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Foreign Direct Investment, R&D and Creative and Digital Industries in the Midlands

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Executive Summary

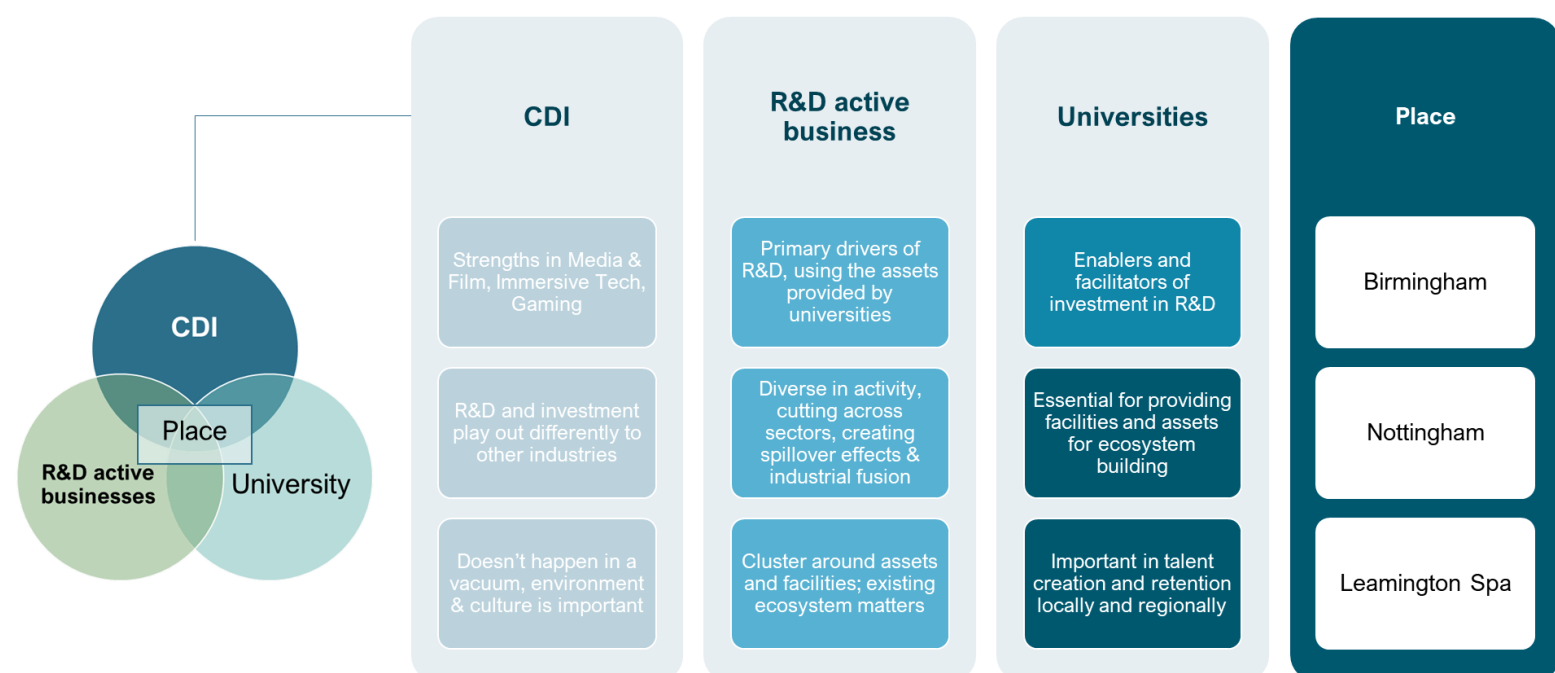
The Midlands is home to a critical mass of Creative and Digital Industries (CDIs), with a critical mass of employment, businesses and skills that are located across the region. Consequently, it has a variety of creative and digital strengths which includes gaming, publishing, media and film, software and computing, fashion, design, pottery and many more. The universities in the region are playing a key role in developing attractive local ecosystems that enable these industries to grow and appeal to CDIs, providing the creative and cultural experiences, facilities and talent that make a place attractive to live, work and study.

This diverse set of skills, institutions and businesses are enhancing and enabling the delivery of products and services across the economy, stretching beyond the boundaries of just pure CDIs. The ideas, innovations and processes which are being created by CDIs are spilling over into other industries and have become a force for cross-sector innovation.

This industrial fusion of CDIs and heritage industry has developed overtime, beginning with the formation of key institutions and businesses like Nottingham Trent University in 1843 and Codemasters in Leamington Spa in the 1980s, to what is now an ecosystem where technologies, skills and services from CDIs are found in sectors like automotive and health. The Midlands today has a unique strength where heritage industries, industry 4.0 and creative services have become more integrated over time and are thriving as a result.

Within the Midlands there exists a number of place specific clusters which are opportunities to attract further investment, identified in the universities as drivers of trade and investment pilot. This report identifies three CDI-specific clusters as the focus for the investment pilot, the areas where the region has a strong competitive advantage and the most complete offer against the three components of the CDI Venn diagram.

Figure 1. Midlands CDI investment proposition model



Introduction

Universities as drivers of trade & investment – pilot programme

Led by Midlands Innovation and Midlands Enterprise Universities, a coalition of seventeen of the region's universities, local economic growth partners and national government have collectively developed the Universities as Drivers of Trade and Investment Pilot.

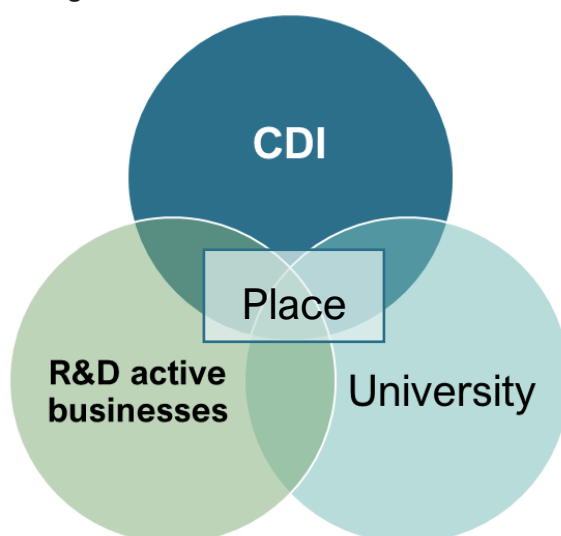
The focus of this pilot is centred around the role of universities in attracting foreign direct investment (FDI) into R&D. Within this pilot is a programme of 23 projects which aim to demonstrate the benefits universities bring. Initially, the pilot looked at Agri-Food, Zero-Carbon Energy, Transport Technologies, Health and Life Sciences, built on the idea that universities can (and should) have a greater role in working with Government and local economic organisations to:

1. Attract, retain and maximise FDI into local and regional economies, in particular FDI into R&D (supporting the Levelling-Up agenda) – **Universities as generators of FDI**
2. Increase FDI into university research, innovation and knowledge exchange activities (supporting the Science Superpower agenda) – **Universities as beneficiaries of FDI**

The pilot was extended earlier this year, through funding from the Arts and Humanities Research Council (AHRC) and DCMS, to also include Creative & Digital Industries. This forms part of the AHRC's Creative Cluster's Demonstrator programme which is focused on exploring how the industries and FDI opportunities specifically involving universities can be understood and promoted.

This report explores Creative and Digital Industries (CDIs) across the Midlands, bringing together data and insights on how R&D and investment are carried out in this industry and the role universities play in this activity. The key focus is the convergence of university, business and CDI activities, and where in the Midlands this is strongest, as identified by figure 2. The findings of this study are then used to inform how a set of investible propositions can be developed in the region.

Figure 2. Identifying convergence of CDIs, R&D active businesses & Universities



The approach

The process taken for this project consisted of a deep dive into the existing theoretical and empirical literature around the CDIs, universities and investment propositions. In parallel a series of stakeholder interviews was undertaken to capture national, regional and local insights into CDIs in the Midlands from industry experts and academics.

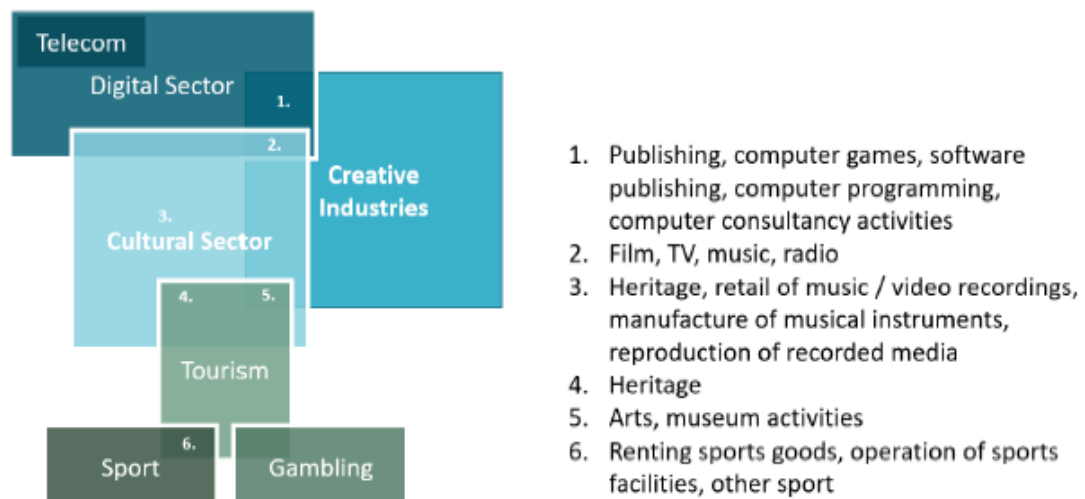
This was supplemented by analysis conducted by The Data City, who, using their own data on the emerging economy, produced a series of maps which geographically conveyed the strengths of CDIs in the Midlands. In June 2023 the research was presented to regional CDI experts and academics in an online workshop, providing helpful insights and validation for the analytical findings, shaping the focus of the CDI investment propositions in this report.

Context

To put this report in context, it is important to understand what is meant by CDIs and what has come prior this study. The study utilised the Digital, Culture, Media and Sport's (DCMS) definition of the Creative & Digital, which is the most broadly accepted definition across the existing literature.

The DCMS definition, found in the 'Sector Economic Estimates Methodology', takes a Standard Industrial Classification (SIC) approach whereby economic activities are grouped within sub-sectors, with recognition of where there are overlaps. For example, SIC activities relating to computer manufacture are considered solely digital whereas SIC's around computer programming would be both creative *and* digital.

Figure 3. DCMS definition of Creative, Cultural and Digital industries



Adapted from DCMS, 'DCMS Sectors Economic Estimates – Methodology', 2016

Most studies have either adopted the DCMS definition or have arrived upon a similar conceptual definition. For the purposes of this work, research has focused on economic activities and industries which are simultaneously creative *and* digital; this encapsulates activities such as computer games and film, but excludes activities which are solely digital, cultural, tourism, sport or gambling, mirroring the focus of wider industrial policy.

Several studies have geographically mapped, evaluated and categorised creative & digital clusters in the UK. Research in this field has been primarily led by NESTA, the Creative Industries Policy and Evidence Centre (PEC) and Frontier Economics. Consistently these have described the Midlands as containing a small number of relatively stable creative & digital clusters, notably Leamington Spa and Birmingham, but lacking the commercial depth of London and the South East.

The first cluster paper, NESTA's '*The geography of creativity in the UK*', found high concentration, high growth creative clusters were disproportionately located in London and the South East, with smaller activity scattered across the rest of the UK. In the Midlands region, Leamington Spa and Northampton were the only clusters identified.¹ NESTA's follow on work, '*Creative Nation*', developed a new typology to categorise creative clusters. It classified the gaming cluster in Leamington Spa and the creative software cluster in Northampton as stable commercial ecosystems with a moderate number of CDI firms, boasting high survival and growth rates. It identified a new cluster in Birmingham but, in contrast was described as a 'creative challenger', showing recent creative specialism, but lacks maturity and stability².

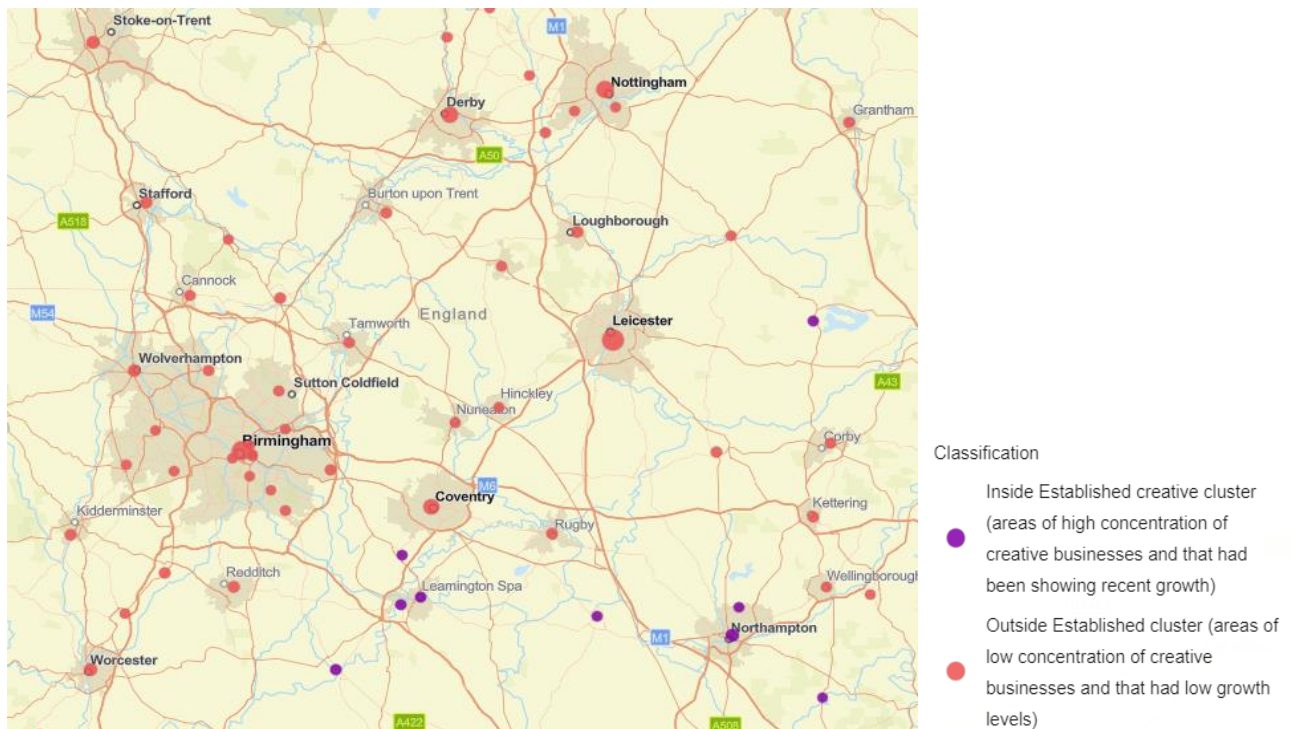
Subsequent work by PEC, through the '*Creative Radar*' study, supported the evidence of these existing clusters, but also identified several, diverse micro-clusters which, although high in frequency, at the time demonstrated low concentration and low growth.³ Figure 4 outlines the micro-clusters within the Midlands region in 2020. While there are differences in growth, it emphasises how creative ecosystems extend beyond city geographies.

¹ NESTA, [The geography of creativity in the UK](#), 2016

² NESTA, [Creative Nation](#), 2018

³ PEC, [Creative radar: Mapping the UK's creative industries](#), 2020.

Figure 4. PEC Creative Radar, Micro-Clusters Analysis



Source: PEC, Creative Radar

In '*Understanding the growth potential of creative clusters*' (2022), Frontier Economics mapped and evaluated factors contributing to CDI cluster success, finding that the Midlands clusters scored in the middle range nationally for access to creative talent, finance, innovation, and enabling environment, and had challenges around CDI exports⁴. Most recently, AHRC released a deep dive report on creative communities in UK, the first release of an ongoing programme looking at the relationships and networks in creative industries, highlighting the important role Midlands universities play in creative projects⁵.

To date, no substantive work has examined inward investment into CDIs in the Midlands from a data or geographical perspective; in a discussion paper, PEC have described it as a 'missing evidence base' which is understood conceptually but not truly empirically⁶, therefore there is a gap in understanding role universities play in investment propositions. There are also well documented data limitations in analysing CDIs; for example, the high number of freelancers in the sector causes difficulties in measuring employment.

Given the gap in the literature around the intersecting role of universities in cluster development and attracting inward investment, this research for the '*Midlands Pilot*' looks to shed light on the CDI strengths in the Midlands and how universities could play a role in inward investment cluster propositions. Recent policy initiatives, such as the AHRC's

⁴ Frontier Economics, [Understanding the growth potential of creative clusters](#), 2022

⁵ AHRC, [Creative Communities](#), 2023

⁶ PEC, [The nature of foreign direct investment in the creative industries](#), 2022

Creative Cluster and CoSTAR programmes, and DCMS' '*Creative Industries: Sector Vision*' means that this research serves as a timely addition to the collective knowledge base.^{7,8}

Building on this context and with empirical support from Data City, Metro Dynamics have further developed understanding of the CDI strengths in the Midlands. The following sections of this report present the following:

- **Creative & digital industries:** The context behind CDIs and the findings of this research, detailing the unique characteristics of the CDIs comparative to other industries and how this informs the critical place-based role of universities in inward investment propositions.
- **The Midlands unique strength for industrial fusion:** insights into how the Midlands CDI ecosystem has developed over time and this is creating unique benefits for its wider industries.
- **Spotlight on creative & digital clusters in the Midlands:** detail of three cluster spotlights which have the strongest propositions for investment attraction. These spotlights focus on:
 - Media and film in Birmingham.
 - Gaming in Leamington Spa.
 - Immersive technology, context and experience design in Nottingham

⁷ UKRI, [AHRC and the creative industries – our profound commitment](#), 2022

⁸ Department for Culture, Media and Sport, [Creative industries sector vision](#), 2023

Creative & Digital Industries

Traits & characteristics

The literature review and consultations with stakeholders highlighted the unique traits and characteristics of the CDIs compared to the other sectors and industries associated with the *Midlands Pilot*. The uniqueness of these characteristics has important implications for the role of universities in attracting inward investment proposition into R&D. As summarised in figure 5, the findings primarily relate to three industry characteristics: the nature of value, the prevalence of R&D, and the focus of inward investment.

Figure 5. Summary of the unique characteristics of the CDIs

Value	R&D	Investment
<ul style="list-style-type: none">• The way value is created is different, through intangible commodities like IP or with the individual, rather than a specific product.• This value plays a big role in the wider economy, with the 'design' element of R&D relying on the creativity of individuals.	<ul style="list-style-type: none">• R&D definition varies – many CDI firms consider their activity as 'day-to-day' commercial activity rather than R&D, meaning it can be difficult to track.• R&D is business-led rather than spinning out of universities, which instead provide facilities for R&D to happen in.	<ul style="list-style-type: none">• The focus of investment is different – inward investment focuses on mergers and acquisitions, acquiring IP and brands, not products.• Location for investment matters, attracted to existing assets, business and clusters, looking for that existing ecosystem.

Value

According to DCMS, creative industries encompass fields rooted in individual creativity, skill, and talent, with the potential for generating wealth and jobs through intellectual property creation and exploitation.⁹ While some industries, like advanced manufacturing, also have links to intellectual property, the primary value in creative industries arises from the intangible creative ideas and processes, making them unique commodities. The main source of value in creative industries lies in the individual's creative intellect, safeguarded as intellectual property for trading in the market.

The intangible nature of this value also relates to the industries position within the wider economy, specifically the complex cross-pollination between the CDIs and other industries where creative intellect is transferred to improve products, processes, and services. In industries which produce tangible products the relationship between the wider economy would be predominantly transactional, where one industry trades goods with another; however, in the CDIs, creative firms are often embedded in non-creative industries in order to provide creative services or improve processes.

⁹University of Leeds, [Intellectual property and creative industries policy in the UK](#), 2018

R&D

According to the '*R&D in Creative Industries Survey*', there is little separation from the day-to-day activity of CDI firms and R&D.¹⁰ The nature of creativity within CDIs means that most activities within a firm could be regarded as R&D; the demands placed upon CDI firms are to be creative, whether that be for a product, service or process, and often contributes to a wider body of experimental research by default. Therefore, the line between a non-R&D active firm and R&D active firm is very blurred.

Given there is often little separation between business-as-usual activity and R&D within CDI firms, R&D is primarily business-led and does not usually spin out of university departments. The decentralised, IP driven nature of the CDIs, combined with the culture within university departments, means that the embeddedness of CDI firms within universities is weaker than other industries. However, that is not to say that universities are unimportant to CDI clusters and creative R&D; within the CDIs, universities are key place-based facilitators and enablers of the broader ecosystem in which this activity can occur. In many cases, the facilities and equipment contained within universities allows for businesses to engage with technologies, through which they develop innovative IP and process which then attract inward investment.

Investment

Research undertaken by PEC in 2022 found that inward investment into the CDIs is predominately characterised by mergers and acquisitions (M&As) compared to co-locations or greenfield FDI (creation of company subsidiary in foreign country).¹¹ M&As in the CDIs are likely down to a motivation by an inward investor to acquire IP or a trusted creative brand. This is reiterated in further studies by PEC, suggesting inward investors cite the opportunity to access a new market as the primary reason for investment, above both institutional and agglomeration factors.¹²

This indicates that inward investors are primarily seeking acquisition opportunities around strong IP or creative talent which enables them to access new markets. Therefore, inward investors in the CDIs are attracted to the final commercial outcomes of a R&D; they are not typically seeking to finance speculative R&D. This is different to some other industries where investors seek to finance the R&D of a technology or concept on the speculative assumption that it will lead to marketable and profitable innovation. A Midlands example of this investor behaviour would be the 2020 acquisition of Warwickshire based video games company *Codemasters* by the American entertainment giant *Electronic Arts*.¹³ The market access motivation therefore implies that the location of inward investment matters, both in terms of the market for creative consumption and the capabilities of the local CDI ecosystem.

