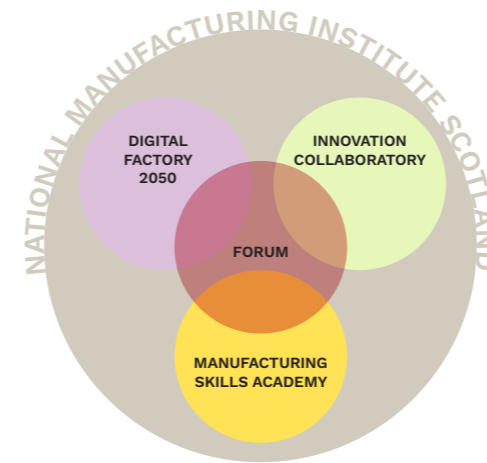
The vision is for the NMIS to be an industry-led international centre of manufacturing expertise, where research, industry and the public sector work together to transform skills, productivity and innovation to attract investment and make Scotland a global leader in advanced manufacturing. This will include the establishment of a new joint Centre for Manufacturing Excellence and Skills Academy to provide businesses with access to expert services, advanced demonstrator facilities and training programmes focused on innovative manufacturing. It will also help to address anticipated demand for skills by promoting Science, Technology, Engineering and Mathematics (STEM) subjects and improving engagement between industry and education.

In essence this facility is about creating an open and collaborative environment where knowledge and creativity can be shared. It should be an exemplar project for the best of Scottish construction technology and engineering, demonstrating new technologies and methodologies.

Located at the heart of the new Advanced Manufacturing Innovation District Scotland (AMIDS), it should act as a catalyst for future development attracting world leading companies and institutions involved at the cutting edge of advanced manufacturing.

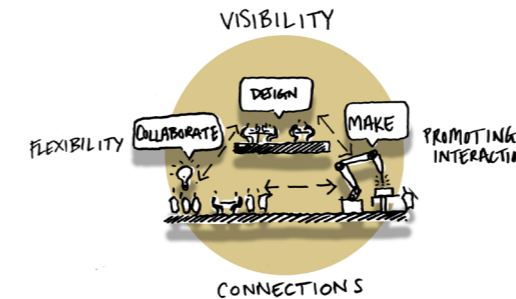


NMIS: An Innovation Ecosystem Under One Roof



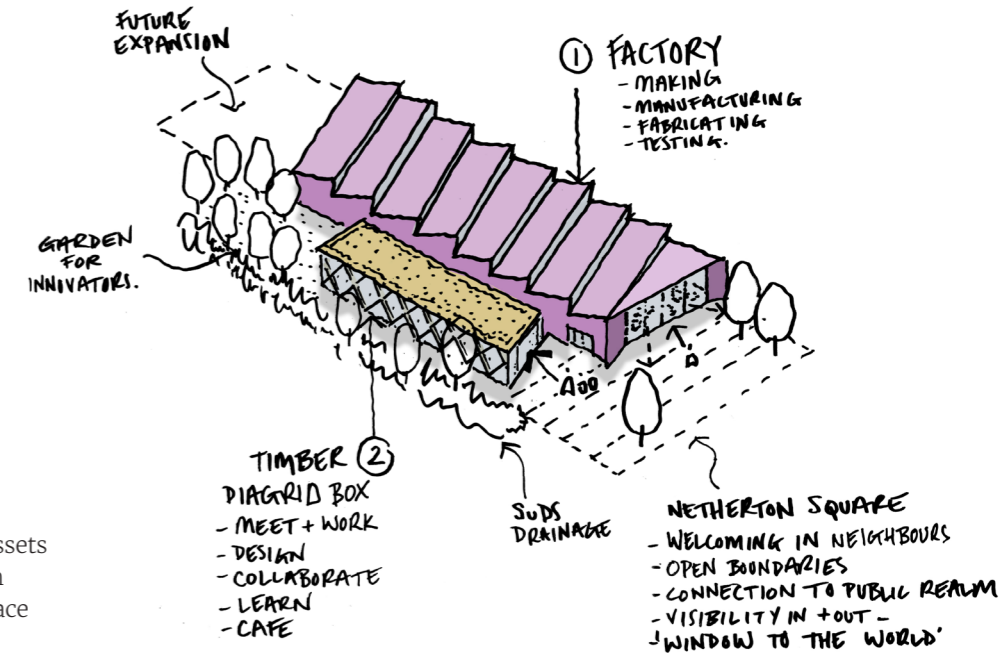
Creating the innovation ecosystem under one roof

NMIS brings together three innovation assets together under one roof and unifies them through the Forum – an open, shared space for collaboration and cross-pollination.



