technopolis |group|

July, 2018

University Enterprise Zones (UEZ) pilot interim evaluation

Interim and process evaluation

technopolis|group|

University Enterprise Zones (UEZ) pilot interim evaluation

Interim and process evaluation

technopolis |group| July, 2018

Kristine Farla

Vivek Seth

Martin Wain

Paul Simmonds

Table of contents

Executive Summary

BEIS commissioned Technopolis Group to carry out the interim evaluation of the University Enterprise Zones (UEZ) pilot. It is both a process and outcome evaluation of the UEZ pilot. It also provides an evaluation framework for the pilot, to be used in the final evaluation. Drawing on a mixed method theory-based evaluation (TBE) framework approach, the study addressed the following research questions:

Strand	Research questions
Process evaluation	• How has the UEZ pilot been implemented and delivered? • Which aspects of the UEZ have helped or hindered its effectiveness?
Outcome/impact evaluation	• Has there been an increase in university-business engagement? • Has there been an increase in co-operation between universities and LEPs? • Has this led to better business performance?

About the UEZ pilot

The University Enterprise Zones (UEZ) pilot initiative commenced in 2014. The initiative aims to facilitate local growth by enhancing relationships between Local Enterprise Partnerships (LEPs) and universities, consequently stimulating additional university-business engagement. It aims to do this through delivering ambitious new-build projects and/or major refurbishments that facilitate connection-building and networking between start-ups and universities. There have been four UEZ pilots:

- Future Space – run by the University of West England (UWE)
- The Ingenuity Centre – run by the University of Nottingham
- Sensor City – a collaboration between the University of Liverpool and Liverpool John Moores
- Bradford Digital Health Enterprise Zone (DHEZ) – a partnership between the University of Bradford and the City of Bradford Metropolitan District Council (CBMDC)

BEIS allocated a £15m capital investment between the four UEZ.

Key findings

How has the UEZ pilot been implemented and delivered

No single delivery model has been adopted across the UEZs. Some have involved the renovation of existing buildings, some have involved the construction of new buildings entirely, and others have been local regeneration-led projects. Location choice has also differed with some choosing to place their UEZs at the heart of the university campus (e.g. Future Space, Ingenuity Centre and DHEZ) while Sensor City opted for a city centre location.

Although all the UEZ pilots offer both workspace and links to university researchers and facilities, the precise type of space offered varies. Among the four UEZs, the Ingenuity Centre is the only one not to provide lab space but instead offers a greater variety of office provision across different buildings.

There is also variation in terms of sectoral focus. Two are largely sector-agnostic (Future Space and the Ingenuity Centre) while DHEZ and Sensor City place sector requirements on prospective tenants. There are other management differences too, with some using specialist business space managers to run the UEZ, others preferring to use existing university staff.

Broadly speaking, all of the UEZs have been implemented as envisaged in their bids, albeit that in most cases delivery timescales have slipped, sometimes by several months.

What has helped or hindered the effectiveness of UEZs?

Drawing on the feedback and evidence collected for each of the individual UEZs, there appear to be some fundamental characteristics that are crucial to the successful delivery of UEZs.

- Choosing the right location is crucial. In some cases, a campus-based location has been appropriate but in other instances, local businesses have preferred locations that are more independent from the university. Key to effective delivery and implementation is finding a convenient and central location that meets local business requirements and can generate interaction between academics and the local business community.
- Running the UEZs from new and modern buildings has been beneficial to each of the pilot areas. The creation of these distinct buildings, with grow-on space, has helped create a pull factor which has helped attract people to the UEZ. This can help to create the sense of community and footfall needed to help build a vibrant eco-system.
- UEZs have also worked best when they have been run by organisations or individuals with a previous track-record in business support or facility management. Without this experience, it can take much longer to recruit tenants. Acquiring external management support can also help run the day-to-day operations.
- Several UEZs have struggled to properly staff their facilities owing to a lack of revenue funding. It seems that provision of revenue funding may help to make delivery more effective and enable quicker progress to be made. Allocating sufficient revenue funding could help overcome issues around staffing and, in relation, help the organisation of outreach events and the timely recruitment of on-site tenants.
- Building on and adding value to the existing business support offer, including co-location of key stakeholders where possible to help acquire a critical mass needed to make the UEZ initiative a success in the long-term. There is also a strong case for trying to secure an anchor tenant that adds to the UEZ profile. The right anchor tenant can help secure critical mass more quickly.

Has there been an increase in university-business engagement?

In spite of the delays in opening the centres, there is early evidence suggesting that the UEZs have led to improvements in university-business engagement. Anecdotally at least, several businesses at different UEZs have spoken about how being based at a UEZ has enabled them to interact better with universities. This was especially true of the UEZs that were based on university campuses and therefore had easier access to the student population.

Survey evidence reinforces the suggestion that UEZs are successfully creating links between SMEs and the university community, especially in terms of helping provide businesses with access to university services and facilities.

Has there been an increase in levels of co-operation between universities and LEPs?

The evidence suggests that UEZs have done little to facilitate greater co-operation between universities and LEPs. In most cases, the LEPs' direct engagement with the UEZ ended following the bid, and, in all four pilot areas, the LEPs maintain only an arm's length relationship with the UEZ. Nevertheless, all the LEPs spoken with during the evaluation saw the UEZ as a real local asset and were keen to offer strategic support for it wherever they could.

The effect of the UEZ on business performance

It is too early to see significant effects on the performance of UEZ tenants. Based on the results of a survey of UEZ businesses, the majority of tenants find that the UEZ is having a positive impact on their business activities. Benefits include university-business knowledge sharing. A small minority of

respondents reported a positive impact on sales and employment, and several survey respondents expect to do so in the near future. However, as the number of responses is small we would expect there to be some degree of response bias.

1 Introduction

1.1 This report

This report presents the results of the interim evaluation of the University Enterprise Zones (UEZ) pilot initiative.

The interim evaluation was carried out in the period September 2017 to July 2018, four years after the launch of the UEZ pilot initiative and three years since the Outline Evaluation Plan and Baseline was published in March 2015. A full impact evaluation is planned for 2023.

In line with the Outline Evaluation Plan, the UEZs have been reporting on progress each year through an Annual Monitoring Report, with the first Annual Reports submitted to BEIS in 2016. Each of the UEZs has collected information on, amongst other things, the volume of co-investment secured, the amount of incubator space created and the numbers of clients and other users engaging with the new facilities.

The interim evaluation combined a process and early impact evaluation. The process evaluation focused on an assessment of how the UEZ pilot was implemented and which aspects of the delivery arrangements had helped the effectiveness of the UEZ collaborations. Moreover, the process evaluation also reviewed the individual UEZ's activities to determine the extent to which they had made the progress expected by this point in time.

The early impact evaluation focussed on understanding what difference the intervention has made to date, with a focus on the following three research objectives:

- To what extent has there been an increase in university-business engagement?
- Has there been an increase in cooperation between universities and LEPs?
- Has this led to better business performance?

1.2 Structure of this report

Chapter 2 presents a set of main findings, in reference to the interim evaluation questions.

Chapter 3 presents an overview of the UEZs, comparing the inputs, delivery and performance of each of the UEZs in relation to a set of key indicators and overarching logic model. The case studies in the appendix presents a more detailed overview of each of the UEZs, including an introduction of the lead partner(s), the build project and an outline of the objectives, focus and facilities offered to the community.

Chapter 4 provides a summary of the UEZ management structure, perceptions on working relationships between key partners including the UEZ partnership arrangements with local and regional bodies, the number and type of UEZ business recruitment and outreach campaigns, and critical success factors.

Chapter 5 provides an overview of early outcomes and impacts of the four UEZs. Based on the results of a first survey of UEZ tenants, we present evidence on the degree of collaboration between UEZ businesses and universities and between UEZ businesses and local authorities. Evidence is presented on business performance although at this interim stage, less than 12 months after the centres became fully operational; the majority of client businesses are still very much in the situation they were in upon joining the UEZ initiative. It is similarly too early to identify any substantive effects in the local economy; these wider effects will accumulate over time and are only likely to begin to be measurable 3-5 years hence.

Chapter 6 reflects on the overall role of the UEZ model in the UK research and innovation landscape and presents an overview of some of the success factors identified at this UEZ pilot stage.

2 Main findings

2.1 The Interim process evaluation

2.1.1 Introduction

The interim process evaluation set out to understand how well the UEZ pilot had been implemented and what factors had affected its delivery. The study team drew on most aspects of the evaluation to answer these two overarching questions, including our: desk research, stakeholder interviews, site-visits and UEZ client survey.

2.1.2 Implementation of the UEZ pilot

The pilot has been implemented broadly in line with expectations, each of the UEZs being operational within 3 years, and securing all the co-financing anticipated. DHEZ did however, lose its core sponsor, BT, which switched its investment to the University of Leeds.

The facilities provided by the UEZs (e.g. office space, lab space, and business support services) have largely mirrored those appearing in their proposals. The UEZs are also delivering the mix of innovation support functions described in their proposals be that the provision of specialist health facilities at DHEZ, or the co-location with robotics facilities. The UEZs are also delivering on their commitment to work with a cross-section of would-be -entrepreneurs, start-ups and existing smaller businesses.

To fit the pilot's timetable, all the UEZs had ambitious construction timescales in their proposals. In the main, the UEZs were not able to adhere to the planned timescales, with some UEZ buildings even opening six months later than planned. The delay in opening has had some a knock-on effect for all UEZs, leading to a short term delay in the delivery of planned outputs. However, UEZ management remain positive about future occupancy rate, as shown below.

Table 1 Summary of progress made against UEZ business plans

UEZ	Progress against UEZ business plans
Future Space	As of November 2017: • Ahead of business plan with revenue and occupancy levels being 100% of their business plan • Occupancy levels of 70%, expected to rise to 85% within six months (in line with the average occupancy rate of a typical incubator)
Ingenuity Centre	As of March 2017: • Occupancy rate of 67 • On track with rental receipts
Sensor City	As of November 2017: • Occupancy rate of 25% - this is in line with initial target of 10% but behind revised target of 50% • Running at a slower pace than other UEZs because they started their client base from scratch
DHEZ	As of March 2017: • 48% of space let (excluding that occupied by the Digital Catapult Centre) • DHEZ remain hopeful that unused space will be filled in coming years

Source: Technopolis analysis

2.1.3 Factors affecting the implementation

We identified several factors that helped the UEZs with the implementation of their individual centres, perhaps most notably the creation of the UEZ network.

Regular meetings between individual UEZ managers allowed them to discuss different ways of solving implementation challenges, both on a bilateral and multilateral basis. The meetings – and the network – also helped lessen the feelings of isolation for several of the UEZ managers and provided a welcome fast-track introduction for new joiners. Some attendees also spoke about the events could be inspiring, revealing early success stories, and also providing direct experience of the new facilities and signature architecture.

Staffing challenges

UEZs had to cope with churn and were often short staffed at key times. This was most challenging for those UEZs where there was less experience of this kind of support for innovation and entrepreneurship: in simple terms, DHEZ and Sensor City have had a tougher time than Future Space and the Ingenuity Centre. This differential experience underlines the importance of the UEZ concept – and BEIS financial support – in supporting the many places outside the country's major innovation hotspots, where less well-developed innovation and university ecosystem my lead to less business support capacity. The Ingenuity Centre found a way forward by letting out a substantial part of its new building (c. 30% of the total space available) to a pre-existing university group (Haydn Green Institute) with an established innovation and entrepreneurship 'business' that wanted to take advantage of the larger, better designed, and better serviced building

In other instances, local labour markets were unable to provide the highly specialist technical and business support expertise required to make a success of such ventures. The use of external contractors such as Oxford Innovation in the case of Future Space, has helped address these skills shortages though it was reported to be an ongoing problem for DHEZ and Sensor City. We expect this to be a challenge for any UEZ, as it has been historically for university technology transfer offices and incubators.

On average, an incubator has 2.3 management staff and the average percentage of an incubator mangers' time is spent on advising clients is 39%[1]. These figures show that UEZ management has been under-staffed during this launching phase, in particular management at the Ingenuity centre and Sensor City, where FTE staff rates are comparatively low (around 1.8 FTE).

Table 2 Overview of tenants and FTE staff at the UEZ

	Future Space	Ingenuity Centre	Sensor City	DHEZ
Tenants on site	30	26	7	26
Virtual tenants	0	24	0	0
Total tenants	30	50	7	26
FTE management staff	5	1.8	1.8	3
Ratio of FTE staff to total tenants	1:6	1:28	1:4	1:9

Source: Technopolis. Data for DHEZ collected in February 2018. All other data collected in November 2017

A greater proportion of the management time at the UEZs' should be invested in creating the University-Business linkages than at a typical incubator. Based on the number of tenants at the end of 2018, the ratio of FTE staff to total tenants ranges from 1:4 at Sensor City to 1:28 at the Ingenuity Centre. The benchmark ratio of incubator staff to tenants at an incubator is 1:10 -1:20[2].

The challenge of competing and/or alternative provision

[1] EC (2020) Benchmarking of business incubators

[2] EC (2020) Benchmarking of business incubators

The UK incubator landscape is heavily concentrated on London, the golden triangle and two or three other major city conurbations (e.g. Edinburgh).The UEZ operate in a crowded landscape, and would-be-entrepreneurs and tech start-ups have plenty of choices. In the four UEZ cities, there were pre-existing innovation centres and facilities,. However, by developing a relationship with the universities in the region, the UEZs provide a somewhat different service as compared with a conventional incubator or property-focused science park. The UEZs have intentionally been built in places where there is a weaker innovation ecosystem (or a weakness in the current innovation system) and a small pool of resident innovators; part of their mission is to grow the pool bottom-up and this will take time. Moreover, as the UEZs develop their pipeline we expect there will be a steady flow of start-ups that take-up residence in other local facilities with a possibly that some of the most promising will quickly migrate to London and other long-established innovation hotspots.

Funding challenges

While each UEZ has benefited from a very substantial investment, a substantial part of the funds has gone into the creation of the building and its facilities. The UEZs are struggling to find funds for the recurrent costs (e.g. staff) and while the host universities have all helped in various ways, institutional finances are closely managed and every one of the centre directors has had to continually battle short-term budgetary pressures.

UNIP management at the Ingenuity Centre and Oxford Innovation at Future Space are broadly on track to run operations at a financially sustainably level, with options to reinvest any profits made.

The demand for incubation space is much lower in Bradford and Liverpool (where space is generally available but high quality space less so) as compared with Cambridge or even Bristol, and the UEZs are struggling to achieve prices high enough to cover the running costs of the building (much less the full cost associated with the upfront capital investment or the annual depreciation that will be written down in the university balance sheet). The economics are made more challenging by the fact that a substantial proportion of the buildings are given over to spaces for informal interaction and public events. These types of spaces are critical to the success of the UEZ concept and should help recover some or all of the substantial the public investment through wider social impacts in the longer term; in the short term they increase costs and reduce income.

DHEZ also faced a notable additional challenge, losing its anchor tenant BT to Leeds at a critical time. It managed to secure £1m in-kind contribution from BT and strengthen its network by collaborating with the Bradford Districts Clinical Commissioning Group (CCG) and the Digital Catapult Centre Yorkshire. Moreover, Bradford City took a position as a minority shareholder in DHEZ Ltd. Sensor City also sought funding assistance, engaging with LCR4.0, a LEP-led, ERDF-supported programme to support SMEs working on 'Industry 4.0' technologies, which was contributing to strengthen its client basis.

While it is early days for these UEZs, the evident financial challenges do suggest the model is going to struggle to become self-financing outside of the country's larger city regions. Even then it is likely to continue to require some level of external support (e.g. through a grant to cover most of the cost of the physical facilities).

2.2 The Interim outcome evaluation

2.2.1 Introduction

The outcome evaluation set out to understand if the UEZs have led to an increase in university-business engagement, an increase in cooperation between universities and LEP, and if this has led to better business performance. The study team drew on our stakeholder interviews, site-visits and UEZ client survey to answer these questions. The UEZ client survey was particularly helpful however, survey response rate was low (ranging from 10% at the Ingenuity Centre to 37% at Sensor City) and the UEZ are still building their tenant base.

2.2.2 *University-business engagement*

Our UEZ business surveys suggest that between 13% (DHEZ) and 57% (Future Space and Sensor City) of the tenants are cooperating with research groups at the host universities. Rather than working with several university research groups, in practice, the nature of UEZ business's engagement is multifarious. Many are from the university, and come to the UEZ to commercialise their academic work. Others come from outside, and benefit from the general environment and informal interactions The UEZ is an attractor of many constituencies, which should strengthen the whole institution's business engagement over time.

Our interviews and surveys suggest cooperation with the university has been important for the UEZ management team. The host universities are promoting the UEZs and providing a variety of different kinds of financial and ad hoc support. They also confirm that each of the UEZs is facilitating a wide range of university business interactions, albeit the numbers of tenants and users doing so remains low in absolute terms.

Currently, the vast majority of UEZ statistics are only a small fraction of the equivalent statistics being reported by the host institutions in their annual HEBCI return, and so at this stage in the life of the UEZs one would have to conclude that have not had any substantial increase one the overall volume of university-business engagement[3].

There is more opportunity for change in Universities where the baseline figures for University-Business engagement are relatively low - see also Appendix G. For example, UEZ tenants at Sensor City interaction' with Liverpool John Moores University can potentially lead to a doubling in the number of consultancy contracts with SMEs by next year.

Table 3 Consultancy contracts by UEZ host HEI, baseline for 2015/16

	Future Space (UWE)	**Ingenuity Centre (UNIP)**	**Sensor City (LJMU)**	**Sensor City (UoL)**	**DHEZ (Bradford)**
Total number of consultancy contracts	662	685	56	17251	153
Consultancy number with SMEs	376	191	6	16652	38
Total income from consultancy (£000s)	£933	£5,394	£382	£12,243	£322
Total income from consultancy with SMEs (£000s)	£134	£1,369	£21	£10,476	£100

Source: HEBCI, 2015/16

The UEZs are still very much in their early phase, and numbers of entrepreneurs and businesses is building steadily. The distinct nature of the UEZ offer should help to expand the size of the pool of entrepreneurs locally and there is potential for a substantial increase of entrepreneurs active in specific sectors (i.e. sensor technology in Liverpool and digital health in Bradford).

There is a measurement challenge here as the centres may cause a change in behaviour through their work and their advocacy. Eventually, the new businesses and innovations will locate somewhere other than with the UEZ. This is still a positive result for the region – and for the UEZ programme – but where this kind of effect does occur, it will be challenging to identify and credit to the UEZs in question. One possible solution to this measurement challenge would be to annually check the company registration number of each beneficiary and using Companies House data, determine the postcode of the beneficiary's registered address. This will help track movement not only within UEZ city areas, but outside them too

[3] By September 2018, all of the UEZ will have been operational for at least a full year and there is scope to see if the UEZ have enabled scaling up university-business engagement using data from the Universities' contribution to HEBCI 2017/18 with reference to the baseline statistics presented in Appendix G.

Academics and recent graduates are taking-up space at some of the UEZ facilities. DHEZ is in part a teaching facility and the Ingenuity Lab, hosted within the Ingenuity Centre, is working with graduate entrepreneurs.

The survey results suggest that between 13% (DHEZ) and 43% (Sensor City) of the UEZ tenants graduated from or are enrolled at one of the partner universities, and, thereby, their tenants are intimately acquainted with its wider research facilities and academic groups.

2.2.3 Cooperation between universities and LEPs

Only at Future Space has the LEP provided part of the co-financing of the UEZ, giving the LEP a more direct involvement than seen in the other UEZs. The Liverpool City Region Local Enterprise Partnership (LEP) played an early role in positioning and endorsing the UEZ bid, and in coordinating the universities.

All of the UEZ have had some engagement with the LEP although this relationship is, post-construction phase, somewhat arms-length and will remain so. The UEZ directors are content with this arrangement and appreciate their ability to look to the UEZ for strategic advice on for example possible new partners or even new funding opportunities for place-based innovation. Since the UEZs have become operational, the relationship between the universities and local governments has focussed on supporting local growth.

The UEZs are flagship initiatives and are recognised as key assets to the area's innovation ecosystem by the LEPs. The LEPs use the UEZ as a basis to promote the area. For example, the LEP and other city region partners around Liverpool often use Sensor City for events, and often include it in tours for visiting officials (e.g. the Department for International Trade). The LEP also champions Sensor City in other channels, for example in bringing conferences and events into the city region.

2.2.4 Business performance

The average FTE employment at the UEZ ranges substantially from 2 to 22, as a result of SMEs working with start-ups and with more established business.

It is early days to see any effect on the performance of UEZ tenants. There is some evidence which suggests that the UEZs work with companies that are experiencing either rapid growth in terms of employment (e.g. the case for some of the service oriented companies) or in sales volume and that the UEZ is positively contributing to this growth.

A majority of tenants replied to the survey saying the UEZ was having a positive impact on their business activities more generally and benefits include university-business knowledge sharing. A small minority reported a positive impact on sales and employment, and several survey respondents expect it to do so in the near future. We need to be cautious to draw conclusions here on the overall impact of the UEZ, as the number of responses is small, and we would expect there to be some degree of response bias.

The wider effects of the UEZ events (e.g. attracting students from the university, occupants of adjacent buildings, or enhancing the reputation of a university) suggests the UEZ are adding value, but these benefits are more difficult to capture and or directly attribute to the UEZ. Our surveys and interviews suggest that narrower inputs given to drop in users or external visitors are most likely to influence thinking about entrepreneurship (starting one's own company) or business development, and while they may fatten the pipeline of people looking to come in to the centre, it is unlikely there will be much direct commercial benefit.

3 Background to the UEZs

3.1 University Enterprise Zones (UEZ) pilot initiative

The University Enterprise Zones (UEZ) pilot was launched in 2014 to enhance relationships between Local Enterprise Partnerships (LEPs) and universities and thereby stimulate enhanced university-business engagement and local growth.

The UEZs are expected to place particular emphasis on connecting local technology start-ups with the wide range of research and innovation activities within the host universities, providing a broader and more differentiated offer to client firms as compared with traditional incubators or science parks.

The pilot has funded four UEZs in this first phase, which are:

- **Future Space**, located on the Frenchay Campus of the University of the West of England (UWE) in Bristol
- The **Ingenuity Centre**, located on the University of Nottingham Innovation Park
- **Sensor City**, located in the City of Liverpool within walking distance of both Liverpool John Moores University and the University of Liverpool
- The **Bradford Digital Health Enterprise Zone** (DHEZ), which has sites on the University of Bradford's main campus and another in the city centre (Bradford's business district)

The four UEZs opened to clients in 2016 and 2017 (the last building was opened in summer 2017) and all four now have on-site tenants and are providing support to a wider network of businesses and entrepreneurs across their local industrial ecosystems.