¹⁰ OMB, [R&D in Creative Industries Survey](#), 2020

¹¹ [The Nature of Foreign Direct Investment in the Creative Industries](#), PEC, 2022

¹² [The Motives of Inbound Foreign Direct Investors in the UK Creative Industries](#), PEC, 2022

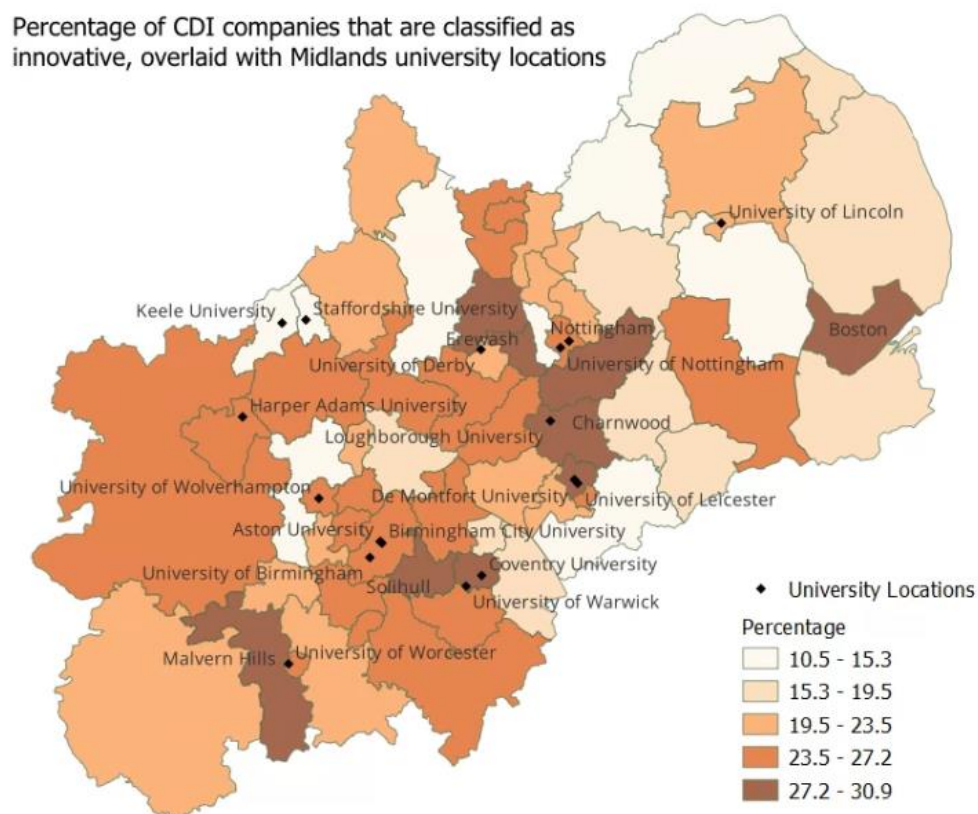
¹³ Games Industry.biz, [EA completes \\$1.2bn Codemasters acquisition and hope to 'revolutionise' racing games](#), 2021

The role of universities in CDI inward investment propositions

The overall finding on the role of universities in CDI clusters is that they provide crucial enabling support to R&D active CDI business, who are the ultimate target of inward investment. As anchor institutions, universities drive forward the development of creative ecosystems within a place, which in turn allows for creative & digital businesses to thrive. The unique characterises of the CDIs, particularly in relation to the source of value, R&D and investment type, means that the relationship of universities with the CDIs differs to other sectors such as manufacturing and life sciences. The extent to which universities directly engage, support and fund CDI business R&D is therefore much less than other industries.

Analysis produced by Data City assesses the links between universities and CDI activity through a series of maps – greater detail on this process and Data City is found in the appendix. Figure 6 looks at CDI businesses Data City have identified as innovative and maps them against university locations, finding a higher proportion in places that have a university present. This is perhaps due to the role universities play in ecosystem building, however more analysis is required to understand the relationships between the businesses and universities in each of these places.

Figure 6. Innovation CDI businesses and university footprint



Further analysis has looked at InnovateUK funding awarded to each University (in this case not CDI specific), InnovateUK funding awarded to CDI businesses and the spatial distribution, as shown in Figure 7. While there appears to be some correlation between the location of innovation active CDI businesses and universities, a shared location should not be interpreted as concrete correlation.

However, analysis of UKRI Knowledge Transfer Partnership (KTP) data finds that since 2011, there have been 706 KTPs involving Midlands Universities. Of these, only 17 have been conducted in partnership with 10 different companies in the CDI RTICs. Furthermore, an analysis of Midlands university spinouts identifies 100 businesses in total, none of which are companies in CDIs, suggesting between the two is more indirect and informal.

Figure 7. Innovate UK funding analysis

Percentage of CDI companies that are classified as innovative, overlaid with Midlands university locations and CDI companies receiving InnovateUK funding, sized by amount of InnovateUK funding received since 2013 (£)

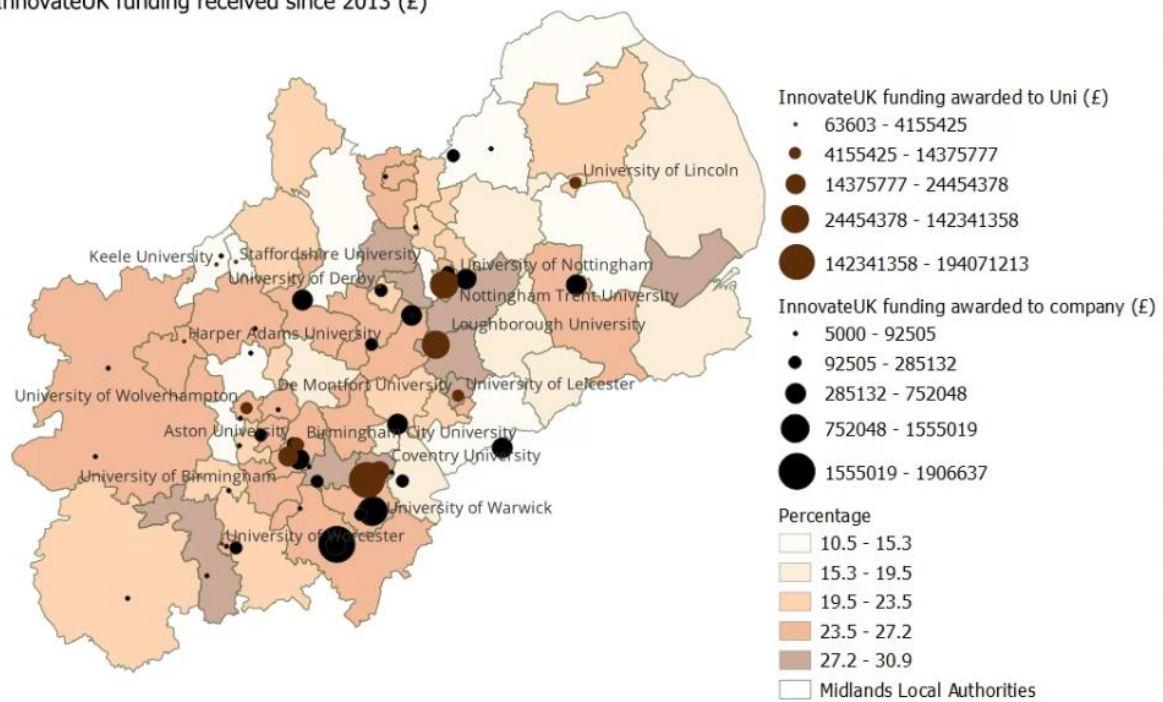
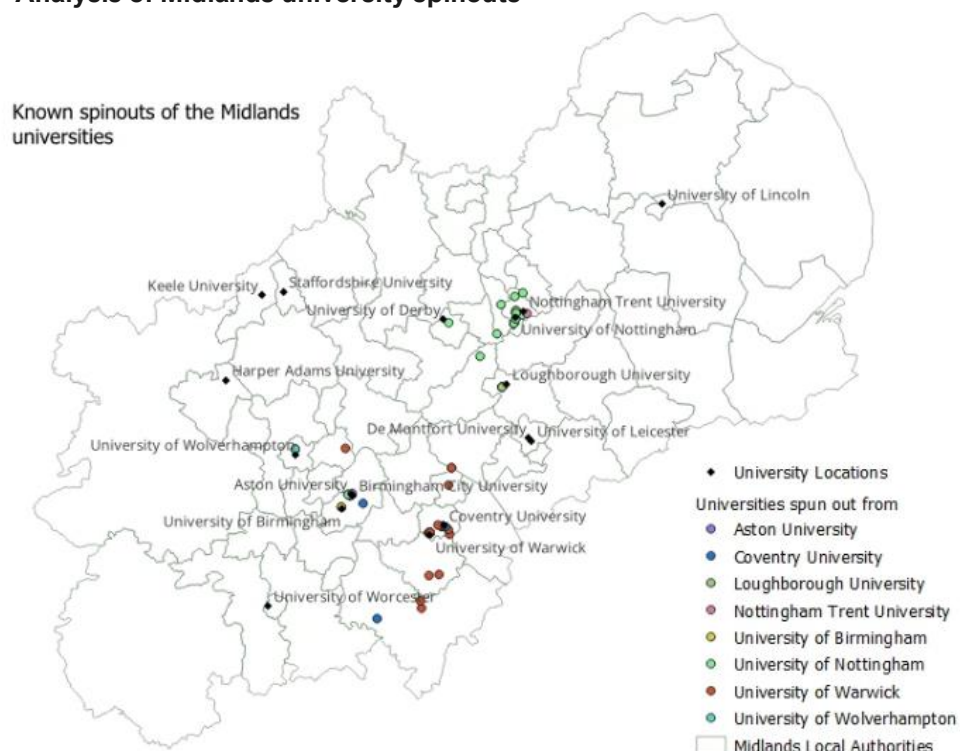


Figure 8. Analysis of Midlands university spinouts



Building on this analysis, the concluding findings from our literature review and consultation with key stakeholders outlines three broad functions of universities within creative clusters, identifying them as key place-based anchor institutions within the conceptual CDI Venn, alongside R&D active businesses and creative & digital enterprises.

- 1. The facilities, equipment and resources owned by universities enable those within CDIs to conduct creative R&D.** Without this resource to test out ideas, many creative workers and firms would be unable to innovate due to limited resources associated with purchasing or accessing costly facilities or equipment. Unlike other industries, the relationship between the university and the entrepreneur will likely be informal and the university will not tend to be contractually involved in the creative R&D; this contrasts with other industries, where universities will typically claim the intellectual property rights on innovations developed using their facilities in order to create a spin-out enterprise.¹⁴
- 2. Universities are central to creating and attracting creative talent into the CDI labour market.** The cultivation of this talent is potentially more important than in other industries due to the critical link between IP and value within the industry – talented creatives develop creative ideas, processes, and products, which in turn attract investor attention.
- 3. Universities are key to the development of the local creative ecosystem and in creating an attractive place to live, work and study.** CDI clusters do not exist without cultural consumption and universities are core to this by investing in the facilities and infrastructure which deliver creative experiences, events, and products. This cultural reputation which universities help mould then attracts more creative individuals and businesses and raises the profile for inward investment.

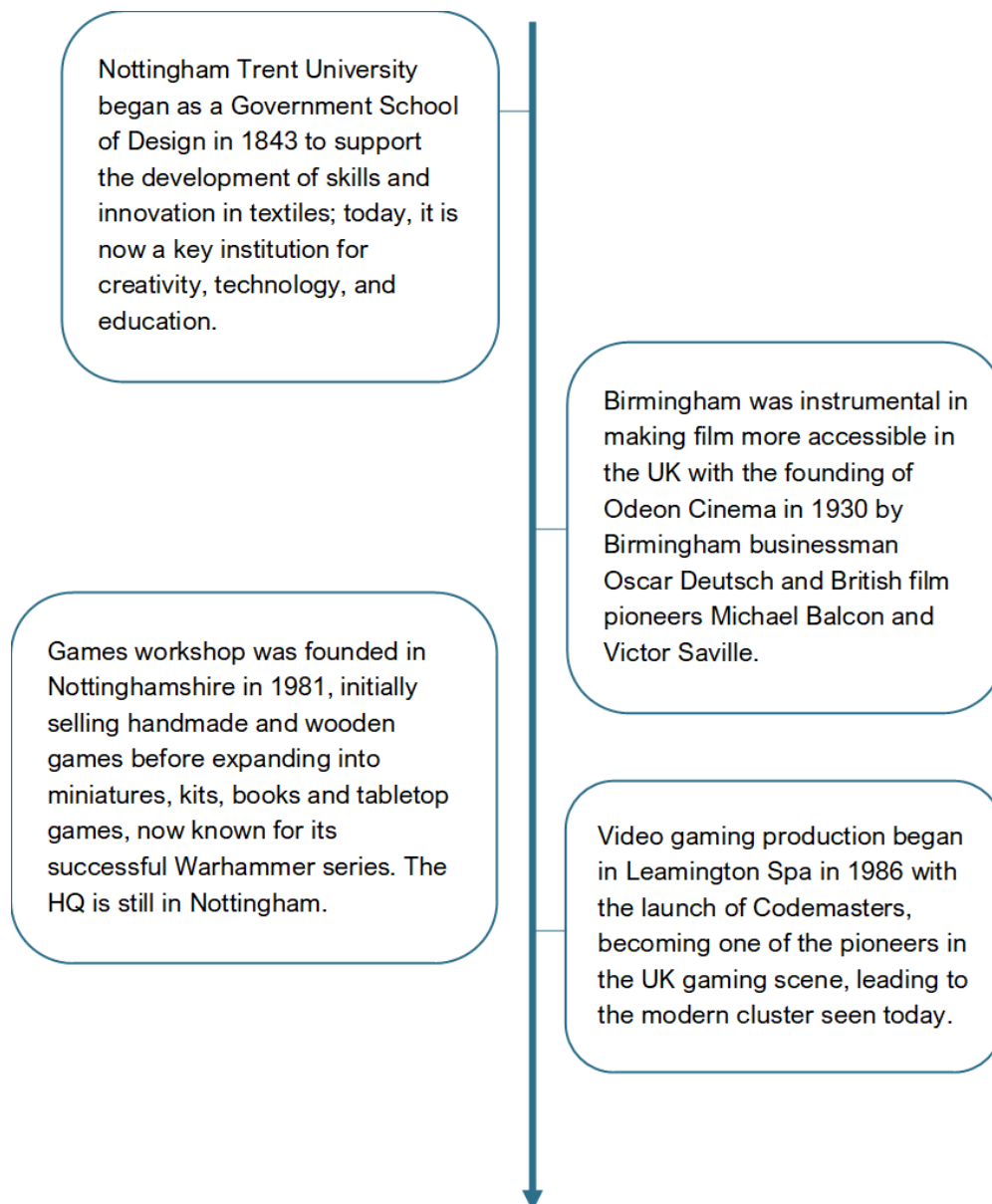
The contributions of universities have been found to be key in the development of prosperous CDI ecosystems and there is a clear role for universities to leverage their place-based position to co-develop inward investment propositions for local CDI sub-sectors. The responsibility of universities is therefore to utilise their significant assets and expertise to cultivate a creative ecosystem which can support their local CDI businesses, enabling them to develop their own IP through R&D; in turn this IP will attract inward investment, enriching and growing the local and regional CDI cluster.

¹⁴ Beauhurst, [UK University Spinouts: who are they and their investors?](#), 2018

The Midlands unique strength for creative industrial fusion

The Midlands is renowned for its industrial heritage, from glass, iron and coal production in the Black Country, silk and textiles manufacturing in Derbyshire, to the inception of the first British car in Coventry. However, less recognised is its history of creativity which has long been embedded in the region. The Midlands has not only been the birthplace of many famous literary figures and musicians, but its creative institutions and businesses have been influential in shaping and developing its industry. Over time these have become integrated together and today, the Midlands has a unique strength where heritage industries, industry 4.0 and creative services are deeply intertwined.

Figure 9. Timeline of major Creative & Digital achievements in the Midlands

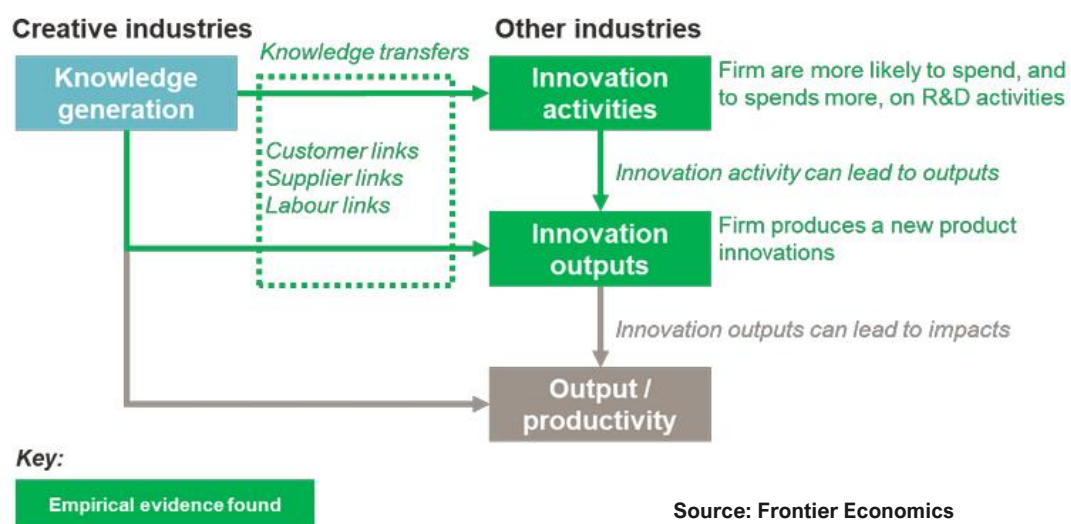


This fusion of ‘traditional’ and creative industries creates benefits through the transfer of knowledge or resources. As CDIs have grown in the Midlands, other industries have become exposed to new ideas and innovations:

- **Automotive:** the region is developing solutions for the future of mobility, using the skills, software and technology from the gaming sector. The transfer of talent between JLR in Gaydon and the Leamington Spa gaming cluster is a good example this mutual benefit.
- **Health:** the Women’s and Children’s NHS Foundation Trust in Birmingham is trialling using Virtual Reality for children and help reduce anxiety around medical procedures.
- **Fashion & design:** in Leicester, the crossover of digital platforms into fashion is enabling new forms of design and experience of textiles to develop new sustainable materials.

Recent studies have assessed how creative industries can be a force for innovation in the wider economy, generating spillover benefits where the ideas, innovations or processes created by CDIs are transferred to firms in other industries, resulting in new innovative practices and improved outputs. It finds firms in the wider economy that are more connected to CDIs are more likely to produce product innovations and in turn spend more on R&D¹⁵.

Figure 10. How knowledge from the Creative Industries benefits the wider economy

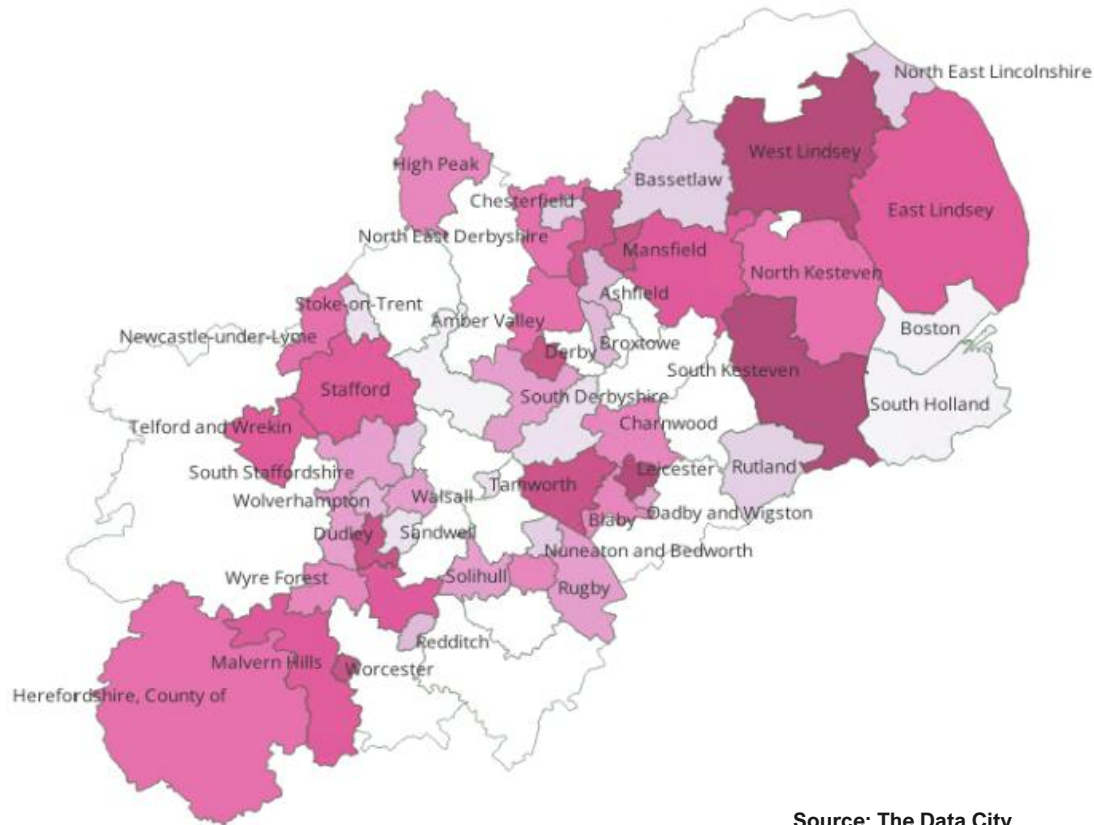


As figure 8 demonstrates, the Midlands is well placed to further capitalise on these cross-sector benefits and generate further spillover effects. Not only is this expertise embedded historically, but there are employees working in CDIs across the region. Many of these places in the region have a higher concentration of workers employed in these industries than the national average, meaning there is significant expertise and potential for growth¹⁶. This concentration of CDI employment means the region has a diverse set of skills, institutions and services which are enhancing and enabling the delivery of products and services across all sectors. This includes services related to art and design, advertising, publishing and marketing, and software and computing services, all of which are strengthening and deepening the industrial fusion connections.