Flexible spaces with high visibility creates connections and promotes interaction

The four zones within NMIS are designed to allow high levels of openness and visibility between the different areas. These connections encourage interaction and collaboration.



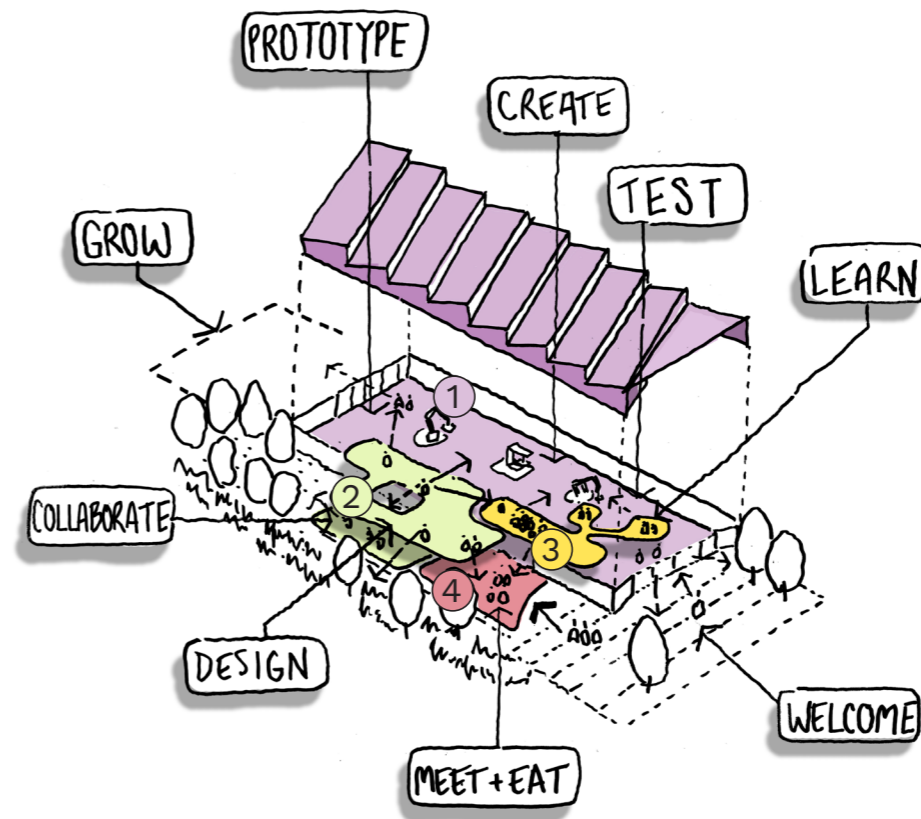
Two Forms: The Factory and The Lattice Box

NMIS is designed with a clear expression of its function. An iconic factory form is coupled with a glassy box formed by an open latticework of timber. Within the factory building are the making and manufacturing facilities. In the glassy box are the 'clean' spaces for designing, meeting, learning and socialising.

A 'window to the world' forms the end of the factory building – an open face to the adjacent public square, inviting interaction with the rest of the Innovation District.

The simple portal frame structure of the factory can be easily expanded to the rear.

A garden and sustainable drainage swale promote connection to nature and promote biodiversity on the site.



Four interconnected zones

The four well-connected zones engender a spirit of collaboration and community within the building. The mix of designers, makers, students and support services will be well served with opportunity for both meetings and chance encounters. The forum area which includes a cafe and space for events and meetings is positioned at the entrance to welcome in tenants and the wider innovation community.

1 Digital Factory 2050

- Workshop for:
- Automation
 - Robots
 - Cyber-physical systems
 - Big data
 - Virtual & augmented Reality
 - Artificial Intelligence
 - Autonomous and Semi-autonomous industrial techniques

2 Innovation Collaboratory

- Meeting place for manufacturing and complimentary sectors
- Hub for innovation in design and manufacturing
- Incubator for new technology based business
- Interactive, flexible collaborative workspace for universities, companies and entrepreneurs to come together for short term projects
- Facilities for support agencies

3 Manufacturing Skills Academy

- Initially training trainers of advanced manufacturing. Later apprenticeship training of:
- Manufacturing and digital manufacturing
 - Fabrication
 - Composites
 - Maintenance
 - Electrics and electronics
 - Instrumentation and control
 - Machining and welding

4 Forum

- Interface with business support
- Gateway for businesses to interact with external groups
- Host financial advice and business support
- Meeting spaces, event space and cafe

Technology Innovation Centre (TIC) Zone Development

Central to Strathclyde University's Innovation Strategy is the goal to escalate the impact and reach of the innovation eco-system by creating new centres of expertise. The objectives of this particular project revolve around the further development of this eco-system based on "open innovation" by delivering facilities that will catalyse an Innovation District in the centre of Glasgow anchored by the University. This will accelerate the impact of creativity and new ideas by crystallising an exciting, co-located, community of industry, investors, and academics, and support the growth of six new clusters – Quantum, Space, 5G, Health Technology, Industrial Informatics and FinTech.