The level of occupancy and demand for occupancy does differ across the UEZs, which reflects differences in the timing of the opening of each UEZ. This also reflects underlying differences in the dynamism of the local innovation ecosystems and, for example, the average number of business births per 1,000 population is below the UK average in Nottingham, Liverpool, and Bradford but it is above the UK average in Bristol.

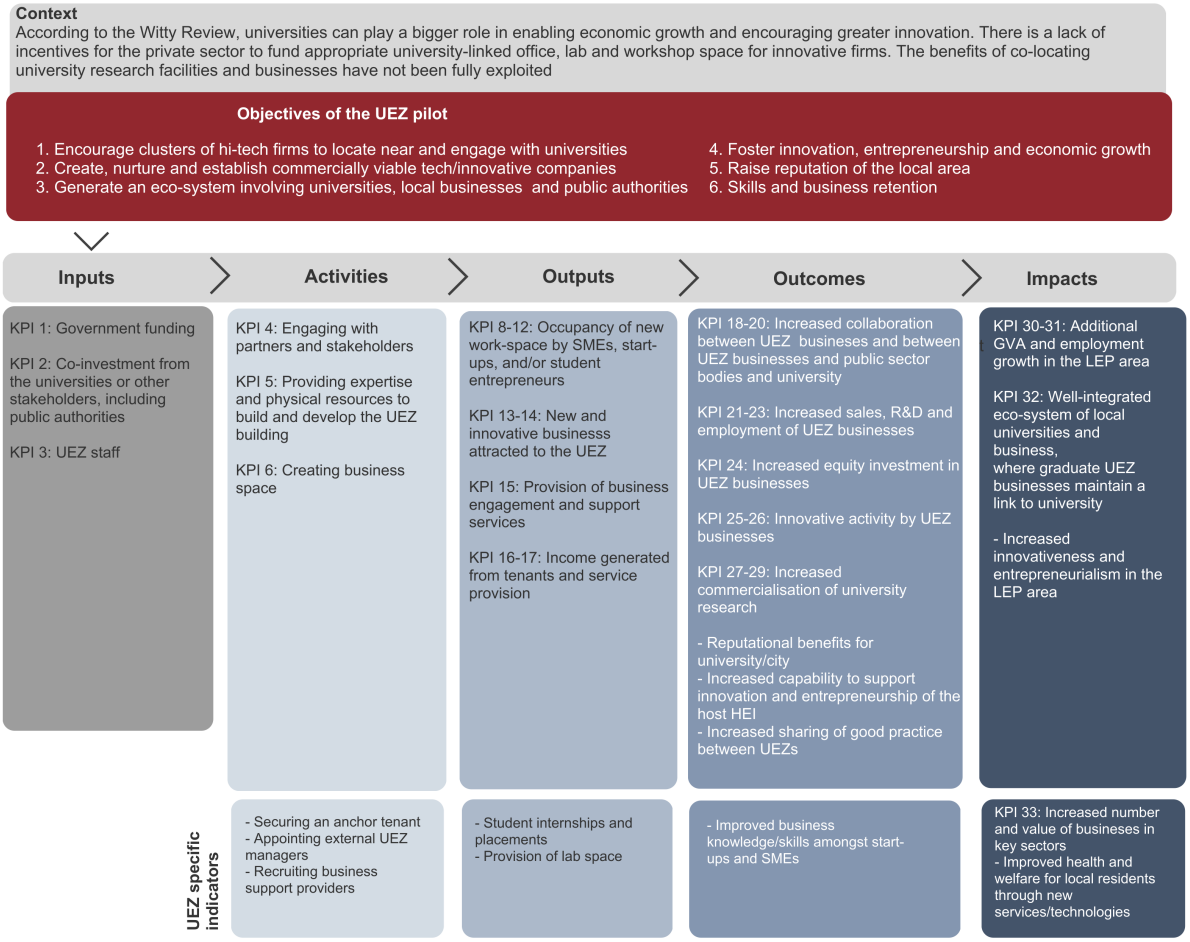
3.2 Overview of the overarching UEZ logic model

Figure 1 presents the agreed logic model for the UEZ pilot, which is based on an original scheme devised as part of the Outline Evaluation Plan (March 2015) and refined as part of the interim evaluation following further discussion with each of the four UEZs and BEIS.

The logic model is the centrepiece of the UEZ evaluation framework, inasmuch as it connects the overarching objectives of the UEZ pilot – to create additional local economic output through increased engagement between universities and their local industrial ecosystems – with the specific activities required to deliver that objective. The logic model sets out the logical sequence and causal relationships among the UEZ programme rationale, aims and objectives; the inputs used and activities undertaken; the results (i.e. outputs); and the outcomes and impacts that are expected to be realised. The scheme is split between a large body of core elements applicable to all UEZs and a small group of more specific elements that are relevant to a subset of 2 UEZs.

Figure 1 also tags each of the core elements as a Key Performance Indicator (KPI), which together capture the principal inputs, activities, outputs, outcomes and impacts. There is a fuller elaboration of the logic model and its individual KPIs in Appendix B.

Figure 1 Revised UEZ pilot logic model



Source: Technopolis

3.2.1 The UEZ finances

The UEZ pilot has facilitated a substantial investment of around £40m in the creation of additional, state-of-the art business incubation and development facilities in the four local areas that benefited from the initial public grants. Table 4 presents an overview of the basic characteristics of each UEZ.

Table 4 Overview of UEZ characteristics

	Future Space	**Ingenuity Centre**	**Sensor City**	**DHEZ**
Project type	Refurbishment, campus renovation	New-build, campus renovation	New-build, local regeneration	Refurbishment, campus and local regeneration
University	University of the West of England	University of Nottingham	Liverpool John Moores University University of Liverpool	University of Bradford
Other co-funding partner(s)	Host university LEP	Host university	Host universities ERDF Microsoft	Host university City of Bradford BT
Engagement with LEP	Arms-length, strategic cooperation	Arms-length, strategic cooperation	Arms-length, strategic cooperation	Arms-length, strategic cooperation

	Future Space	Ingenuity Centre	Sensor City	DHEZ
Sector focus	Deep-tech (not selective)	*(None)*	Sensor technology (gateway criterion)	Communications-enabled healthcare (gateway criterion)
External provider	Oxford Innovation	UNIP Management Limited	No (in-house	DHEZ Limited
Anchor tenant	None	Haydn Green Charitable Trust / Ingenuity lab	None	None
Lab space	Yes	No	Yes	Yes

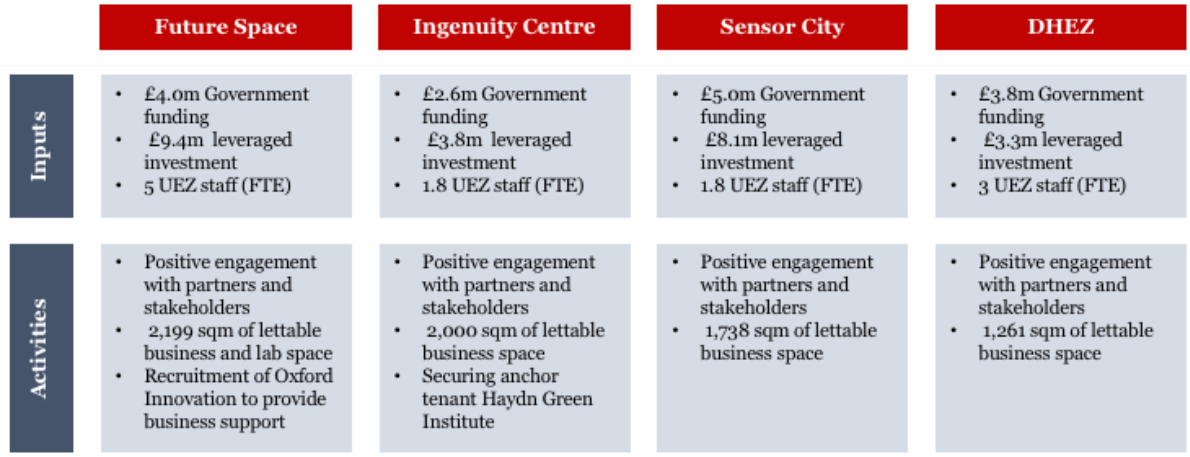
Source: Technopolis, data collected November 2017

The £40m investment is split between the £15m (38%) capital investment from BEIS and around £25m (62%) in co-funding secured by the four UEZs. The total level of investment is higher than that for a typical incubator.

Figure 2 shows the BEIS investment for each of the four UEZs: £4.0m to Future Space, £2.6m to the Ingenuity Centre (UNIP), £5.0m to Sensor City, and £3.8m to DHEZ. The UEZs secured co-funding from several different sources, including: the host universities' own funds or assets (all UEZs), LEPs and local authorities (Future Space and DHEZ), private investors (Sensor City and DHEZ) and European structural funds (Sensor City), see also Table 4 for an overview of the UEZ characteristics. The UEZs raised between £3.3m (DHEZ) and £9.4m (Future Space) in co-funding.[4]

The individual projects range in size (BEIS and co-funding) from around £13.4m for Future Space through to around £6.4m for the Ingenuity Centre. The share of co-funding within the total budget also varies across the four, from a high of around 70% for Future Space through to 46% for DHEZ.

Figure 2 Inputs and activities of the UEZ



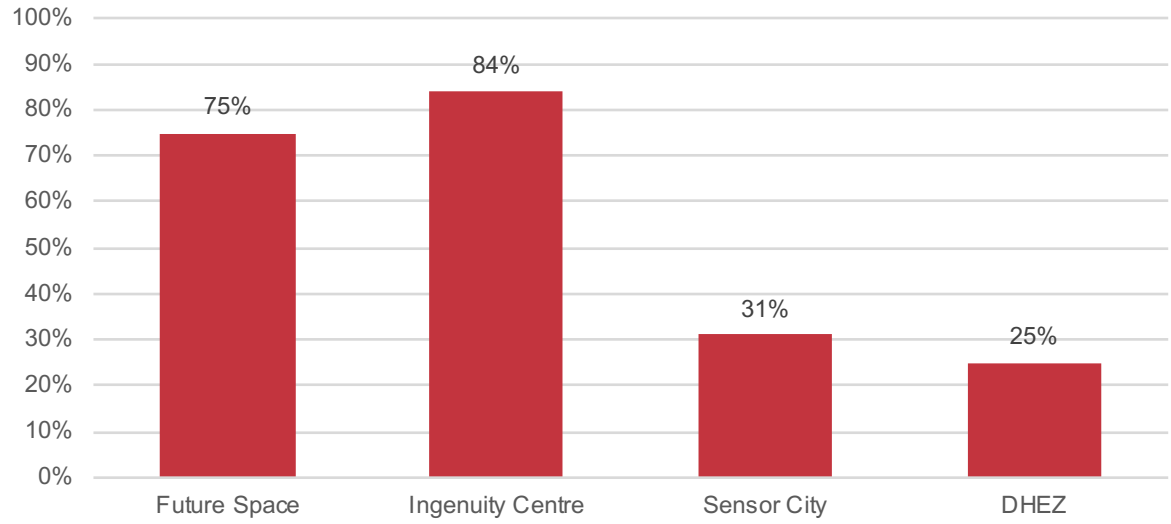
Source: Technopolis. Data for DHEZ collected in February 2018. All other data collected in November 2017

[4] For Future Space, this co-funding is exclusive of revenue funding and for the three other UEZs, total co-funding is inclusive of revenue funding. UNIP, Sensor City and DHEZ each provided about £0.7m of revenue funding, although for Sensor City this excludes additional revenue funding from the universities to support the management team. Revenue funding was mostly allocated towards the salaries of the core team in the start-up phase of the initiative and also covered some other smaller operational costs, e.g. equipment, marketing, communication and event costs.

Each of the four UEZs has succeeded in delivering ambitious new-build projects or major refurbishments, creating a substantial amount of new lettable floor space (between 1,261 sqm and 2,199 sqm) as well as additional space for group meetings and events and more informal social interaction. The timing of the launch of the UEZs and initial up-take of tenants is as follows:

- Future Space opened in August 2016, about 6 months later than its original planned opening. It has 2,199 sqm of lettable business space and by March 2017 40% of its lettable space was occupied
- The Ingenuity Centre opened in October 2016 (about eight months past its original scheduled opening date). The Ingenuity Centre has about 2,000 sqm of lettable space; by March 2017 it was 67% occupied, with the remaining 33% leased by the Ingenuity Lab
- Sensor City opened in June 2017 and was only one or two months behind its original planned schedule. Sensor City has 1,738 sqm of lettable business space. By the end of 2017, it had recruited its first on-site tenants and was building a pipeline of on-site tenants
- The Digital Health Enterprise Zone (DHEZ) opened its first innovation space, Digital Exchange, to businesses in April 2016 and was preparing to open its second innovation space, the Phoenix Building, on the University of Bradford's City Campus at the end of 2017, which is about a year behind the original planned delivery date. The Digital Exchange offers 1,261 sqm of lettable business space, which was 48% occupied by March 2017 (12 months after its inauguration). It is managed by DHEZ Limited, a private company wholly-owned by the University of Bradford

Figure 3 Occupancy rates



Source: BEIS monitoring report, July 2018

Table 5 presents an overview of the four UEZs' tenants and other users, as at December 2017. It shows the facilities had 20-30 in house tenants, with the exception of Sensor City, which opened somewhat later than the other three. Future Space reported working with 30 on-site tenants, the Ingenuity Centre reported 24 on-site tenants and an additional 22 virtual tenants, Sensor City reported 7 on-site tenants, and DHEZ reported 26 on-site tenants. The tenant pipeline is reasonable in three of the four UEZs and somewhat 'overflowing' for Future Space.

The Ingenuity Centre and DHEZ are also recording data on their so-called 'drop-in users,' which is an important additional constituency of would-be entrepreneurs and new businesses. The ingenuity Centre has engaged with 189 members (predominantly student entrepreneurs) of the Ingenuity Lab (its anchor tenant) and another 60 businesses including tenants from adjacent buildings elsewhere on the University of Nottingham Innovation Park (UNIP). DHEZ reported that another 42 'drop-in users', businesses in the main, were either working closely with the UEZ or were benefiting from its facilities.

Table 5 Number of tenants, drop-in users and tenant pipeline

	Future Space	Ingenuity Centre	Sensor City	DHEZ
Tenants on site	30	26	7	26
Virtual tenants	0	24	0	0
Total tenants	30	50	7	26
Drop in-users	0	249	23	42
Total users	30	299	30	68
Tenants / all users	100%	17%	23%	38%
Tenant pipeline	92	22	6	20
Tenant pipeline / tenants	307%	85%	86%	77%

Source: Technopolis. Data for DHEZ collected in February 2018. All other data collected in November 2017

Table 6 presents an overview of the number of events convened by each of the UEZs. They have each run multiple events addressing the needs of either prospective entrepreneurs or existing start-ups. All of the UEZ have organised a launch event. Other types of event organised include networking events, pitching events, and workshops organised around a specific thematic area.

By the end of 2017, all of the UEZs had hosted 20 or more events (around 3 a month). The events are well attended, and attract 30-40 people on average, with a combined total of 5,089 delegates. This figure slightly overstates the extent of the UEZs' outreach activities, as a proportion of these individuals had attended multiple events.

Table 6 Events convened by UEZs

	Future Space	Ingenuity Centre	Sensor City	DHEZ	Totals
Opening date	Aug-16	Oct-16	Jun-17	Apr-16	-
Number of months open	16	14	6	20	56
Number of events	37	61	20	45	163
Events / month	2.3	4.4	3.3	2.3	2.9
Number of attendees	1,300	1,756	798	1,235	5,089
Average attendance	35	29	40	27	31

Source: Technopolis. Data for DHEZ collected in February 2018. All other data collected in November 2017

The UEZs are working towards becoming financially sustainable. In the last 12 months since reporting, Future space recorded just over £300k in income from tenants and other drop-in users, see Table 7 . The Ingenuity Centre reported £140k in income. Sensor City reported £8k in income from UEZ tenant businesses and £2.5k in income from facilities and equipment-related services, which reflects about six months of income since opening. DHEZ reported just over £100k in income, with a roughly equal income from tenants and drop-in users.

Table 7 Income from UEZ businesses, past 12 months

UEZ	Income from UEZ tenant businesses	Income from facilities and equipment related services to UEZ businesses	Total income
Future Space	£309,236	£0	£309,236
Ingenuity Centre	£140,438	£0	£140,438
Sensor City	£8,136	£2,455	£10,591
DHEZ	£49,726	£53,352	£103,078

Source: Technopolis. Data for DHEZ collected in February 2018. All other data collected in November 2017

3.3 Services used

Our survey of UEZ businesses helps indicate the types of UEZ services that businesses have used. As shown in Table 8, the base numbers are low, reflecting the fact that the study was undertaken in a relatively early phase of UEZ delivery when the centres did not have especially large numbers of tenants or users. Response rates were also slightly disappointing considering the close engagement of UEZ management with the businesses. Some UEZ managers suggested that tenants (and others) had already completed similar surveys as part of monitoring requirements for the UEZ/university and other (e.g. European funding) reporting requirements. This may have led to survey fatigue and therefore poor response rates, and this may have affected the quality of responses.

In some cases, however, survey respondents account for nearly half of total UEZ users (Sensor City) but in other cases they account for only 10% (Ingenuity Centre). As such, the following analysis should be considered as being illustrative of how the UEZs are being used rather than being completely representative.

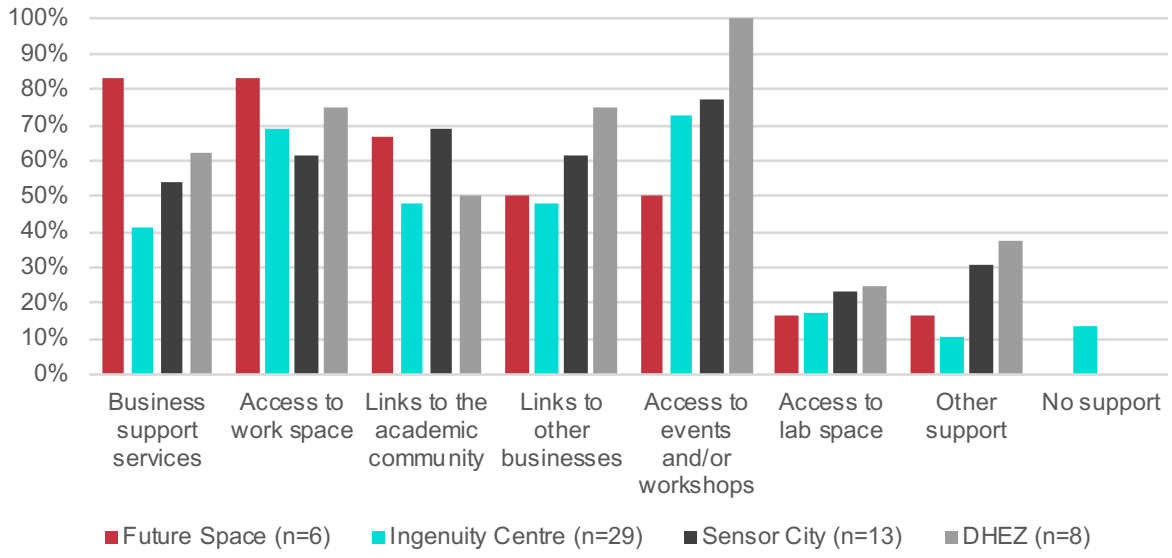
Table 8 Comparison of survey respondents to total UEZ users

	Future Space	Ingenuity Centre	Sensor City	DHEZ
Total UEZ users	30	299	30	68
Total survey respondents	7	31	14	8
Respondents as share of users	23%	10%	47%	12%

Source: Technopolis. Data for DHEZ collected in February 2018. All other data collected in November 2017

Figure 4 presents the results from our survey of UEZ businesses about the types of support services they make use of, ranging from business support services (41%-83%), to access to work spaces (62%-83%), to links to the academic community (48%-67%), to links to other businesses (48%-75%), to access to events and/or workshops (50%-100%), access to lab space (17%-23%) and to other support not elsewhere specified (10%-38%). 14% of respondents at the Ingenuity Centre reported not benefitting from any support. The results show a degree of variability in the range of services in use across each UEZ, with the DHEZ at Bradford for example, doing proportionately more than the other UEZs in respect to events and links to other businesses, while Future Space is doing more in the 'business support' and 'access to work space' service domains.

Figure 4 Percentage of UEZ businesses receiving support



Source: Technopolis survey of UEZ businesses

Table 9 UEZ-business collaborations

		Base number (n)	Yes	No, but we will in the near future	No
% collaborate with other businesses that are using UEZ services/facilities	Future Space	7	29%	14%	57%
	Ingenuity Centre	30	34%	24%	41%
	Sensor City	14	7%	43%	50%
	DHEZ	8	50%	0%	50%
% collaborate with any non-university public sector bodies (e.g. local council, NHS)	Future Space	7	14%	0%	86%
	Ingenuity Centre	30	37%	17%	47%
	Sensor City	14	43%	14%	43%
	DHEZ	8	88%	0%	13%
% made use of any university research facilities or other university research	Future Space	7	57%	0%	43%
	Ingenuity Centre	30	30%	20%	50%
	Sensor City	14	57%	29%	14%
	DHEZ	8	13%	25%	63%

Source: Technopolis survey of UEZ businesses Note: UEZ with highest positive values are shaded in blue, UEZ with highest negative values are shaded in red

The survey results suggest that a proportion of all UEZ clients are involved in collaborative activities with one or more different types of partner: other UEZ clients; university research groups; or other public sector bodies (e.g. LEPs). The extent of collaboration varies widely across the UEZs, by type of partner, with for example, almost 90% of DHEZ respondents reporting collaborations with other public bodies (e.g. the Bradford Teaching Hospitals) while just 14% of Future Space respondents are working with non-university public bodies. The situation is reversed when it comes to collaboration with the

host universities, with 57% of the Future Space and Sensor City respondents reporting links with university research groups, while just 13% of DHEZ tenants are working with the university.

Overall, the survey results suggest that overall, a slightly greater proportion of UEZ tenant businesses can be expected to collaborate with the host university as compared with other UEZ tenants or other public bodies, as shown below:

- At **Future Space**, businesses were most likely to collaborate through the use of university research facilities while some 43% of respondents recorded both formal and informal knowledge exchange projects with researchers and academics (see Table 10)
- At the **Ingenuity Centre**, the most likely form of collaboration was with non-university public sectors although levels of formal and informal engagement with researcher and academics were the lowest of all the UEZs (as per Table 10)
- In **Sensor City**, the most likely form of collaboration was through the use of university research facilities. However, as shown in Table 10, of all the UEZs, Sensor City had the largest share of businesses that did not plan to engage in knowledge exchange projects with researchers and academics
- At **DHEZ** also, respondent businesses were most likely to collaborate through usage of university research facilities while Table 10 confirms the high likelihood of businesses there to engage with researchers and academics (albeit that the base numbers are low). Indeed, one respondent indicated that engagement with the university had led to increased sales.