¹⁵ Frontier Economics, [Creative Spillovers: Do the creative industries benefit firms in the wider economy?](#), 2023

¹⁶ The Data City, Exploring the Creative Digital Industries in the Midlands, 2023

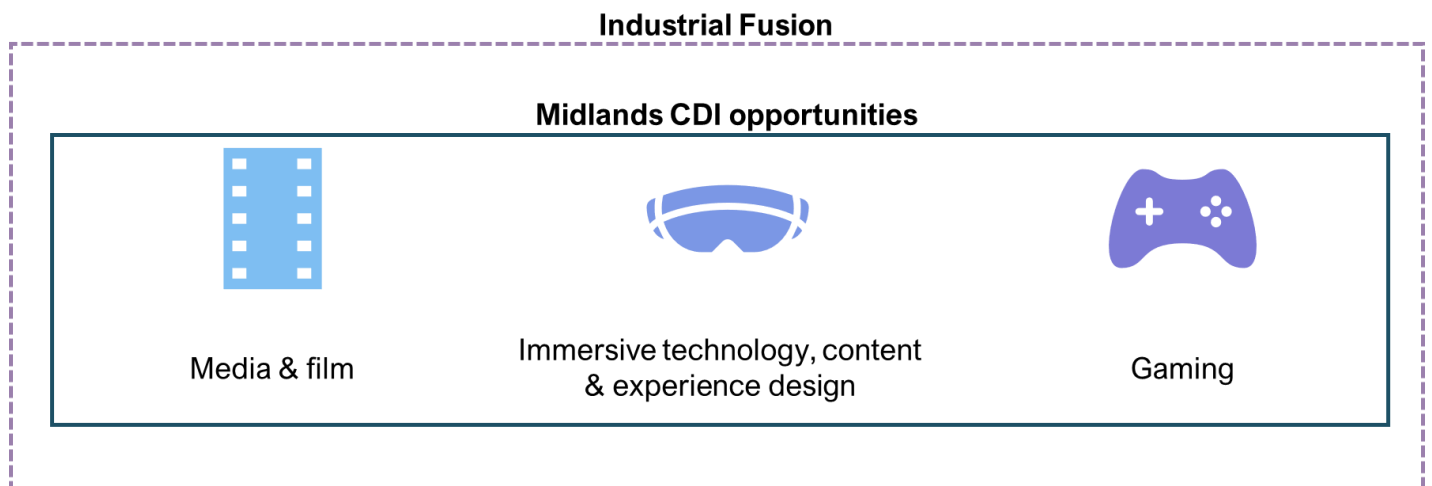
Figure 11. Creative & Digital industry employment in the Midlands, The Data City



Source: The Data City

Building on this strength, the data analysis and stakeholder insights from this work identify three CDI investment propositions for the Midlands. It is important to note that these are not the only important clusters in the Midlands; there are several other dynamics industries, including fashion and design, arts, crafts and pottery, and software and publishing industries. The CDI clusters outlined in the spotlights are sectors in which the region has a strong competitive advantage and the most complete offer against the three components of the Venn diagram – R&D active businesses, university presence and the supporting CDI ecosystem – supported by these industrial fusion networks. It is this reason that the clusters have been chosen as the focus for the investment pilot.

Figure 12. The Midlands CDI investment opportunity

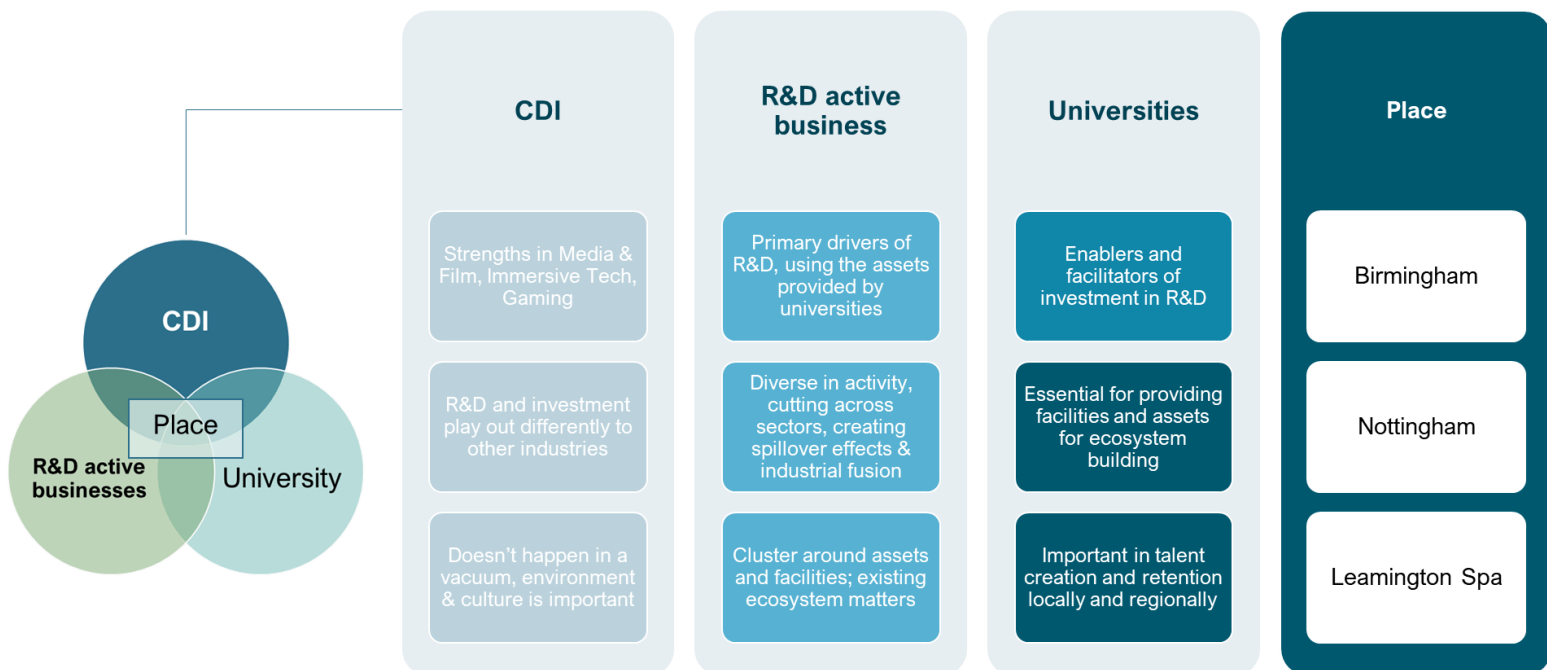


The Midlands CDI investment proposition

The analysis and engagement from this programme of work has strengthened the understanding of how CDIs operate in the broader economy and what this means for the Midlands, identifying three CDI strengths in which to develop an investment proposition. Each has a specific cluster in the region, supported by university and business activities, but there are additional strengths in the enabling services underpinning these clusters which together, have great potential to attract inward investment and catalyse further R&D.

As outlined in previous studies and throughout stakeholder engagement, creative and cultural consumption in a place is vitally important to the success of CDIs. Investors are looking for environments where there is an existing and active market, where investment can translate into new IP. The environments that Birmingham, Leamington Spa and Nottingham have created, with their diverse CDI offering, R&D active businesses and university leadership, means each present a significant opportunity for investment. This is unpacked further in each of the CDI spotlights.

Figure 13. Midlands CDI investment proposition model



Spotlight on Creative & Digital Clusters in the Midlands

Media & Film in Birmingham

This is a high growth industry in the UK. Media and film production has boomed in recent years, with production studios being constructed across the country. Total expenditure within the industry has increased from £3.4 billion in 2017 to over £5.64 billion in 2021, driven largely by inward investment and the rise of high-quality productions made for streaming platforms¹⁷. However, skills and labour supply have not been able to keep up with this growth – BFI estimate the industry requires between 15,000 and 20,000 *additional* employees by 2025¹⁸.

Birmingham is a core hub for media and film in the Midlands and there is a strong opportunity to respond to this industry need by building on recent investments and growth. It will be **home to the BBC's new regional office, the Tea Factory, and the new Digbeth Loc production studios** which is the first major television and film production facility of scale to be developed in Birmingham and is already attracting new partnerships and projects. These investments are significant for the wider regeneration of the area and demonstrate the ambition of growing Birmingham's Creative Quarter around this core industry.

Helping to push this forward is Create Central, an industry body comprising of creative thinkers and leaders involved in promoting West Midlands talent and opportunities. Their vision is to have a creative ecosystem that makes the region internationally renowned as 'the place to create' for any storyteller. Create Central has recently been selected by the British Film Institute (BFI) as a key location for one of their seven skills clusters in the UK, in recognition of Birmingham's growing film and tv industry. This is aimed at addressing skills gaps, developing pathways into the industry and providing opportunities for local people.

Supporting this, **Film Birmingham, Create England and BFI are leading the promotion of the region as an international destination for film and TV production**, with funds set up to support businesses in this area, including the West Midlands Production Fund. All of this is underpinned by a strong regional vision, with the WMCA prioritising investment into Creative Industries as part of its Plan for Growth.

While **the role of universities in this Media and Film cluster is still emerging, they are key to the talent pipeline and the wider creative ecosystem**. Between 2019/20 and 2021/22 universities in Birmingham enrolled approximately 12,400 undergraduate students in Media and Film related courses, which is around 15% of the total intake of creative

¹⁷ BFI, [BFI Skills Review: Workforce development in the scripted film and high-end television production sector](#), 2022.

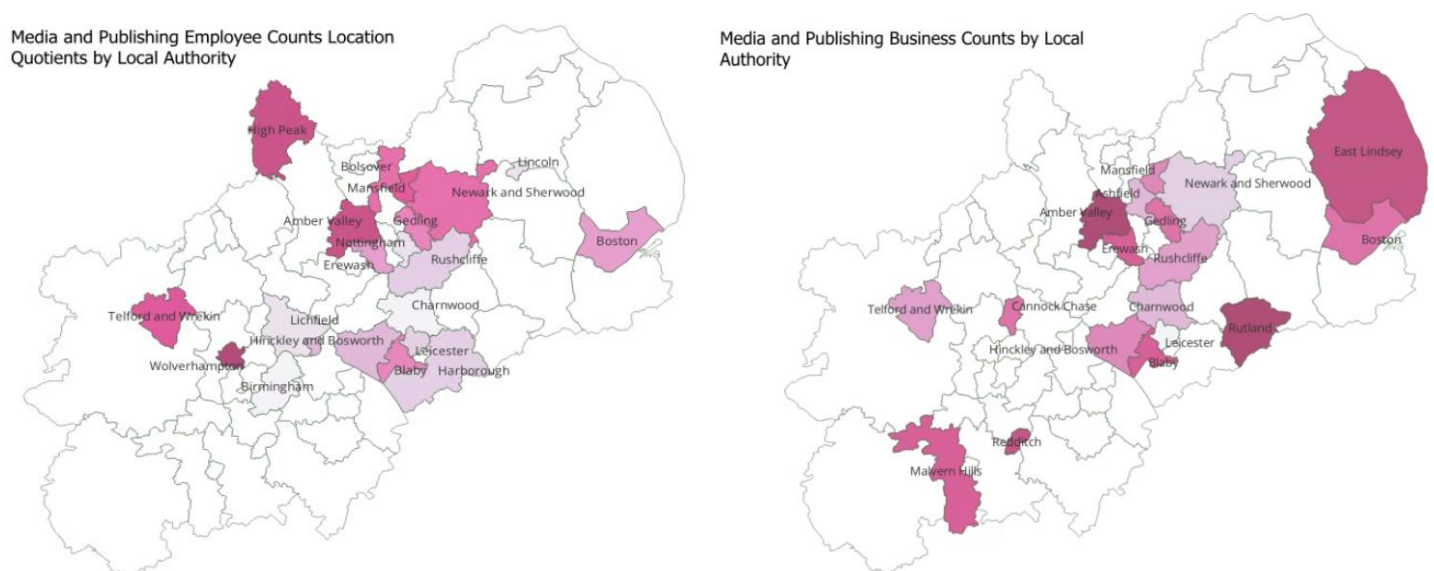
¹⁸ ScreenSkills, [Forecast of labour market shortages and training investment needs in film and high-end TV production](#), 2022.

students in the Midlands; this high influx of creative students into the city, combined with the high quality of teaching, provides the industry with a talented labour market.¹⁹

Media and Film is a complex industry to measure as it contains many diverse activities involved in production and is therefore difficult to summarise in a single metric. However, a location quotient analysis of SIC codes, a measure of the concentration of an industry or occupation relative to national averages, finds **Birmingham has a higher concentration of employment and businesses in motion picture project activities than the national average**. In addition, analysis provided by The Data City (Figure 11) finds concentrations in the East and West Midlands in Media and Publishing which are core to supporting the Birmingham hub.

In light of this complexity, it is important to emphasise the signals from industry – investment, announcements and promotion by public and industry bodies demonstrate the confidence in the film and media industry in Birmingham and signify the extent of the opportunity.

Figure 14. Media and Publishing in the Midlands, The Data City



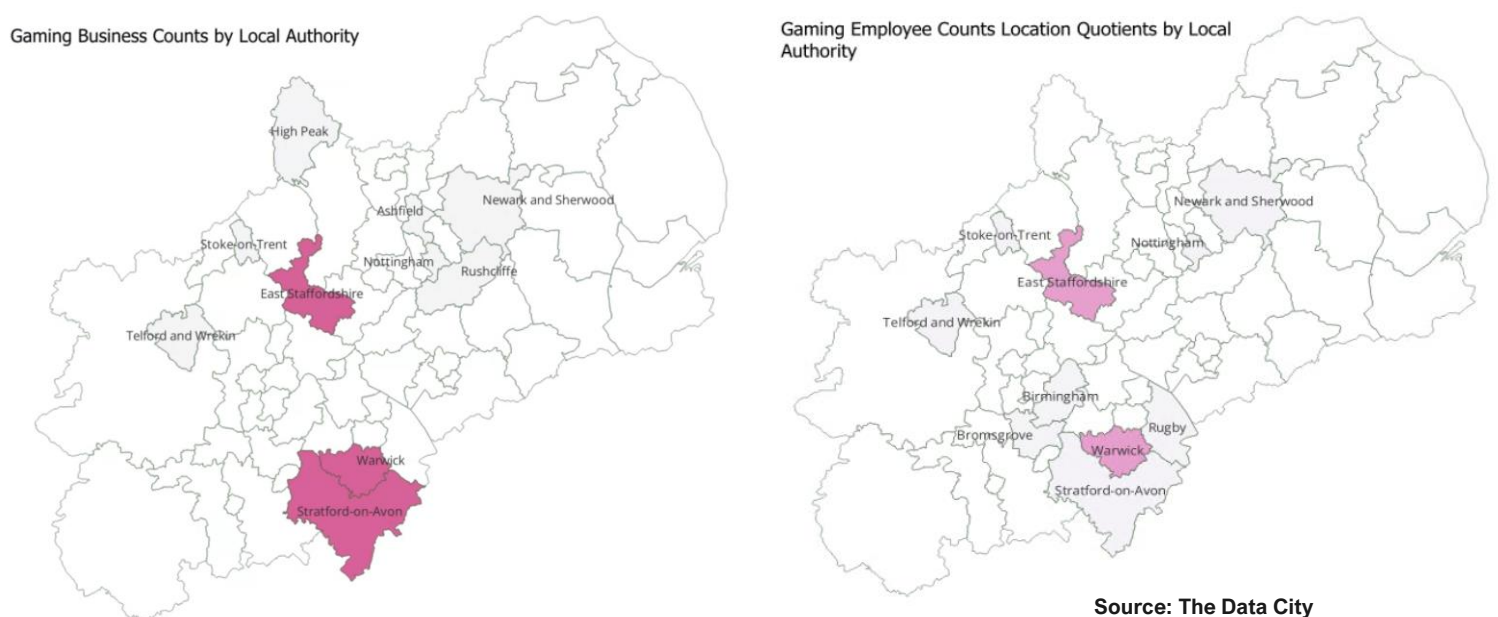
¹⁹ HESA, [HE student enrolments by HE provider and subject of study](#), 2022

Gaming in Leamington Spa

In Leamington Spa, **the Midlands has one of the largest gaming clusters in the UK**. This cluster has grown considerably since the 1980s and is now home to approximately 2,500 employees, over 80 gaming companies, and represents 10% of the entire UK gaming industry. Since beginning with Codemasters, the cluster has since attracted several large firms including SEGA and Ubisoft, and an ever-present independent gaming scene.

Analysis produced by The Data City corroborates this, identifying a **significant concentration of gaming businesses situated around Leamington Spa and throughout Coventry and Warwickshire**. It is worth stating that as businesses in this industry tend to be smaller in size, they have fewer employees, but often cluster together.

Figure 15. Gaming in the Midlands, The Data City



There are also exceptional research and development capabilities in the region which enable these businesses to access, develop, test and adopt new technologies. **Coventry University is central to this** through its Disruptive Media Learning Lab and the Coventry Simulation Centre, but there are also facilities for startups and micro studios, alongside dedicated business support functions through the Creative Futures Incubator.

The benefits of this gaming cluster are extending beyond the boundaries of the industry, reaching businesses that are not solely game developers or studios. **Gaming technology is being used to generate solutions in other sectors**. CUE Interactive are a prime example of this, using game engine technology to produce solutions for business, virtually re-creating engineering or manufacturing environments for testing technology or training purposes.

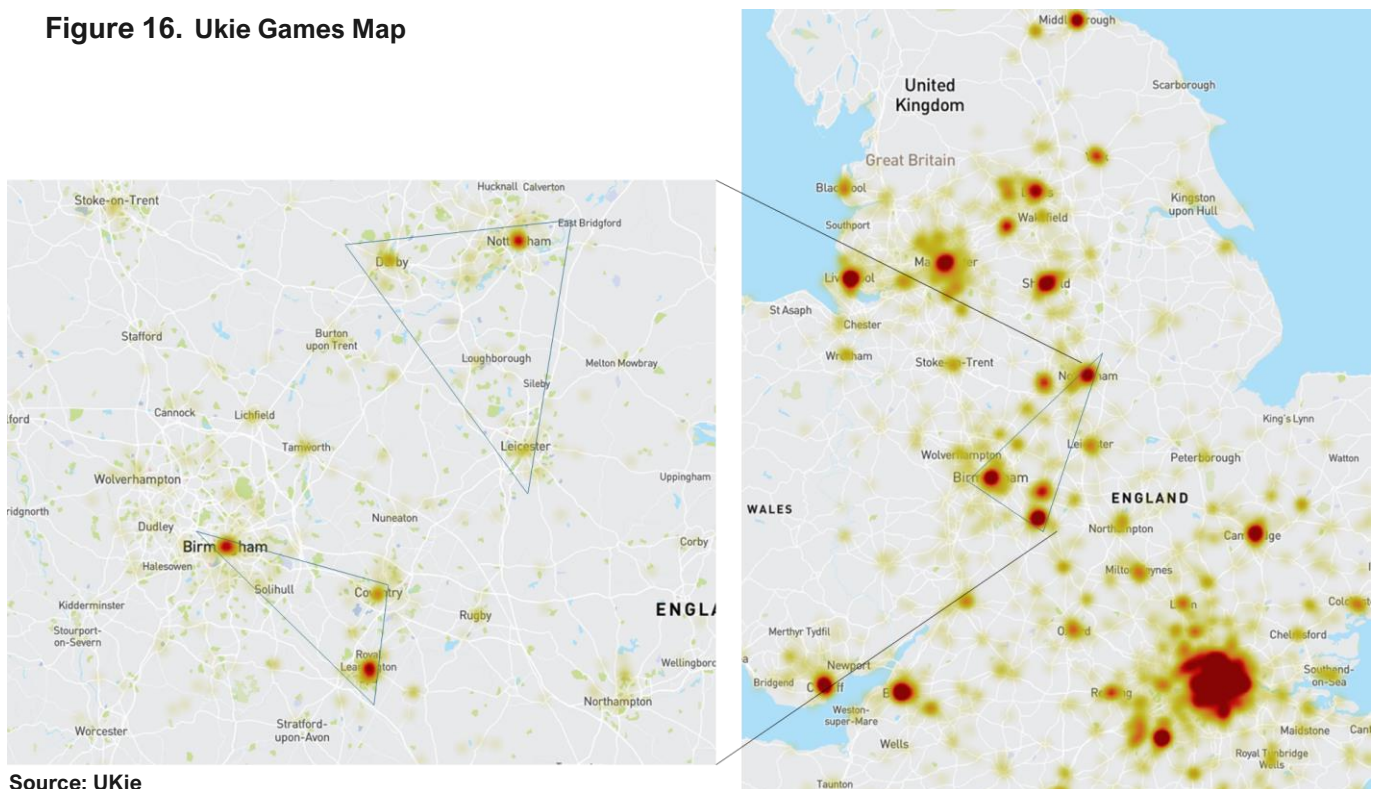
The Leamington Spa cluster has been central to these wider spillover effects. The location of Jaguar Land Rover at the nearby Gaydon hub has seen **a fusion of skills between the automotive and gaming sector**; engineers and technical specialists are switching between businesses and applying their skills in a new context. This has coined the term 'Silicon Spa' – a place that is both specialised in making cars and creating the games that race them.