Glasgow City Innovation District is a hub for entrepreneurship, innovation, and collaboration, and is transforming the way academia, business and industry collaborate to bring competitive advantage to Scotland. The model – which is recognised for improving productivity, creating jobs and attracting inward investment in several cities around the globe – brings together researchers and high-growth firms with technology and creative start-ups, to work side-by-side in vibrant, walkable innovation communities.



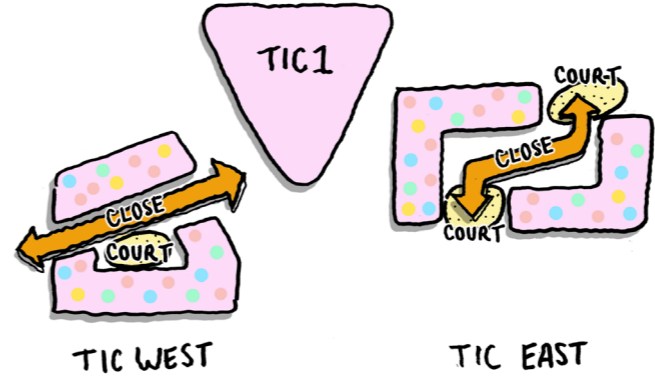
A Permeable, People-focused City Centre Innovation District

The historical street pattern of this early neighbourhood of Glasgow is reflected in the intimate arrangement of passages and spaces recreated in the Innovation District. TIC West and TIC East complement TIC1 with permeable, welcoming

buildings enhancing connections through the Innovation District. The surrounding public realm presents multiple routes through and intimate landscaped spaces for chance encounters and places for reflection.

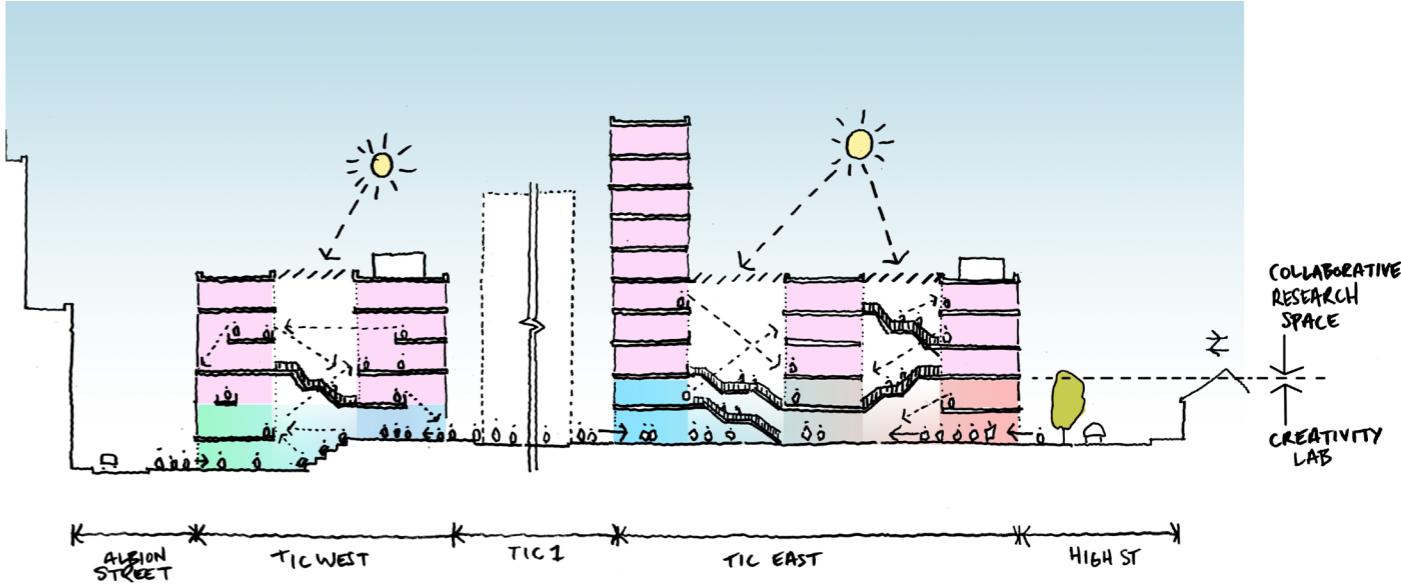


TIC: An Innovation District embedded with the urban spirit of Glasgow



Close and Court: Glasgow heritage as part of its future

The once commonplace tenements that were a feature of the area, were characterised by buildings set around a series of tight spaces called courts and closes. The design of TIC West and East follow the same principle of dense wings of collaborative working spaces set around intimate court and close spaces. In the past these communal spaces were places where everyone knew everyone else's business. The close and courts of the TIC buildings will foster the same tight knit innovation community.