Table 10 Percentage of businesses reporting engagement in formal/informal research and knowledge exchange projects involving researchers/academics

	Future Space (n=7)	Ingenuity Centre (n=30)	Sensor City (n=6)	DHEZ (n=4)
Yes, formal and informal	43%	20%	46%	50%
Yes, formal only	14%	20%	8%	0%
Yes, informal only	29%	13%	8%	50%
No, but we will in the near future (formal and/or informal)	14%	13%	31%	0%

Source: Technopolis survey of UEZ businesses

A small majority of respondents reported that their UEZ's offer was broader than that on offer through a typical incubator, with, amongst other things, the provision of more support than is typical, the vibrant nature of the community (including the provision of flexible and mixed-use spaces) and better links to the university. Several respondents responded saying that their UEZ was no different to a typical incubator. Table 11 lists some of the key distinguishing features, by UEZ.

Table 11 UEZ: elements of differentiation as compared with a typical incubator

	Overview of responses
Future Space	• Location on-campus and number of links to the university
Ingenuity Centre	• Networking, academic engagement and the proximity to students • Programme of events and workshops that a good sense of community
Sensor City	• Supports for a different category of occupants to typical business space, including those focused on 'blue sky' developments • More support than is typical

	• Academic connections/interface • State of the art prototyping machines and specialist facilities • Community of help and interaction
DHEZ	• More thematically focused than a typical incubator • Links to the University • More support than is typical

Source: Technopolis survey of UEZ businesses

3.4 Overview of early benefits

Although the base numbers are low, survey responses provide evidence of at least some businesses seeing impacts from their affiliation with the UEZ. For each UEZ, at least 25% of respondents indicated some kind of impact in terms of increased university engagement as a result of their UEZ involvement. Table 13 also shows businesses seeing a range of benefits as a result of research and knowledge exchange projects at the UEZ, especially in terms of an accelerated knowledge in their field of business.

Table 12 Percentage of businesses reporting impact on UEZ business engagement with the university and use of university research and facilities

	Future Space (n=7)	**Ingenuity Centre (n=16)**	**Sensor City (n=14)**	**DHEZ (n=4)**
Significant impact	0%	17%	29%	25%
Some impact	86%	50%	43%	25%
No impact	14%	33%	29%	50%

Source: Technopolis survey of UEZ businesses

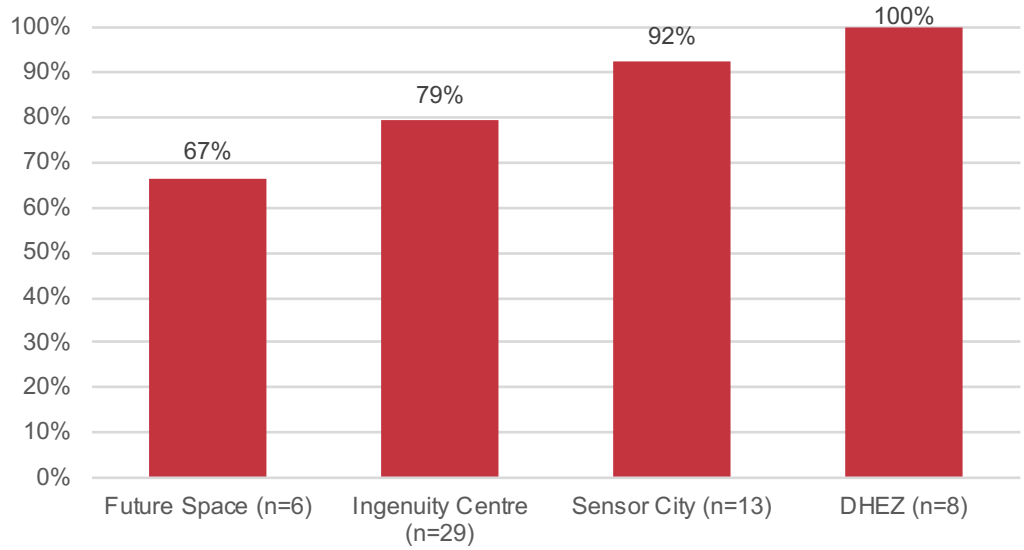
Table 13 Reported impact of research and knowledge exchange projects (formal or informal)

	Future Space (n=6)	**Ingenuity Centre (n=16)**	**Sensor City (n=8)**	**DHEZ (n=4)**
Launch of new product	17%	13%	63%	50%
Accelerated knowledge in field of business	67%	50%	50%	25%
Opened up new knowledge sharing opportunities	17%	56%	50%	25%
Increased sales	0%	19%	25%	25%
No effect	17%	6%	0%	0%
Other effects	17%	0%	25%	0%

Source: Technopolis survey of UEZ businesses

As shown in Figure 5, the vast majority of client businesses reported that the UEZ initiative has had a positive impact on their activities and performance. All of the respondents from DHEZ suggested their involvement with the UEZ had had a positive impact on them; between 67% and 92% of the respondents at the other UEZs also reported a positive impact. None of the respondents argued that the initiative had had a negative impact on activities/business.

Figure 5 Percentage of businesses reporting positive impact of the [UEZ] on activities/business



Source: Technopolis survey of UEZ businesses

4 Results of the process evaluation

4.1 Introduction

The next sections consider each UEZ in turn, examining in greater detail the various inputs and activities that each has used, the progress made to date against output indicators, and whether there are any factors hindering the translation of inputs to these outputs. It also considers the extent to which there are any overarching issues that are holding back all of the UEZs. Recommendations on the UEZ model are suggested by key stakeholders. The findings are based on a review of the UEZ bids, the UEZ annual monitoring reporting to BEIS, and a series of face-to face interviews with key stakeholders.

4.2 Future Space

4.2.1 Inputs, activities and delivery of the UEZ

In funding terms, BEIS has provided £4 million, the LEP has provided close to £2 million (and an additional £2.6 million for BRL), while UWE has given a further £7.5 million. BEIS and LEP inputs here are exclusively capital funding. In terms of non-capital inputs, there are currently 5 FTE staff at the UEZ, which include management staff, administrative staff, and business advisors.

UWE both hosts and manages the UEZ and is in many ways, the party most heavily involved in the UEZ. On a more operational level, UWE has appointed Oxford Innovation to oversee the day-to-day running of the UEZ, including client recruitment and general maintenance of the facility. The University of Bristol, the West of England LEP, and South Gloucestershire Council are also involved in the UEZ with their specific roles set out in more detail later in this chapter.

Future Space brings with it a range of physical resources including commercial workspace (both office and lab), meeting space, kitchenettes and printing facilities. More specialist equipment includes a tissue culture lab, a microbiology lab, and a general bioscience lab. These facilities are all available on flexible lease terms. Supplementing these are wider services such as networking events, workshops and the provision of on-site business support. Nevertheless, the UEZ sought to deliver something more than just an isolated building. The key aspect that the UEZ sells to potential clients is that being located there also means being part of a community of like-minded companies, and having real and exploitable links to UWE. Oxford Innovation sees its role as acting as a conduit between the academic and commercial communities, helping the two speak a common language and identifying ways that both can benefit one another.

4.2.2 Partners and level of engagement

Future Space has involved several strategic partners, including UWE and the University of Bristol. In terms of their direct involvement in the project, UWE is managing the UEZ and providing a substantial amount of financial support. The University of Bristol has not provided the UEZ with any funding but is a partner in BRL co-located with Future Space.

The West of England LEP also has had engagement with the UEZ, largely through providing capital funding for the project. With the building's completion and occupation, the LEP's direct involvement came to end. However, it continues to see the UEZ as a real asset to the area's innovation ecosystem and showcases the facility when trying to promote the area. It has directed some firms to Future Space and has also held important events such as Venturefest and Tech Spark there. South Gloucestershire Council also provides strategic direction and support to the UEZ, viewing it as an important economic development asset and a very important part of the local innovation ecosystem.

4.2.3 Overview of progress to date

Future Space opened in August 2016 and by March 2017, the percentage of business floor space occupied by tenants was 39.5%. Table 14 below shows the progress made by Future Space against some KPIs.

Table 14 Progress to date against output indicators - Bristol

Indicator	UEZ tenants on-site	Virtual Tenants	Drop-in users	Total
Number of UEZ businesses	30	0	0	**30**
Number of new start UEZ tenant businesses	30	0	-	**30**
Number of UEZ graduate tenants	0	0	-	**0**
Number of UEZ businesses from outside LEP area (UK)	10	0	0	**10**
Number of UEZ businesses from outside LEP area (international)	1	0	0	**1**
UEZ businesses on-site tenant pipeline				**92**
Total number of UEZ convened events				**37**
Total number of people attending UZ convened events				**1,300**
Number of UEZ businesses receiving business support	20	0	0	**20**
Income from UEZ tenant businesses				**£309,236**
Income from facilities and equipment related services to UEZ businesses				**£0**

Source: West of England UEZ monitoring form return, November 2017

As demonstrated in Table 14, the UEZ has achieved a number of different outputs since it started operating. A total of 51 businesses are registered with them, including new businesses, and firms based outside the LEP area. Future Space also has a healthy pipeline of tenants which in number is nearly double what they have currently. At this early stage, no tenants have yet graduated from the facility.

The data also show that individuals have made use of the wider services available at Future Space. Two-thirds of the on-site tenants have used business support available at the UEZ while the 37 events at the UEZ have, on average, been attended by 35 people.

From a financial perspective, Future Space has received close to £310,000 from tenants although they have not received any income from providing access to equipment and services.

According to UEZ management, the facility is ahead of its business plan with revenue and occupancy levels being 100% of their business plan. As of November 2017, Future Space was 70% full and the expectation was that occupancy would rise to 85% within six months. Nevertheless, management did also identify areas where the UEZ had not fared quite so well. The demand for shared labs has not been as high as anticipated with clients tending to prefer labs in Future Space which they can fit out to their own requirements. This option gives them greater privacy and provides greater security for their IP. The host desking space has not been as popular as envisaged either, with clients choosing instead to work and/or hold meeting in the Hub café space instead.

4.2.4 Barriers and success factors

All the consultees said that there were no real barriers or constraints to the ongoing success of Future Space, although they voiced what they said were minor issues around parking, and navigation and signage around the UWE campus. Some also added that the lack of grow-on space at Future Space might hamper some of its longer-term success, as would any relocation of BRL away from its current building.

Nevertheless, the consultees identified some very specific issues that contributed to Future Space's recent success – the absence of these features might prevent UEZs from working effectively in other contexts.

- **The central location:** the fact that the UEZ is centrally located within the UWE campus has helped to ensure greater footfall. It also means that the on-site businesses have access to the full range of services available on the campus. Future Space is located only a couple of minutes' walk from the Law Faculty and has enabled one UEZ tenant to gain easy access to law students to help draft contracts. Consultees acknowledged that not all universities would have available buildings or land located in such strategically advantageous parts of their institution
- **The presence of BRL:** established in 2004, BRL is one of the UK's leading academic centres for multi-disciplinary robotics research. Consultees acknowledged that being co-located with a centre of such reputation is a key reason behind clients' interest in Future Space, especially in the early stages of its existence. Indeed, some went so far as to say that Future Space would struggle to be successful in the absence of BRL. To that end, co-location or close proximity to existing research centres may be hugely important in getting the critical mass needed to make a UEZ successful.
- **Having external managing agents:** UWE staff spoke about the importance of having an external managing agent on board to operate the UEZ. They are more experienced at acquiring clients and working with businesses, and are also free from the bureaucratic processes that universities have to go through. The consultees all felt the optimal way of running a UEZ like theirs' was to outsource the operations, but recognised that political issues might prevent this in other institutions.
- **The presence of other innovation centres/incubators:** several consultees also suggested that part of Future Space's strength was its proximity to and links with other university-back innovation facilities such as the Bristol and Bath Science Park a few kilometres away and the SETsquared Bristol incubator in the city centre. A successful innovation ecosystem needs variation in commercial workspace provision so that all needs are taken care of. The fact that Bristol has this means that Future Space only has to take on clients that will benefit the most from the university-based location, and thereby ensure that the project's overall impact is maximised.

4.2.5 Timescales for delivery to date

According to the consultees, the West of England UEZ has not faced any problems with delivery timescales with Future Space being built on time, and having been operational since August 2016. Staff noted that it did take around six months to get the building and associated services up and running, meaning it took a little time for the UEZ to see any tangible impacts. Despite this, Future Space is ahead of its occupancy targets by around ten months, and has already seen some of its firms expand.

4.2.6 Funding and funding requirements

Consultees at the site visits raised few concerns about the funding conditions attached to the UEZ. They considered the requirement for match-funding to be fair, acknowledging that the government needed to try and minimise some of the pilot's potential risks.

There was a belief, however, that the project would benefit from some revenue funding, helping give it some more wriggle room. This is a particular issue as the LEP is only able to provide capital funding. ERDF can provide some revenue funding but there was some concern whether any replacement funding would be available post-Brexit.

Nevertheless, UWE staff do view the UEZ as being a long-term sustainable business model for themselves at least. Although the short-term costs have been high given the building of such a large and modern facility, they feel that the size is needed to generate the critical mass needed to attract clients to Future Space on a more long-term basis. With occupancy levels being on target, and the management outsourcing helping to manage some of the financial risk, there were few concerns about Future Space's long-term financial sustainability.

4.2.7 Recommendations

Building Management and service delivery

Several consultees during the site visit commented on the advantages of using an external body to manage and run Future Space. Contracting out Future Space's running has helped to:

- Lessen some of the cost risks associated with having to attract tenants and secure sufficient tenant income for UWE
- Oxford Innovation has an established brand in the West of England which can help attract potential clients to Future Space, especially those that might otherwise be deterred by a university branded institution.
- Others noted that private providers were much leaner organisations and were also free from some of bureaucracies associated with a university (e.g. typically challenges are related to hiring and procurement).

Knowledge sharing

Senior figures at Future Space have also welcomed the opportunity to attend meetings with the other UEZ leads. It has given them an opportunity to discuss problems they have faced and find ways of addressing them. Some consultees did note however, that although there was value in having the meetings, each of the pilot UEZs are so different to each other that there is only so much that they can learn from one another.

Other

The consultees commented on how there was nothing fundamental that the UEZ should have done differently in the set up or initial delivery phases of the project. One consultee felt that a potential improvement would have been to do some more initial marketing to help with client recruitment.

4.2.8 Summary

- The central location of Future Space has been critical, encouraging footfall and making it easier for tenants to meet with university staff and researchers
- Future Space has really benefited from using an external managing agent, helping broker relationships between university and the wider business community, and bringing a track record in operating similar centres

4.3 Ingenuity Centre

4.3.1 Inputs, activities and delivery of the UEZ

In funding terms, BEIS has provided £2.6 million which the University of Nottingham has matched in cash terms, both covering capital expenditure. In addition, the University has provided £0.5 million worth of land (which otherwise would have been released for more commercially lucrative uses), and £0.65 million to cover running and operational costs.

The Nottingham-based Haydn Green Charitable Trust has also provided an endowment worth £1.9 million. Interest from this endowment funds the salary of the Ingenuity Lab's manager, and was also used to underwrite the appointment of Robert Carroll as a Professor of Practice in Venture Capital and Private Equity at Nottingham Business School. Professor Carroll is using his links and contacts to help connect Nottingham-based start-ups to angel investors, as well as helping deliver the Business School's 'Growth 100' SME support programme.

In terms of non-capital inputs there are currently 1.75 FTE staff, comprising a receptionist, administrative manager, and the UNIP Operations Director.

More strategic level inputs have come from D2N2 LEP who provided their support to the bid. Since the UEZ became operational, its involvement has been more arm's length. Closer involvement has come from the Haydn Green Institute who has become an anchor tenant of the Ingenuity Centre. They have worked alongside UNIP to ensure that the provision at the Ingenuity Lab dovetails with what is provided elsewhere in the Centre. Indeed, UNIP staff said they saw the Haydn Green Institute more as a co-delivery partner than a tenant.

The Ingenuity Centre's delivery model has been a property focused one. They have adopted a property escalator model, enabling a business to start as a virtual tenant and when they grow, can then become a co-working space user. As growth continues, firms can then move to rent-a desk premises, can then progress to taking out offices, and eventually can move elsewhere on the innovation park or beyond. Even when 'graduating', it was thought the UEZ businesses would like to remain a virtual tenant to continue benefitting from the eco-system and services provided, but also to give back to the community.

Thus far, the UEZ has not provided any on-site business support services although it hopes to appoint an external body to provide this over the next 12-18 months. Nevertheless, UNIP has laid on a series of social and networking events to encourage greater interaction between individual businesses, and between businesses and the university. Events have included Friday coffee mornings, monthly business challenge breakfasts, quarterly digital downloads, a twice-yearly lunch for Managing Directors, and a variety of showcase events.

4.3.2 Partners and level of engagement

The University of Nottingham has the greatest involvement in the project, managing the UEZ and providing a substantial amount of financial support. The University of Nottingham-backed Haydn Green Institute is also a noteworthy contributor, acting as an anchor tenant for the Ingenuity Centre. The Institute has worked closely alongside UNIP Management Ltd to ensure that the Ingenuity Centre and wider UEZ services meets the needs of the start-up and SME community.

D2N2 LEP's involvement in the UEZ has been much more arms-length but do maintain a good relationship with the University. The LEP has also held events at the Ingenuity Centre, using it to host meetings and delegations.

4.3.3 Overview of progress to date

The Ingenuity Centre opened in October 2016 and, half a year later, by March 2017, the percentage of business floor space occupied by tenants was 67%, with 33% being occupied by the Ingenuity Lab.

The table below shows the progress made by UNIP against some KPIs. The UEZ has achieved a number of different outputs since it began operating. Sixty businesses are registered directly with them and once businesses operating through the Ingenuity Lab are considered, the UEZ supports close to 300 businesses. The Ingenuity Centre also has a healthy pipeline of tenants – roughly equal to the total number of businesses that it currently houses. Even at this early stage of delivery, UNIP has been able secure a handful of graduate tenants.

The data also show that individuals have made use of the wider services available. They suggest that all businesses either based at or linked to the Ingenuity Centre, have used UEZ-provided business support. The UEZ has also held 61 events which on average, have been attended by 29 people.

From a financial perspective, the UEZ has received over £140,000 income from tenants.

According to UNIP management, the facility is now roughly on track with its rental receipts, having faced some initial difficulties. Although the building was delivered on time, delivery was delayed by around six months which in turn put the budget behind by two months.

Table 15 Progress to date against output indicators – Ingenuity Centre

Indicator	UEZ tenants on-site	Virtual Tenants	Drop-in users	Total
Number of UEZ businesses	26	24	249	**299**
Number of new start UEZ tenant businesses	22	9	99	**130**
Number of UEZ graduate tenants	5	0	N/A	**5**
Number of UEZ businesses from outside LEP area (UK)	8	2	10	**20**
Number of UEZ businesses from outside LEP area (international)	6	3	4	**13**
UEZ businesses on-site tenant pipeline				**22**
Total number of UEZ convened events				**61**
Total number of people attending UZ convened events				**1,756**
Number of UEZ businesses receiving business support	26	24	249	**299**
Income from UEZ tenant businesses				**£140,438**
Income from facilities and equipment related services to UEZ businesses				**(included in income from UEZ tenant businesses)**

Source: Ingenuity Centre / UNIP UEZ monitoring form return, November 2017. *Note: Includes those associated with the Ingenuity Lab

4.3.4 Barriers and success factors

The consultees did not identify any real barriers or constraints that could jeopardise the future success of the Ingenuity Centre. One did raise some concern about Brexit potentially lessening some of the UEZ's potential impact given the risk of restricted movement of students and researchers, and the lack of access to ERDF funding that it will bring.

The consultees were clear there were some particularly specific elements that had contributed to the Ingenuity Centre's progress and noted that some of these might not be available to all universities:

- **Having a pre-existing business support model:** the consultees all claimed that part of Ingenuity Centre's success is that it already had a well-established business support model to draw on and which the Ingenuity Centre could contribute to. This meant that the University already had expertise and a track record it could draw on to secure clients and engagement from wider stakeholders. Essentially, they were only looking to extend a model that was already in place rather than developing something completely new. Other institutions could find it difficult implementing a UEZ without this background. Consultees cited the example of a university that had tried to build a business engagement centre in central Sheffield. This however, was not especially successful, in part because the institution had no prior experience in delivering anything similar.
- **The location:** consultees agreed that it was crucial for a UEZ to have a convenient location. Representatives from the Ingenuity Lab commented on the attractiveness to potential clients of being based close to the main university campus (providing access to expertise and resources) but nevertheless separate to it. The Lab's location also meant that it was surrounded by other innovation centres; part of a bigger innovation ecosystem. One consultee noted that an early iteration of the Ingenuity Lab was located on the Nottingham Science Park but was unsuccessful as there was no critical mass there. Such well-placed locations as the Jubilee Campus might not be available to other institutions.

- **The quality of the building:** The Ingenuity Centre's design has been an important feature. It is visually attractive and easily accessible, helping to generate interest in UNIP (high quality buildings and signature architecture has been a particular feature of the innovation park, with for example, the Sir Colin Campbell business innovation centre winning the East Midland's Building Design award in 2009). A university representative also described how the building helped contribute to the positive image of the university. Furthermore, for an ecosystem to develop from it, the UEZ needs a critical mass. A building the size of the Ingenuity Centre will help with this.
- **Delivery structure:** The Ingenuity Centre is run by UNIP Management Limited, a facilities management company that is wholly-owned by the University, which ensures the management team has good links to the University while also having the flexibility to deviate from some of the latter's more involved procurement and human resources processes. With the UEZ also being run as a commercial enterprise, UNIP is also able to charge market rates for using the facility. This option may not be available to all other institutions.
- **Availability of HEIF funding:** one of Nottingham's advantages is that it has in recent times secured Higher Education Innovation Funding (HEIF) that has helped fund some of the knowledge exchange activity taking place at the UEZ. Without this HEIF funding, UNIP might not have been as successful as it has been given the range of activity there might have been more restricted. However, other institutions may not have as much HEIF available to them, making it more difficult to maximise the impact of any future UEZs there.

The consultees were clear that although the model at the University of Nottingham has worked well, it would not be appropriate for all institutions – others would need to have similar contexts to that of Nottingham. Nonetheless, it was thought that another 50-60 Higher Education Institutions could in principle benefit from adopting a UEZ model.

One interviewee also added that a slightly different approach could have helped the Ingenuity Centre be even more successful. Considering how well the Ingenuity Lab's space has fared, one individual argued that in hindsight, they could have made the Ingenuity Centre building bigger so that it could accommodate more businesses, possibly even SMEs in addition to the start-ups it already serves.