Gaming has continued to diversify over time, particular with the rise of online content creation and streaming. This has led to the rise of competitive gaming, 'eSports', which attracts a global audience and is now a billion-dollar industry. **WMCA has recently partnered with Global Esports Federation in a 10-year agreement** to cement the Midlands as an international hub of Esports and Gaming, with events already held in both Birmingham and Leicester. There is no doubt that Leamington Spa's reputation as a gaming hub of the UK has been a core part of attracting these opportunities into the region.

Universities are unequivocally important in supporting this growth, not only in providing facilities and space for the up-and-coming businesses, but in delivering excellent education to produce the talent pipeline required by businesses.

A study by Ukie, the trade body for UK games and interactive industry, found a clear link between the location of universities offering high quality courses in games development and clustering of businesses²⁰. Figure 13 also demonstrates that gaming is not limited to Leamington Spa, but there are **also smaller clusters in the East Midlands** around universities which offer these courses, such as Nottingham, Derby and Leicester.

Figure 16. Ukie Games Map



Source: Ukie

²⁰ Ukie, [UK Games Map](#), 2023

Immersive technology, content & experience design in Nottingham

The creation and implementation of immersive technology is still an early-stage development but one that benefits both CDI businesses and the wider economy. Immersive technology involves using new ways to create, display or interact with applications, content and experiences by merging the physical world with simulated reality. It is often associated with the use of a specific technology, like Augmented or Virtual Reality (AR and VR) but also includes 3-D, spatial sensing and interactive experiences.

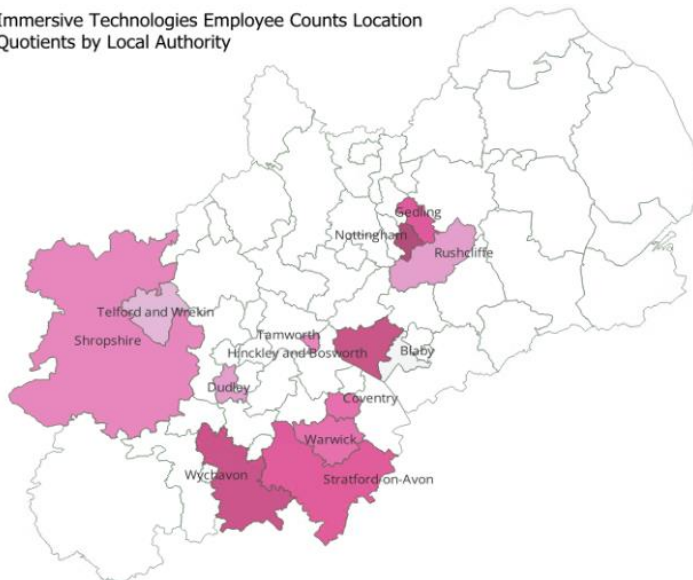
The opportunity immersive technologies presents is one that spans across several creative spaces and sectors. It involves technological hardware at one end through to human experiences at the other, with use cases that fit within a range of sectors which catalyse innovation – design, modelling, prototyping, training, advanced storytelling and content creation, gamification of services, retail diversification.

The knowledge and skills of CDI businesses in applying this technology for creative services and solutions are core to exploring its capabilities and potential within other industries, supporting them in scoping new R&D activity in areas like product design and development.

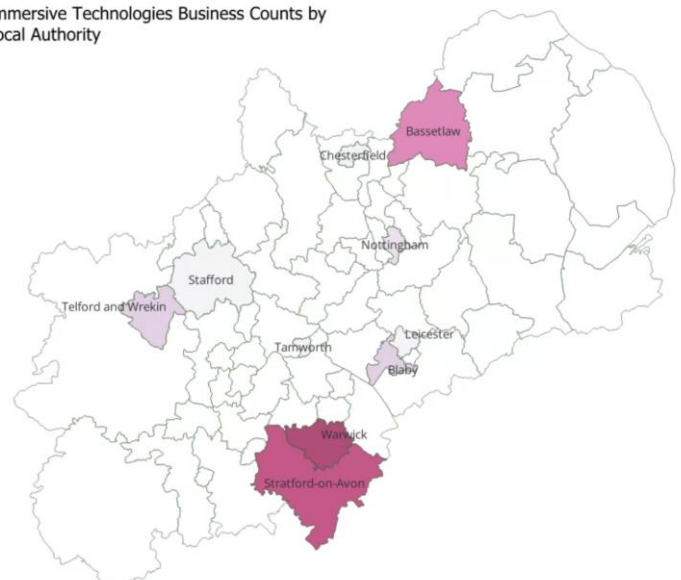
While this technology remains in its infancy in terms of adoption, its use cases are diversifying quickly and the Midlands is well positioned to capitalise. Due to the relationship between immersive technology and the gaming sector, there is a notable cluster of activity around Coventry and Warwick. However, **Nottingham sits at the heart of this opportunity, possessing each component of the CDI Venn** and has the knowledge, equipment and the facilities to unlock the potential of immersive technology.

Figure 17. Immersive Technology in the Midlands, The Data City

Immersive Technologies Employee Counts Location Quotients by Local Authority



Immersive Technologies Business Counts by Local Authority



Source: The Data City

To enable CDI businesses to explore the uses of immersive technology they require access to expensive software, hardware and production space. **The universities in Nottingham have put considerable investment into dedicated facilities** which provide each of these elements – the Mixed Reality Lab, the Virtual Immersive Production Studio and lab space within the Confetti Institute of Creative Technologies. The universities also provide support programmes for SMEs, artists and creatives who are seeking to explore immersive technology products and dedicated undergraduate and postgraduate courses.

The findings from Data City reveal that **the city is home to a variety of different businesses utilising immersive technologies**. These range between designing immersive training and simulation experiences, creating interactive art exhibits, producing the related animation and content creation for immersive experiences, providing services to enable businesses to access the virtual metaverse or using the technology to innovate existing services like architecture and product design.

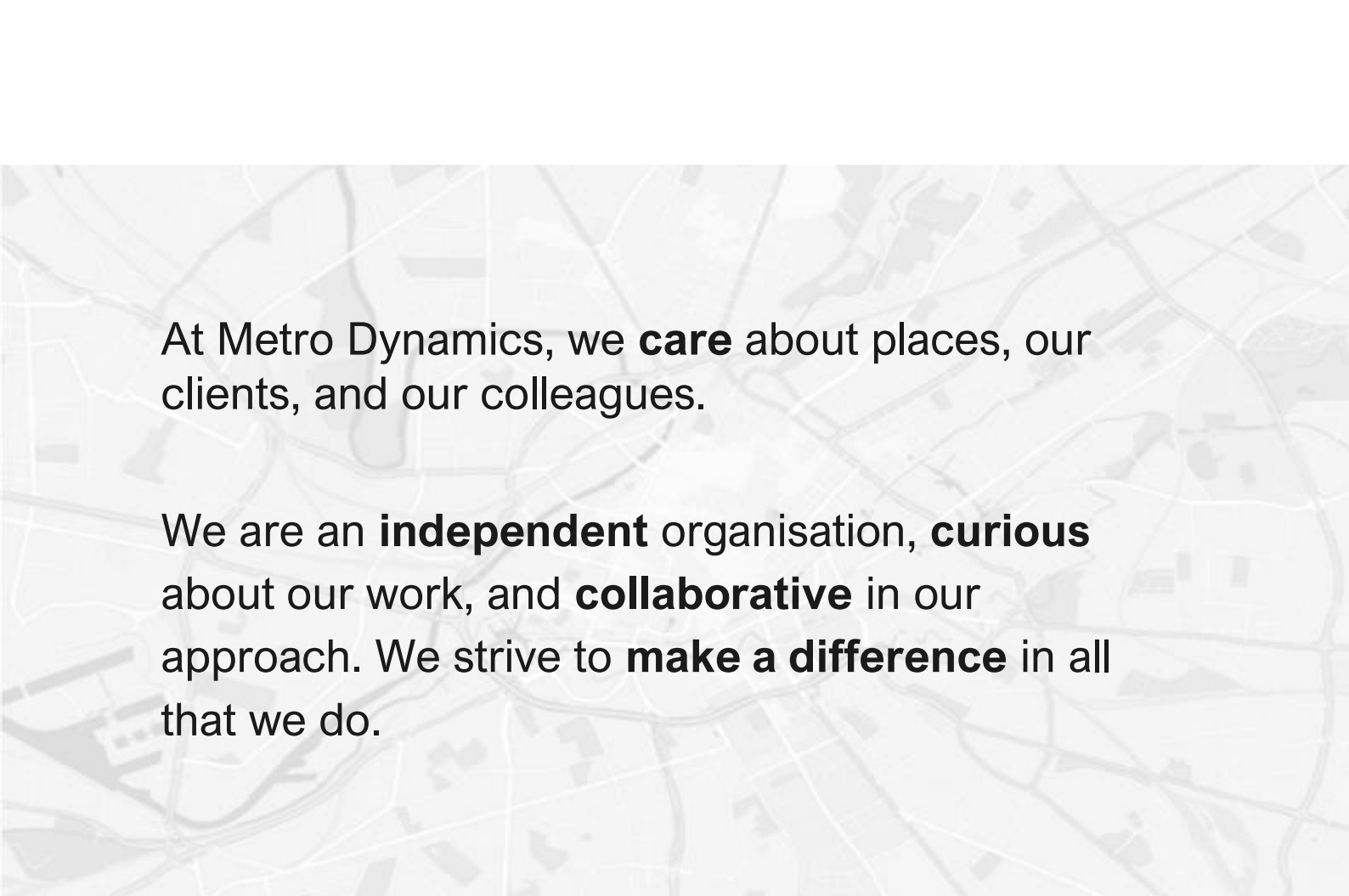
The development of Nottingham’s CDI ecosystem over time has supported the growth of this tech business base where CDI employment has grown faster than most major cities including London²¹. It has developed an ecosystem that is home to a diverse set of CDI businesses specialising in animation, production and creative services, with a Creative Quarter that provides the space and facilities to support these businesses. This has not only developed a nascent cluster of smaller businesses but has also attracted larger businesses like industry heavyweight, Improbable.

Next steps

This is an active policy space which means there is an opportunity for the Midlands to further develop its CDI proposition. The Creative Industries Sector Vision, published in June 2023, sets out government ambition to unlock the growth potential of the creative industries. This includes a £50 million expansion of the Creative Clusters programme, while AHRC are continuing to lead a significant programme of work that includes the Clusters demonstrators project, CoSTAR and a growing portfolio of investments for growth, skills and impact.

Through extensive research, analysis and engagement with industry and academic experts, this report has identified three investment propositions for the Midlands to advance as part of the Midlands’ universities as drivers of trade and investment pilot programme. This forms part of a wider piece of work in which CDIs is one of several strengths and clusters, but it presents an opportunity to respond to recent policy announcements. The next phase of the pilot will be to develop out these three propositions, testing with them key stakeholders and use these learnings to identify and scope out specific investment opportunities.

²¹ Nottingham Trent University, [A sector analysis of Nottingham the Creative Quarter](#), 2022



At Metro Dynamics, we **care** about places, our clients, and our colleagues.

We are an **independent** organisation, **curious** about our work, and **collaborative** in our approach. We strive to **make a difference** in all that we do.

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Exploring the Creative Digital Industries in the Midlands

INVESTIGATING THE ROLE OF UNIVERSITIES AS DRIVERS





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Project Overview

The aim of this project is to explore the relationship between Midlands universities and R&D and innovation activities in companies operating in the region related to the Creative and Digital Industries. This work will underpin Midlands Innovation's selection of three regions/sectors of focus for its FDI into R&D pilot.

This report will, specifically:

- a) Present an overarching picture of the Creative and Digital Industries/university/R&D map of the Midlands.
- b) Explore spatial/sectoral patterns within the Midlands, particularly where sectors linked to the CDIs are strong/emerging and consider whether there is evidence of a link to universities.

Background

Methodology

The Creative and Digital Industries (CDI) are strategic economic sectors that contribute to the economy directly while supporting other economic and R&D activities. They have the potential to play a central role in the development of regional and local economies thanks to their interdisciplinary and innovative nature. This is well-known by policymakers and investors, who seek knowledge on the characteristics and location of actors directly related to the creative and digital space. However, traditional frameworks for industrial classification do not efficiently keep track of the most innovative activities, products and services developed by CDIs.

The Data City's industrial classifications (Real-Time Industrial Classifications or RTICs) are data products representing emergent economies that overcome the limitations of other industrial classification frameworks. They are generated with proprietary machine learning technology that groups companies considering how similarly they describe their activity in their website text. This approach to industrial classification produces a view of CDIs independent from other industrial classification frameworks such as Standard Industrial Classification (SIC) codes, providing an alternative representation of the industry.

For this piece of research, we have employed a combination of RTICs (pg 5) and SIC codes (Appendix B) to find the companies that constitute CDIs. Using a combination of RTICs and SICs makes possible to harness all the information on traditional creative and digital industries, which may be well represented by SIC codes, and understand it in tandem with the companies providing the most innovative creative and digital services and products, which will be captured by RTICs.

Regarding SIC classification, companies choose a representative SIC when they register with Companies House. Hence, this is a self-declared industrial classification.

RTICs are built following a robust methodology that has been reviewed and utilised by a great variety of stakeholders and policymakers in academia and the private and public sectors. The RTIC production process can be summarised as follows:

A. Taxonomy definition:

First, it is key to articulate industries in pockets of activity (industry verticals) that share language patterns. This enables the algorithm to focus on activity-specific language patterns and obtain more accurate results.

This exercise is referred to as taxonomy definition and informs the machine learning classification process. In this context, a taxonomy is a framework that identifies industry verticals within a sector. The aggregated view of all companies captured in each industry vertical builds the resulting RTIC.



Industry verticals are defined by keywords and key phrases that represent their activity, specialised technologies or role in a supply chain. The resulting framework and language guide the iterations of the machine learning exercise.

There are four steps in the process of taxonomy creation.

- Desk research and expert advice: existing literature and expert knowledge regularly provide a useful insight into current developments and major verticals of activity in industrial sectors. It also contributes to the identification of technical language.
- Website discourse analysis: diving into a few company websites is important. Usually, academic literature or expert reports describe processes in a different way than companies when addressing a wide audience. Understanding how companies use sector-specific language is crucial to identify the most relevant keywords.
- Choosing an approach: there are many ways to address the classification of a sector. We have identified four main approaches for taxonomy development:
 - Technology approach: the verticals are defined according to the enabling technologies companies use.
 - Applications approach: the verticals are defined considering the market applications of a product, technology and/or services.
 - Functions approach: the verticals are defined according to the companies' activity in a sector's supply chain.
 - Services approach: the verticals are defined according to the services companies provide to the sector.
- Selecting company websites for the training sets: this stage involves the selection of the first 10/20 company websites to train the algorithm. These can be provided by experts, existing databases and/or found through a combination of keyword searches.

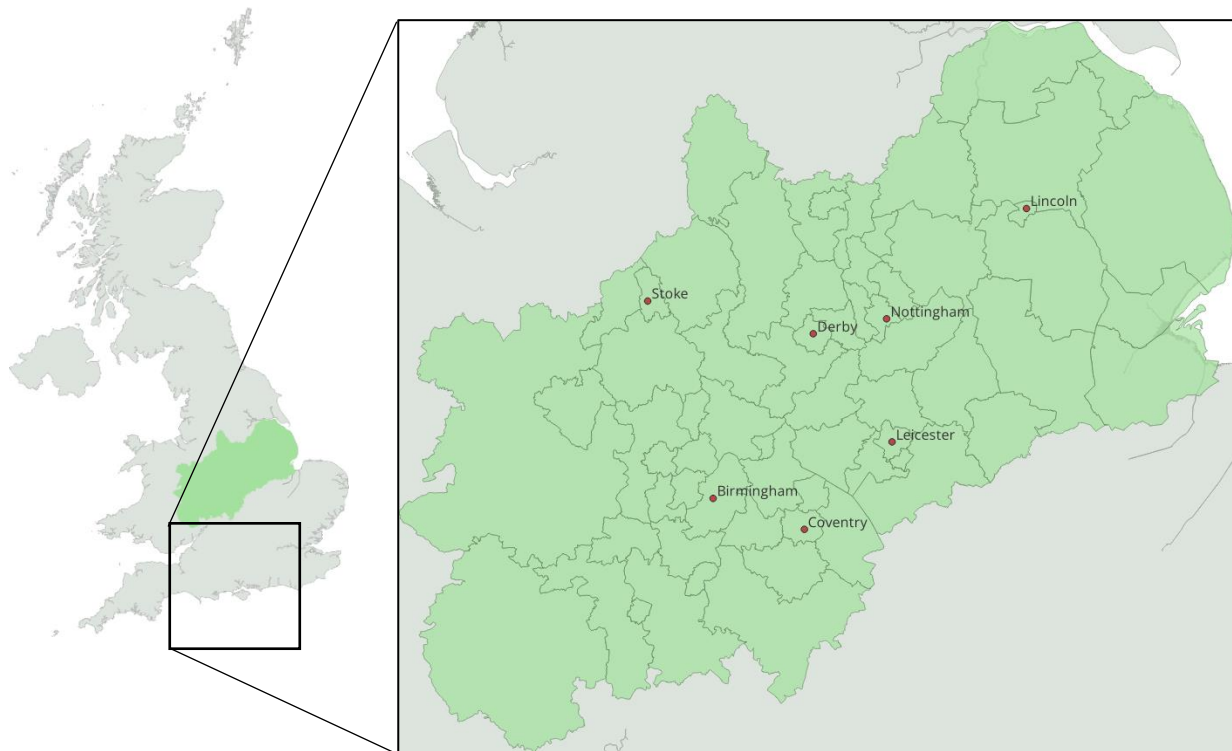
B. Data/RTIC production:

The information collected in the taxonomy leads the classification. We create one machine learning list for each industry vertical. This is an iterative process that requires:

- Updating the training data: machine learning industrial classification.
- Expert review: the outputs of the different iterations of training are reviewed by an expert in the field/the client to confirm the data is representative of the industry and the categories. The expert review can lead to the application of changes to the training data.
- Publication of the data: once the machine learning lists have been produced and signed off, they are published on the platform as an RTIC. The raw data is downloadable in .xlsx, JSON and .csv formats. In addition, the platform also provides summary results and processed insights of the raw data, also downloadable in .csv format.

Geography

The focus of this project is the Midlands, as defined by the 65 Local Authority (LA) boundaries, listed in Appendix A and shown on the map, below, alongside some of the largest cities in the region.



Data

Defining the CDI landscape in the Midlands

SICs and RTICs

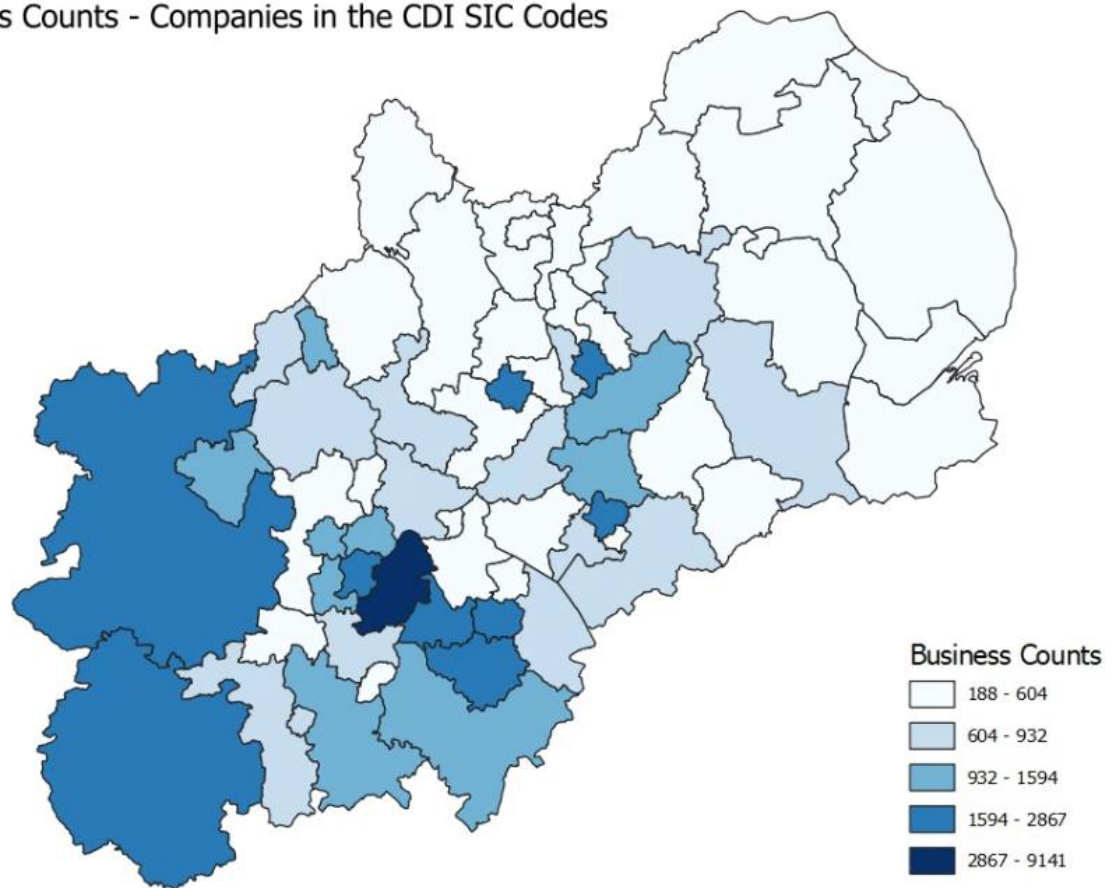
Upon registering with Companies House in the UK, all companies self-identify with 1-4 pre-defined [Standard Industrial Classifications](#), which they believe best describes the nature of their business at the time of registration.