Open boundaries at ground floor

The entrance levels of TIC West and TIC are an open, welcoming mix of facilities that promote collaboration and connection. The full height atria between the wings of the

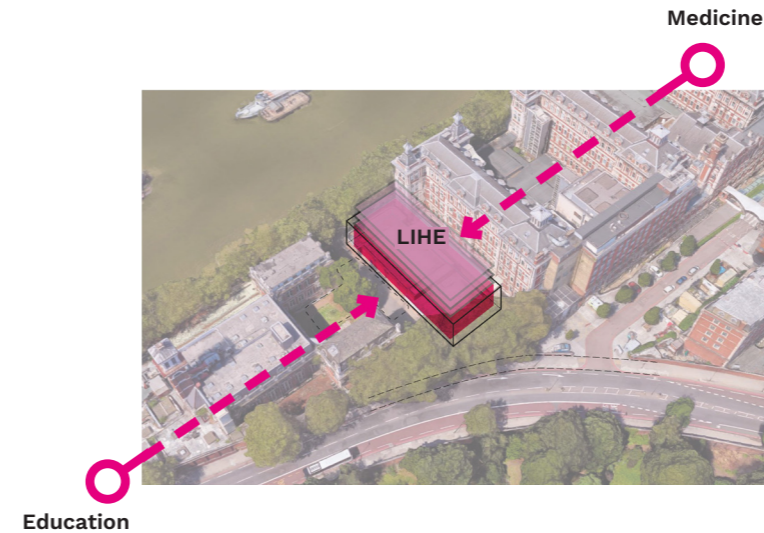
buildings create dramatic, light-filled spaces which allow for visual connections between floors. The upper floors are comprised of more private research spaces and labs.

St Thomas' MedTech Hub, London

The London Institute of Healthcare Engineering creates a new, multi-disciplinary research and teaching laboratory facility embedded in St Thomas' Hospital – part of England's leading NHS Trust for patient recruitment to clinical studies. This dedicated space allows academics, clinicians and medtech companies including SMEs and start-ups to co-locate in a shared space.

This opportunity was generated through major co-investment of over £32m from Wellcome and industry partners including Siemens Healthineers, Medtronic, NVIDIA and IBM, as well as £15m contribution from King's towards the construction of the new building.

The London Institute for Healthcare Engineering, part of the vision for St Thomas' MedTech Hub, is a joint initiative led by King's School of Biomedical Engineering & Imaging Sciences and Guy's and St Thomas' NHS Foundation Trust. It involved the construction of a new building embedded within St Thomas' campus which will bring together King's research excellence, Guy's and St Thomas' NHS Foundation Trust's leading clinical practice and the medtech sector's commercial innovation power and talent, engaging multinationals, SMEs and start-ups simultaneously. The close collaboration will ensure that research in healthcare engineering is translated rapidly into new products and technologies that will benefit patients.