4.3.5 Timescales for delivery to date

The consultees highlighted that there were some initial delays in the project with construction on the Ingenuity Centre starting two months late. This led to some initial slippages in the delivery schedule. Nevertheless, the general consensus was that UNIP has coped well with the delivery timescales to date: buildings were completed broadly on time and are now well used. Indeed, UNIP has been able to secure more Ingenuity Centre clients than they had originally expected at this stage.

4.3.6 Funding and funding requirements

Site visit consultees raised few concerns about the pilot's funding requirements. They considered the match-funding component to be a good idea in that it forced universities to properly engage with the project rather than simply focusing on securing the grant money. Others also spoke about the funding provided by BEIS being about right – had it been any lower, the project's viability would have been compromised.

There was some concern about whether the UEZ would remain on budget or not. One university representative commented that although the running costs of the UEZ could be met, the full costs associated with building and operating it might not be (which would typically be the case for capital investments of this volume into incubator /accelerator space). It was felt that the provision of revenue funding would help in this regard.

4.3.7 Recommendations

The consultees highlighted their belief that the University of Nottingham provided a good example of a UEZ model that worked well and given the right circumstances and context, could be replicated elsewhere. Indeed, one consultee commented on how the University's China campus would be

introducing something similar to the UEZ model. The real added value from the UEZ comes from creating a self-sustaining eco-system: an area which caters for firms at all stages of the business lifecycle, and which has a well-integrated community encompassing businesses, students and university researchers.

Two elements in particular are critical to developing this ecosystem: a convenient location, and a building whose design encourages collaboration and interaction between diverse individuals and businesses.

The consultees felt that there was nothing fundamental that they should have done differently over the course of the project. However, one potential improvement identified was to find a way of enabling companies from the different UEZs to meet and engage with one another. This would help to create links between the various individual eco-systems.

4.3.8 Summary

- Critical to the success of the Ingenuity Centre is being based in a convenient location, enabling easy interaction between business and the university community
- The building's design has been an enabler of success, being an attractive feature that people want to visit and spend time in
- UNIP's track record of operating business support has given them experience and knowledge to draw on to help deliver the UEZ

4.4 Sensor City

4.4.1 Inputs, activities and delivery of the UEZ

Inputs

In total, Sensor City has received £11.1m in funding: £5.0m from BEIS, £4.5m from ERDF and £1.6m from private and university co-investors. The vast majority of the funding is capital (85%), while 6% is allocated as revenue and 9% as in-kind. The original UEZ bid budgeted £15m for the UEZ project, though a smaller amount of ERDF was secured – £4m rather than the £7m targeted. It is hoped that funding applications will generate additional income.

The project has received additional revenue funding from the universities to support the management team, and a further (in-kind) contribution worth £2m over four years from Microsoft in the form of KIT, software and product licences for use by tenants. Total co-funding is about £8.1m. In terms of non-capital inputs, there are currently 1.8 FTE staff at Sensor City.

Activities and delivery of the UEZ

Discussion with stakeholders revealed that awareness raising has been a big part of activity in Sensor City to date. A database of 600 companies and 125 academics was built entirely from scratch (i.e. with no purchasing of contacts).

Stakeholders described how the focus of the delivery of the UEZ has shifted between awareness raising and other priorities. This was stated to have often followed fluctuations in the capacity of the delivery team, and with a shift from focusing on awareness raising and the build project. Now that the building is complete and formally launched, the team are working on driving engagement with their business database, and the surrounding community. A total of 120 people registered for a welcome event, though a maximum of 80 could attend due to space restrictions.

The management team also intend to facilitate access to the student base. No formal procedures are currently in place although it is hoped that links can be created between Sensor City and students taking the MSc in Entrepreneurship and Sensor Technology jointly run by the University of Liverpool and Liverpool John Moores University, and some of the two universities' PhD students. Despite the interest

in generating student-business connections there is limited scope for formal connections because the building and lab facilities are only accessible to students at commercial rates.

4.4.2 Partners and level of engagement

Sensor City is a joint venture between Liverpool John Moores University and the University of Liverpool, both acting as equal partners, the respective engineering departments being most closely involved. The two universities play a key role in the ongoing operation of the UEZ, and in the provision of expertise. For example, university personnel helped to establish the correct health and safety documents for Sensor City. Interviewees also suggested that it had been critical to mobilise both academic and broader university knowledge (e.g. building/estates) in the development and operationalisation of Sensor City. The quarterly board meetings are the main reporting channel for Sensor City's director, where the universities hold the UEZ to account for ERDF and BEIS objectives.

The UEZ's academic director (a member of University of Liverpool faculty) plays an active role in brokering relationships and promoting Sensor City from a technology point of view. Senior academics from the two universities run regular (monthly) 'clinics' at Sensor City that offer bookable time for businesses, helping create new links between the universities and business.

The Liverpool City Region Local Enterprise Partnership (LEP) played an early role in positioning and endorsing the UEZ bid, and in coordinating the universities. The LEP and other city region partners often use Sensor City for events, and often include it in tours for visiting officials (e.g. the Department for International Trade). The LEP also champions Sensor City in other channels, for example in bringing conferences and events into the city region. It was suggested that the LEP sees Sensor City as part of their asset base, and an opportunity to demonstrate the city region's capacity in this technology area. The LEP has used Sensor City as the leverage to attract key events such as the 'Manufacturing Live' conference (which took place in November) to the city.

Interviewees described relationships with other city regional structures, too. There is a productive relationship with LCR4.0, a LEP-led, ERDF-supported programme to support SMEs working on 'Industry 4.0' technologies,[5] and initial conversations with prominent figures in Liverpool's digital cluster, centred in the nearby Baltic Quarter of the city.

Overall, there was a sense among stakeholders that there has been an increase in relationships between the universities and with businesses and other stakeholders, as Sensor City has provided a robust business case to pursue such opportunities.

However, overall there were mixed views from interviewees about the universities' engagement. While some described the universities as 'like brothers', others argued that the relationship is still in a stage of trust creation and that the universities are occasionally in competition. One other contributor argued that there remains a lack of coordination among city region partners, which can result in Sensor City being 'left out'. It was suggested that connections between businesses and academics or students, encouraged by the affiliated academic staff, are sometimes also not registered by Sensor City staff.

4.4.3 Overview of progress to date

Sensor City became fully operational in June 2017, and held a launch event in November 2017. Table 15, below, shows the progress made by the Sensor City UEZ against a range of KPIs set in collaboration with BEIs.

Table 16 Progress to date against output indicators – Sensor City

Indicator	UEZ tenants on-site	Virtual Tenants	Drop-in users	Total
Number of UEZ businesses	7		23	**30**

[5] See: http://lcr4.uk/what-lcr4-0/

Indicator	UEZ tenants on-site	Virtual Tenants	Drop-in users	Total
Number of new start UEZ tenant businesses	10	0	N/A	**10**
Number of UEZ graduate tenants	0	0	N/A	**0**
Number of UEZ businesses from outside LEP area (UK)	2	0	0	**2**
Number of UEZ businesses from outside LEP area (international)	1	0	0	**1**
UEZ businesses on-site tenant pipeline				**6**
Total number of UEZ convened events				**20**
Total number of people attending UZ convened events				**798**
Number of UEZ businesses receiving business support	7	0	23	**30**
Income from UEZ tenant businesses				**£8,136**
Income from facilities and equipment related services to UEZ businesses				**£2,455**

Source: UEZ monitoring form return, November 2017

Sensor City has made progress in a number of areas since becoming operational. The UEZ is working with 30 companies, including seven tenants currently on-site. The forecast to the end of the calendar year is to achieve 50% of lettable space let to tenants. This was revised up from a target of 10% by end of the first year. The current progress represents approximately 25% of space let.

The UEZ currently has seven tenants on site. It also has an on-site tenant pipeline that is almost equal to its current portfolio, suggesting that tenancy could almost double.

Financially, Sensor City has generated a small amount of income – just over £10,000 – from tenants and the rental of facilities. Consultees suggested that Sensor City may not become financially sustainable through rentals alone[6], and so there would be a need to consider other revenue streams. Consideration is being given to a membership scheme, and large corporate companies are charged for engaging with Sensor City's SMEs.

4.4.4 Barriers and success factors

Barriers

Interviews suggested that the main challenges faced in the delivery of the Sensor City UEZ concerned staffing and recruitment. There have been difficulties in finding appropriate skilled staff, with the local labour market cited as a barrier. The goal was to have a delivery team of six or seven by March 2017, though as seen in Table 16, this has not been achieved.

There have been particular issues with hiring laboratory technicians, though a technician did start in post during the time of the field visit, the first week of November. Other posts remain to be filled, and there has been some degree of churn in the members of the delivery team.

Other recruitment challenges, such as finding expertise to deal with the build project, and establishing working and operating procedures were addressed via mobilising university expertise.

[6] In this context, a UEZ is financially sustainable when tenant income and other income matches or is greater than operating costs.

One interviewee suggested that the staffing of Sensor City could have been reconsidered. The current delivery team was described as excellent for generating and delivering valuable activity, but that there is a gap in addressing the 'start-up' stage of the UEZ. Particularly, one respondent stated that there is a specific skillset required around building trust, and navigating the issues that come with the bottom-up way in which universities engage. It was suggested that one potential issue in this is managing the programme expectations for the generation of activities from a relatively low base.

Interviewees suggested that working under the auspices of a university has also been challenging. It was suggested in interview that the delivery team do not have full control over hiring and finances and must rather negotiate the bureaucracy of the university.

There are some additional barriers to establishing certain revenue streams. For example, it was suggested that while facilities are generally chargeable, there are expectations from some public sector partners city regional partners that facilities and space should be free of charge.

Interviewees suggested that because it is still early in the life of Sensor City, it remains to be seen if the facility will be able to attract enough interest from companies that work with sensor technologies, or whether the focus of the UEZ should be somewhat broadened and, for example, be open to companies that are operating further down the value chain which may benefit cross-fertilisation. There was some suggestion that the exact timing of future student internships might prove themselves to be restrictive to the needs of companies.

Also, the financial sustainability of Sensor City will need to be proven as currently it remains heavily dependent on input from the universities.

Success factors

Interviewees generally agreed that the building itself has been key to driving success in other areas. One respondent stated that this kind of activity was not happening before and would not have happened without the UEZ – particularly not in the specific area and not at the same scale. The building has been a focus of the activity, and has benefited from having a 'transformative look'.

The investment, buy-in of various partners, and a strong brand has imbued Sensor City with significant technical credibility. It was suggested that if individuals – even senior faculty members – undertook activity with businesses from the university only, the credibility would be less. Indeed, the creation of an independent building slightly outside of the university space, and not another university building (i.e. via refurbishment) was cited as a success factor.

The name, Sensor City, was also thought to be well chosen as it conveyed the idea of a 'cluster' around sensor technology. This brand name could in future be applied to other initiatives around promoting the application of sensor technology in other parts of Liverpool.

Interviewees also suggested that the work undertaken to develop the community around Sensor City has been a key success factor.

Finally, leveraging engineers from the LCR4.0 project, was also stated as a success factor.

4.4.5 Timescales for delivery to date

Consultees reported few issues with timing to date. They said that Sensor City was launched on schedule, with tenants entering the facility according to the planned timescale. They noted however, that laboratory spaces are not yet fully functional – though all equipment is procured and installed, there is a lull in recruiting the personnel to manage the lab space.

Sensor City remains behind its revised occupancy target (but ahead of its original target).

4.4.6 Funding and funding requirements

Interviewees raised few concerns around the funding for the UEZ, with the requirements for match funding and the timescales for expenditure regarded as fair.

In common with some of the other UEZs, there was some belief that more revenue funding would benefit the delivery of the UEZ, either through BEIS or through a requirement for university partners to add more revenue funding.

4.4.7 Recommendations

The unanimous message among consulted stakeholders is that the UEZs are an excellent impetus for planning city regional economic futures. All consultees believed that there is a case for more UEZs to be implemented in future.

However, individuals reflected on the difficulties of developing and setting up the facilities. It was suggested that, based on experience, it is insufficient to fund a building alone. One respondent in particular suggested that a building alone is not enough to create a thriving ecosystem. The most common recommendation for addressing this was to transparently encourage university partners to add more revenue money to the funding mix.

While there were no issues raised with the timing of delivery, it was suggested that one month is rather too short for the development and preparation of high quality UEZ bids. The main challenge in this was to build a coherent narrative around the proposed UEZ, and to decide how they should relate to other assets nationally and regionally. It was regarded as important at this stage to create linkages into established innovation mechanisms like the Catapults.

One consultee suggested that UEZs could be larger in scale, and more geographically spread (e.g. a campus rather than a single building, or a corridor between two other sites, such as Liverpool and Manchester. It was suggested that the existing UEZs may even serve as an anchor for a larger zone.

4.4.8 Summary

- Branding has been important, helping differentiate Senor City from the university, and helping convey the idea that being part of it also means being part of a much wider cluster
- Location has also proved to be important. Being located away from the university campuses has again helped to create some independence and differentiation from the universities, helping give Senor City much more of a business facing image
- Recruitment issues have held back the UEZ's progress. In part the problems have been caused by the local labour market but in it also appears that a lack of control and independence from university finances has also been a contributing factor

4.5 DHEZ

4.5.1 Inputs, activities and delivery of the UEZ

Inputs

In financial terms, DHEZ has received £6.1m of funding, comprising £3.8m from BEIS, £1m from the University of Bradford, and £1.3m from the City of Bradford Metropolitan District Council. Overall, 84.8% (£5.2m) of this funding is capital (BEIS and the University of Bradford), while 11.5% (£0.7m) of this funding is revenue (University of Bradford). The remaining 3.7% (£0.2m) is resource commitments (Bradford Council). These figures do not include the proposed £1m in-kind contribution from BT, which would bring the total investment to £7.1m.

In addition, Bradford Council committed resource and gifted the freehold for the Digital Exchange building to DHEZ Ltd. The real estate was reportedly valued at £1m, but with a lower market value. Further funding was secured for DHEZ Academic from the University of Bradford Faculty of Engineering, when the Academic Director approached them about becoming involved.

In terms of non-capital inputs, there are currently 3 FTE staff at DHEZ.

Activities and delivery of the UEZ

One interviewee described the work to deliver DHEZ as being based around four substantive projects: two build (refurbishment) projects and two organisation development projects (i.e. planning, recruitment, etc.)

Though there have been some setbacks in implementation (see section 4.5.4), particularly with the implementation of the Health and Wellbeing Centre (based at the Phoenix Building), both DHEZ Ltd. and DHEZ Academic are active. The work of the UEZ team has focused on brand awareness and profile-building, running events, developing contacts with NHS partners, funders and academics. They have also engaged with potential tenants and clients by setting challenges – something particularly important to interviewees as they believe the UEZ is not about providing space, but developing an ecosystem.

DHEZ Academic is promoted to bring together these academic themes and facilities[7]:

- Optometry and Physiotherapy Clinics
- Digital Diagnostics (laboratory space and research grouping)
- Health promotion and informatics unit
- Bradford Evaluation and Trials Unit (BETU)
- A community pharmacy consultation unit
- A full-size technology enabled house
- Teaching and meeting space

Moreover, to increase the push to market, the Academic director of DHEZ introduced a policy that DHEZ academics must cooperate with the health care technology unit, the Department of Electrical & Electronic Engineering, four times per year. The objective of this interaction is to generate a greater understanding of patient needs and the issues of patients' self-management. The arrangement also intends to increase access to patients and clinicians, possibly triggering future commercialisations.

DHEZ Ltd. and DHEZ Academic co-host themed quarterly sessions, at which the business attendance is curated by DHEZ Ltd. These events are based around a theme (e.g. mental health, ageing and dementia). The workshops allow academics to present their research interests to the assembled businesses and three have been held so far.

DHEZ Ltd. has also convened Bright Ideas Bradford, a Dragon's Den-style competition, in conjunction with the Digital Catapult Centre, the Bradford Districts Clinical Commissioning Group (CCG), and Medipex Limited (a healthcare innovation hub for NHS organisations, academia and industry, working across the Yorkshire and Humber and East Midlands regions).[8] Interviewees suggested that the programme has produced promising successes, with some participants having gone on to take an office in the UEZ.

DHEZ Academic has been used as a focus to help the development of institutional relationships, resulting in a relationship between the University of Bradford and with the health economics unit at the University of York. Interviewees stressed that this is important, rather than simply maintaining interpersonal relationships.

At the time of the last annual monitoring report to BEIS (March 2017), 535 companies had engaged with DHEZ Ltd in the prior 12 months through events, meetings, workshops, and innovation programmes. It was reported that much of this engagement had been in association with Digital Catapult Centre Yorkshire, which is hosted and managed by DHEZ Ltd.

[7] https://www.bradfordunisu.co.uk/articles/digital-health-enterprise-zone-update

[8] See: https://www.digitalcatapultcentre.org.uk/bradford-nhs-innovation/

4.5.2 *Partners and level of engagement*

DHEZ has a number of core partners, which each sit on the Programme Board:

- The **University of Bradford** chairs the Programme Board, and aside from BEIS is the key financier of the project. The Academic director of DHEZ will be driving the relationship building between academics and businesses, with the support of the Chief Executive of DHEZ Ltd.
- As set out above, the **City of Bradford Metropolitan District Council** have committed resources to DHEZ, and provided the Digital Exchange building. In interview, several consultees suggested that the interaction between DHEZ and the council is strongest in the operational aspects, and that there has been significant growth in the relationship between the Council and the University due to the UEZ.
- Interviewees expressed mixed views on the engagement of the **Leeds City Region LEP,** though these were on balance more positive than negative. Early on in the process, there were several competing UEZ bids from the Leeds City Region, which the LEP assessed before choosing DHEZ. One interviewee stated that the LEP "are always there to help enable things to happen", and a LEP representative expressed a very clear view of the value and fit of DHEZ to the city region. However, where some felt the relationship with the LEP to be invaluable and increasing, others suggested that the LEP is strategically helpful, but politically unhelpful.
- In interview, it was revealed that DHEZ runs innovation challenges in partnership with the **Bradford Districts Clinical Commissioning Group (CCG).** One example described by an interviewee was a challenge around digital health solutions for helping patients manage Chronic Obstructive Pulmonary Disease (COPD). Companies came forward with various apps and data analysis, several of which then ran pilots.

One partner (and proposed anchor tenant) BT has rescinded its involvement due to an internal review of the business and a de-prioritisation of telehealth. In the proposal, it was originally foreseen that BT would make an in-kind commitment equivalent to £1m, including a team of six that would integrate commercial, managerial and technical mentoring for tenants, run intensive technical hothouses, and offer reduced-cost access to its BT Health and BT Compute cloud systems to tenants. It was also foreseen that the market penetration accessible through BT's platform technology would be highly attractive to ambitious, innovative SMEs. Despite removing themselves from the project BT donated some equipment and facilities to DHEZ.

DHEZ Ltd. also collaborates with the Digital Catapult Centre Yorkshire which focuses on growing the region's digital economy. Amongst other things, DHEZ Ltd. and the Catapult jointly organise events to support SMEs to grow and up-scale.

While there has been little interaction with other UEZs outside of the existing BEIS-led meetings, there is appetite for such a community and opportunity for peer learning among the directors of DHEZ.

4.5.3 *Overview of progress to date*

The Digital Exchange building was opened in April 2016 and the Phoenix Building South West was in the process of opening at the end of 2017. About one year after the Digital Exchange opened, March 2017, the percentage of business floor space occupied by tenants was 48%, excluding any let co-working space. Table 17 below shows the progress made by the Digital Health Enterprise Zone against a selection of KPIs from the evaluation framework.

Table 17 Progress to date against output indicators – DHEZ

Indicator	UEZ tenants on-site	Virtual Tenants	Drop-in users	Total
Number of UEZ businesses	26	0	42	**68**
Number of new start UEZ tenant businesses	24	0	N/A	**24**

Indicator	UEZ tenants on-site	Virtual Tenants	Drop-in users	Total
Number of UEZ graduate tenants	1	0	N/A	**1**
Number of UEZ businesses from outside LEP area (UK)	1	0	0	**1**
Number of UEZ businesses from outside LEP area (international)	0	0	0	**0**
UEZ businesses on-site tenant pipeline				**20**
Total number of UEZ convened events				**45**
Total number of people attending UZ convened events				**1,235**
Number of UEZ businesses receiving business support	27	0	42	**69**
Income from UEZ tenant businesses				**£49,726**
Income from facilities and equipment related services to UEZ businesses				**£53,352**

Source: UEZ monitoring form return, February 2018

The proposal sets a target of 90% occupancy of 160 new workspaces by March 2019. At the time of the last annual monitoring report to BEIS, 48% of DHEZ Ltd. space was let, excluding the co-working space and that occupied by the Digital Catapult Centre Yorkshire. In interviews, there was confidence that the space will be filled in the coming years and early 2018 DHEZ reported having 27 tenants on site and engaging with another 42 businesses. DHEZ has a pipeline of about 20 businesses and one graduate tenant. All of the businesses DHEZ works with have received various support services. DHEZ has held 45 events which on average, have each been attended by 27 people.

From a financial perspective, the UEZ has received close to £50,000 income from tenants and another £53,000 in income from facilities and equipment related services.

4.5.4 Barriers and success factors

Barriers

Most significantly, interviewees described the lack of revenue funding as the main barrier to success. This has impacted the ability to recruit a number of staff members. There had been plans to recruit a number of positions, including an Operations Manager as well as a Chief Executive for DHEZ Ltd., though this became unfeasible. There had also been plans to recruit a senior administrator for DHEZ Academic, though this is now not possible (and cannot be paid for by the university due to a recruitment freeze). The position is being covered ad hoc by other staff members in the clinical practices resident in the Health and Wellbeing Centre. It was suggested in interview that this is particularly troublesome for DHEZ Academic which requires dedicated personnel to work on funding bids. It was thought that the University of Bradford could apply for ERDF revenue funding to support some of these costs, though the opportunity did not arise.

There has been some loss of personnel, too. The UEZ team used to have a marketing manager, who would collect information to measure marketing penetration, but this person is no longer in post and has not been replaced.

Another challenge faced by the UEZ is that BT has exited the programme. The negotiations for this have been recently completed, and BT supplied some facilities to DHEZ as part of the agreement.

Because DHEZ Ltd. and DHEZ Academic are managed independently there is not a clear steer on how cooperation between businesses and academics should be fostered. It was also suggested that (in the field of digital health) companies that are working on developing their business, across the 'valley of

death', would not particularly look to benefit from graduates, and as such there is no direct link between the Digital Exchange and DHEZ Academic.

Furthermore, there was some uncertainly amongst some of the interviewees regarding the sustainability of the DHEZ model, although one interviewee did affirm that DHEZ Ltd.'s model is sustainable and that there has been plenty of interest in the lettable space. The University of Bradford remains responsible for DHEZ Academic.