In 2016 [The Department for Digital, Culture, Media and Sport \(DCMS\)](#) published their understanding of the [CDI sector](#) in the UK, which outlined their definition of the entire sector. This definition focuses on 6 key sectors, and their overlaps, (1) Digital Sector; (2) Creative Industries; (3) Cultural Sector; (4) Tourism; (5) Sports; and (6) Gambling. This encompasses the companies engaging in creative and/or digital activities.

This project is specifically interested in the overlap of the creative *and* digital sectors to identify companies engaging in *both*. For this project, MetroDynamics highlight (1) Digital Sector, (2) Creative Industries, and (3) Cultural Sector as the key areas to focus on, including the overlaps of these sectors, and have selected the 43 SIC codes in Appendix B as best representing this focused CDI sector.

There are distinct 59,984 companies located in the Midlands Las which are classified in at least one of the SIC codes in this list.

Business Counts - Companies in the CDI SIC Codes



However, MetroDynamics are aware of the shortfalls of SIC codes, which often fail to show the complete picture in a given sector. Specifically, they reference sectors such as Immersive Technologies and Gaming, which might not be sufficiently represented by a focus on SIC codes. [The Creative Industries Policy and Evidence Centre \(PEC\) also noted in a recent createch \(creative technologies\) specific report](#) that "*More than half of organisations involved in createch projects are in SIC codes outside the creative industries.*", suggesting it necessary to widen exploration of the CDI beyond the traditional SIC sectors to capture activity such as this.

Therefore, this project seeks to extend this picture of the CDI by employing The Data City's Real Time Industrial Classifications (RTICs) as an additional source of data, to capture CDI companies which are not sufficiently represented by these SIC codes.

CDI RTICs

The following 9 RTICs have been selected to focus on in this project:

- AdTech
- Agency Market
- Design and Modelling Technologies
- Digital Creative Industries
- Gaming
- Immersive Technologies
- Media & Publishing
- Software Development (subset to just the following 7 verticals: API Development and Integration, Desktop, DevOps, Games development, Mobile development, UI/UX development, Web development)
- Streaming Economy

An additional bespoke classification will also be considered in this project. This will be treated as a 10th RTIC.

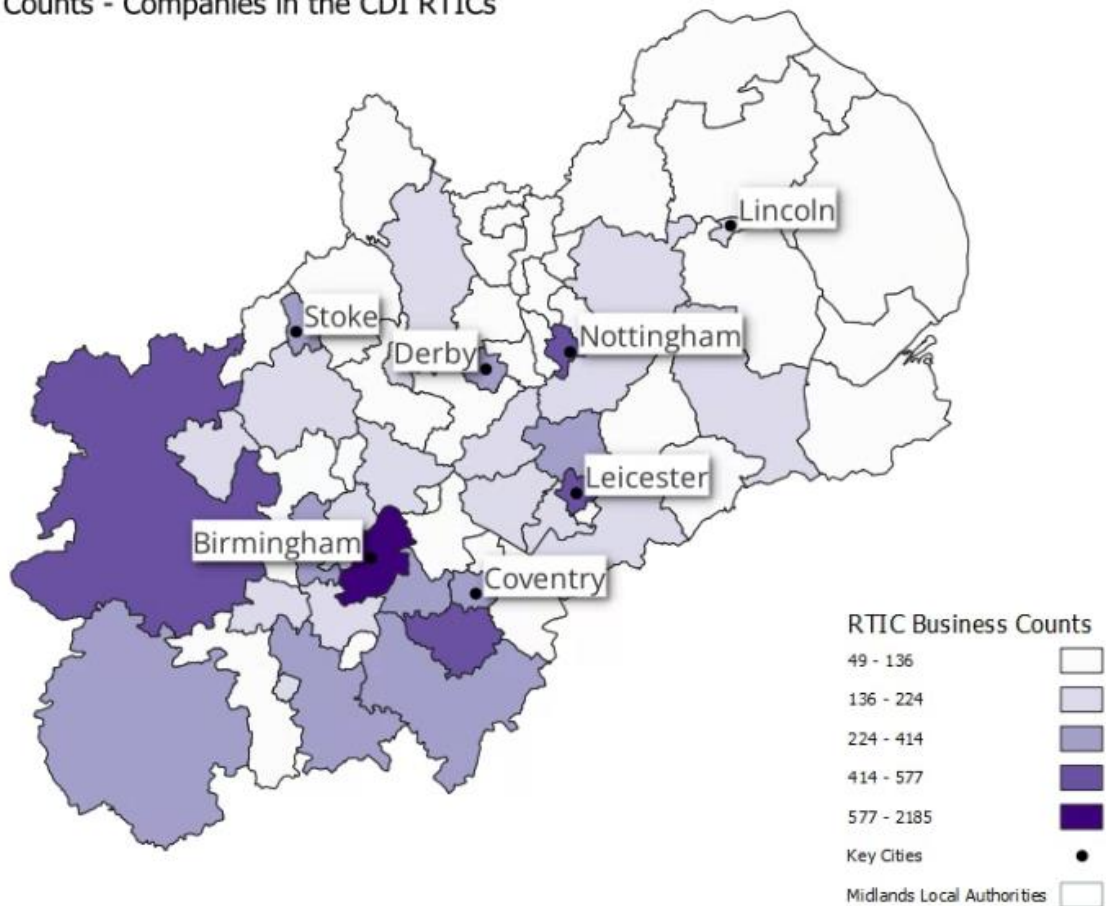
- Creative Industries

This "Creative Industries" classification was developed specifically in collaboration with the University of Edinburgh as a broad 'catch-all' for the Creative Industries (<https://creativeinformatics.org/research/horizon-5-data-data-everywhere/>). Its development also carefully considered DCMS' definition of the Creative and Digital industries, and it was created considering a combination of relevant SIC codes and applications of the Machine Learning processes used to develop the other RTICs. This is somewhat of a hybrid approach to developing a classification, and is being considered here (with the permission of the University of Edinburgh) to capture any relevant companies which do not fall into the categories of the existing 9 RTICs but which, through this earlier project, have been confidently identified as CDI companies.

There are 10,677 distinct companies located in the Midlands LAs which are classified in at least one of these RTICs.

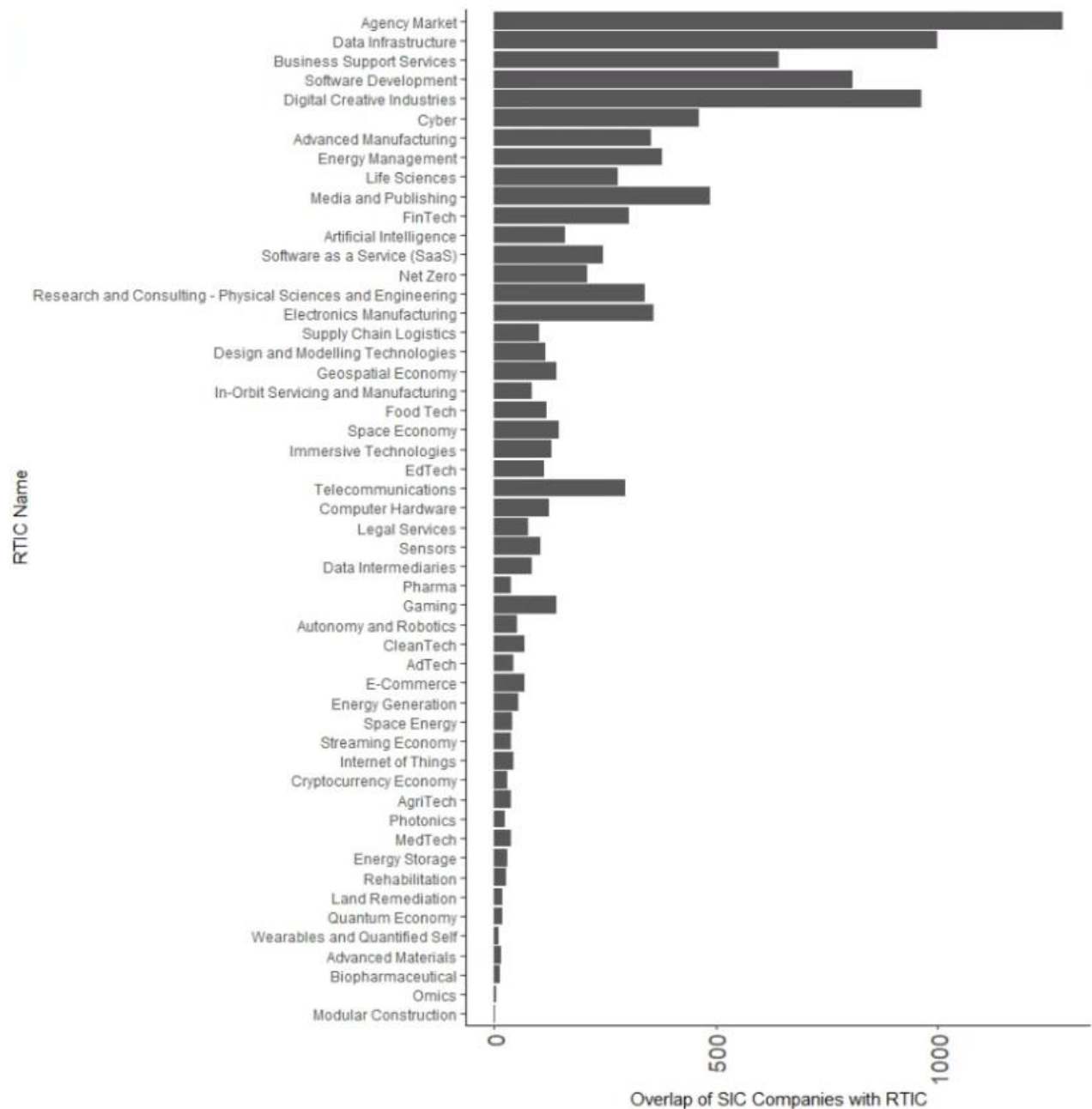
The map below shows these companies aggregated to each of the 65 LAs. In line with expectations, the majority of the companies are located in the main cities in the region, some of which have been labelled.

Business Counts - Companies in the CDI RTICs

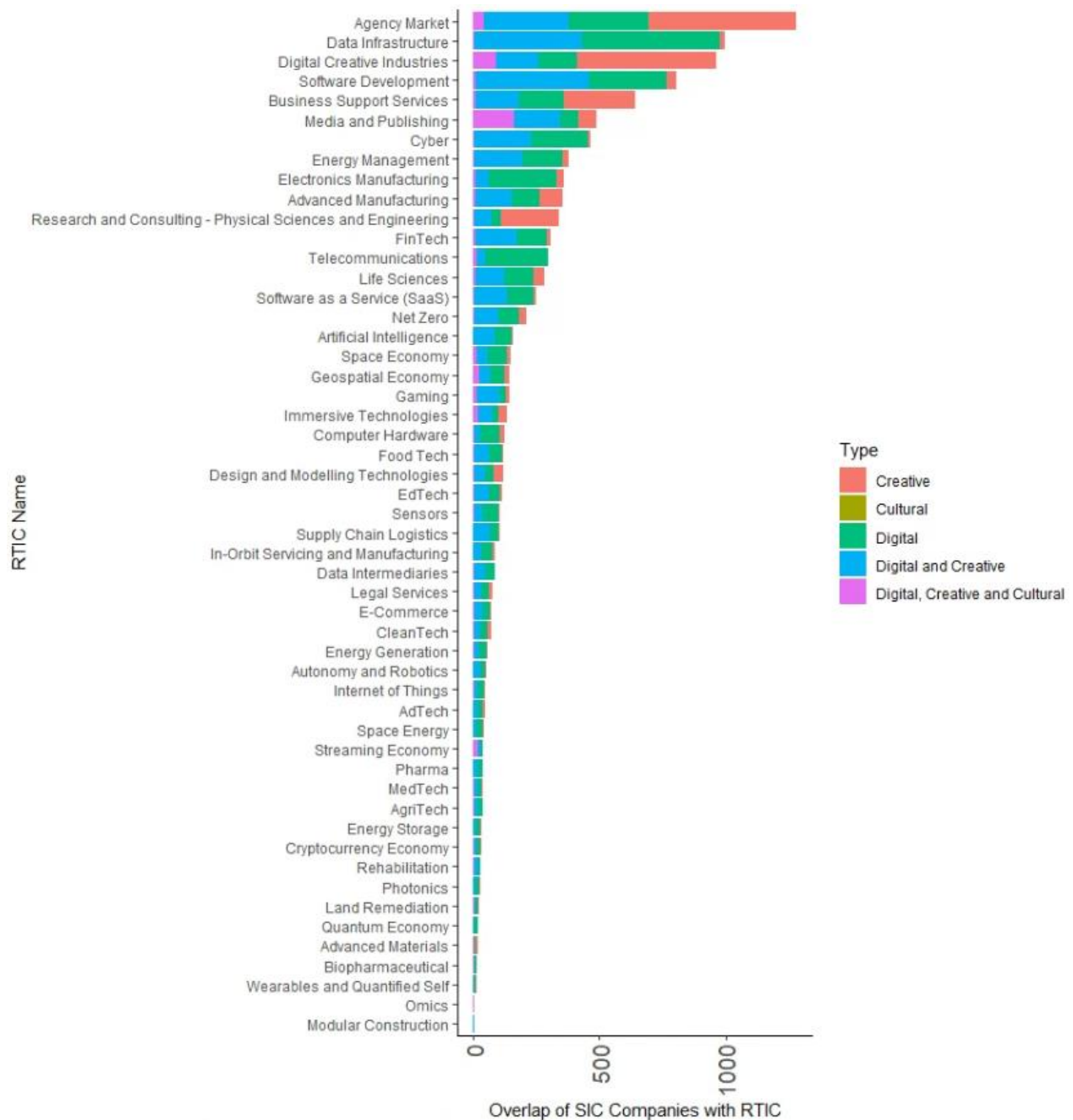


Overlap of CDI SICs and RTICs

The graph below shows the RTICs to which the companies in the SIC codes (selected to align with DCMS's definition) have been classified.



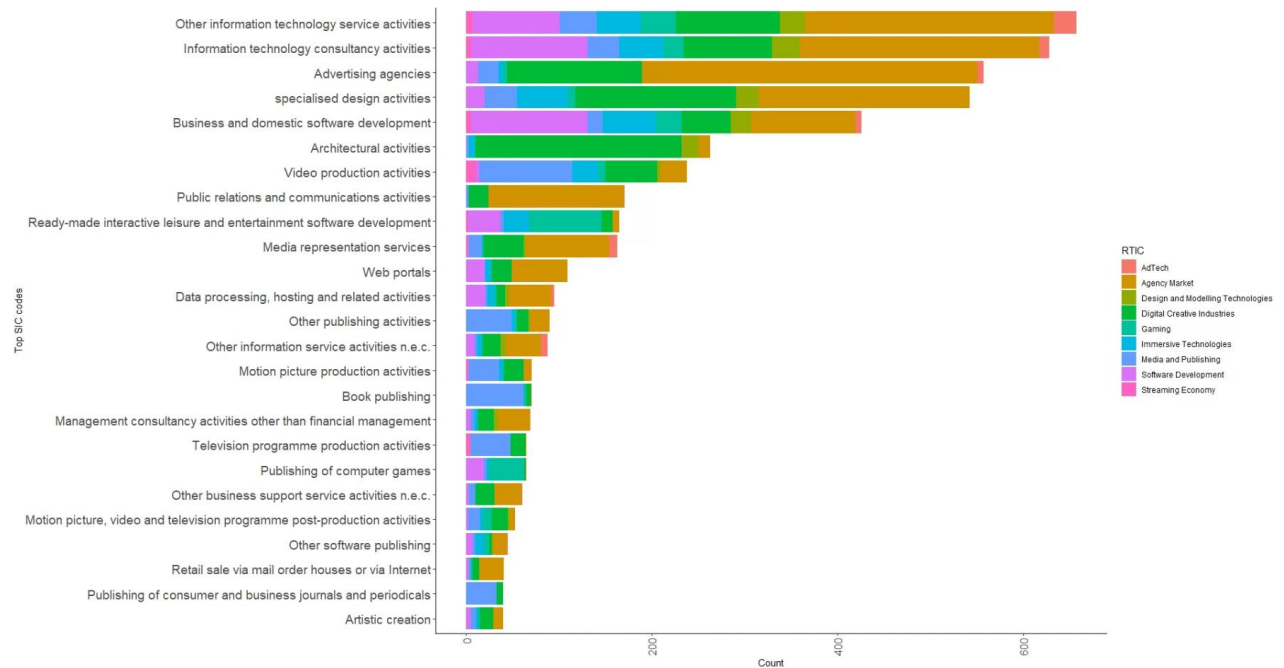
This reveals that the majority of companies in these SIC codes are likely not the types of CDI focused companies that this project aims to focus on. Particularly, the companies which are of interest could be lost in the noise generated by companies offering Business Support Services, Data Infrastructure, or Cyber, for example.



If we split the data further to highlight the types of SIC codes that are allocated to each of these RTICs (as per the DCMS definitions in Appendix B), we see that the breakdown of each type differs across these large RTICs.

No companies in SIC codes "26800: Manufacture of Magnetic and Optical Media" and "32200: Manufacture of Musical Instruments" in the Midlands region are classified in any of the RTICs of interest.

Alternatively, it is possible to consider which SIC codes the companies in these RTICs are allocated to (Note: The same company could have been allocated to the SIC code multiple times, if it is in multiple RTICs). The following graph shows the top 25 SIC codes to which the companies in the RTICs have been allocated.



This reveals that companies across the RTICs are coming from the “Other IT Service Activities” SIC code. This is a SIC code which is known to be used as a “catch-all” for companies which are difficult to allocate to a more specific SIC code. Similarly, many are coming from the “IT consultancy activities” SIC code. These companies may be being missed in the original list of CDI SIC codes. These could be createch companies which are not easily classified into the traditional SIC codes.

CDI in the Midlands

Overarching picture of CDI in Midlands

Location quotients are statistical measures that compare the concentration of a particular industry or occupation in a specific geographic area to its concentration at a broader regional or national level, offering a more nuanced understanding of regional specialization and economic strengths compared to raw counts alone.

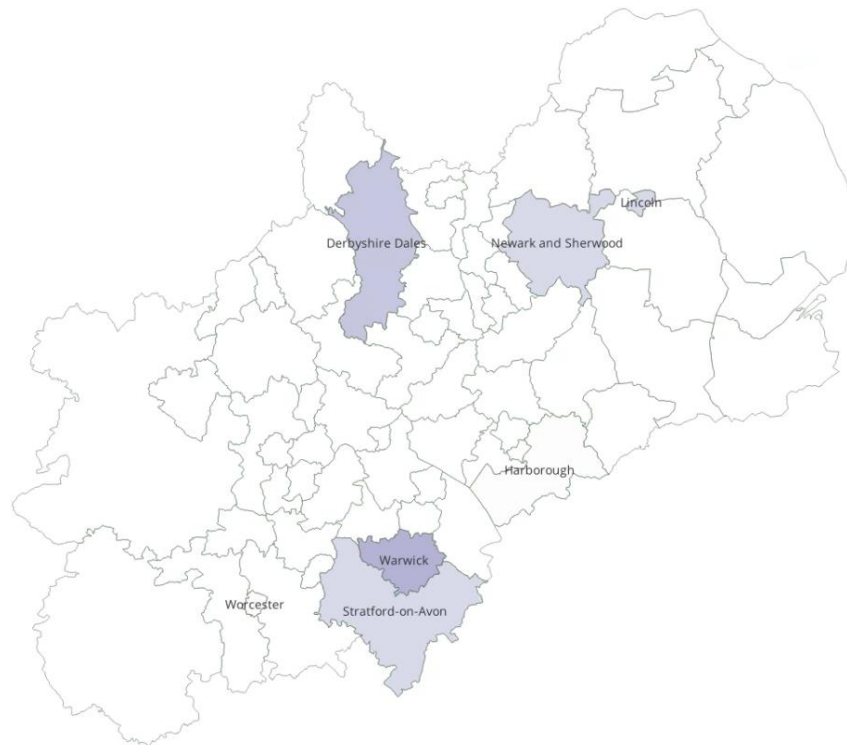
A location quotient of 1 or above typically indicates that a particular industry or occupation is overrepresented or more concentrated in a specific geographic area compared to the broader regional or national average. It suggests that the area has a specialization or comparative advantage in that industry or occupation.

The following maps show the location quotient of the business counts, turnover and employee counts for all of the companies in the CDI RTICs for each of the LAs in the region.