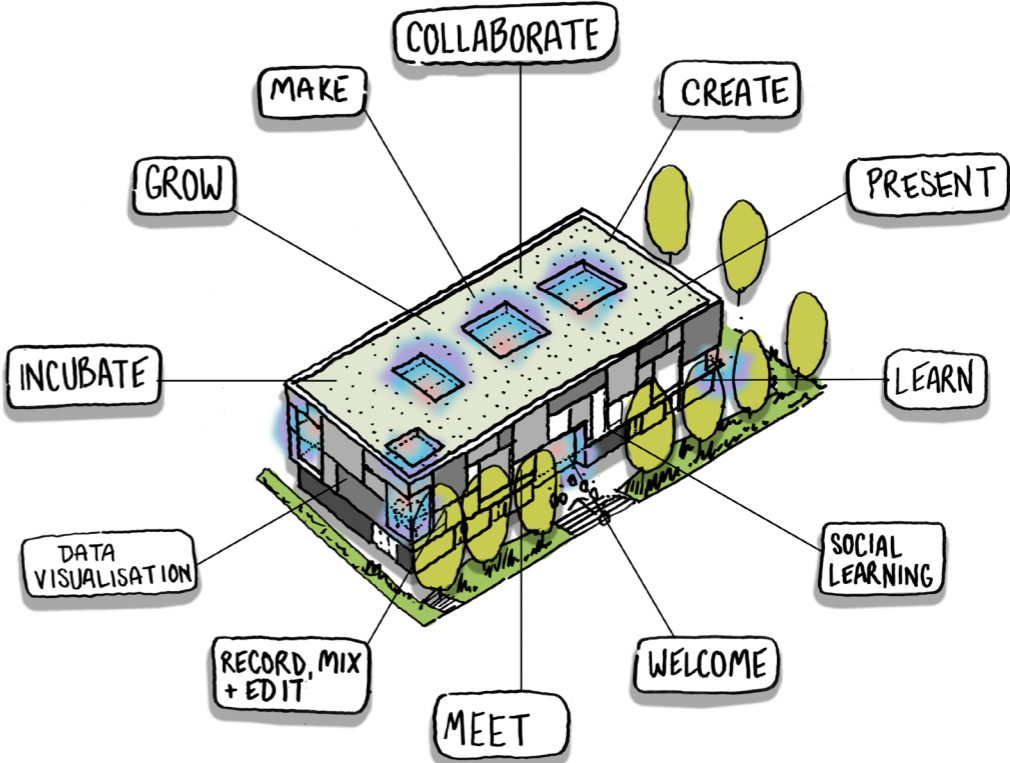


The Institute's initial focus is on key clinical challenges in cancer, neurological, cardiovascular, ophthalmology, oral health and prenatal conditions, which have been selected for their high disease burden and potential for transformation through healthcare engineering.

The funding received by The London Institute for Healthcare Engineering is part of the Round 6 of UK Research Partnership Investment Fund (UKRPIF), which announced major financing of 11 research and innovation projects."



Keele University IC7: A Celebration of Digital Innovation and Culture



Keele Digital Innovation Centre

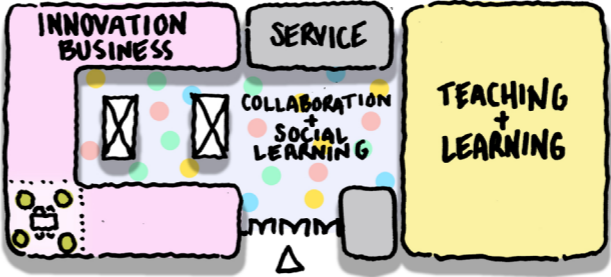
Businesses continue to thrive and spread opportunity for everyone in Staffordshire and Stoke-on-Trent despite cultural and societal challenges. Underpinning the principles of the New Keele Deal, this project on the Keele Science and Innovation Park will create a world-leading Digital Innovation Centre that promotes Keele University as a regional hub supporting digital business, knowledge and innovation. The whole building will be a flexible, adaptable workplace for interdisciplinary research and business as well

as providing specialists facilities for robotics, workshop fabrication and computer sciences.