Success factors

A strong brand, and high-profile government investment were seen as a key success factors, giving DHEZ a strong position and credibility.

A proactive and connected leadership has been a key success factor in securing business engagement.

In addition, several interviewees suggested that securing the Digital Catapult Centre Yorkshire in Bradford aided the sustainability of DHEZ, and boosted the ability to engage businesses in events. At the same time, it should be noted that the focus of the Digital Catapult Centre is not exclusively on Digital Health and that the Catapult is also in a development phase.

4.5.5 Timescales for delivery to date

There has been slippage experienced on both build projects during delivery, which has resulted in some delays. Issues faced within the Digital Exchange were minor, and foreseen. At the time of the site visit in early November, the Digital Exchange was open and active. However, the issues experienced within the Health and Wellbeing Centre building were major and unexpected, resulting in a significant setback. The original target for opening the Health and Wellbeing Centre was January 2017, however, the facility only went live in September 2017, and the building was still being repaired at the time of the site visit.

4.5.6 Funding and funding requirements

While interviewees raised no concerns about the conditions attached to the funding, or the requirements for match funding, most raised an issue related to the lack of revenue funding to support the UEZ. As set out in section 4.5.4, DHEZ has experienced issues related to staffing because of a lack of revenue funding and surrounding factors. One interviewee suggested that there has been little room for the University of Bradford to increase their support for revenue costs in straitened times.

The original proposal sets a target to operate DHEZ on a financially sustainable basis by March 2018. However, there were mixed views among consultees on the feasibility of this, despite efforts to pursue alternative income streams. There has been a proactive approach to pursue other income streams across both DHEZ components:

- DHEZ Ltd. operates around three streams of income: events, rent, and projects
- DHEZ Academic will work on collaborative research bids. When prompted about the source of funding sought for this, interviewees suggested there will be a broad-based approach, including Horizon 2020 (which also includes funding for businesses), and UK funding, too.

4.5.7 Recommendations

Several interviewees suggested that any further iteration should redress the balance of capital to revenue funding to better support the generation of UEZ activity in the first two years of operation. It was suggested that this could also be undertaken on a match-funding basis between partners and BEIS.

An alternative approach would be to introduce a more flexible funding model based on individual UEZ needs. One interviewee suggested that some UEZs may require capital investment to expand their estate to do what is needed, while others require a mixture of capital and revenue, perhaps in a phased approach.

4.5.8 Summary

- A lack of revenue funding has created recruitment difficulties which has made the UEZ much more difficult to implement and manage

- There have been issues is having two independent bodies managing different aspects of the UEZ. In particular, the approach to fostering collaboration between business and academics was not as cohesive has it could have been
- Having a strong brand has been important, helping give DHEZ much more credibility

4.6 Conclusions

Drawing on the evidence outlined for each of the UEZs individually, there appear to be some fundamental characteristics in ensuring that future UEZs are delivered effectively:

- Choosing the right location is crucial. In some cases, a campus-based location is appropriate but in other instances, local businesses prefer somewhere more independent from the university. The key is finding a location that meets the local business requirements, but also one that is likely to secure sufficient people traffic.
- Running the UEZs from new builds has also been an important factor. Building, new, modern and distinct buildings helps create a pull factor and attracts people to the UEZ. This in itself can help create the footfall needed to help create a vibrant cluster.
- UEZs have worked best where they have been run by organisations with a previous track-record in business support. Without this experience, it can take much longer to recruit the number of tenants needed to create a critical mass.
- Several UEZs have struggled to properly staff their facilities owing to a lack of revenue funding. It seems that the provision of some revenue funding may make delivery more effective and ensure that quicker progress is made.

5 Results of the outcome evaluation

5.1 Introduction

The next sections consider each UEZ in turn, examining in greater detail the early outcomes of the UEZs. They draw primarily on the findings from the survey but as appropriate, also use evidence collected during the case study visits. As noted previously, the survey response rates were disappointing. Consequently, the results help to illustrate some examples of outcomes seen, rather than providing a totally representative view of how each UEZ has fared.

5.2 Future Space

5.2.1 Overview

Future Space offers a range of different services to its users, as outlined earlier in this report. The events and workshops held there were particularly welcomed while survey respondents also commented on how they had used Future Space to access work space, and to access business support services.

Based on the Future Space survey respondent group, it seems that Future Space tenants tend not to be graduates from the University of the West of England. However, tenants did actively seek collaboration opportunities with those connected with the University. Tenants interviewed during the site visits spoke about hiring interns from UWE and holding lunchtime meetings with research staff based at the University. Survey respondents also highlighted how they had used university facilities in the last 12 months, including use of specialist equipment. In some cases, UEZ tenants engaged in formal research and knowledge projects, including one instance of a collaborative project worth almost £330,000. For others, knowledge and research projects occurred on a more informal basis, including ongoing discussions with academics around specific research specialisms, collaborating on competitive research bids, engaging in common marketing activities, and discussing training and new courses.

There is anecdotal evidence of Future Space tenants interacting with one another. Some survey respondents, spoke about how they had worked with other businesses also using the UEZ, examples of collaboration included the use of specialist equipment, providing specialist consultancy, and discussing more formal future collaborative opportunities.

These collaborations also appear to have had some tangible results. Cited examples include: the launch of new products, and an acceleration of knowledge development relevant to their field of business.

There also appear to have been tangible commercial benefits associated with some tenants' involvement in Future Space. One survey respondent estimated that in the absence of their engagement with the UEZ, their sales figures would have been 15% lower. One respondent also estimated that their pre-tax profits would have been 10% lower without involvement in the UEZ.

5.2.2 Added value

There is little evidence to suggest that Future Space's work and offer has led to its users undertaking new types of research. Indeed, a number of survey respondents commented on the fact that even without UEZ support, they would still be involved in the same activities that they are with it. Nevertheless, tenant feedback on Future Space has on the whole been positive. Firms have welcomed having access to new and modern facilities, being in close proximity to UWE, and having opportunities to meet other individuals and organisations, both informally and via more formal organised events.

Survey respondents also provided some feedback on how the Future Space set up differed from a more traditional incubator. Where responses were provided, these tended to centre on Future Space having an on-campus location and having close links to the university.

5.3 Ingenuity Centre

5.3.1 Overview

Drawing on the Ingenuity Centre survey respondent group, it seems that many of the UEZ's users are not recent University of Nottingham graduates. Nevertheless, there is clear evidence of Ingenuity Centre of seeking opportunities to directly engage with the university. Tenants consulted during the site visits spoke about how one of the main attractions of the Ingenuity Centre was its close ties to the university, which could in turn provide access to specialist facilities and potential interns/future staff. Survey respondents also confirmed the diverse range of interactions taking place between Ingenuity Centre users and the university, ranging from use of library facilities for research, using lab space at another Nottingham campus, using postdoctoral consultancy support, and accessing specialist testing machines (e.g. tensile testing machines and climatic chambers). There were also examples of Ingenuity Centre users participating in formal research and knowledge exchange projects with researchers and academics, some being worth as much as £100,000. In other cases, Ingenuity Centre users were engaged in more informal knowledge exchange projects with university researchers. Cited examples included participation in an entrepreneurship Masters programme, and ongoing interaction with academics or institutes around research areas and specialisms.

There is also some evidence of Ingenuity Centre users collaborating with one another too. Survey respondents spoke interactions such as sharing experiences and good practice, partnership working in lab settings, and developing commercial client relationships.

There is also limited evidence of these collaborations, especially the knowledge exchange projects, generating tangible results for businesses. Commonly reported benefits including the opening up of new knowledge sharing opportunities, and accelerated knowledge acquisition in their business area, A small handful of respondents also spoke about the knowledge exchange projects leading to new products and new sales.

A number of Ingenuity Centre users have spoken about how their involvement in the UEZ has led to commercial benefits too. Based the 23 respondents who answered a relevant question in the tenant survey, users estimated that in the absence of their UEZ engagement, employment per user would on average be 0.7 FTE lower, sales would be 22% lower, and R&D investment also 22% lower. Although the survey respondents only represent a small proportion of all Ingenuity Centre tenants, it nevertheless demonstrates the strong positive effect that UEZ involvement has had some for some users at least.

5.3.2 Added value

There is little evidence to indicate that the Ingenuity Centre offer has encouraged its users to undertake new types of research. Almost half (48%, 14 respondents) suggested that they would be involved in the same activities as they are currently. However, a small handful did state that were it not for their involvement in the Ingenuity Centre, they would not have been involved in any research activity at all. More generally, user feedback on the Ingenuity Centre has been positive, welcoming in particularly the opportunity to easily interact with students, as well as the networking opportunities available. One respondent went so as to say that that Ingenuity Centre has successfully helped create a sense of community, not only in the building but across the city more widely.

Some respondents also commented on how the Ingenuity Centre's offer differed from that of a typical incubator. Where provided, typical responses talked about how the UEZ provided closer university links and greater opportunities for academic engagement than might typically be expected in an incubator.

5.4 Sensor City

5.4.1 Overview

As previously outlined, Sensor City provides a range of services and facilities to its users, with businesses seeing at as opportunity to access a variety of events and workshops, and developing their links with the academic community. Some tenants have drawn on business skills and coaching provided via the UEZ's

links to the LJMU Centre for Entrepreneurship and Liverpool Business Schools. Sensor City also organises 'surgery sessions' where companies and entrepreneurs can discuss their interests with academic experts. Others' interaction with the universities has come via use of their facilities including computer labs, motion-capture studios, the Virtual Engineering Centre, and the Liverpool John Moores Idea Lab accelerator.

Survey respondents have also spoken about engaging in research projects and knowledge transfer activities with university researchers and academics. Some of these have been formal research projects (including some worth £100,000) while others pointed to having formal projects planned for the future. Other respondents said that they had been involved in more informal knowledge exchange projects with university researchers. Examples of this informal interaction included student internships, a Student Entrepreneurs and Mentoring programme, Hackathon-type events, and ongoing conversations with academics around specific research areas and specialisms. However, there were also handful of tenants that stated that they had not really engaged in any research or knowledge exchange projects, be they formal or informal.

Some Sensor City users have also recorded their intention to work with other Sensor City businesses in the future although there is limited evidence of meaningful interaction between different users to date. There are however, several instances of Sensor City tenants having worked with other public sector organisations such as the NHS, the Alder Hey Hospital Trust, the Northern Schools trusts, and local councils. However, it is unclear the extent to which these relationships have been brokered through the UEZ's connections.

Initial indications are that such collaborative activity, especially through the research and knowledge exchange projects with researchers, has led to positive results for Sensor City businesses. Survey respondents highlighted benefits such as the launch of new products and/or prototypes, and an acceleration of knowledge development.

The feedback provided to the evaluation team also suggests links between involvement in Sensor City and improved business performance. Several respondents spoke about without engagement in Sensor City, their employment, sales or profits would have been lower. It also appears that participation in Sensor City has encouraged some tenants to dramatically increase their R&D investment. One respondent went so far as to say that their R&D investment levels would have been 150% in the absence of Sensor City involvement.

5.4.2 Added value

It is unclear the extent to which Sensor City's offer has led to its users undertaking new types of activity. Some reported that without Sensor City support they would not have undertaken any research projects at all. Others however, commented on how they would have continued pursuing similar or somewhat similar research even in the absence of Sensor City. Based on anecdotal evidence, it does seem that users are generally positive on the impact that Sensor City has had on them, saying it had been a worthwhile experience. Several commented on how the UEZ was preferable to engaging in a more traditional incubator. They valued the quality of academic connections that Sensor City provided, the fact it had created a community of like-minded sensor-interested stakeholders, and provided access to state-of-the-art specialist machines and facilities.

5.5 DHEZ

5.5.1 Overview

DHEZ's users have used it for a range of different functions, ranging from accessing events and workshops, developing links with the academic and wider business communities, and gaining access to work space.

The survey responses revealed that there were several DHEZ tenants who were not recent graduates of the University of Bradford. Nevertheless, it is clear that some tenants have looked to develop closer ties with the University. For some, this has come through dedicated events aimed at increasing knowledge

exchange between researchers and SMEs while others highlighted their use of university research facilities. There were also cases where businesses chose to develop links with the university through knowledge exchange and/or research projects. Some of these projects were formal collaborations, with some businesses indicating that they had been involved in multiple collaborative projects with the university over the past 12 months. In other instances, these university collaborations were on a much more informal basis, involving activities such as providing consultancy to university research projects, engaging with PhD students, and on-going discussions with academics on particular research specialisms (e.g. models and data flows related to digital in-home care). Nevertheless, there were also several survey respondents who noted fairly minimal levels of interaction with the University.

There are also examples of DHEZ businesses collaborating with one another too. Examples of collaborations over the last 12 months included joint grant applications, and drawing on machine-learning experts also based at DHEZ. However, survey evidence also shows a strong tendency for DHEZ businesses to collaborate with other public sector bodies, particularly health organisations such as the NHS, CCGs and GP federations. It is unclear though, whether the UEZ has played any role in fostering these relationships with businesses and public bodies.

In some cases, involvement in collaborative activity (especially the research and knowledge exchange projects) has led to clear benefits for DHEZ businesses, with users citing impacts such as the launch of new products, the opening up of knowledge sharing opportunities, and an acceleration of their knowledge development.

Others have directly attributed involvement in DHEZ to commercial benefits for their business. One survey respondent estimated that in the absence of UEZ involvement their R&D investment would have been 100% lower in the previous 12 months. One respondent also spoke about their pre-tax profits have been 26% lower had it not been for their involvement in DHEZ. Nevertheless, based on the small sample size within the survey respondents, it does not appear that DHEZ activity can be attributed to much in the way of improved employment or sales for its users.

5.5.2 Added value

It is unclear the extent to which DHEZ's offer has led to its businesses undertaking new types of research. Some claimed that without DHEZ they would have been involved in any research projects or activities at all but conversely, there are some businesses who noted that the nature of their research activity would have remained unchanged in the absence of DHEZ. Nevertheless, initial feedback suggests that businesses view DHEZ in favourable terms. Several noted that the DHEZ offer was different to what was typically available at incubators: DHEZ offering much closer links to the University, and providing a greater range of business support.

5.6 Conclusions

Drawing on the evidence collected, it is clear that all of the UEZs have generated positive early outcomes for some of its businesses at least. survey results for each of the UEZs the early outcomes of the UEZs are generally positive:

- Some UEZs have been able to attract recent graduates from the region to take up space at the UEZ (although the extent of this appears to vary between the different UEZs).
- Many businesses have sought to use the UEZ as a way of developing closer links with the host universities. Commonly cited forms of university interaction have been the use of university research facilities including labs, equipment and libraries.
- For other businesses, the interaction with universities has come through formal joint research projects. In other cases, businesses have engaged in more informal knowledge exchange activities such as ongoing discussions with research staff, student internships, and mentoring programmes. There were also instances where businesses linked their involvement in formal and informal knowledge exchange activities to benefits such as the launch of new products, and the acceleration of knowledge development.

- Some businesses in each of the four UEZs have attributed engagement in the UEZ to improvements in their business performance, particularly with respect to R&D investments. Some others have also identified benefits in the form of additional employment, sales, and profits.
- For most of the UEZs, it is unclear how far the UEZ offer has led to new research activity from the tenant companies. Some businesses commented that without UEZ support, they would not have engaged in any research activity but equally, others across all four centres have said their research activity would have been unchanged in the absence of the UEZ.
- Survey respondents on the whole view each of the UEZs in favourable terms, especially when compared to a traditional incubator model. Commonly identified advantages of the UEZ model versus incubators are the provision of much more business support, the close university links, and the vibrant nature of the community (including the provision of flexible and mixed-use spaces) and better links to the university.

However, given the low response rates to the survey, and the anecdotal evidence of some of the other evidence collected, it is unclear the extent to which these benefits have been seen by all UEZ users. Nevertheless at a minimum, the findings show that the UEZ model does help some businesses deliver considerable improvements in business performance, and the levels of R&D activity.

6 Concluding statement

The Witty Review, Industrial Strategy Green Paper and the ongoing UK Science and Innovation Audits (SIAs) highlight the importance of universities' contributions to place-based innovation. Universities are in a strong position to drive economic growth and UEZ's are an important part of making that happen. The Industrial Strategy Green Paper stresses that extending and deepening the existing commercialisation channels of universities will enable them to do even more for their local economy, directly supporting more local high-growth potential SMEs.[9]

The 2015 Government Response to the House of Commons Business, Innovation and Skills Committee Report on Business-University Collaboration stresses that UEZs should fit within the existing local ecosystem for innovation. The UEZ provide a focal point for strengthening cooperation on the ground between the HEIs and LEPs, with LEPs playing an important role in supporting the development of UEZ pilot bids, and in at least two cases, the Strategic Economic plans of the LEPs explicitly discuss the importance of their UEZ pilot in fostering innovation-led economic growth, and to improve university-business interaction in line with the proposals of the Witty review.[10] Future Space and DHEZ have befitted from local government co-funding.

The UEZ pilot successfully funded four ambitious initiatives, each unique in its own right and with objectives and focus closely linked to that of the leading university/universities and local growth plan. Early evidence suggests that this is a model that is worth pursuing further. This study has demonstrated that UEZs have clear potential of creating self-sustaining innovation eco-systems. They provide facilities that cater for firms at a critical stage of the business lifecycle, and there is early evidence of creating well-integrated communities encompassing businesses, students, and university researchers. Perhaps most importantly, they offer a distinct and separate offer to traditional accelerator and incubator spaces by offering links to university, providing relatively more business support than thought typical as well as a nurturing and vibrant community. The UEZ are subject specific which helps encourage interaction and collaboration, while the construction of new, modern and eye-catching premises also helps attract people and businesses to the facilities. Success factors identified at this UEZ pilot stage include:

- Investing in a quality building and grow-on space that allows foster a sense of community and a vibrant ecosystem
- Identifying a convenient and central location that generates sufficient footfall and interaction between academics and the local business community
- Allocating sufficient revenue funding to help overcome issues around staffing and, in relation, ensure timely recruitment of on-site tenants and the organisation of outreach events targeting the local community
- Building on a pre-existing business support model and/or acquiring external management support to help run the day-to-day operations
- Building on and adding value to the existing business support offer, including co-location to key stakeholders where possible to help acquire a critical mass needed to make the UEZ initiative a success in the long-term. There is also a strong case for trying to secure an anchor tenant that adds to the UEZ profile. The right anchor tenant can help secure some kind of critical mass from the onset. For example, we see the benefit of an anchor tenant whose business involves:
  - Organising events for the local business community and creating footfall in the UEZ
  - Working with graduate students looking to start up their own-businesses, creating more opportunity for UEZ businesses to draw on the experience form young talent

[9] See: https://beisgovuk.citizenspace.com/strategy/industrial-strategy/supporting_documents/buildingourindustrialstrategygreenpaper.pdf (p21)

[10] See: D2N2 http://www.d2n2lep.org/write/Documents/D2N2_SEP_March_31st.pdf (p17, p45, p90) and West of England https://s3-eu-west-1.amazonaws.com/so-welep-uploads2/files/About%20Us/Strategic%20Plan/LEP225%20SEP%20All%20Final.pdf (p4, p5)

Appendix A Methodology

This section sets out the methodology adopted for this study, including some of the issues and limitations experienced.

A.1 Overall approach

For this study we have used a mixed-method approach that works within a theory-based evaluation (TBE) framework, using qualitative and quantitative research methods to reach a series of findings. We have subsequently triangulated these findings in order to reach some overall conclusions for the study. Our workplan involved the following:

- **Contextual analysis:** using telephone interviews with each UEZ project manager and a review of existing documents and literature, sought to understand the profile of each UEZ, the context in which they functioned in, and how they had operated to date. The contextual analysis also provided an opportunity to test the underlying assumptions and theory of change set out in the UEZ *Outline Evaluation Plan*, to help inform the rest of the study
- **Developing an interim evaluation framework:** drawing in large part on the contextual analysis, we updated the original evaluation framework presented in the *Outline Evaluation Plan*, producing a new list of key performance indicators (KPIs), and creating a new logic model to set out the logical sequence and causal relationships between the rationale, aims and objectives, inputs, results, and early changes that would be expected with the intervention. The KPIs formed the basis for our outcome evaluation, while the process evaluation would in part, assess how far the UEZ programme followed the intended logic model. We presented our updated evaluation framework, logic model and KPIs to the UEZ project managers to help ensure that they were well understood by each pilot site.
- **Interviews and site visits:** we visited each of the UEZ pilots areas in person, using them to interview a combination of UEZ project managers, other UEZ staff, university pro-vice chancellors, LEP representatives, and other key stakeholders identified by the respective UEZs. The site visits also provided an opportunity to pilot the client survey, receiving feedback in person.
- **Establishing the baseline:** drawing on feedback from UEZ project managers (both qualitative and information provided for our KPIs) and an analysis of HEBCI data, we established a baseline position against which impact could be measured not only for this interim evaluation, but also for the future final evaluation.
- **Online survey of clients:** having refined the pilot survey in light of client feedback, we revised our survey which each UEZ subsequently distributed to their tenants in early 2018. Copies of these are provided below but in summary, they contained a mixture of questions seeking to understand the impact of UEZ on their commercial performance, and how effectively and efficiently they felt the UEZ has been run to date
- **Data processing and analysis:** we processed the client survey, with a view to seeing some evidence on the early impact that the UEZ pilot has generated.

Subsequent sections in this appendix explain some of these core elements of our methodology in more detail.

A.2 Caveats and limitations

Over the course of the evaluation, the project team experienced two main methodological limitations unanticipated at project inception. Firstly, during the contextual analysis phase, we learned that all the UEZs experienced some form of delay in building and completing their UEZ building, in some cases by several months. This meant some were not fully operational until 2017, and created knock-on delays in the delivery of the main UEZ services and support. Consequently, by the time of this interim evaluation, some UEZs had not made any meaningful progress against its objectives and could not report

meaningful outcomes. This evaluation therefore has therefore focused on the delivery of activities and outputs, relying on qualitative feedback to help gauge the likelihood of future success.

Secondly, we had a mixed response rate to our client survey, with especially poor response rates for the Ingenuity Centre and Future Space. We believe this is partly due to these UEZs running their own client survey in the months immediately preceding the evaluation, causing survey fatigue for the evaluation survey. To test the validity of the survey findings, we have sought to triangulate evidence with qualitative findings from the site visits. We have also used the survey results as a way of learning about potential future outcomes once the UEZs have been established for much longer.

A.3 Specific methodological considerations

A.3.1 Contextual analysis

As part of our contextual analysis, we conducted a series of scoping interviews with each UEZ project manager. Semi-structured in nature, they covered the following themes:

- The UEZ's rationale and objectives (including perceived market failures to be addressed)
- How the UEZ was implemented
- Progress made to date
- Challenges faced and lessons learnt
- Data currently collected

Findings from this informed the development of the evaluation framework, and the design of subsequent research tools.