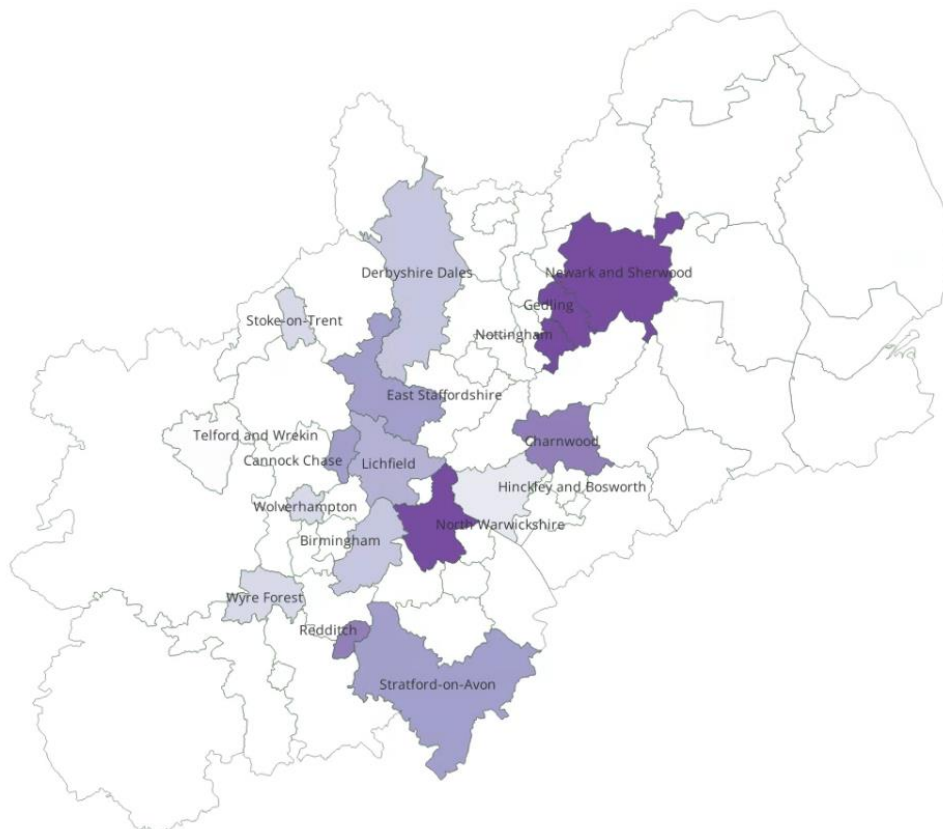
Business Counts by LA

Location Quotients



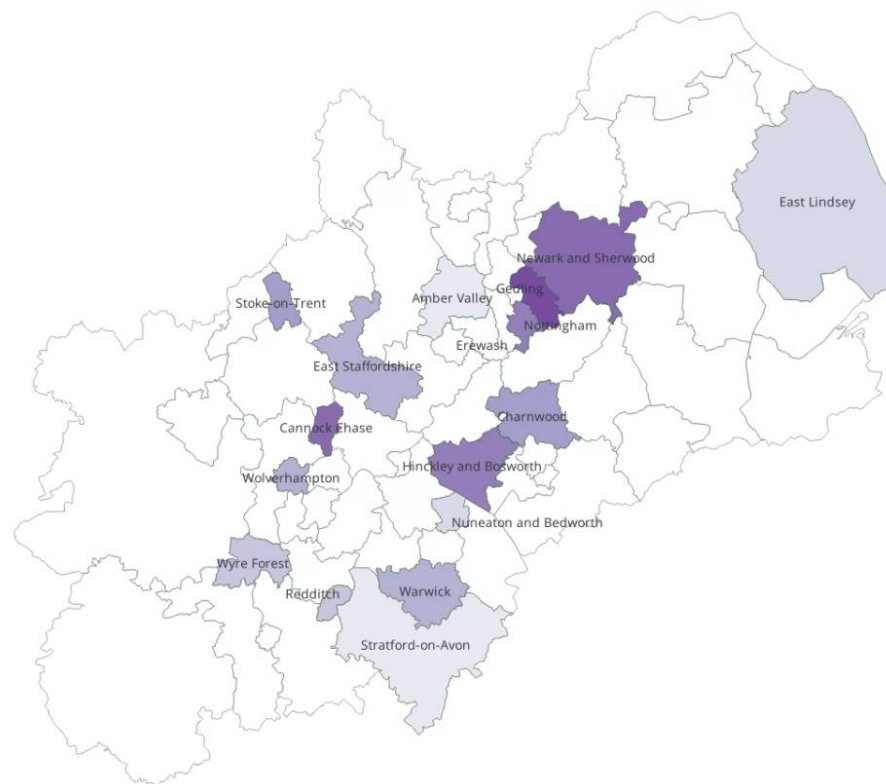
Turnover by LA

Location Quotients



Employee Counts by LA

Location Quotients



In contrast with the map which just represents raw business counts, we can see that there are specific Local Authorities which are particularly overrepresented in each case – or in which there is a concentration of the variable higher than we might expect - which are not necessarily just the main cities. This indicates an economic strength in these Local Authorities. These maps represent the location quotient of each variable for the whole of the Creative Digital Industries. Applying this methodology to the specific RTICs in turn can reveal even further insight into the nature of the strengths of the Midlands LAs.

RTIC specific picture of CDI in Midlands

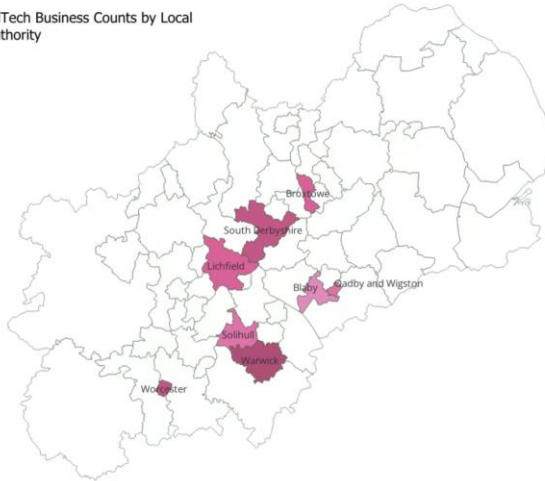
RTIC breakdown

The first thing to consider is which (if any) LAs in the Midlands might specialise in any particular CDI. To do this, let's consider the location quotients of the business counts of each individual RTIC in each LA (as defined above).

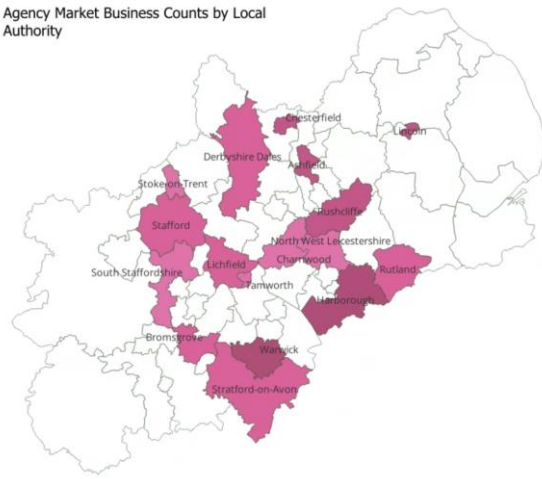
The following series of maps, therefore, show the LAs which are over indexing for each of the CDI RTICs (have a location quotient calculated at the national level of greater than or equal to 1), depicting the LAs with higher than the national average concentration of the specific RTIC industry.



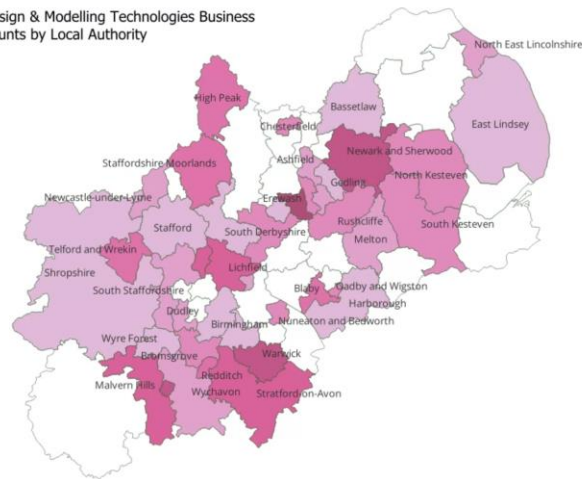
AdTech Business Counts by Local Authority



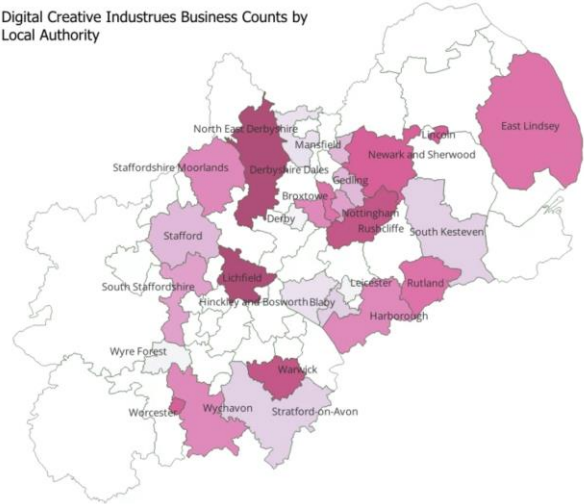
Agency Market Business Counts by Local Authority



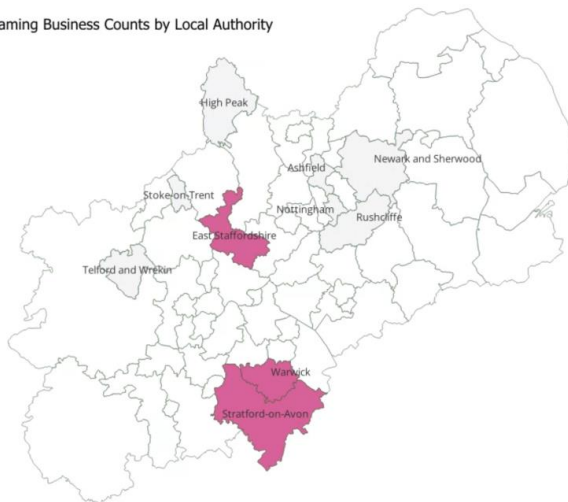
Design & Modelling Technologies Business Counts by Local Authority



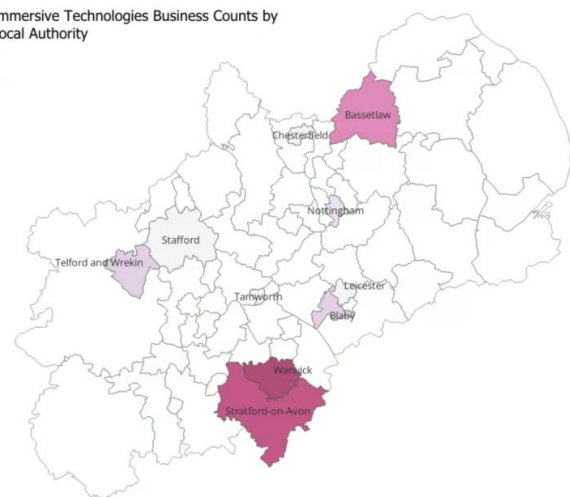
Digital Creative Industries Business Counts by Local Authority



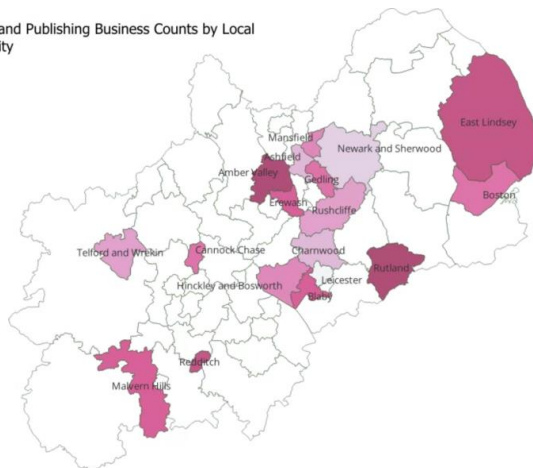
Gaming Business Counts by Local Authority



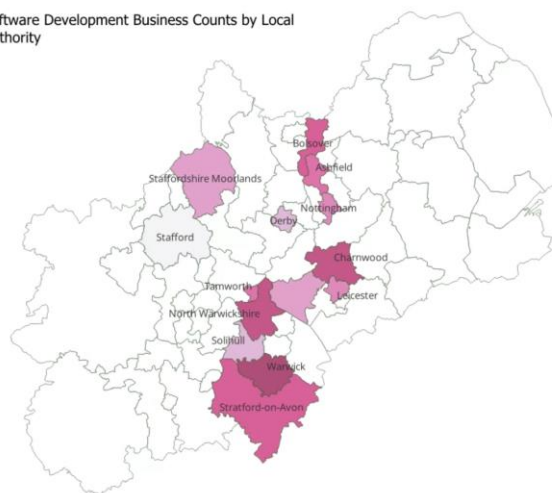
Immersive Technologies Business Counts by Local Authority



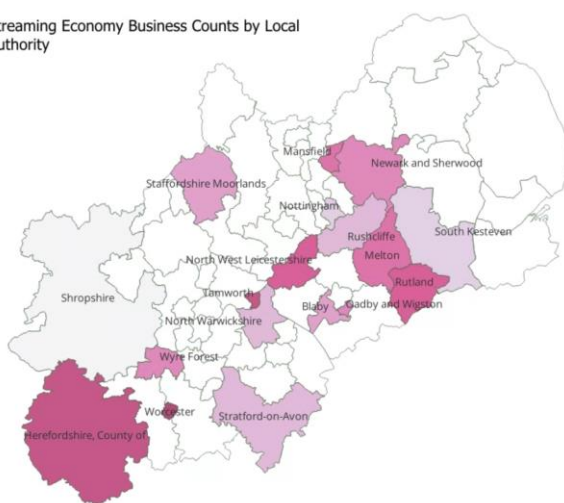
Media and Publishing Business Counts by Local Authority



Software Development Business Counts by Local Authority



Streaming Economy Business Counts by Local Authority



Top Local Authorities in each RTIC:

CDI RTIC

TOP LOCAL AUTHORITIES

Ad Tech

Warwick, South Derbyshire, Worcester

Agency Market

Harborough, Warwick, Ashfield

Design & Modelling Technologies

Erewash, Worcester, Newark and Sherwood, Warwick

Digital Creative Industries

Lichfield, Derbyshire Dales, Warwick

Gaming

East Staffordshire, Warwick, Stratford-on-Avon

Immersive Technologies

Warwick, Stratford-on-Avon, Bassetlaw

Media & Publishing

Amber Valley, Rutland, East Lindsey



Software Development (limited to the 7 verticals listed above)

Warwick, Charnwood, North Warwickshire

Streaming Economy

Worcester, Tamworth, County of Herefordshire

The below table shows the LA/RTIC pairs in the region with the greatest location quotients.

Greatest concentrations of CDI companies in the Midlands LAs:

LOCAL AUTHORITY	CDI RTIC	LOCATION QUOTIENT
East Staffordshire	Gaming	6.19
Warwick	AdTech	4.77
Erewash	Design & Modelling Technologies	4.53
Warwick	Gaming	4.03
Warwick	Immersive Technologies	3.77
Worcester	Design & Modelling Technologies	3.33
Newark and Sherwood	Design & Modelling Technologies	3.04
Warwick	Design & Modelling Technologies	2.93
Worcester	Streaming Economy	2.66
Lichfield	Design & Modelling Technologies	2.50

RTIC perspective

The above maps and tables indicate that some CDI RTICs, such as Design and Modelling Technologies are overrepresented across the Midlands as a whole, whereas other RTICs, such as AdTech, Gaming and Immersive Technologies are more highly concentrated, and more overrepresented than the national average, in specific LAs.

Gaming

the table above indicates that the Local Authority/RTIC pair with the highest location quotient based on business counts is Gaming in East Staffordshire. In total, gaming and immersive technologies appear in the list of the top 10 highest location quotients for business counts a total of 3 times. This, in addition to the maps, indicates that there is a particular strength in this industry in several locations across the Midlands.

There is a visible overlap of overrepresentation in both Gaming and Immersive Technologies in the south of the region, in both Warwick and Stratford-on-Avon, where there is also a high level of Software Development activity and activity in the Streaming Economy.



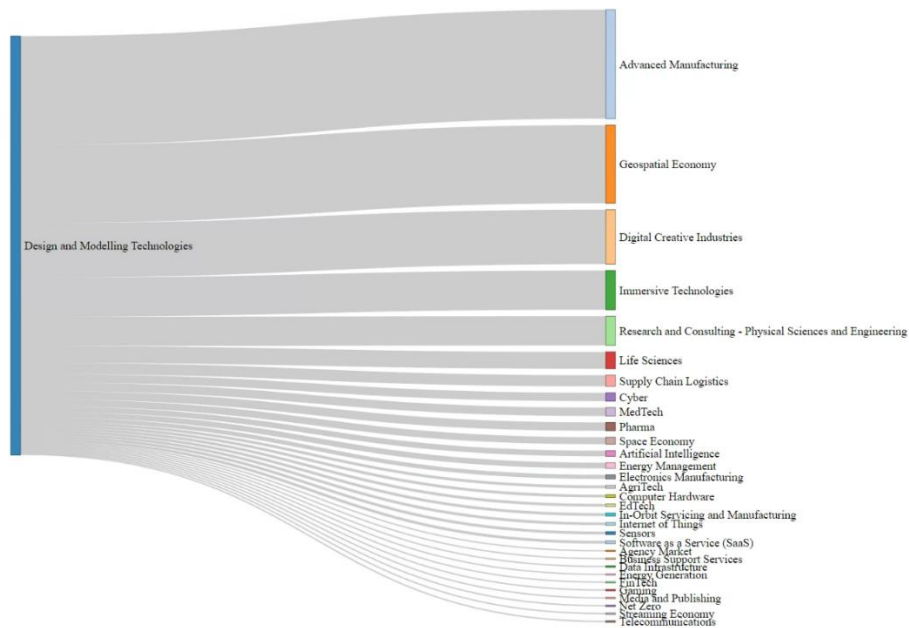
Design and Modelling Technologies

Five different Local Authorities have some of the highest location quotients for business counts in Design and Modelling Technologies. The maps highlight this different dynamic in the distribution of the high location quotients in this RTIC, compared to gaming, for example. This RTIC (and similarly Agency Market, Media and Publishing, Digital Creative Industries, and the Streaming Economy) are much less concentrated in one or two Local Authorities. Why might this be?

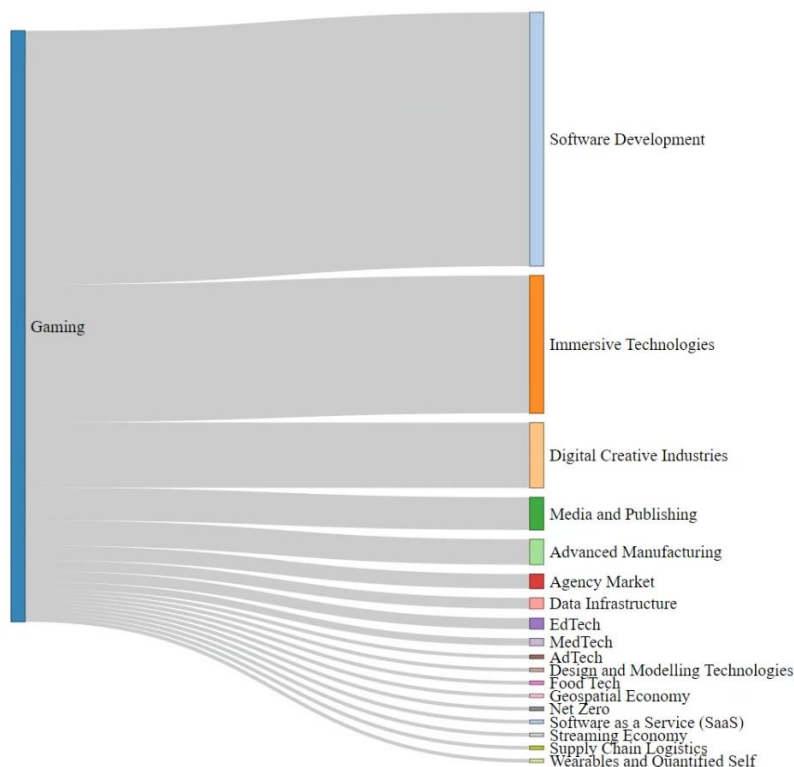
Relatedness

The diagrams below represent the relationships between (1) Design and Modelling technologies with all other RTICs, including those outside of the CDIs (and by relationship, I mean the overlap of companies that are classified in the Design and Modelling technologies RTIC and in any other RTIC) compared with the same relationships for (2) the Gaming companies.

(1)



(2)





These diagrams indicate that Design and Modelling technologies companies are much more likely to be companies also working in and with the some more traditional and non-CDI industries, notably Advanced Manufacturing. This is likely companies adopting Design and Modelling technologies tools and practices within their non-specifically CDI industries. Alternatively, the gaming companies appear to be much more aligned with the CDI industries, particularly software Development and Immersive Technologies, and as the earlier maps also indicated.

Place based perspective - seeking a "critical mass" in a single location

Business count location quotients

Considering the results from the place-based perspective, the tables and maps above also indicate that some LAs are over-represented in several different RTICs, notably Warwick, Worcester and Stratford-on-Avon appear as the top LAs (with the highest location quotients based on business counts) in multiple RTICs.

Additionally, 11 other LAs also have location quotients of at least 1.5 (are at least 1.5 times more represented than the national average in terms of businesses in the RTIC) for at least 2 RTICs. This indicates that there is a substantial amount of CDI activity across the Midlands.

Employee count location quotients

The below tables replicate these results, instead based on location quotients of employee counts, in each LA for each RTIC.

