Knowledge Networks: London and the Ox-Cam Arc
This research paper explores the growth in knowledge-intensive industries across London, Oxford and Cambridge, known as the ‘Golden Triangle’, and examines how the knowledge economy can be strengthened across this region.

The project showcase presents over 90 exemplary projects and schemes having a transformational impact on the education, healthcare, technology and innovation sectors in the UK.
By Peter Murray, Curator-in-chief, New London Architecture

As we come out of the COVID-19 crisis, and out of the EU, the UK economy needs an industrial strategy that is firing on all cylinders. The knowledge economy, a key growth area in recent years, will face many of the challenges of the rest of the economy, not least the impact of the pandemic on our universities, but it will remain a key driver of future growth. Vaccine development and epidemiological modelling, which are in the headlines every day, are vital to create a safer world in the future. At the same time, tech has become even more critical, not just in terms of keeping the economy moving during lockdown but providing the means to control future viral outbreaks.

The Golden Triangle includes the strongest biosciences cluster in Europe studying genomics, digital health, artificial intelligence in healthcare, and neuroscience; it contains the greatest concentration of top universities in the world as well as clusters of global tech companies. This dynamic, world-class innovation ecosystem is key to harnessing transformative technologies to support the UK economy. To maximise its potential it needs to be planned and promoted regionally to ensure the development of appropriate buildings, affordable housing and efficient infrastructure.

This will become even more important as the Government adjusts the north-south balance. Boris Johnson can only achieve his election promises if the south-east economy remains strong. He should thus speed up coordinated development in the region and promote the growth of this world-beating supercluster in the Golden Triangle to deliver jobs and successful businesses as well as game-changing innovation.
Executive Summary

- London, Oxford and Cambridge — ‘the Golden Triangle’ — have demonstrated global leadership in the response to the COVID-19 crisis. The region’s strengths in life sciences have been at the forefront in developing testing, treatments and, ultimately, a vaccine.

- This unique knowledge cluster has produced some of the most high-profile innovations through the research excellence, collaborations and cutting-edge applications developed by world-leading universities, researchers and companies located in the region.

- This region will play a significant role in the post-COVID economic recovery of the UK as a global exporter of innovation and employment creator. The £1.25 billion support package announced by the Chancellor of the Exchequer in April 2020 confirms the central role of the tech, life sciences and related sectors.

- The current lack of a regional plan and coordination across the Golden Triangle poses significant challenges for the future of the region. This report urges government to streamline planning to speed up development and unlock housing, transport and workspaces to help future-proof the UK economy.

- Over the last two years, we’ve seen significant investment in spaces for knowledge intensive industries in this area. Over 90 projects are showcased in this report.

- The impact of COVID-19 will result in new challenges for the knowledge sector, as universities adapt to remote learning and flexibility of spaces will become even more important.
**Economic contribution**

- £74 bn
  - Annual contribution from the UK life sciences sector, mainly driven by the Golden Triangle region

- £111 bn
  - Annual contribution to the UK economy from the Oxford and Cambridge Arc alone

- £80 bn
  - Estimated growth per year until 2050 by the Arc

**The need for space**

- 25%
  - Increase in life sciences employment in London in the decade running up to 2018, the largest of any UK region or country

- £1.25 bn
  - Support package for tech, life sciences and related sectors to boost COVID-19 recovery

- 1.1 mil
  - Sqm of office and lab space being sought in Oxfordshire, but only half that amount available

- 50%
  - Additional commercial floor space needed to support 950,000 new jobs in the Arc by 2050

- 12%
  - Increase in prime rents in Cambridge in the year previous to February 2020
A fast changing context—responding to COVID-19
The public health crisis demonstrates clearly the need to have significant scientific, social science, mathematical and engineering capabilities. The speed with which the scientific community has come together to seek urgent solutions, together with the swift repurposing of equipment and personnel to the healthcare frontline, shows the benefit of this capacity to the community and economy at large in times of crisis.’

Dr Phil Clare, Deputy Director, Research Services (Knowledge Exchange and Engagement), University of Oxford

The value of the knowledge economy, in every sense, has been powerfully demonstrated in the past weeks and months, as the UK, along with the rest of the world, grapples with the response to the rapid spread of the COVID-19 disease.

Some of the most high-profile innovations generated at remarkable speed have emerged through the research excellence, collaborations and cutting-edge applications developed by world-leading universities, researchers and companies in South-East England, especially in and around London, Oxford and Cambridge. The region’s strengths in life sciences, in particular, have been at the forefront of the overriding need to develop effective testing, treatments and, ultimately, a vaccine.

In 2018, NLA’s Knowledge Capital report highlighted the transformation of the higher education and health sector estate in London and across the South East. Since then there has been considerable growth in demand for life science, laboratory and high-tech office space as the knowledge economy has expanded across the region. While COVID-19 has presented an urgent and unexpected set of challenges, this was already an expanding sector and is now seen as one of the most resilient. Maintaining this momentum, supporting networks and providing the right types of spaces will be vital for the region’s future, and the UK economy as a whole given the shockwave created by
the impact of the disease worldwide. As well as immediate social and economic impacts, London, Oxford and Cambridge and other towns and cities across the region will still face underlying structural challenges in ensuring sustainable, inclusive growth in a future beyond COVID-19.

The response to COVID-19 has—beyond the fundamental concerns about public health—generated potential opportunities alongside the challenges, often arising from existing trends brought into sharp focus by the pandemic. To date, these can be summarised to date around the following key questions:

**How will the demand for space for knowledge-intensive industries change?**

The life sciences sector, leading the response to COVID-19, is seen as one of the most resilient, and growth of demand for space continues. But there are major concerns about falls in funding and investment among start-ups, with a consequent negative impact not just on space requirements but also on research capability and potential to attract talent.

**How can we harness the success of accelerated solutions and collaborations?**

The temporary Nightingale Hospitals—which saw convention centres and other buildings transformed into critical care facilities within days—and rapid switching of high-value manufacturing capabilities to development and production of ventilators have highlighted how crises are the engines of innovation. To build these lessons into long-term thinking, we need to invest in more modern methods of construction and look at speeding up the decision-making process.

**How can existing physical assets be made more flexible and adaptable?**

Universities and anchor institutions are now starting to look at how they plan for reduced income and demand for accommodation, particularly if there are dramatic falls in the number of applications from international students. Many universities and research institutes are putting capital programmes on a short-term hold, and there will be greater consolidation of the existing estate. Repurposing and adapting existing assets will become critical for sustaining these institutions, and business models will need to be reworked while social distancing is in place.

**How can we ensure that the knowledge economy is inclusive and meets local need?**

Much attention has been focused on how innovation supports economic growth, but COVID-19 has highlighted how inequality still exists side by side with prosperity. This time presents unique opportunities to
rethink the role of anchor institutions and innovation districts and how they can engage more effectively with their local areas, and to address such issues as digital poverty alongside public health.