A.3.2 Defining the evaluation framework

In developing the evaluation framework, we created a list of KPIs which would serve as the basis for the output and outcome evaluation, not only for this interim evaluation, but also for the future final evaluation. A more detailed explanation of how we reached each KPI follows in Appendix B, but the table below summarises the KPIs used in this evaluation.

KPI reference number	KPI	Source of baseline data
Indicator 1	Value of BEIS investment	BEIS Annual Monitoring Reports
Indicator 2	Value of leveraged investment	BEIS Annual Monitoring Reports
Indicator 3	FTE staff	Evaluation monitoring return from UEZ
Indicator 4	Engagement with partners	Evaluation monitoring return from UEZ
Indicator 5	Physical resources provided by UEZ partners	Evaluation monitoring return from UEZ
Indicator 6	Sqm of business space created	BEIS Annual Monitoring Reports
Indicator 7	Occupancy rate	BEIS Annual Monitoring Reports
Indicator 8	Number of UEZ businesses	Evaluation monitoring return from UEZ
Indicator 9	Number of new start UEZ tenant businesses	Evaluation monitoring return from UEZ
Indicator 10	Number of UEZ graduate tenants	Evaluation monitoring return from UEZ
Indicator 11	Number and point of origin of UEZ businesses from outside the LEP area	Evaluation monitoring return from UEZ
Indicator 12	UEZ businesses on-site tenant pipeline	Evaluation monitoring return from UEZ

Indicator 13	Total number of UEZ convened events	Evaluation monitoring return from UEZ
Indicator 14	Total number of people attending UEZ convened events	Evaluation monitoring return from UEZ
Indicator 15	Number of UEZ businesses receiving business support	Evaluation monitoring return from UEZ
Indicator 16	Income from UEZ tenant businesses	Evaluation monitoring return from UEZ
Indicator 17	Income from facilities and equipment related services to UEZ businesses	Evaluation monitoring return from UEZ
Indicator 18	Number of UEZ businesses collaborating with other UEZ businesses	UEZ tenant survey
Indicator 19	Number of UEZ businesses collaborating with public sector bodies	UEZ tenant survey
Indicator 20	Number of UEZ businesses collaborating with university	UEZ tenant survey
Indicator 21	Expenditure on R&D by UEZ businesses	UEZ tenant survey
Indicator 22	Sales by UEZ businesses	UEZ tenant survey
Indicator 23	Number of FTE employees in UEZ businesses	UEZ tenant survey
Indicator 24	Level of external investment in UEZ tenant businesses	UEZ tenant survey
Indicator 25	Innovations brought to market by UEZ businesses	UEZ tenant survey
Indicator 26	Number and type of new formal Intellectual Property Rights filed and registered by UEZ businesses	UEZ tenant survey
Indicator 27	Number of research and knowledge exchange projects	UEZ tenant survey
Indicator 28	Value of research and knowledge exchange projects	UEZ tenant survey
Indicator 29	The number of UEZ tenant businesses that originated at the UEZ's host university	UEZ tenant survey
Indicators 30-31	(Not relevant for interim evaluation)	-
Indicator 32	Graduate UEZ tenant businesses that maintain a link to university	Evaluation monitoring return from UEZ

A.3.3 Site visits

The study team conducted visits to the four pilot sites. In part, these were to help better understand the approach each university adopted. The visits also provided an opportunity to hold detailed discussions with UEZ project managers and key stakeholders. Discussions were semi-structured, in part following areas of specific interest to this interim evaluation. However, a number of core questions were also suggested as part of the ex-ante evaluation framework (see Appendix C). In order to allow for a direct comparison between 2014 and 2017 we have used this list of questions in the site-visits for consultations with UEZ managers, university leads, LEP representatives and other partners. Question areas included:

- How the UEZ had been delivered
- The roles of various partners involved and their engagement levels with the UEZ
- Extent of increases in university-business engagement
- Extent of increased co-operation between universities and LEPs
- Usage of UEZ facilities by university researchers
- How far the UEZ set up processes and delivery followed what was anticipated in the UEZ bid

- Appropriateness of funding conditions and timescales.

A.3.4 Tenant surveys

The study team designed four tailored online surveys – one for each UEZ – which the UEZs distributed to on-site tenants/occupants, virtual tenants, and other non-tenant businesses working closely with the UEZ or using UEZ facilities. Between them, the UEZs launched the surveys between 14 February and 19 February 2018, remaining open until 14 March 2018. In total, the survey invitation was sent to 394 tenants, occupiers and users of the four UEZs. After cleaning, we received 60 valid responses (excluding duplicates), equating to response rates for between 10% and 37% amongst the respective UEZs. This is summarised in the table below.

Table 18 Survey invitations, responses and response rates (four UEZs)

UEZ	Survey launched	Invitations sent	Total responses	Response rate	Typical profile of respondents
Bradford (DHEZ)	19-Feb	27	8	30%	• Businesses registered for less than 12 months • Tenants occupying private office space or co-working space • Engagement with UEZ for less than 12 months
Nottingham (Ingenuity Centre)	(Est.) 19-Feb	299	31	10%	• Businesses registered for 1-4 years • Private office space tenants • Engagement with UEZ for 13-24 months
Liverpool (Sensor City)	14-Feb	38	14	37%	• Businesses registered for up to 4 years, or more than 10 years • Tenants occupying private office space or co-working space • Engagement with UEZ for less than 12 months
Bristol (Future Space)	19-Feb	30	7	23%	• Businesses registered for 1-4 years • Office space tenants • Engaged with UEZ for 13-24 months

Source: Technopolis analysis of UEZ tenant survey

The survey results provided complementary and up-to-date evidence on early outcomes, costs of engagement, and deadweight. Copies of the surveys issued are included below.

Appendix B Key performance indicators

B.1 Input indicators

Indicator 1	Value of BEIS investment
Description	£s spent by BEIS (previously BIS) on the UEZ and any related development
Source	Annual Monitoring Reports
Year(s) available	2015/16 & 2016/17
Frequency of reporting	Annual
Comments	The baseline sets out investment detail and Annual Monitoring Reports monitor additional spending

Indicator 2	Value of leveraged investment
Description	£s spent by partners on the UEZ and any related development.
Source	Annual Monitoring Reports
Year(s) available	2015/16 & 2016/17
Frequency of reporting	Annual
Comments	This indicator is comprised of the sum of two separate data items: 1. The value of cash contributions 2. The value of in-kind contributions The baseline sets out investment detail and Annual Monitoring Reports monitor additional spending

Indicator 3	FTE staff
Description	The last available data on the number of Full Time Equivalent (FTE) staff working at the UEZ
Source	Interviews with UEZ management and lead university
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	The recruitment of dedicated UEZ staff will contribute to the delivery of UEZ services and long-term sustainability of the UEZ. The total number of staff should not include support staff such as receptionists, security staff, and cleaners.

B.2 Activity indicators

Indicator 4	Engagement with partners
Description	List of partners engaged and description of roles. The description will include internal and external stakeholders/members, including appointment of external UEZ managers and anchor tenants. It will also record the recruitment of university's own experts and stakeholders (e.g. academics). The evaluation will consider engagement from the perspective of all the partners.
Source	Interviews with UEZ management and lead university
Year(s) available	From 2017
Frequency of reporting	2017 & 2023
Comments	A central aim of UEZ is to encourage greater interaction between HEIs and local business partners. Changes in the Steering Group Members can be monitored each year using the information provided in the Annual Monitoring Reports

Indicator 5	Physical resources provided by UEZ partners
Description	Description of equipment and facilities provided, including lab equipment, by the UEZ partners and any changes in the provision.

Source	Interviews with UEZ management and lead university
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	Physical resources indicated do not have to be uniquely owned by the UEZ but have to be accessible to UEZ businesses. Details on any joint-ownership and estimated value of lab equipment may be provided.

Indicator 6	Sq. m of business space created
Description	Amount of incubator/business space sq. m. created up to date. This should include all businesses space that has been occupied or is available for occupation.
Source	Annual Monitoring Reports
Year(s) available	2015/16 & 2016/17
Frequency of reporting	Annual
Comments	Data has been provided in sq.m or in sq.ft.

B.3 Output indicators

Indicator 7	Occupancy rate
Description	The percentage of business floor space occupied by tenants
Source	Annual Monitoring Reports
Year(s) available	2015/16 & 2016/17
Frequency of reporting	Annual
Comments	This is an important indicator of the success of/demand for business space.

Indicator 8	Number of UEZ businesses
Description	The number of UEZ businesses represents the number of businesses that benefit from the UEZ and are currently engaged in innovative projects. The number should be split by: (1) UEZ tenants on-site, (2) virtual tenants, (3) other non-tenant businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs. This should include fee paying and non-fee paying businesses.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	The UEZ pilot aims to engage innovative businesses. The UK Innovation Survey definition of an innovative business comprises businesses that have engaged in any of the following: (1) introduction of a new or significantly improved product (good or service) or process, (2) engagement in innovation projects not yet complete or abandoned, and (3) new and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies. It is expected that all UEZ businesses are working on one or more innovative projects. Changes in the number of tenants on-site can be monitored each year using the information provided in the Annual Monitoring Reports. This number is also spilt by type (e.g. pre-start-up, entrepreneur, new small business) and sector.

Indicator 9	Number of new start UEZ tenant businesses
Description	The number of new start UEZ businesses includes the total number of businesses that have joined the UEZ in the previous 12 months. The number includes new start UEZ businesses that are no longer UEZ tenants. The number should be split by: (1) UEZ tenants on-site and (2) virtual tenants.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting

Comments	Data on the number of other businesses working closely with the UEZ or benefiting from UEZ facilities is not requested.

Indicator 10	Number of UEZ graduate tenants
Description	The number of UEZ graduate tenants includes the total number of businesses that have graduated from the UEZ in the previous 12 months it includes all businesses that have stopped renting physical office space or paying other tenant fees. The number should be split by: (1) former UEZ tenants on-site and (2) former virtual tenants.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	Data on the number of other businesses working closely with the UEZ or benefiting from UEZ facilities is not requested.

Indicator 11	Number and point of origin of UEZ businesses from outside the LEP area
Description	The number of UEZ businesses from outside the LEP area represents the number of businesses that benefit from the UEZ (and are currently engaged in innovative projects) and have moved from outside the LEP area. The number should be split by: (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs. This should include fee paying and non-fee paying businesses. The point of origin should be specified as UK or international.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	

Indicator 12	UEZ businesses on-site tenant pipeline
Description	UEZ businesses tenant pipeline is the total number of companies that are potential new tenants, i.e. total number of organisations that have indicated they would like to become on-site tenants. The total number tenant pipeline should include a snapshot of the number of companies that are on a waiting list.
Source	Annual Monitoring Reports and interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	Changes in marketing activities, plans and progress can be monitored each year using the information provided in the Annual Monitoring Reports. A summary of UEZ business tenant pipeline is also provided but details are lacking. Data on the number of potential virtual tenants or other potential businesses that are interested in the UEZ and its facilities is not requested.

Indicator 13	Total number of UEZ convened events
Description	The total number of UEZ convened events includes the total number of conferences and workshops that have been organized at the UEZ premises in the past 12 months.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	Meetings held between UEZ businesses that were not open to the wider public should not be included.

Indicator 14	Total number of people attending UEZ convened events
Description	Estimation of the sum of people that have attended UEZ convened events. This includes the estimated total headcount across conferences and workshops that have been organized at the UEZ premises in the past 12 months.

Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	The headcount of meetings held between UEZ businesses that were not open to the wider public should not be included.

Indicator 15	Number of UEZ businesses receiving business support
Description	The number of UEZ businesses receiving business support represents the number of businesses that have benefit from e.g. legal, financial, technical or strategic advice in the past 12 months. The number should include support provided to (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	

Indicator 16	Income from UEZ tenant businesses
Description	The total £ value of income from UEZ tenant (on-site and virtual) businesses over the past 12 months.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	UEZ tenant fees should include rent for physical office space and other paid-for services. The data should not include fees paid by tenants in relation to access to lab equipment unless this fee is part of the tenant membership fee.

Indicator 17	Income from facilities and equipment related services to UEZ businesses
Description	The total £ value of income from facilities and equipment related services to UEZ businesses over the past 12 months.
Source	Interviews with UEZ management
Year(s) available	From 2017
Frequency of reporting	2017 & 2023, recommendation for annual reporting
Comments	The data should include fees paid by tenants in relation to access to lab equipment unless this fee is part of the tenant membership fee.

B.4 Outcome indicators

Indicator 18	Number of UEZ businesses collaborating with other UEZ businesses
Description	This indicator captures the degree to which UEZ businesses collaborate with other UEZ businesses and UEZ businesses' perceptions on the degree of collaboration. Collaborations can include e.g. networking events attended, B2B meetings held, and joint informal projects between UEZ businesses.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 19	Number of UEZ businesses collaborating with public sector bodies
Description	This indicator captures the degree to which UEZ businesses collaborate with (local) public authorities and UEZ businesses' perceptions on the degree of collaboration. Collaborations can include e.g. business meetings held and joint informal projects between UEZ businesses and public authorities.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 20	Number of UEZ businesses collaborating with university
Description	This indicator captures the degree to which UEZ businesses collaborate with academics/researchers and the student body and UEZ businesses' perceptions on the degree of collaboration. Collaborations can include formal and informal knowledge exchange projects between UEZ businesses and academics/researchers and student placements. Academics/researchers and students do not have to be affiliated with the host university/universities.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 21	Expenditure on R&D by UEZ businesses
Description	£ annual R&D capital and operating expenditure in the past 12 months or last complete financial year, by UEZ business
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	Business R&D is an important pre-condition to, and lead indicator of, innovation in some technologically-intensive industries. The UEZ business survey will be administered by BEIS This question will be made optional Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 22	Sales by UEZ businesses
Description	£ annual turnover in the past 12 months or last complete financial year, by UEZ business
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS This question will be made optional Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 23	Number of FTE employees in UEZ businesses

Description	The last available data on the total number of Full Time Equivalent (FTE) positions, by UEZ business
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 24	Level of external investment in UEZ tenant businesses
Description	The sum (£) of external investment in UEZ tenant business, received in the past year and the sum received in the past five years. External investment can include grants, equity and loans. This indicator helps identify whether tenants are managing to attract investors to support their ideas and to generate the investment funds needed to scale-up their business.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS This question will be made optional Data should be collected from (1) UEZ tenants on-site and (2) virtual tenants.

Indicator 25	Innovations brought to market by UEZ businesses
Description	The degree to which UEZ businesses have introduced, in the past 12 months, a new or significantly improved product (good or service) or process, and/or a new and significantly improved form of organisation, business structure or practice and marketing concept or strategy.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs. The UK Innovation Survey definition of an innovative business comprises businesses that have engaged in any of the following: (1) introduction of a new or significantly improved product (good or service) or process, (2) engagement in innovation projects not yet complete or abandoned, and (3) new and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies.

Indicator 26	Number and type of new formal Intellectual Property Rights filed and registered by UEZ businesses
Description	The total number and type of new formal Intellectual Property Rights registered by UEZ businesses in the past 12 months. Intellectual Property Rights filed and registered include disclosures and patents, filed and registered, licences granted, software licences granted, and non-software licences granted, copy rights, design rights, etc.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 27	Number of research and knowledge exchange projects

Description	The total number of new formal research and knowledge exchange projects involving researchers/academics from host and/or other universities undertaken in the past 12 months.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 28	Value of research and knowledge exchange projects
Description	The total value of new formal research and knowledge exchange projects involving researchers/academics from host and/or other universities undertaken in the past 12 months and UEZ businesses' perception on the importance of such knowledge exchange projects.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site, (2) virtual tenants, (3) other businesses working closely with the UEZ or benefiting from UEZ facilities including equipment and labs.

Indicator 29	The number of UEZ tenant businesses that originated at the UEZ's host university
Description	The number of graduate students that have become a UEZ tenant businesses and pay tenant fees.
Source	UEZ business survey
Year(s) available	From 2018, Q1
Frequency of reporting	Annual
Comments	The UEZ business survey will be administered by BEIS Data should be collected from (1) UEZ tenants on-site and (2) virtual tenants.

B.5 Impact indicators

Indicator 30	Net change in GVA as a result of UEZ investment
Description	Additional GVA growth in the LEP area. GVA is defined as total output minus intermediate inputs.
Source	UEZ business survey and analysis
Year(s) available	From 2020
Frequency of reporting	Final evaluation
Comments	The evaluation will require responses on counterfactual. It will require an estimate of where sales, employment and GVA are genuinely additional to the LEP, these should be aggregated to produce a net impact figure. The analysis of GVA is not immediately relevant to the interim evaluation. Information about the UEZ's contribution to improved sales and fixed costs (including employment costs) will be sought from UEZ businesses, however, it is likely that relatively few UEZ businesses will report a measurable uplift at the interim stage.

Indicator 31	Net change in employment as a result of UEZ investment
Description	Number of additional Full Time Equivalent (FTE) jobs created or retained.
Source	UEZ business survey and analysis
Year(s) available	From 2020
Frequency of reporting	Final evaluation

Comments	The evaluation will require responses on counterfactual. It will require an estimate of where employment is genuinely additional to the LEP, these should be aggregated to produce a net impact figure. The analysis of net change in employment is not immediately relevant to the interim evaluation. Information about the UEZ's contribution to an increase in FTE employment will be sought from UEZ businesses, however, it is likely that relatively few UEZ businesses will report a measurable uplift at the interim stage.

Indicator 32	Graduate UEZ tenant businesses that maintain a link to university
Description	This indicator aims to capture the degree to which UEZ graduate tenant businesses that have stopped renting physical office space or paying other tenant fees in the past 1-5 years have maintained a link to the UEZ eco-system.
Source	*Recommendation to UEZ's to set-up an alumni survey*
Year(s) available	*Recommendation to survey graduates from 2019, Q1 onwards, to feed into the final evaluation*
Frequency of reporting	*Final evaluation, recommendation for annual reporting*
Comments	The analysis is not immediately relevant to the interim evaluation as there are few to none graduate UEZ businesses.

Indicator 33	Net change in the number and value of businesses in the key sectors
Description	Net change in the number and value of businesses in the key sectors (e.g. sensor technology, heath tech), as a result of UEZ investment
Source	UEZ business survey and analysis
Year(s) available	From 2020
Frequency of reporting	Final evaluation
Comments	The analysis is not immediately relevant to the interim evaluation. This KPI is only relevant for UEZs that have a sector focus.

Appendix C Process interview questions

The following core interview questions were suggested as part of the ex-ante evaluation framework. They have also formed the basis for interviews we have conducted as part of the process evaluation.

- How has the UEZ been delivered (describe progress and mechanisms for delivery)
- What have been the roles of partners?
- What are the key local factors that have or will make a positive/negative difference to the delivery of the UEZ?
- How would you describe the level of engagement with partners engaged in economic development? (name each and describe)
- Are there aspects of the set up and process of delivering the UEZ that worked well? (describe) And aspects that worked less well? (describe)
- Are these likely to be barriers to the programme working successfully in other contexts?
- Has the UEZ delivered the progress expected to date, explain and use indicator targets as a base?
- Has the UEZ followed the Logic Model as anticipated and how has it deviated?
- Has the timescale been appropriate?
- Have the conditions associated with the funding been realistic?
- Has the UEZ remained on budget or has it required additional resources?
- In hindsight are there elements of the UEZ that you would refine or improve?

Appendix D List of interviewees

Table 19 Interviewees for the process evaluation

UEZ	Name	Affiliation	Date
Sensor City – Liverpool	Prof. Joe Spencer	UoL and a Centre Director	02/11/2017
	Joanne Phoenix	Business development manager, Sensor City	02/11/2017
	Prof. Robin Leatherbarrow	LJMU	02/11/2017
	Alan Welby	Lead of research and innovation services at LJMU	02/11/2017
	Prof Ahmed Al-Shammah	LJMU	02/11/2017
	Alison Marshall	Director, Sensor City	02/11/2017
Digital Health Enterprise Zone (DHEZ) - Bradford	Dermot Bolton	Programme manager, DHEZ, University of Bradford	03/11/2017
	Prof Allan Kellehear	Academic Director University of Bradford, DHEZ Academic	03/11/2017
	Liam Sutton	Head of Knowledge Transfer, University of Bradford	03/11/2017
	Ian Sharp	Chief Executive, DHEZ Ltd	03/11/2017
	Sarah Bowes	Innovation and Digital Policy Manager West Yorkshire	16/11/2017
Future Space - Bristol	Dave Brennand	UWE, Head of Commercial Ventures, UEZ bids project manager	06/11/2017
	Martin Boddy	Pro Vice-Chancellor Research and Business Engagement, UEZ bids lead	06/11/2017
	Anthony Merritt	South Gloucestershire Council, Strategic Economic development	06/11/2017
	Antony Corfield	WELEP, Investment Board	06/11/2017
	Elaine McKechnie	Oxford Innovation	07/11/2017
	Duncan Quig	Oxford Innovation	07/11/2017
University of Nottingham Innovation Park (UNIP) - Nottingham	Dr Mark Tock	Operations Director at UNIP	14/11/2017
	Mr Daljit Cheema	MD of PharmaSeal Limited	14/11/2017
	Dame Prof Jessica Corner	PVC Research & Knowledge Exchange, Director of UNIP	14/11/2017
	Mr Ryan Keyworth	Director of Research & Innovation, Director of UNIP	14/11/2017
	Mr Chris Jagger	Chief Facilities Officer, Chair of UNIP Board	14/11/2017
	Dr Andy Sowter	CTO of Geomatic Ventures Limited	14/11/2017
	Prof Simon Mosey	Prof of Entrepreneurship & Innovation, NUBS	14/11/2017
	Mr Steve Chapman	Head of Ingenuity Lab	14/11/2017

Appendix E HEBCI data - Part A

Table 20 HEP strategy for business and community engagement

		Future Space (UWE)	*Ingenuity Centre (UNIP)*	*Sensor City (LJMU)*	*Sensor City (UoL)*	*Digital Health Enterprise Zone (Bradford)*
Does your HEP have a strategic plan for **business engagement**?	1. No strategic plan in place. 2. Between 1 and 3. 3. Strategic plan developed and only partially implemented. 4. Between 3 and 5. 5. Strategic plan developed and implemented as a result of an inclusive process across the whole HEP.	5	5	4	4	4
Does your HEP have a strategic plan for **public and community engagement**?		5	5	5	4	4
How would you rate the level of **incentives for staff at your HEP to engage with Business and the Community**?	1. Barriers outweigh any incentives offered. 2. Between 1 and 3. 3. Some incentives in place, but with some barriers remaining. 4. Between 3 and 5. 5. Strong incentives in place	4	4	3	4	4

Data from HEBCI 2015/16

Table 21 HEP capability to seek out licensing opportunities for all its forms of IP (patents, copyrights, designs and trademarks)

Future Space (UWE)	*Ingenuity Centre (UNIP)*	*Sensor City (LJMU)*	*Sensor City (UoL)*	*Digital Health Enterprise Zone (Bradford)*
In-house capability	In-house capability	In-house capability and external agency	In-house capability and external agency	In-house capability and external agency

Data from HEBCI 2015/16

Table 22 HEP approach for providing SME support

	Future Space (UWE)	*Ingenuity Centre (UNIP)*	*Sensor City (LJMU)*	*Sensor City (UoL)*	*Digital Health Enterprise Zone (Bradford)*
An enquiry point for SMEs	√	√	√	√	√
Assistance to SMEs in specifying their needs	√	√	√	√	√
A required contracting system for all staff business and community interaction activities	√	√	√	√	√

Data from HEBCI 2015/16

Table 23 HEP support for spin-offs, by the HEP and/or Partner organisation (e.g. IP Group, Imperial Innovations, Fusion IP)

	Future Space (UWE)	*Ingenuity Centre (UNIP)*	*Sensor City (LJMU)*	*Sensor City (UoL)*	*Digital Health Enterprise Zone (Bradford)*
On-campus incubators	HEP	HEP	None	HEP	Both
Other incubators in the locality	None	Partner	Both	HEP	None
Science park accommodation	Partner	None	Both	Partner	Partner
Entrepreneurship training	Both	Partner	Both	HEP	Both
Seed corn investment	None	Both	Both	HEP	Partner
Venture capital	None	Partner	Partner	Both	Partner
Business advice	Both	Both	Both	Both	Both

Data from HEBCI 2015/16

Table 24 HEP support for start-ups, by the HEP and/or Partner organisation (e.g. IP Group, Imperial Innovations, Fusion IP)

	Future Space (UWE)	*Ingenuity Centre (UNIP)*	*Sensor City (LJMU)*	*Sensor City (UoL)*	*Digital Health Enterprise Zone (Bradford)*
On-campus incubators	HEP	HEP	None	HEP	Both
Other incubators in the locality	Partner	Partner	Both	Partner	None
Science park accommodation	Partner	Both	Both	Partner	None
Entrepreneurship training	Both	Both	Both	Both	Both
Seed corn investment	None	Both	Both	HEP	Partner
Venture capital	None	Partner	Partner	Partner	Partner
Business advice	Both	Both	Both	Both	Both

Data from HEBCI 2015/16

Appendix F Baseline performance of UEZ partner Higher Education Institutions

The appendix presents an overview of time-series data on key metrics of relevance to the UEZ pilot evaluation, including data on contract research, intellectual property registrations and spin-offs.