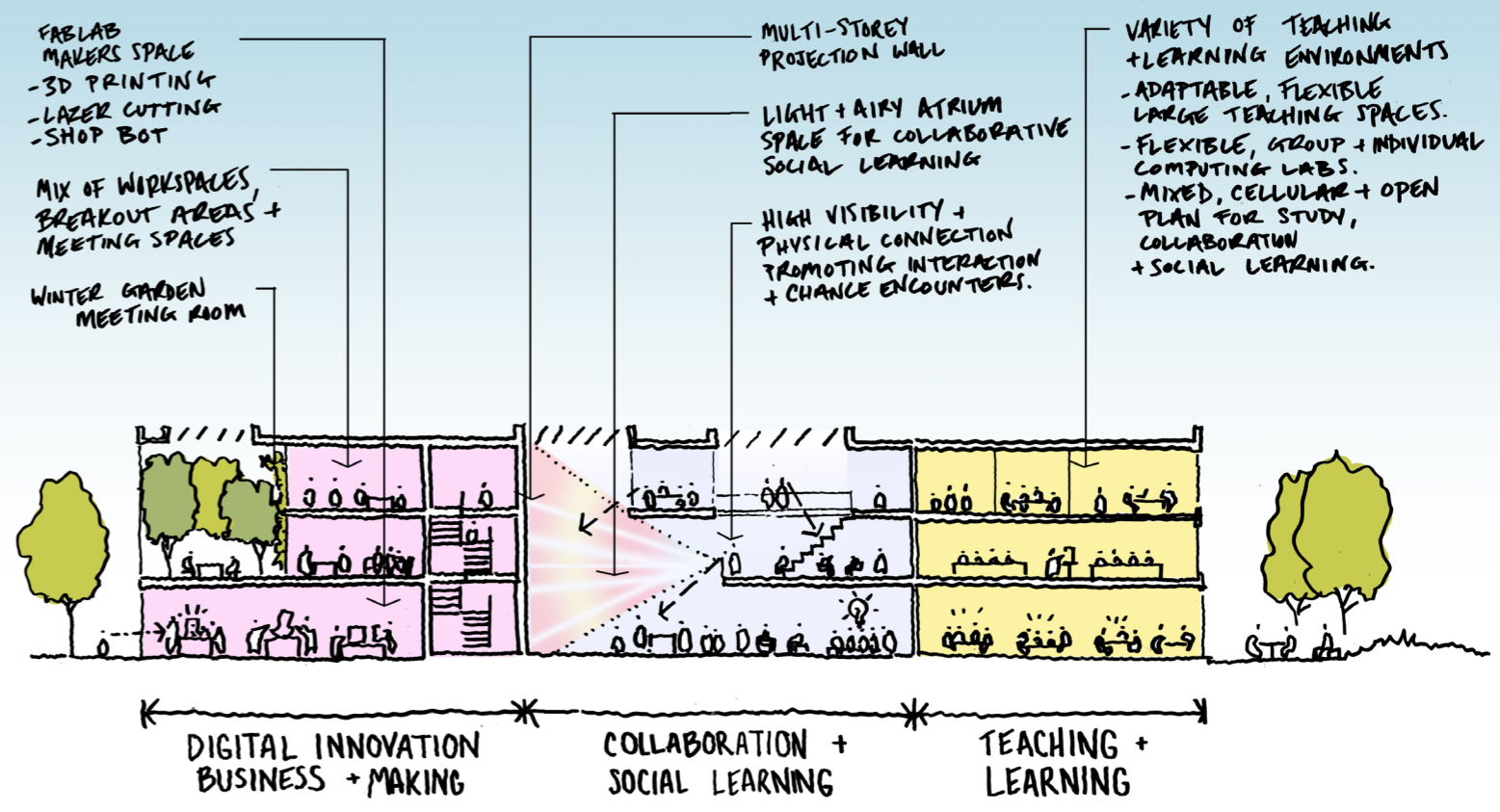
The building will provide a home and a showcase for the University's world-leading research into digital themes and technology, acting as a demonstrator for Smart Energy, Cities and Transport. It will promote the highest sustainability standards, utilising passive design measures to reduce energy demand and the University's own renewable energy network to create an incredibly efficient and low carbon building.

A simple form with a complex interior

Externally IC7 is a simple rectangular box. It's facade design is a representation of a digital matrix – communicating its intricate internal functions. Inside is a dense hive of activity centred around digital innovation and culture. The building houses an entire innovation community of digital business, education and making. IC7 contains a vast range of facilities from a recording studio, a large format data visualisation suite, a digital makers space to an immersive winter garden meeting room. Teaching and business workspaces vary from large, flexible spaces to smaller break out areas and meeting rooms.



Conceptual internal layout



The interior: A dynamic digital innovation ecosystem

IC7 is composed of two primary functions; supporting and incubating digital innovation business and providing a base for Keele University's digital education programme. The triple height central atrium area acts as a catalyst to promote collaboration and interaction within the building's innovation community. The sociable, open plan area has a variety of spaces to promote group working and social learning. The backdrop to this lively space is a giant projection wall that will showcase the output of the building's innovators.

Advanced Wellbeing Research Centre, Sheffield

Following a £14m investment from the UK's Department of Health and Social Care and the European Regional Development Fund, the Advanced Wellbeing Research Centre (AWRC) provides state-of-the-art indoor and outdoor research laboratories for academic experts across the fields of health, engineering, robotics, software design and psychology to codesign innovations to help people move to prevent and treat chronic diseases. Delivered in partnership between Sheffield Hallam University, technology leader Toshiba Medical, leading health insurer Westfield Health, Sheffield City Council and Sheffield Teaching Hospitals NHS Trust the AWRC will take services and products from concept to market. It will use the intellectual property, products and knowledge developed in the research centre to generate wealth and employment opportunities across the city to aid regeneration.

The AWRC is a key part of Sheffield City Region's Advanced Manufacturing Innovation District (AMID) – a 2,000-acre centre of excellence for innovation-led research and industrial collaboration. It sits alongside Sheffield Hallam's National Centre for Food Engineering, the Orthopaedic and Rehabilitation Research and Innovation Centre and the Centre for Child Health Technology, creating interventions and solutions that have real-world application.