Top Local Authorities in each RTIC:

CDI RTIC	TOP LOCAL AUTHORITIES
Ad Tech	Harborough, Warwick, Lichfield
Agency Market	Rushcliffe, Gedling, Birmingham
Design & Modelling Technologies	Cannock Chase, Nottingham, Chesterfield, Wolverhampton
Digital Creative Industries	North Lincolnshire, Wychavon, Derbyshire Dales
Gaming	East Staffordshire, Warwick, Nottingham, Newark and Sherwood
Immersive Technologies	Nottingham, Hinckley and Bosworth, Wychavon, Gedling, Stratford-on-Avon
Media & Publishing	Wolverhampton, High Peak, Amber Valley, Mansfield
Software Development (limited to the 7 verticals listed above)	Charnwood, Warwick, Derby
Streaming Economy	Rugby, Nottingham

Greatest concentrations of CDI companies in the Midlands LAs:

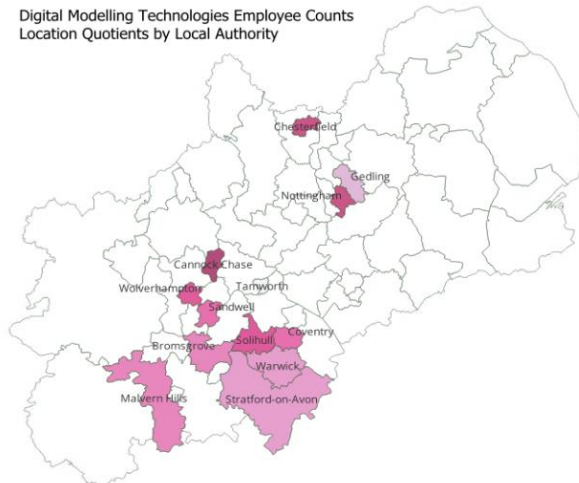
LOCAL AUTHORITY	CDI RTIC
Charnwood	Software Development
East Staffordshire	Gaming
Nottingham	Immersive Technologies
Warwick	Gaming
North Lincolnshire	Digital Creative Industries
Wolverhampton	Media & Publishing
Cannock Chase	Design & Modelling Technologies
Hinckley and Bosworth	Immersive Technologies
Warwick	Software Development
Wychavon	Immersive Technologies

Similarly considering the location quotient of the employee counts in each RTIC in each Local Authority (LAs with more people employed in the RTIC industries than the national average) in the table above, there are several LAs which appear in the top LAs for multiple RTICs, Warwick (again), Gedling and Nottingham.

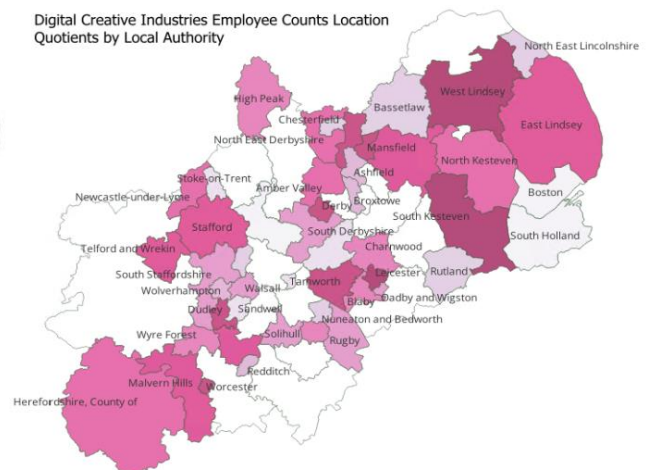
There are 20 further LAs with a location quotient of at least 1.5 (which are at least 1.5 times more represented than the national average in terms of employee counts) in at least 2 CDI RTICs.

The below maps show the location quotients of the employee counts in each of the LAs in the RTICs in the table, above.

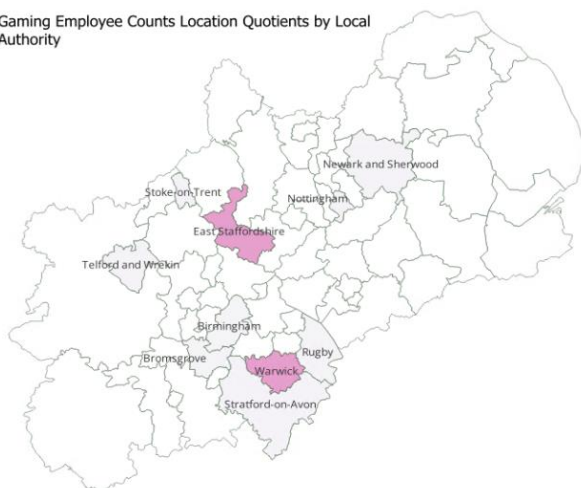
Digital Modelling Technologies Employee Counts
Location Quotients by Local Authority



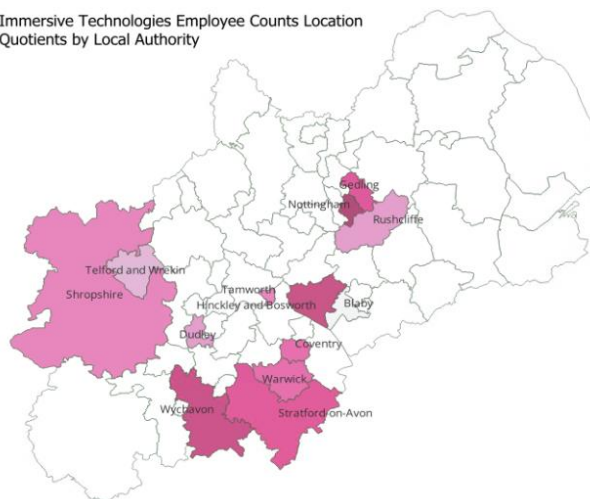
Digital Creative Industries Employee Counts Location
Quotients by Local Authority



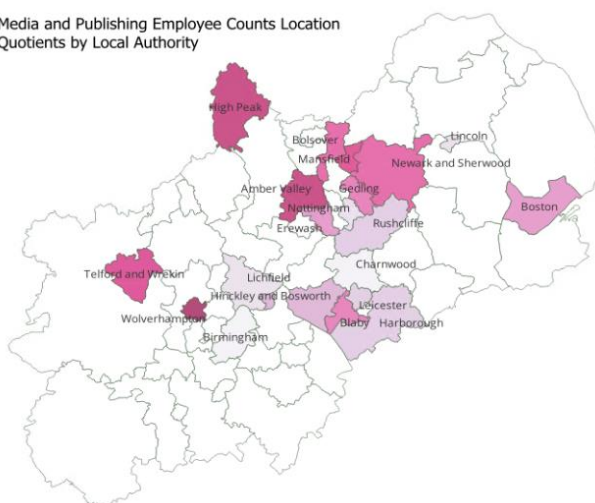
Gaming Employee Counts Location Quotients by Local Authority



Immersive Technologies Employee Counts Location Quotients by Local Authority



Media and Publishing Employee Counts Location Quotients by Local Authority



Software Development Employee Counts Location Quotients by Local Authority



In the national context

Considering the location quotients of each RTIC in the Midlands LAs in the context of the national picture, we see that several of the LAs have location quotients in the top 5 LAs nationally, for a given RTIC.

Warwick has the 4th greatest location quotient for Immersive Tech of all national LAs.

It also has the 3rd greatest location quotient for AdTech, nationally.

Erewash has the 3rd greatest location quotient for Design & Modelling Technologies, nationally.

East Staffordshire has the 3rd greatest location quotient for Gaming, nationally.

Evidence of a link to the Midlands universities

Exploration of university activity and engagement with RTICs

University research funding

This report focuses on 17 universities in the Midlands:

ASTON UNIVERSITY	LOUGHBOROUGH UNIVERSITY	UNIVERSITY OF LINCOLN
Birmingham City University	Nottingham Trent University	University of Nottingham
Coventry University	Staffordshire University	University of Warwick
De Montfort University	University of Birmingham	University of Wolverhampton
Harper Adams University	University of Derby	University of Worcester
Keele University	University of Leicester	

University share of research funding

Based on [Higher Education Statistics \(HESA\) data](#), 10% of all research funding from all research councils is received by these 17 universities in the Midlands in the five years between 2017-2022. Similarly, 10% of all funding from the Arts & Humanities Research Council (AHRC) is received by these universities in this time.

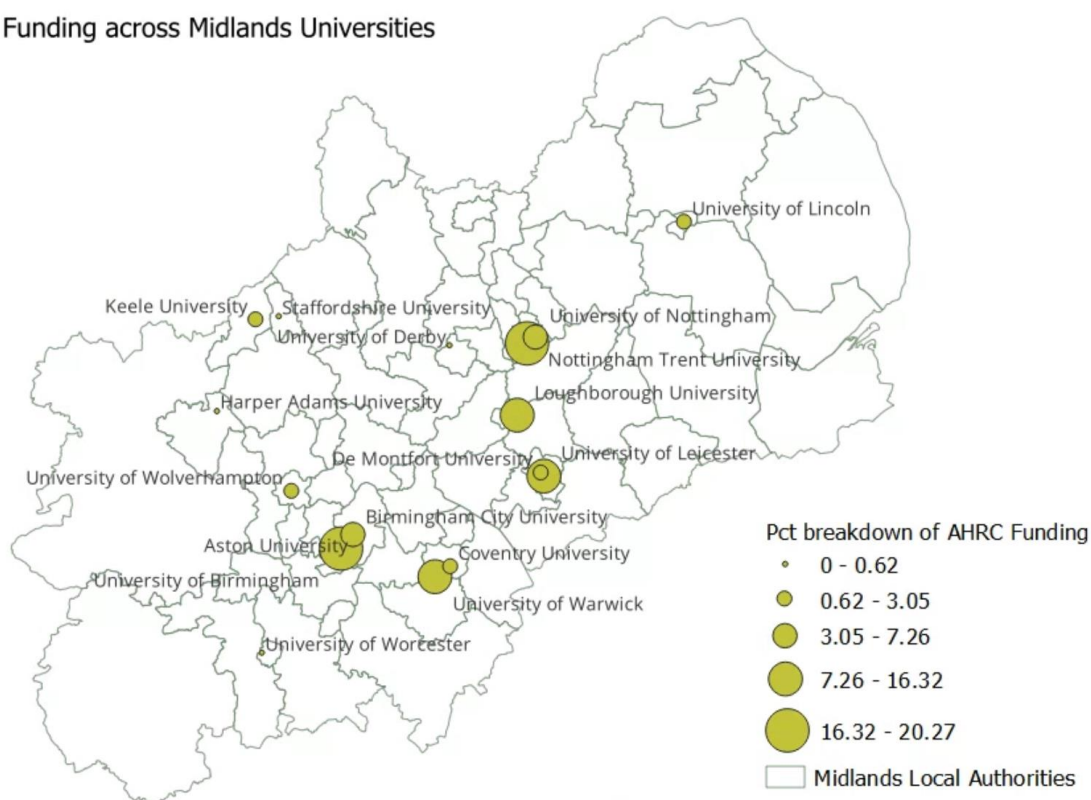
The following table shows the share of all funding, and AHRC specific funding, received by each of the Midlands universities between 2017-2022, as per the HESA data.

UNIVERSITY	PCT OF AHRC - MIDLANDS	PCT OF ALL RESEARCH FUNDING - MIDLANDS	PCT OF AHRC - NATIONAL	PCT OF ALL RESEARCH FUNDING - NATIONAL
Aston University	0.62	2.03	0.06	0.20
Birmingham City University	7.26	0.61	0.75	0.06
Coventry University	2.08	0.99	0.21	0.10
De Montfort University	2.20	0.51	0.23	0.05
Harper Adams University	0.00	0.32	0.00	0.03

Keele University	3.05	1.15	0.31	0.12
Loughborough University	8.91	8.35	0.91	0.84
Nottingham Trent University	6.82	0.97	0.70	0.10
Staffordshire University	0.06	0.02	0.01	0.00
University of Birmingham	20.27	26.19	2.08	2.63
University of Derby	0.03	0.05	0.00	0.01
University of Leicester	16.32	8.88	1.68	0.89
University of Lincoln	2.68	1.74	0.27	0.17
University of Nottingham	18.58	23.25	1.91	2.33
University of Warwick	8.20	18.63	0.84	1.87
University of Wolverhampton	2.73	0.20	0.28	0.02
University of Worcester	0.14	0.05	0.01	0.00

Some universities, such as Birmingham City University, Nottingham Trent University and University of Leicester are receiving substantially more funding, proportionally, in the Arts than they are receiving in general. Conversely, University of Warwick is receiving much less funding from SHRC as a proportion of their overall research funding.

**Pct of AHRC Funding across Midlands Universities
2017-22**





The UK Research and Innovation (UKRI) also release AHRC funding data ([GtR \(ukri.org\)](https://gtr.ukri.org)). This includes more detail regarding the recipients themselves. From this, it is possible to identify the specific departments in receipt of this funding. The following table indicates 20 departments (across all of the Midlands universities) which are most closely aligned with CDI, and which are in receipt of the greatest share (for any department) of AHRC funding awarded between 2017-2022.

UNIVERSITY	DEPARTMENT
University of Lincoln	School of Fine and Performing Arts
Birmingham City University	ADM Birmingham Conservatoire
University of Birmingham	English Drama American and Canadian Stu
University of Nottingham	School of English
University of Birmingham	Languages Cultures Art History & Music
University of Warwick	School of Theatre, Perform & Cult Poli Stud
Nottingham Trent University	Sch of Arts and Humanities
University of Leicester	English
University of Warwick	Centre for the Study of the Renaissance
University of Nottingham	School of Computer Science
Birmingham City University	ADM Birmingham Sch of Media
Nottingham Trent University	Sch of Archit Design and Built Env
Loughborough University	Loughborough Design School
Loughborough University	Creative Arts
Coventry University	Ctr for Dance Research
Loughborough University	Communication and Media
University of Leicester	Media and Communication
University of Wolverhampton	Faculty of Arts
De Montfort University	LMS – Leicester Media School
Birmingham City University	ADM Sch of English

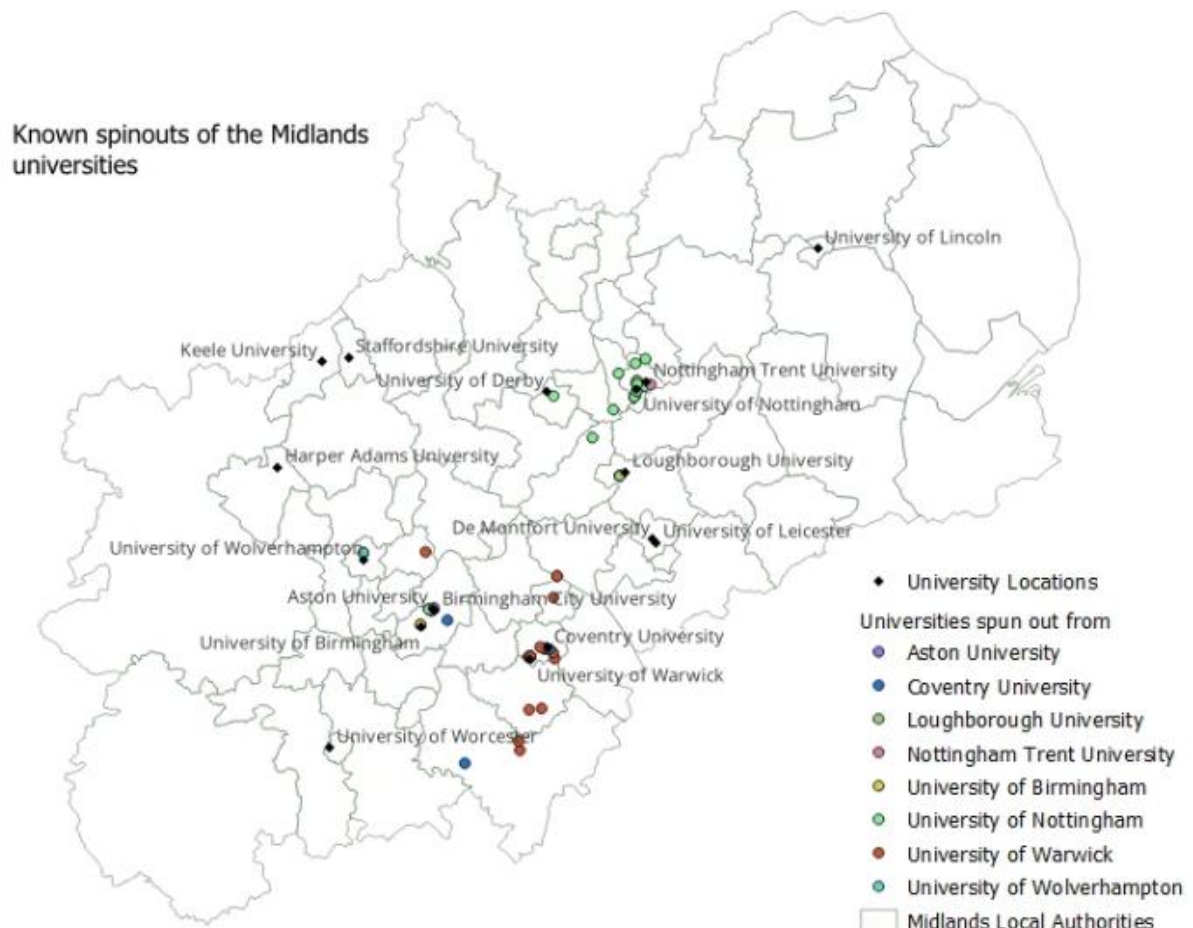
Although University of Lincoln and University of Warwick received a lower overall share of AHRC funding than some of the other universities listed, it seems that split of this across these universities was more focused on a limited number of CDI related departments.

A further review of this data indicates that in the universities receiving the greatest amount of AHRC funding (such as University of Birmingham, University of Nottingham and University of Leicester), the greatest share of this funding was going to departments more aligned with the humanities, such as Education, School of Psychology, School of Humanities, School of Health Science, School of Archaeology and Ancient History and School of Historical Studies.

It is also of note that The School of Computer Science in Nottingham is in receipt of one of the largest departmental shares of the AHRC funding, evidencing an overlap into non-traditionally creative (or arts or humanities) departments.

Known university "spinouts"

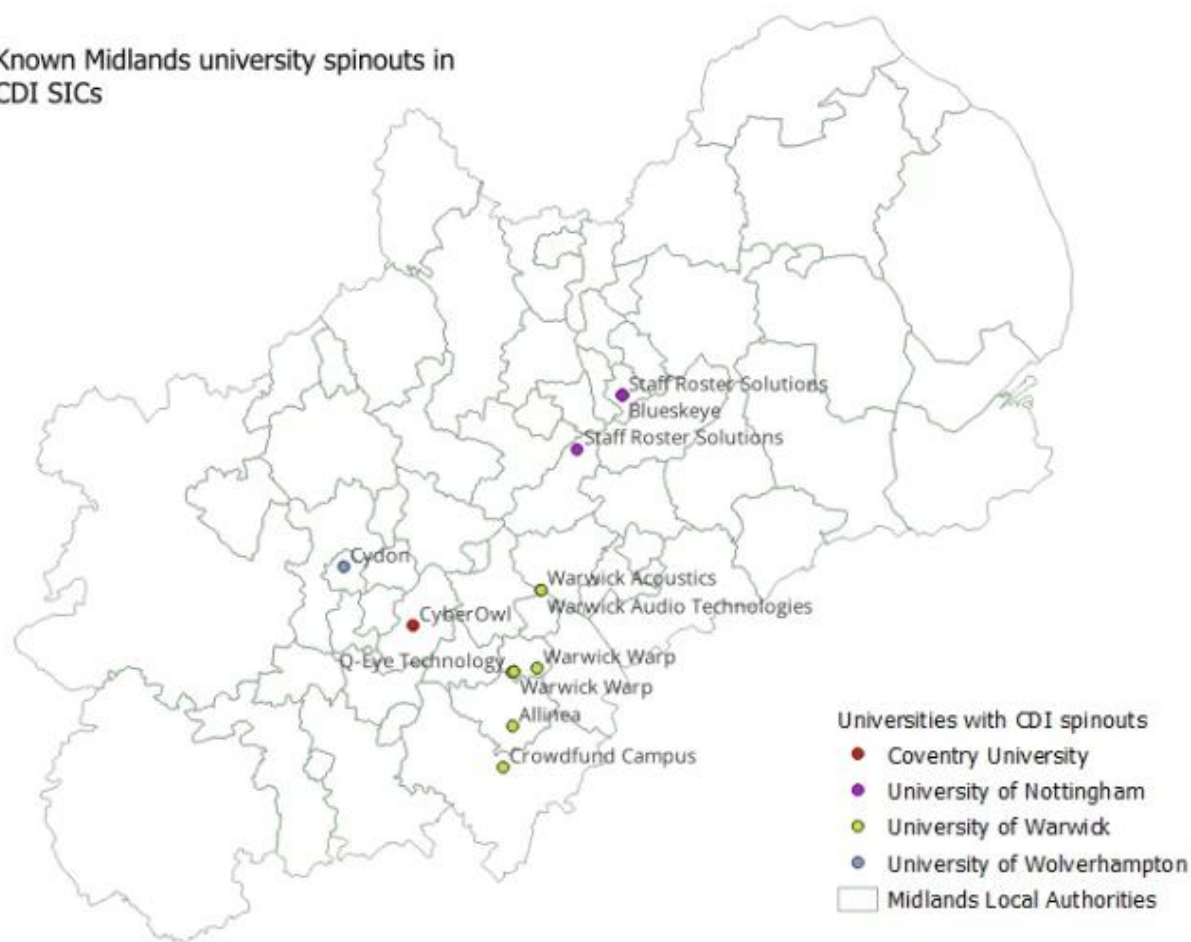
Another avenue through which universities can feed into the wider economy is through the creation and development of university spinout companies. 100 known spinouts have been identified in the region, which have originated from one of the 17 universities, listed above. These are mapped below alongside the universities. The points representing each company each indicate which university from which the company has originated.