The baseline analysis uses data from the Higher Education Statistics Agency's HE Business and Community Interaction (HEBCI) survey for the years 2003/04 - 2015/16.[11]

- Contract research income from businesses and non-commercial organisations (e.g. charities)
- Contract numbers and income associated with consultancy, which is work entailing a high degree of intellectual input from the HEI but without the creation of new knowledge
- Income from the use of HEI facilities and equipment
- Counts of intellectual property registrations
- Number of spin-offs by type and information on the income and employment of those new additions

The HEBCI statistics can often be analysed further to reveal the extent of the relationships between the institution and SMEs. We assume the focus of the UEZ work is likely to have an earlier and proportionately greater effect on the host institution's SME engagement as compared with all business and community interactions.

For each KPI, our baseline analysis presents the long-run performance of the host HEI against the average performance for all universities and colleges in the same LEP area and the average for all UK HEIs. We assume that a successful UEZ initiative would result in a discernible improvement in the performance of the host HEI; the regional and national comparators will allow the UEZ management team to gauge the extent to which the host HEI is performing in line with or ahead of the evident trend in the region or country overall. Trends will be driven by multiple factors, so one must be cautious about the interpretation of any single point of convergence or divergence between the host HEI and the wider community. However, the UEZ management team can be more confident in the significance of their contributions if there is a reasonable degree of consistency in the direction of travel across multiple indicators. Confidence will be higher still if the KPIs are tending to converge for the UEZ scheme overall.

An overview of the relevant Higher Education Institutions (HEIs) and their corresponding LEP area and HEIs is presented below. To facilitate comparison, the data on the LEP region represent averages of the relevant HEIs, excluding the UEZ HEIs. Data on the UK reflects all 161 HEIs that provided data (including the UEZ HEIs).

Table 25 Overview of HEIs by UEZ and LEP

UEZ	UEZ partner HEIs	LEP reference area	Other HEIs in LEP area
Future Space - Bristol	• University of the West of England	West of England	• University of Bristol • Bath Spa University • University of Bath
Nottingham Innovation Park (UNIP) Ingenuity Centre – Nottingham	• University of Nottingham	Derby, Derbyshire, Nottingham and Nottinghamshire	• Nottingham Trent University • University of Derby
Liverpool: Sensor City	• University of Liverpool • Liverpool John Moores	Liverpool City Region	• Liverpool Hope University

[11] The HEBCI definitions can be found online at www.hesa.ac.uk/support/definitions/hebci

			• Liverpool School of Tropical Medicine • The Liverpool Institute for Performing Arts
Bradford Digital Health Enterprise Zone	• University of Bradford	Leeds City Region	• Leeds Beckett University • Leeds College of Art • Leeds College of Music • Leeds Trinity University • University of Huddersfield • University of Leeds • University of York • York St John University

F.1 Overall baseline for 2015/16

An overall baseline for the key indicators is presented in the table below and discussed in the sections that follow.

Table 26 Baseline for 2015/16, by UEZ host HEI and KPI

	Future Space (UWE)	**Ingenuity Centre (UNIP)**	**Sensor City (LJMU)**	**Sensor City (UoL)**	**Digital Health Enterprise Zone (Bradford)**
Total number of contracts	84	1,078	149	408	107
Total number of contracts with SMEs	2	129	4	73	34
Contract research, total value with SMEs (£000s)	£90	£2,078	£281	£2,130	£229
Total number of consultancy contracts	662	685	56	17251	153
Consultancy number with SMEs	376	191	6	16652	38
Total income from consultancy (£000s)	£933	£5,394	£382	£12,243	£322
Total income from consultancy with SMEs (£000s)	£134	£1,369	£21	£10,476	£100
Total number of facilities and equipment related services	19	310	9	917	27
Total number of facilities and equipment related services - SMEs	9	38	0	720	16
Facilities and equipment related services - total value with SMEs (£000s)	£2	£2,373	£-	£219	£49
IP income from software licences – SMEs (£000s)	£-	£21	£-	£1	£-
IP income from non-software licences – SMEs (£000s)	£-	£119	£-	£85	£62
IP income from their IP – SMEs (£000s)	£-	£128	£-	£-	£-
Total number of staff start-ups	0	0	0	1	0
Staff start-ups - estimated current employment of all active firms (FTE)	43	6	0	2	11
Staff start-ups Estimated current turnover of all active firms (£000s)	£4,153	£191	£-	£-	£435

	Future Space (UWE)	Ingenuity Centre (UNIP)	Sensor City (LJMU)	Sensor City (UoL)	Digital Health Enterprise Zone (Bradford)
Total number of graduate start-ups	25	124	61	4	1
Graduate start-ups - estimated current employment of all active firms (FTE)	363	165	431	0	2
Graduate start-ups Estimated current turnover of all active firms (£000s)	£34,196	£2,500	£17,065	£-	£-

Source: HEBCI

F.2 The University of the West of England: Future Space

F.2.1 Contract research

The University of the West of England (UWE) reported a total of 84 research contracts in 2015/16, up from a count of around 50 in the preceding three years. UWE was reporting higher numbers of research contracts (129-219) in the years leading up to the economic crisis. In 2015/16 UWE is recording around 39% of the average number of research contracts for the UK overall and 21% of the average for the LEP region (i.e. University of Bristol, Bath Spa University and University of Bath). UWE has seen a fall in the number of research contracts over the past 10 years, where the trend for the UK has been improving slightly.

UWE reported two SME research contracts in 2015/16, with the annual count fluctuating around 2-5 contracts each year for the past 10 years. SME contract research represents 2%-8% of total contract research. UWE is recording around 12% of the average number of SME research contracts recorded for the UK overall and 11% for the LEP region. The UWE trend is slightly down. The UK trend is flat or improving very slightly. The regional trend is improving more strongly, in the last five years at least.

The total value for contract research for SMES of UWE was £90k in 2015/16, up from £37k in 2014/15.

Table 27 Contract research – Baseline for Future Space and comparators

Figure 6: Total number of contracts

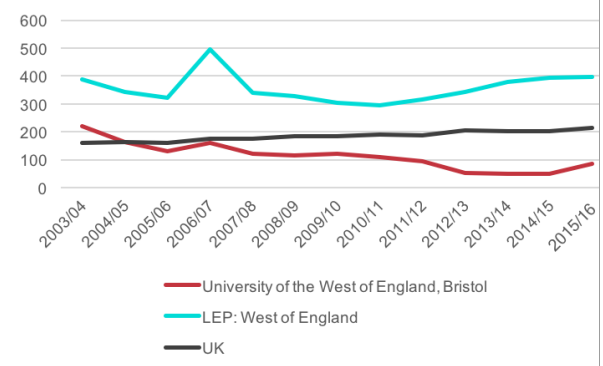


Figure 7: Total number of contracts with SMEs

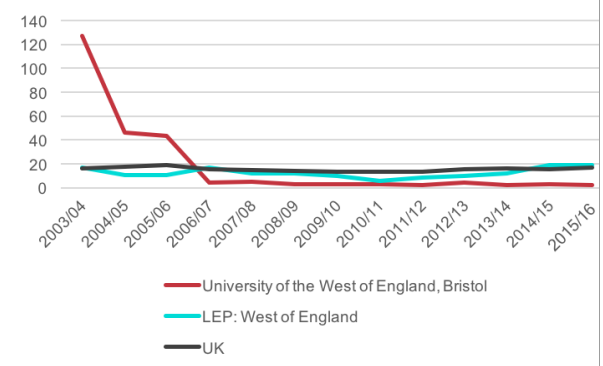


Figure 8: Percentage of contract research involving SMEs

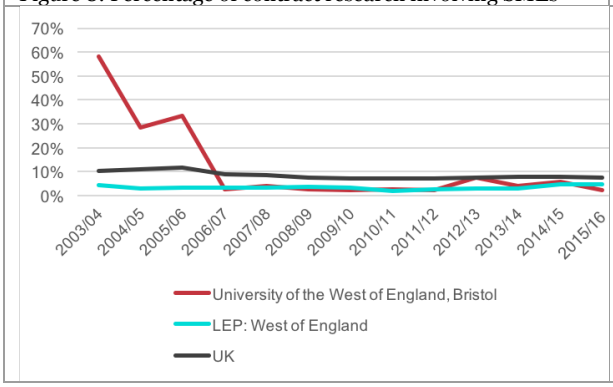
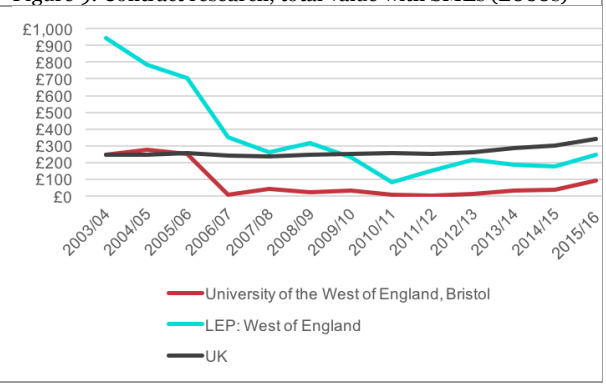


Figure 9: Contract research, total value with SMEs (£000s)



Source: HEBCI

F.2.2 Consultancy

UWE reported 662 consultancy contracts in 2015/16. The trend is strongly positive in the last three years and over the longer term, with the 2015/16 count approaching two times the 10-year average of around 350 contracts a year. The UWE figure is similar to the UK average, around 676 contracts, in 2015/16 and somewhat higher than the average for the region overall (c. 410 contracts in 2015/16).

There is a clearly positive upward trend for the UK average, albeit the UWE figures are a little stronger in recent years albeit more volatile over the longer term (as would be expected when comparing one institution with the average performance for 161). The regional average is also up over the last 10 years, but has been falling over the last four years in contrast to the UWE figures.

The university reported consultancy income of close to £1M in 2015/16, which gives a ten-year average contract value of around £1,600. The trend in annual income is broadly negative however, having declined steadily each year from a high of around £3.1M in 2009/10. The figure was around £2.1M in 2003/4 (all in cash prices).

In 2015/16, 376 of the 662 contracts were with SMEs (57% of all contracts). Income from consultancy with SMEs was around £134K or 14% of the total. SME contracts are typically smaller than the average for all contracts, at around £300-£550.

Table 28 Consultancy contracts – Baseline for Future Space and comparators

Figure 10: Total number of consultancy contracts

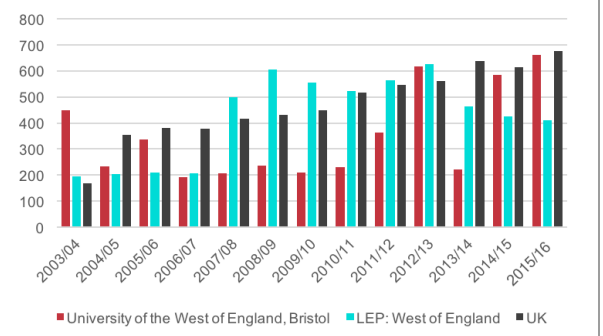


Figure 11: Consultancy number with SMEs

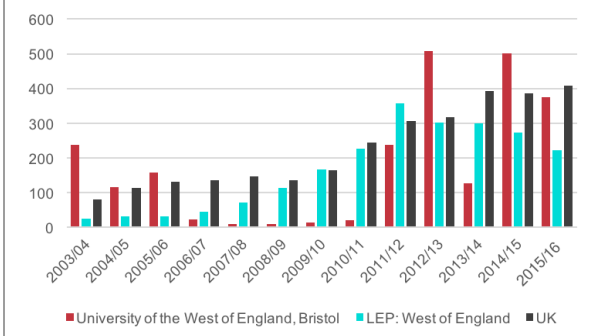


Figure 12: Total income from consultancy (£000s)

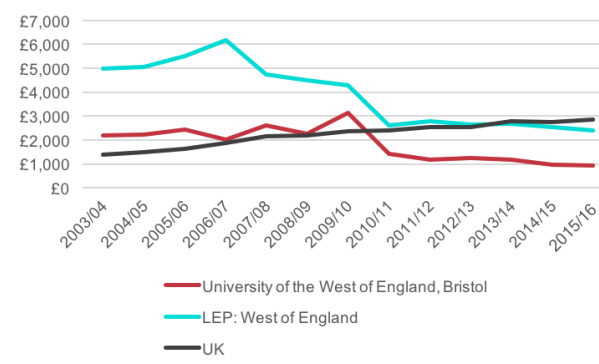


Figure 13: Total income from consultancy with SMEs (£000s)

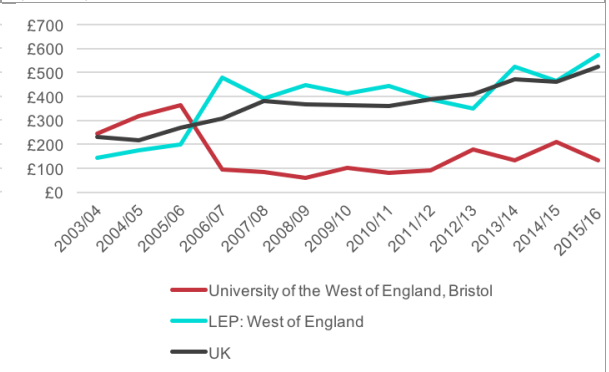


Figure 14: Percentage of consultancy contracts involving SMEs

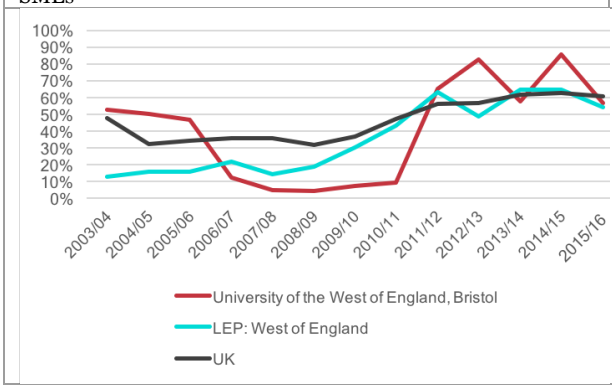
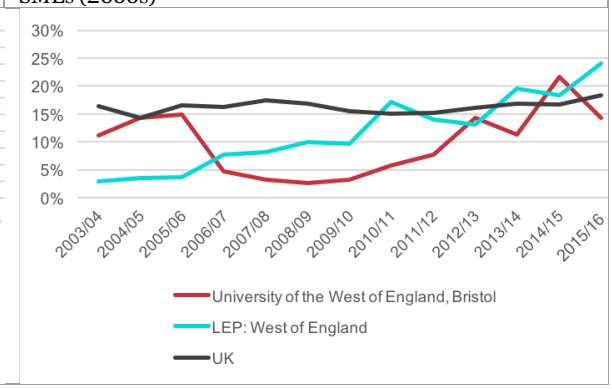


Figure 15: Percentage of total consultancy value that involves SMEs (£000s)



Source: HEBCI

F.2.3 Facilities and equipment

UWE provided 19 (£65k in total) facilities and equipment related services in 2015/16. In the same year facilities and equipment related services to SMEs were reported as 9 (£2k in total). In the past ten years the total number of facilities and equipment related services to SMEs range from zero to ten.

In 2015/16 UWE is recording around 7% of the average number of facilities and equipment related services recorded for the UK overall and 11% for the LEP region.

Table 29 Facilities and equipment related services– Baseline for Future Space and comparators

Figure 16: Total number of facilities and equipment related services

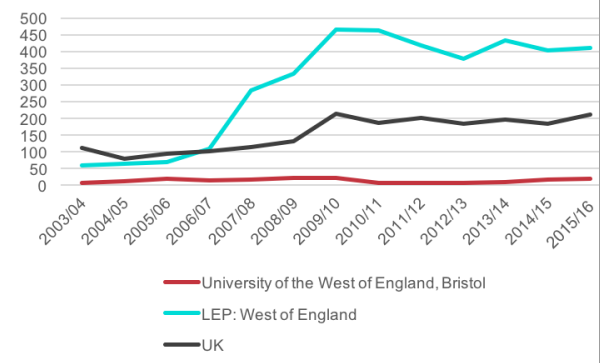


Figure 17: Total number of facilities and equipment related services - SMEs

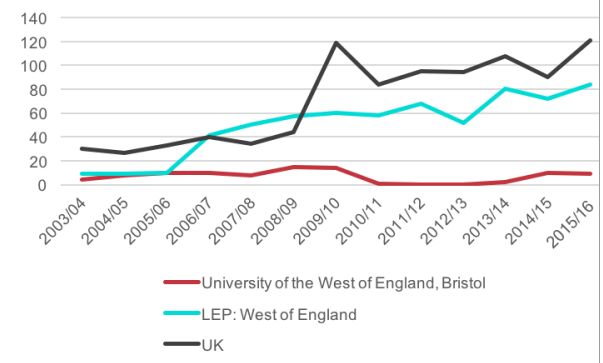


Figure 18: Facilities and equipment related services - total value with SMEs (£000s)

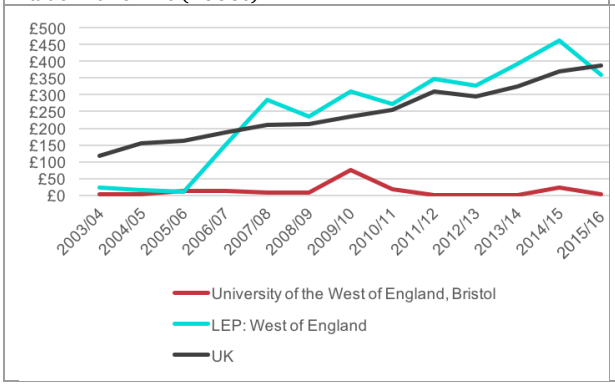
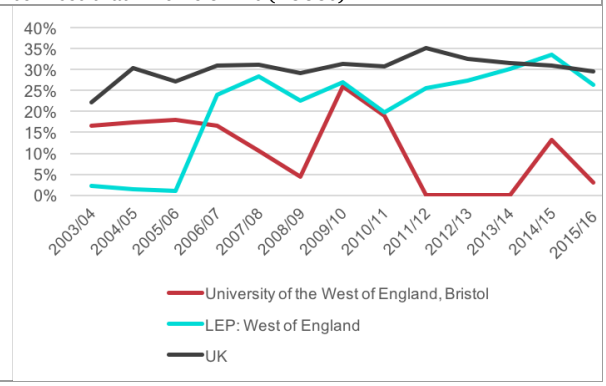


Figure 19: Percentage of facilities and equipment related services that involve SMEs (£000s)



Source: HEBCI

F.2.4 Intellectual Property

The University of the West of England has not registered any income from Intellectual Property from SMEs in 2015/16. It registered relatively small amounts in preceding years, i.e. a total of £6k in 2014/15.

Table 30 Intellectual Property Income from SMEs (£000s) – baseline for Future Space and comparators

	Type	2011/12	2012/13	2013/14	2014/15	2015/16
University of the West of England	Software licences	£5	£4	£0	£2	£0
	Non-software licences	£13	£8	£3	£4	£0
	Other IP	£0	£0	£0	£0	£0
LEP: West of England	Software licences	£11	£11	£14	£10	£10
	Non-software licences	£75	£39	£46	£126	£60
	Other IP	£6	£9	£13	£0	£11
UK	Software licences	£4	£8	£6	£8	£7
	Non-software licences	£52	£51	£54	£70	£100
	Other IP	£10	£9	£6	£8	£7

Source: HEBCI

In 2015/16, UWE has not recorded any staff start-ups, but it has recorded 25 graduate start-ups in 2015/16. The UK average number of graduate start-ups in 2015/16 was 24.

The estimated current employment of all active firms (FTE) was 43 for staff start-ups and 363 for graduate start-ups in 2015/16.

Estimated current turnover of all active firms (staff and graduate) was a combined total of £38.3m in 2015/16, up from a combined total of £200k in 2003/04. In 2015/16, estimated turnover from start-ups of UWE was about eight times the UK average.

The university estimated that in 2014/15 graduate start-ups received as much as £21.3m external investment in total.