Through the AWRC's close links with the adjoining National Centre of Sports and Exercise Medicine, researchers will have the unique opportunity to work with both the population of Sheffield, and elite athletes and para-athletes as part a living laboratory to explore and test the potential of new innovations and products developed.

To provide a flexible, collaborative research centre the new building includes consulting rooms, a very large motion analysis lab, CT and MRI scanning facilities, design workshops, meeting rooms and conference facilities and a knowledge transfer floor. This arrangement of spaces enables the building to flex to meet different research projects over time.



“Improving population health is one of the great challenges of our time. Through the AWRC, Sheffield Hallam is leading work that has the potential to transform the health of the nation. Co-locating research and innovation alongside education, health, leisure and business will help to contribute to economic growth and the quality of life in and beyond the region.”

Professor Chris Husbands,
Vice-Chancellor of Sheffield Hallam University

Clyde Waterfront Innovation Campus, Glasgow

The Clyde Waterfront Innovation Campus (CWIC) aims to capture a commanding international lead in the industrialisation of Quantum Technology. The CWIC development will be transformative for Glasgow, building on the strength of the current JWNC in creating a state-of-the-art fabrication platform which integrates academic research, industrial partnerships and education and training for continued excellence in regional and UK quantum research.

Working alongside Stantec, HLM are executive architects for the new James Watt Nanofabrication Centre which will be the main focus of the CWIC programme, acting as a catalyst for further development on the campus.



The JWNC will focus on industries like nanofabrication for quantum technology and photonics, enabling the co-location of high-quality academic and translational assets with cutting-edge industrial R&D teams supported by state-of-the-art facilities. Even at an early stage major industry partners are already on board and committed to being part of this new open collaborative environment.



HLM R&D: Innovation Districts -Exploring Worldwide Best Practice

A virtuous partnership of academia with the public and private sectors.



Patrick Clark
Associate Director

The global rise of Innovation Districts continues, and in the United States alone roughly 20 districts have now reached a level of critical mass to warrant the name, concentrating a mix of research institutions, mature companies, start-ups and scale-ups, co-working spaces, and supportive intermediaries in close geographic proximity.

They are neighbourhoods where people come to work, live and play, and are essentially 'living labs' where the private sector partners with industry, academia and public sector agencies to deliver flexible space for entrepreneurs, Universities, researchers, investors and industry to co-invent and co-produce new discoveries for a diverse range of technologies.

Three Key Themes

1

Responding to a changing demographic.

The emerging breed of innovators and digital makers in companies both big and small need a habitat to call their own. Somewhere they can cluster, grow and thrive alongside each other. They are increasingly aware of their environment, the impact of climate change, and the benefits to their wellbeing of adopting a healthy lifestyle. Ideally, they want to live and work in an exciting, car free urban environment, which is transit-accessible, technically wired, and offers a mix of workshops, labs, office, mixed-use housing, leisure and retail.

2

Open collaboration and innovation.

Researchers learn new ideas from fellow researchers often in different sectors, entrepreneurs learn from nearby mentors, and venture capital firms are more likely to invest in a company they can observe. Creating the right character of space and "vibe" is key to successful outcomes, and these will differ depending on the requirement of the cluster groups involved. For example, Medtech research require labs and space different to Fintech or 5G, however it is often the space in between that is crucial for successful collaboration and where innovation takes place.

3

Adopting a "service provider" mindset.

Real estate now needs to become a service industry rather than an asset industry. To generate returns in future, real estate operators will have to offer a range of other services including funding, coaching, networking, and supplies. If they don't start doing so, other players such as VC companies will and many already do.

It is increasingly important to align interests and build transparency between owners and occupiers. Landlords might work with their tenants to build a compelling story around a development, or even become a venture capital partner with a direct stake in the success of their businesses. There are tangible benefits to all involved and both building owners and operators should provide hands-on stewardship to address the broader framework for innovation. This means not only managing relationships between big companies and start-ups, but also exploring opportunities to provide accommodation or social infrastructure.

We need to prepare for continuous adaptation, feedback and complexity. Real estate providers need to design bespoke solutions when it comes to access, location, workplace, building layout, and rental terms. A new business model is essential.

Exploring Worldwide Precedents

Where collaborative partnerships form to create new kinds of infrastructure.



Pennovation Works, University of Pennsylvania

Designed by Hollwich Kushner this project was established and owned by the University of Pennsylvania, it is now under management and operation by 1776vc. It is focussing on being service based rather than asset based. The 23-acre property is adjacent to the University's main campus and is there to turn ideas into economic opportunities for the surrounding area and neighbourhoods.