Although 100 spinouts have been identified from these universities, none of these spinout companies are in the CDI RTICs.

Defaulting to the CDI SIC codes, 11 of the spinout companies classify themselves in the CDI SIC codes (mapped and listed below).

Known Midlands university spinouts in CDI SICs



COMPANY NAME	UNIVERSITY	CDI SIC CODE
Allinea	University of Warwick	Business and domestic software development (Digital)
Blueskeye	University of Nottingham	Data processing, hosting and related activities (Digital & Creative)
Crowdfund Campus	University of Warwick	Other information service activities n.e.c. (Digital)
CyberOwl	Coventry University	Other information technology service activities (Digital)
Cydon	University of Wolverhampton	Business and domestic software development (Digital & Creative)
Human Technologies	University of Warwick	Manufacture of consumer electronics (Digital)
Q-Eye Technology	University of Warwick	Manufacture of electronic components (Digital)



Staff Roster Solutions	University of Nottingham	Business and domestic software development (Digital & Creative)
Warwick Acoustics	University of Warwick	Manufacture of electronic components (Digital)
Warwick Audio Technologies	University of Warwick	Manufacture of electronic components (Digital)
Warwick Warp	University of Warwick	Other software publishing (Digital & Creative)

Exploring these companies in more detail, it seems that these are very much digital companies first and foremost. It thus seems that there is not a focus from these universities on generating and developing CDI spinouts.

Knowledge Transfer Partnerships

The UKRI also holds data on research activity occurring between universities and companies. One such source is data relating to Knowledge Transfer Partnerships (KTPs), these are collaborative projects between businesses and academic institutions that aim to facilitate the transfer of knowledge, expertise, and innovation for the benefit of both parties.

Since 2011, there have been 706 KTPs involving the Midlands Universities. Of these, 17 have been conducted in partnership with 10 different companies in the CDI RTICs.

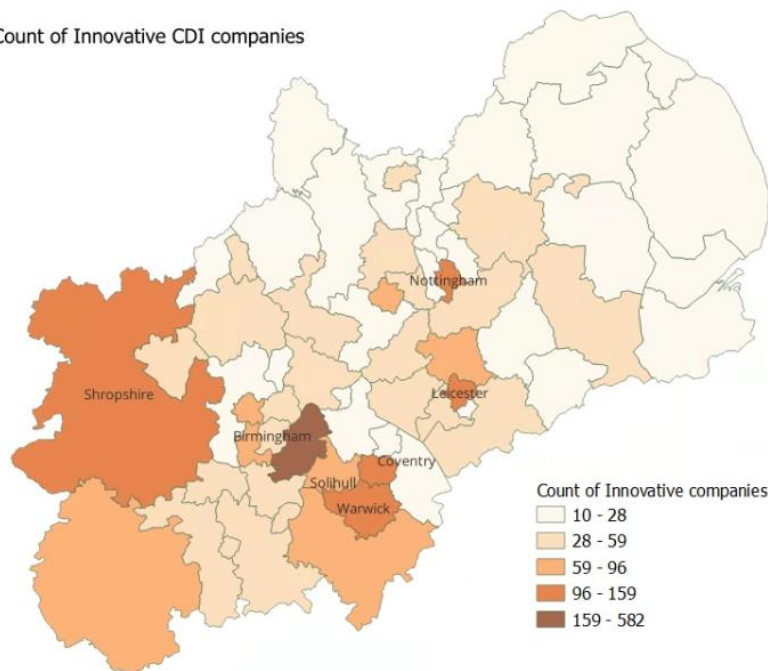
COMPANY NAME	PARTNER UNIVERSITY	CDI RTIC CODE(S)
Cognition Agency	Aston University	Agency Market, Digital Creative Industries
Nexus Creative	Coventry University	Agency Market, Digital Creative Industries
Cookson Gold	University of Birmingham	Creative Industries
Clive Durose	Staffordshire University	Creative Industries
Bloc Digital	University of Derby	Immersive Technologies
The Together Agency	University of Nottingham	Agency Market
Severn Partnership	University of Wolverhampton	Design and Modelling Technologies, Immersive Technologies
Black Country Living Museum	University of Wolverhampton	Creative Industries
Bulb Studios	University of Leicester	Software Development
Serendipity Artists Movement Ltd	University of Leicester	Creative Industries

This is a tiny percentage of the 706 KTPs in the Midlands across the different industries (just 2.4%). Again, this suggests that KTPs are also not the way universities are predominantly engaging with CDIs in the region.

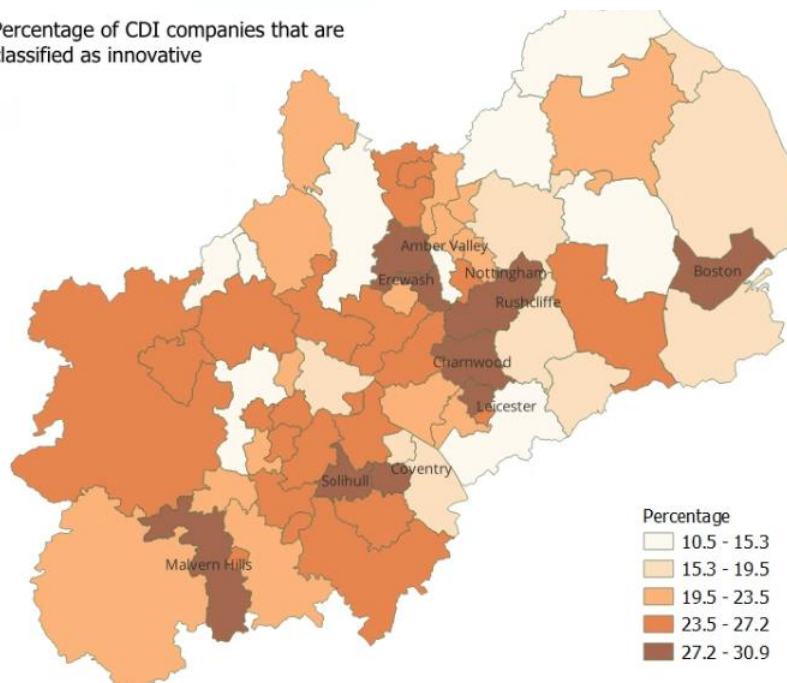
CDI Research and Development activity in the Midlands

The maps below show first the count, and then a percentage of the CDI companies in each LA believed to be innovative, based on The Data City's proprietary Innovation Score. This is generated using ML trained on available R&D spend data which predicts whether a company is Innovative or Not Innovative, based on evidence of innovativeness in the company's webtext.

Count of Innovative CDI companies

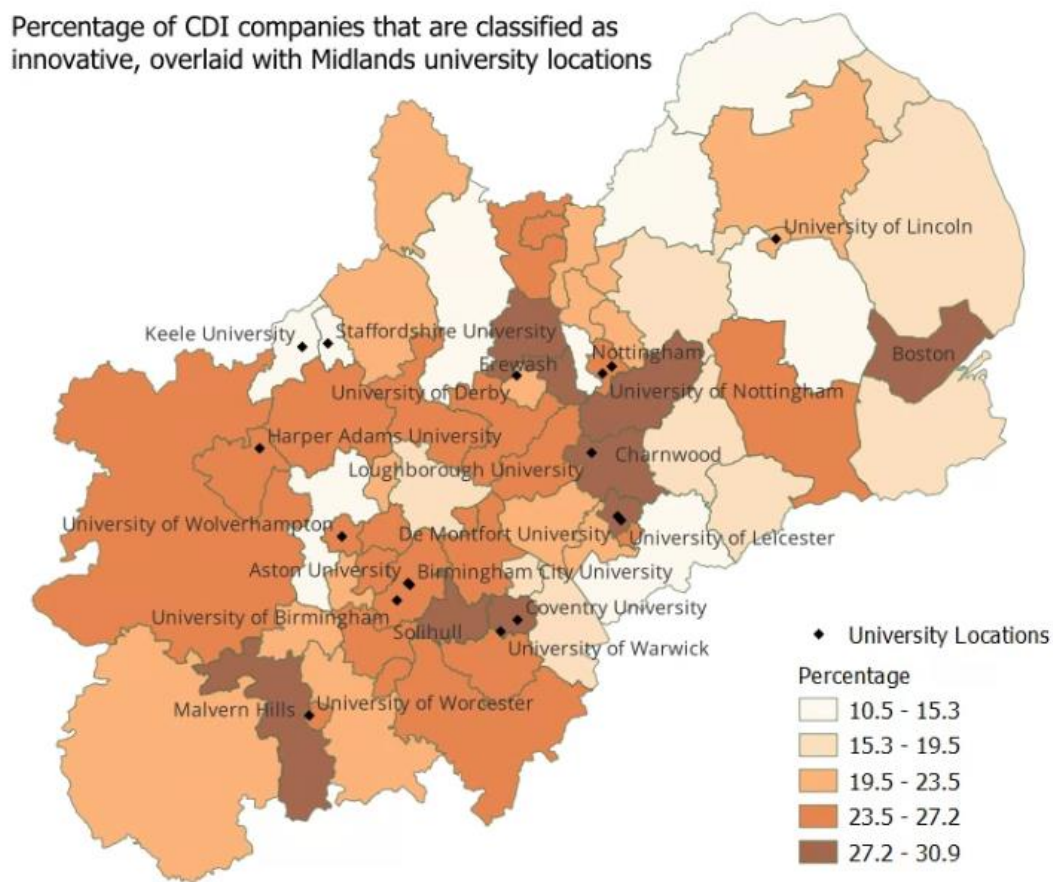


Percentage of CDI companies that are classified as innovative



Evidence of the role of the universities in Research and Development activity

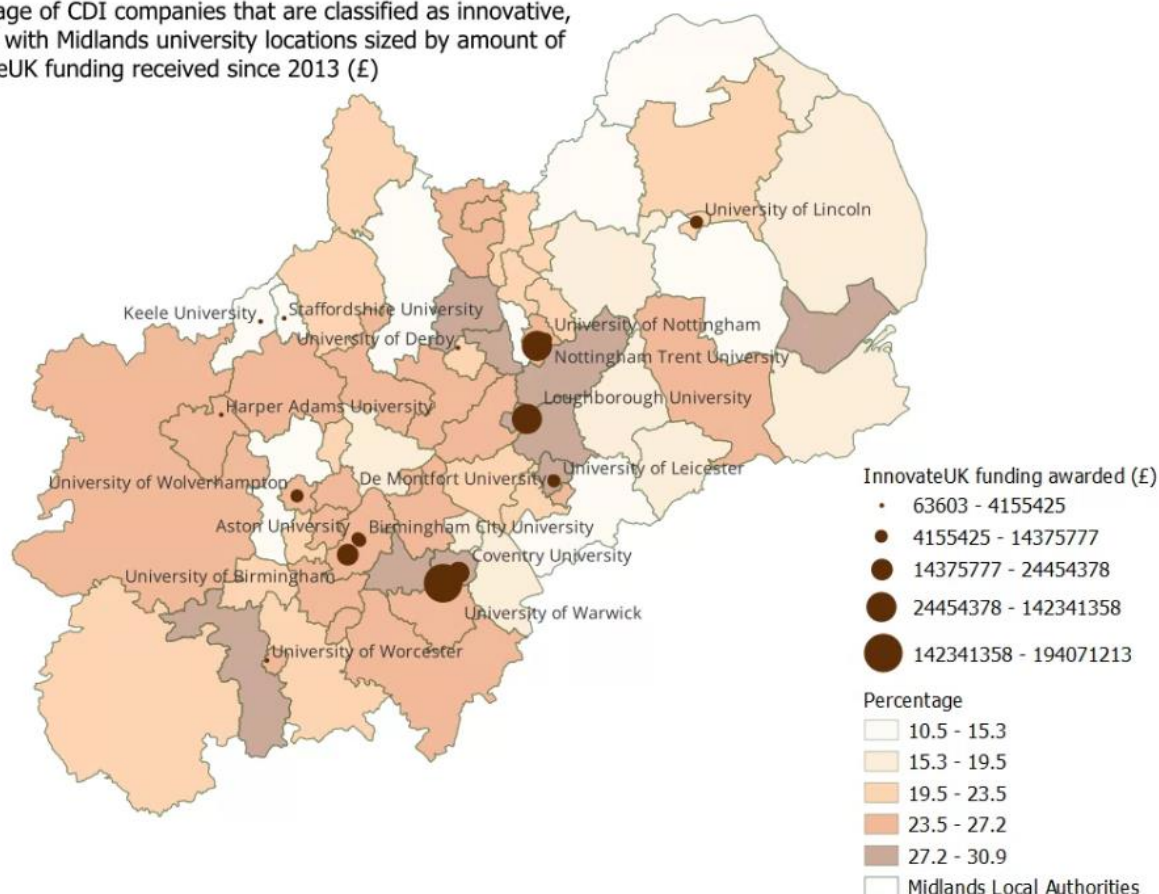
Overlaying the Midlands universities on the innovation percentage map indicates a link between the university locations and CDI innovation.



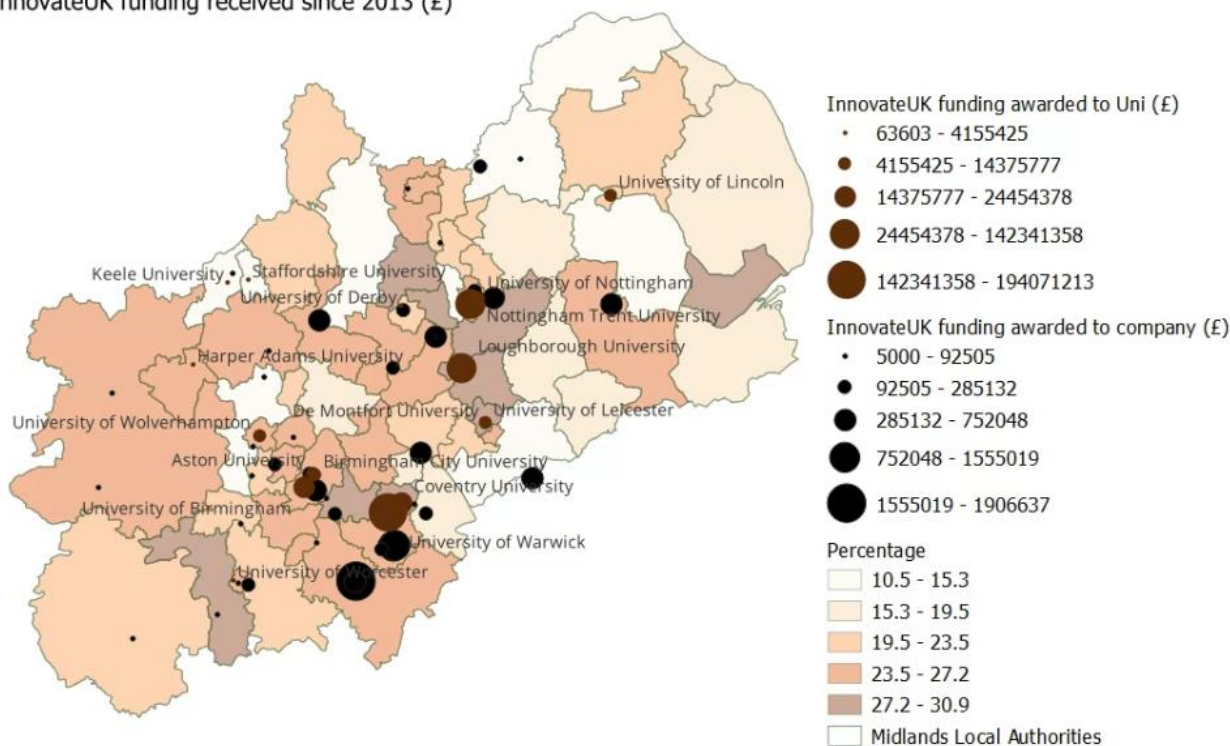
Overlaying this again, this time with the InnovateUK funding as awarded to each University (in this case not CDI specific), the map (below) again suggests a relationship between universities and R&D activity in the CDI.

Thus, although the role of the universities in the CDI in the Midlands does not seem to be linked to university spinouts or direct shared research activity, in the form of KTPs, there does appear to be a link which is worth exploring to determine the specific role of universities in this space.

Percentage of CDI companies that are classified as innovative, overlaid with Midlands university locations sized by amount of InnovateUK funding received since 2013 (£)



Percentage of CDI companies that are classified as innovative, overlaid with Midlands university locations and CDI companies receiving InnovateUK funding, sized by amount of InnovateUK funding received since 2013 (£)



Data tables

65 Midlands Local Authorities (LAs) considered in this piece of work:

AMBER VALLEY	HIGH PEAK	RUTLAND
Ashfield	Hinckley and Bosworth	Sandwell
Bassetlaw	Leicester	Shropshire
Birmingham	Lichfield	Solihull
Blaby	Lincoln	South Derbyshire
Bolsover	Malvern Hills	South Holland
Boston	Mansfield	South Kesteven
Bromsgrove	Melton	South Staffordshire
Broxtowe	Newark and Sherwood	Stafford
Cannock Chase	Newcastle-under-Lyme	Staffordshire Moorlands
Charnwood	North East Derbyshire	Stoke-on-Trent
Chesterfield	North East Lincolnshire	Stratford-on-Avon
Coventry	North Kesteven	Tamworth
Derby	North Lincolnshire	Telford and Wrekin
Derbyshire Dales	North Warwickshire	Walsall
Dudley	North West Leicestershire	Warwick
East Lindsey	Nottingham	West Lindsey
East Staffordshire	Nuneaton and Bedworth	Wolverhampton
Erewash	Oadby and Wigston	Worcester
Gedling	Redditch	Wychavon
Harborough	Rugby	Wyre Forest
Herefordshire, County of	Rushcliffe	

SIC codes selected by MetroDynamics as representing CDI, based on DCMS definition of Digital Industries, Creative Sector and Cultural Sector.

DCMS DEFINITION	SIC	SUB-SECTOR	DESCRIPTION
Digital	26110	Manufacturing of electronics and computers	Manufacture of electronic components
Digital	26120	Manufacturing of electronics and computers	Manufacture of loaded electronic boards
Digital	26200	Manufacturing of electronics and computers	Manufacture of computers and peripheral equipment
Digital	26301	Manufacturing of electronics and computers	Manufacture of telegraph and telephone apparatus and equipment
Digital	26309	Manufacturing of electronics and computers	Manufacture of communication equipment other than telegraph, and telephone apparatus and equipment
Digital	26400	Manufacturing of electronics and computers	Manufacture of consumer electronics
Digital	26800	Manufacturing of electronics and computers	Manufacture of Magnetic and Optical Media
Digital	62030	Computer programming, consultancy and related activities	Computer Facilities management activities
Digital	62090	Computer programming, consultancy and related activities	Other Information technology and computer service activities
Digital	63110	Information service activities	Data Processing, hosting and related activities
Digital	63120	Information service activities	Web Portals
Digital	63910	Information service activities	News agency activities
Digital	63990	Information service activities	Other information service activities N.E.C
Digital	95110	Repair of computers and communication equipment	Repairs of computers and peripheral equipment
Digital	95120	Repair of computers and communication equipment	Repair of communication equipment





Digital	61100	Telecommunications	Wired Telecommunication Activities
Digital	61200	Telecommunications	Wireless telecommunications activities
Digital	61300	Telecommunications	Satellite telecommunications activities
Digital	61900	Telecommunications	Other telecommunications activities
Digital & Creative	58110	Publishing	Book Publishing
Digital & Creative	58120	Publishing	Publishing of directories and mailing list
Digital & Creative	58130	Publishing	Publishing of newspapers
Digital & Creative	58141	Publishing	Publishing of journals
Digital & Creative	58142	Publishing	Publishing of consumer and business journals and periodicals
Digital & Creative	58190	Publishing	Other publishing activities
Digital & Creative	58210	IT, software and computer services	Publishing of computer games
Digital & Creative	58290	IT, software and computer services	Other software publishing
Digital & Creative	62011	IT software and computer services	Ready-made interactive leisure and entertainment software development
Digital & Creative	62012	IT software and computer services	Business and domestic software development
Digital & Creative	62020	IT, software and computer services	Information technology consultancy activities
Digital, Creative & Cultural	59111	Film, TV and Music	Motion picture production activities
Digital, Creative & Cultural	59112	Film, TV and Music	Video production activities
Digital, Creative & Cultural	59113	Film, TV and Music	Television programme production activities



Digital, Creative & Cultural	59120	Film, TV and Music	Motion picture, video and television programme post-production activities
Digital, Creative & Cultural	59131	Film, TV and Music	Motion picture distribution activities
Digital, Creative & Cultural	59132	Film, TV and Music	Video distribution activities
Digital, Creative & Cultural	59133	Film, TV and Music	Television programme distribution activities
Digital, Creative & Cultural	59140	Film, TV and Music	Motion picture projection activities
Digital, Creative & Cultural	60100	Radio	Radio broadcasting
Digital, Creative & Cultural	60200	Film, TV and Music	Television programming and broadcasting activities
Creative	70210	Advertising and Marketing	Public relations and communication activities
Creative	71111	Architecture	Architectural Activities
Creative	73110	Advertising and Marketing	Advertising Agencies
Creative	73120	Advertising and Marketing	Media Representation
Creative	74100	Design and designer fashion	Specialised design activities
Creative	74300	Publishing	Translation and interpretation activities
Cultural	32200	Film, TV and Music	Manufacture of Musical Instruments
Cultural	47630	Film, TV and Music	Retail sale of music and video recordings in specialised stores