Singh Center, University of Pennsylvania

With a focus on innovation, the Singh Center is a hub for scientists and researchers that integrates state-of-the-art nanofabrication and nanocharacterisation equipment to define new frontiers in nanotechnology.

The collaborative spaces throughout the building provide ample opportunity for intellectual interaction between researchers, and offers a relaxed environment for the student community. Located on the University of Pennsylvania campus in Philadelphia, the Singh Center, which is open to all institutions – academic and industrial, epitomizes Penn's philosophy of pursuing knowledge beyond traditional boundaries.



Sidewalk Toronto, IDEA District.

Sidewalk Labs proposes a vision — beginning with Quayside — designed to realise and maximise ambitious quality-of-life goals by integrating innovations into the physical development.

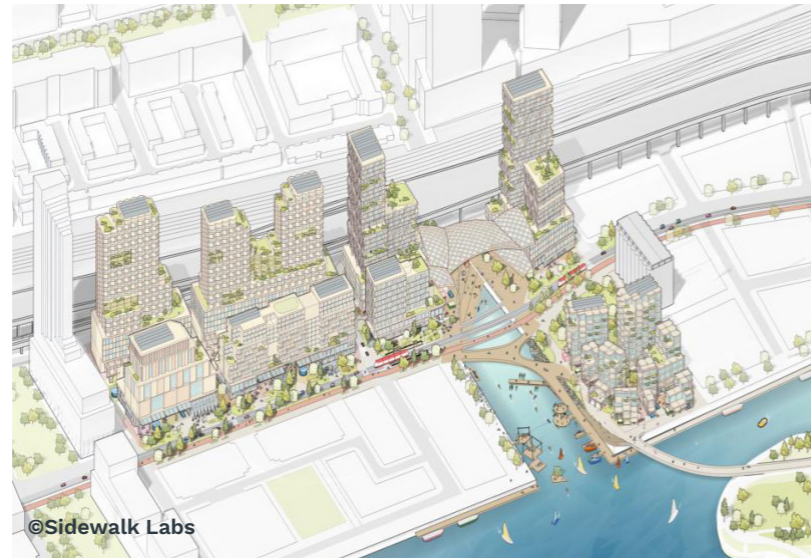
The proposal is to transform a small portion of Toronto’s eastern waterfront into an Innovative Design and Economic Acceleration (IDEA) District that can catalyse tens of thousands of jobs and help tackle the major challenges facing Toronto today.

To demonstrate the impact of urban innovations on improving quality of life, the plan is to start small and work up to larger areas as priority outcomes are achieved. Thus, the first phase of the IDEA District would be Quayside, a five-hectare neighbourhood that sits at the crucial transition point to the eastern waterfront.

Sidewalk Labs are leading this development, working with local partners, and take the risk of proving the viability of the proposed development model.

Sidewalk Labs proposes a new development approach that not only meets but exceeds Waterfront Toronto’s five priority outcomes;

1. Job creation and economic development
2. Sustainable and climate-positive development
3. Housing affordability
4. New mobility
5. Urban innovation.



Kendall Square, Boston Ma.

Kendall Square has been called “the most innovative square mile on the planet,” in reference to the high concentration of entrepreneurial start-ups and quality of innovation which have emerged in the vicinity of the square since 2010.

Kendal Square is extremely dense, with 66,000 people and more than 10,000 companies gathered on very little space. Companies include tech giants like Microsoft, Google and Facebook.

An area characterised by entrepreneurial activity centered around MIT activity, where universities and companies work closely together.

More than 30 sectors are represented here, the dominant ones are tech, life science and professional services. In the past, innovation took place mostly within individual sectors, but now organisations are actively collaborating across industry boundaries.

Summary

HLM is committed to exploring new ideas about how we live, work and play. We invest in research and development and explore international best practice. We recognize that the evolution of innovation districts presents an opportunity for us to rethink how we develop our towns and cities to create rich neighbourhoods where communities can thrive, bringing prosperity and reducing environmental impacts.

This is a future we're already helping to shape.

Let's talk about making better places.

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Keele IC7

About Us

Delivering

World-class architecture with a social purpose

We operate a

One team culture

Seven Sectors

- Asset & Workplace
- Defence
- Education
- Healthcare
- Hospitality, Leisure & Culture
- Justice & Emergency Services
- Living & Communities

Employing over

190 people

Enabling us to

Collaborate across

Five Disciplines

- Architecture
- Interior Architecture
- Landscape Architecture
- Masterplanning
- Environmental Sustainability

Since

1964

Five Studios

- Belfast
- Cardiff
- Glasgow
- London
- Sheffield



Thoughtful design