Table 31 Spin-off activity – Baseline for Future Space and comparators

Figure 20: Staff start-ups

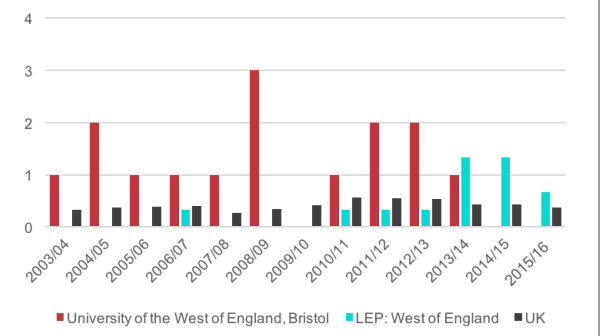


Figure 21: Graduate start-ups

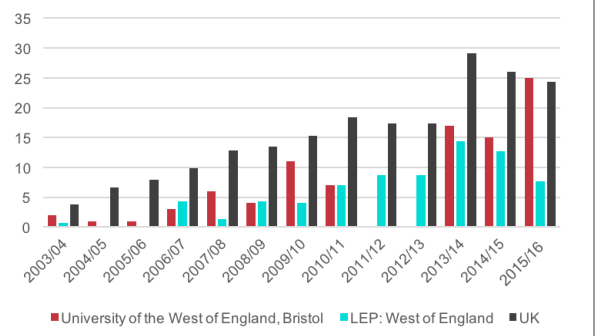


Figure 22: Staff start-ups - estimated current employment of all active firms (FTE)

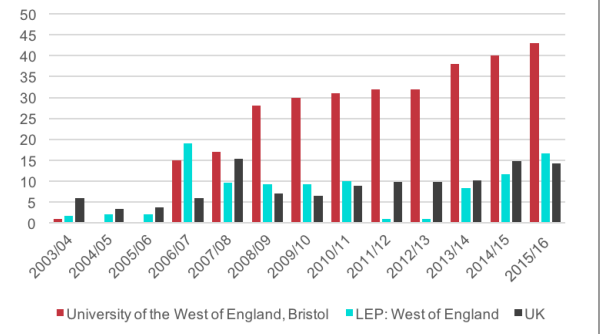


Figure 23: Graduate start-ups - estimated current employment of all active firms (FTE)

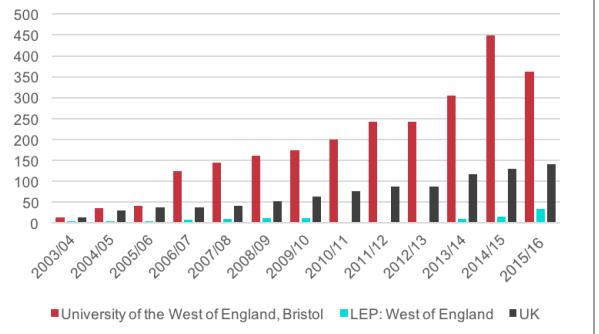


Figure 24: Staff start-ups Estimated current turnover of all active firms (£000s)

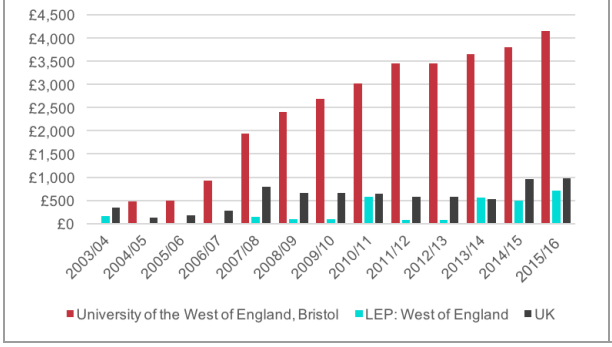
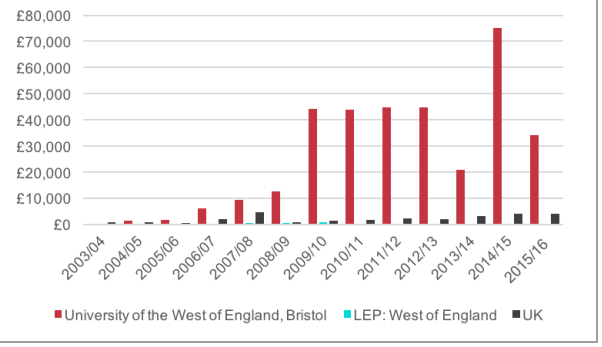


Figure 25: Graduate start-ups Estimated current turnover of all active firms (£000s)



Source: HEBCI

F.3 Nottingham Innovation Park (UNIP) Ingenuity Centre – Nottingham

F.3.1 Contract research

The University of Nottingham reported a total of 1,078 research contracts in 2015/16, up from a count of around 800 in the preceding three years. The University of Nottingham was reporting higher numbers of research contracts (129-219) in the years leading up to the economic crisis. In 2015/16 University of Nottingham is recording around 39% of the average number of research contracts for the UK overall and 21% of the average for the LEP region (i.e. Nottingham Trent University and the University of Derby). Since 2007/08, the University of Nottingham has seen a continued increase in the number of research contracts, where the trend for the UK has been improving at a relative slower pace.

The University of Nottingham reported 129 SME research contracts in 2015/16, with the annual count fluctuating around 74-99 contracts each year for the past 10 years. In 2015/16 SME contract research represented 12% of total contract research.

The University of Nottingham is recording around eight times the average number of SME research contracts recorded for the UK overall and around nine times that of the LEP region.

The total value for contract research for SMES of UWE was close to £2.1m in 2006/07, which is well above the UK average (£339k) and up from £0.6m in 2006/07.

Table 32 Contract research – Baseline for UNIP and comparators

Figure 26: Total number of contracts

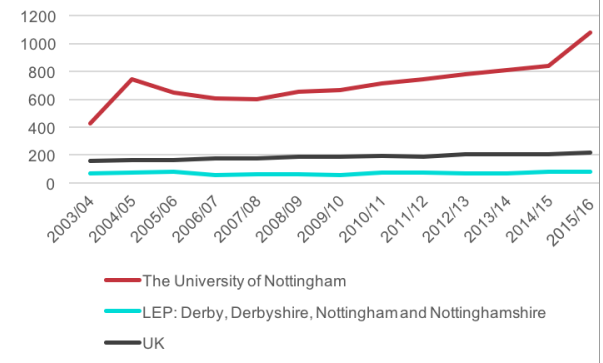


Figure 27: Total number of contracts with SMEs

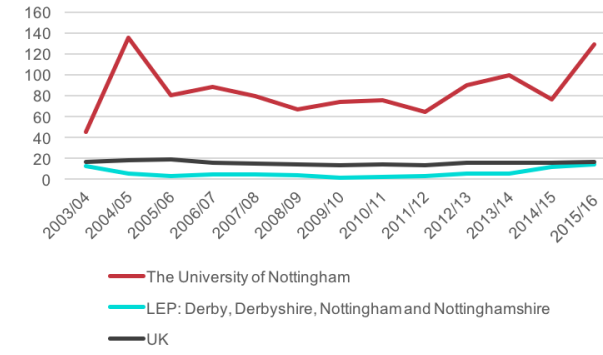


Figure 28: Percentage of contract research involving SMEs

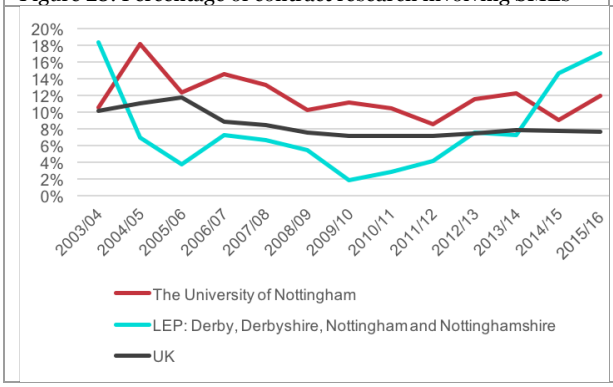
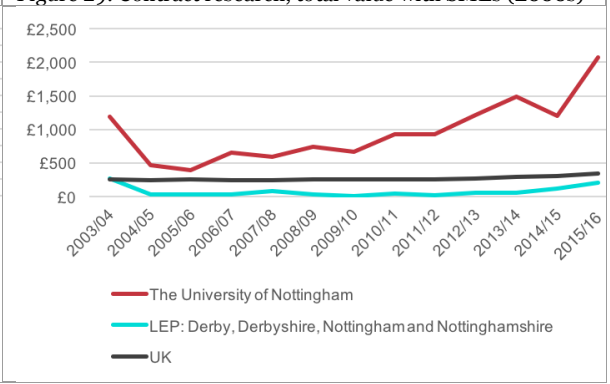


Figure 29: Contract research, total value with SMEs (£000s)



Source: HEBCI

F.3.2 Consultancy

The University of Nottingham reported 685 consultancy contracts in 2015/16. The trend is mostly positive in the last ten years, with the 2015/16 count being a close to tenfold increase from 2003/04. The University of Nottingham figure is similar to the UK average, around 676 contracts, in 2015/16 and substantially higher than the average for the region overall (c. 56 contracts in 2015/16).

There is a clearly positive upward trend for the UK average, albeit the University of Nottingham figures are relatively higher in the last reporting year and more volatile over the longer term (as would be expected when comparing one institution with the average performance for 161).

The university reported consultancy income of close to £5.4M in 2015/16. Total consultancy income peaked in 2012/13 at £9.2m, after which consultancy income declined steadily.

In 2015/16, 191 of the 685 contracts were with SMEs (28% of all contracts). Income from consultancy with SMEs was around £1.4m or 25% of the total, which is above the UK and regional average. The percentage of total consultancy value that involves SMEs has fluctuated in the long-term but has increased steadily since 2011/12, when it was only 2%.

Table 33 Consultancy contracts – Baseline for UNIP and comparators

Figure 30: Total number of consultancy contracts

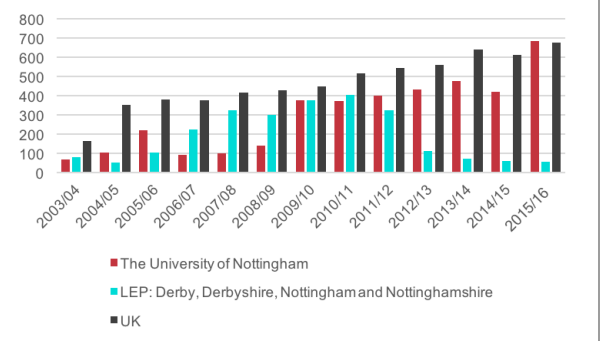


Figure 31: Consultancy number with SMEs

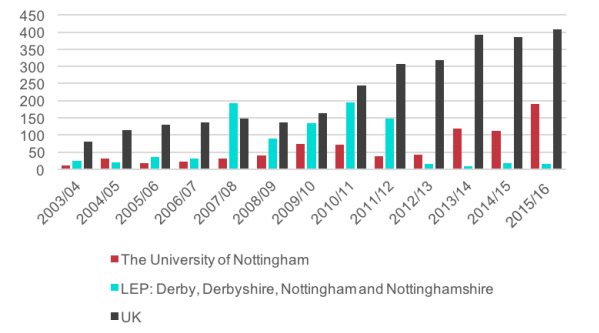


Figure 32: Total income from consultancy (£000s)

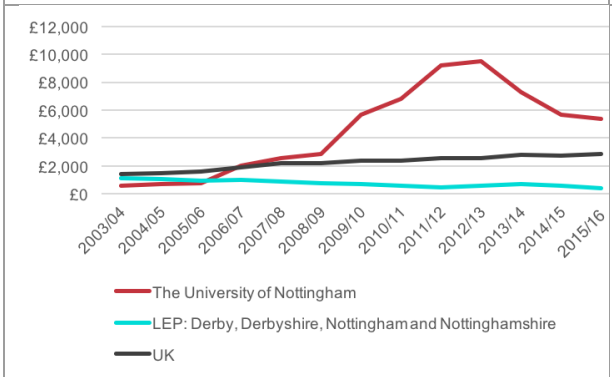


Figure 33: Total income from consultancy with SMEs (£000s)

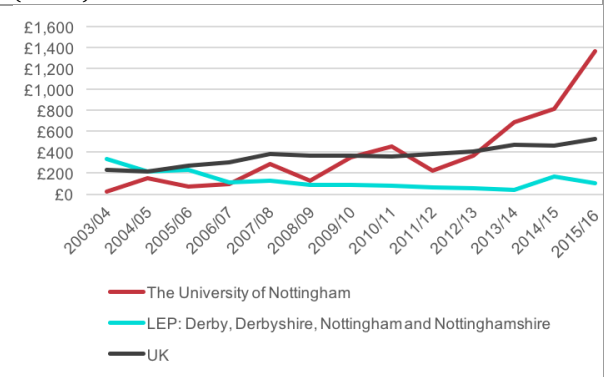


Figure 34: Percentage of consultancy contracts involving SMEs

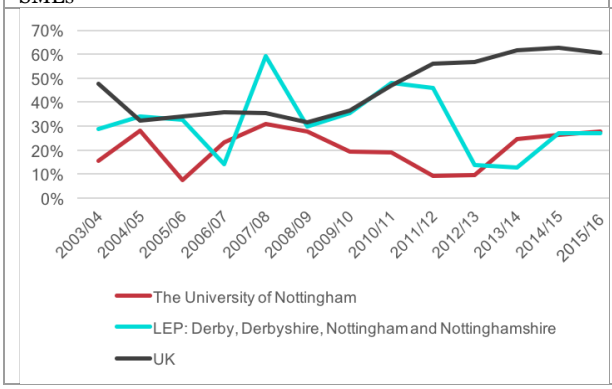
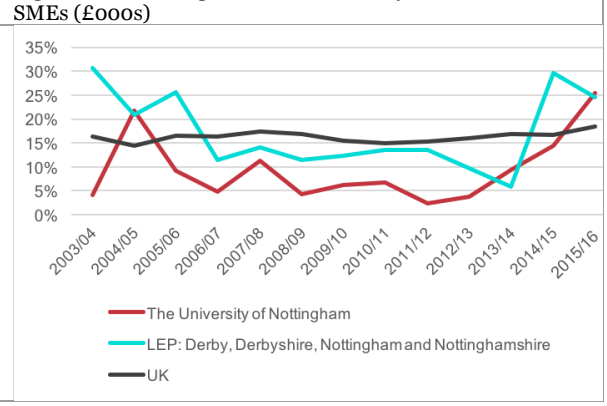


Figure 35: Percentage of total consultancy value that involves SMEs (£000s)



Source: HEBCI

F.3.3 Facilities and equipment

The University of Nottingham provided 310 (£5.4m in total) facilities and equipment related services in 2015/16. In the same year, the university provided facilities and equipment related services to 38 SMEs. As illustrated by means of the figure below, the University of Nottingham has increased it income from facilities and equipment related services that involve SMEs in the last years from only £70k in 2010/11 to close to £2.4m in 2015/16 and this higher than the regional and UK average.

In 2015/16 the University of Nottingham is recording around 32% of the average number of facilities and equipment related services to SMES recorded for the UK overall and 81% for the LEP region.

Table 34 Facilities and equipment related services– Baseline for UNIP and comparators

Figure 36: Total number of facilities and equipment related services

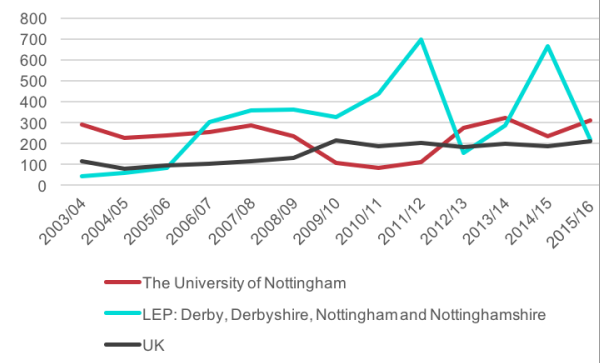


Figure 37: Total number of facilities and equipment related services - SMEs

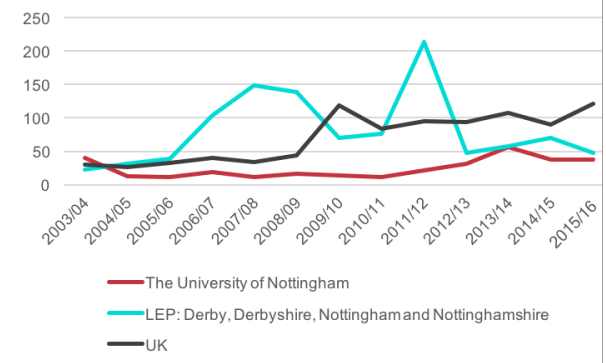


Figure 38: Facilities and equipment related services - total value with SMEs (£000s)

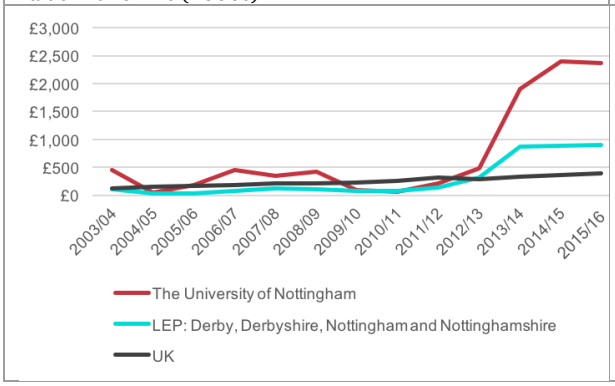
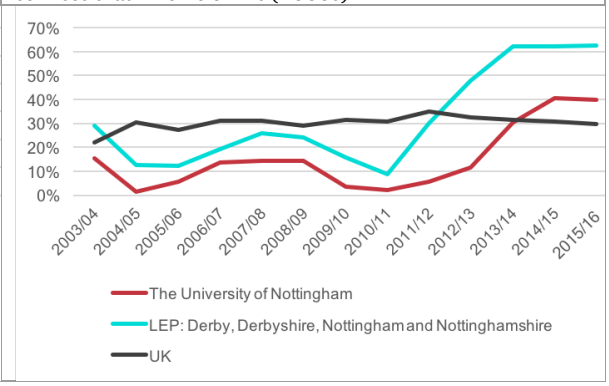


Figure 39: Percentage of facilities and equipment related services that involve SMEs (£000s)



Source: HEBCI

F.3.4 Intellectual Property

The University of Nottingham has registered a substantial income from Intellectual Property from SMEs in recent years: £21k software licences, £119k non-software licences and £128k other types of IP in 2015/16. In the same year, the average combined value of IP from SMES for the UK was £114.

Table 35 Intellectual Property Income from SMEs (£000s) – baseline for UNIP and comparators

	Type	2011/12	2012/13	2013/14	2014/15	2015/16
The University of Nottingham	Software licences	£7	£5	£13	£11	£21
	Non-software licences	£190	£226	£193	£51	£119
	Other IP	£0	£0	£130	£135	£128
LEP: Derby, Derbyshire, Nottingham and Nottinghamshire	Software licences	£11	£6	£5	£5	£0
	Non-software licences	£2	£0	£0	£0	£0
	Other IP	£5	£10	£0	£0	£0
UK	Software licences	£4	£8	£6	£8	£7
	Non-software licences	£52	£51	£54	£70	£100
	Other IP	£10	£9	£6	£8	£7

Source: HEBCI

Since 2004/05, the University Nottingham has not registered any staff start-ups. It has registered a steadier flow of graduate start-ups and a substantial jump in the total number of graduate start-ups from 12 in 2013/14 to 124 in 2015/16, which is well above the national average (about 24 in 2015/16). The estimated current employment of all active firms (FTE), for graduate spin-off activity has increased in recent years, roughly following the national trend. The regional estimated current employment for graduate spin-off activity is substantially higher in the same period. The university estimated that in 2014/15 graduate start-ups received £750k external investment in total.

Table 36 Spin-off activity – Baseline for UNIP and comparators

Figure 40: Staff start-ups

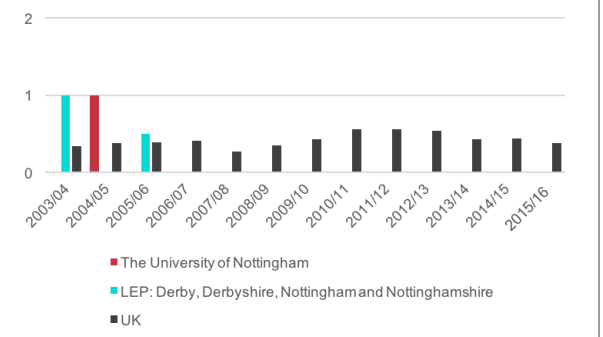


Figure 41: Graduate start-ups

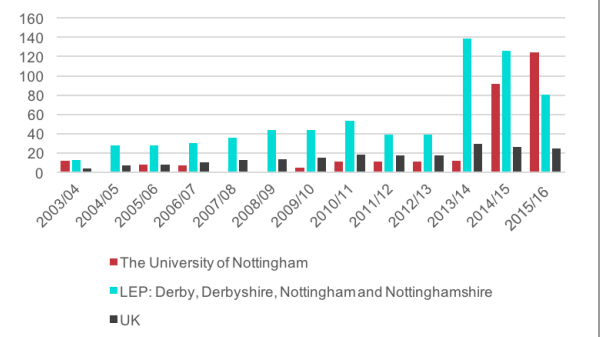


Figure 42: Staff start-ups - estimated current employment of all active firms (FTE)

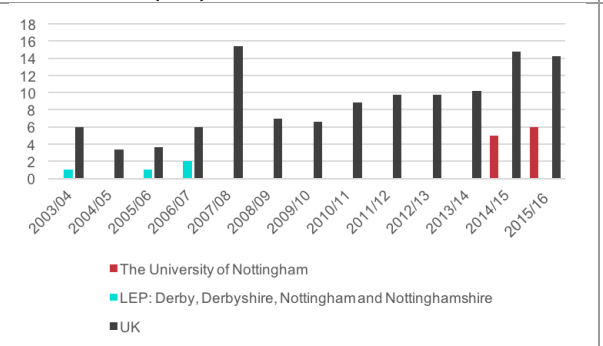


Figure 43: Graduate start-ups - estimated current employment of all active firms (FTE)

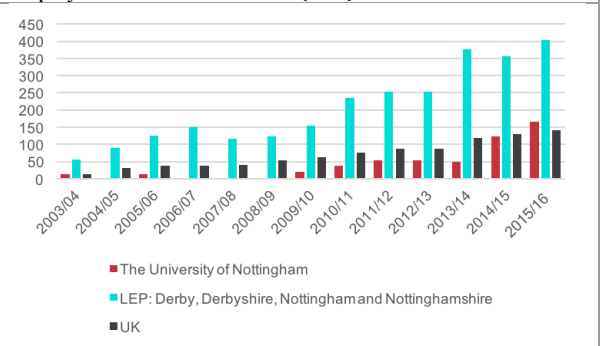


Figure 44: Staff start-ups Estimated current turnover of all active firms (£000s)

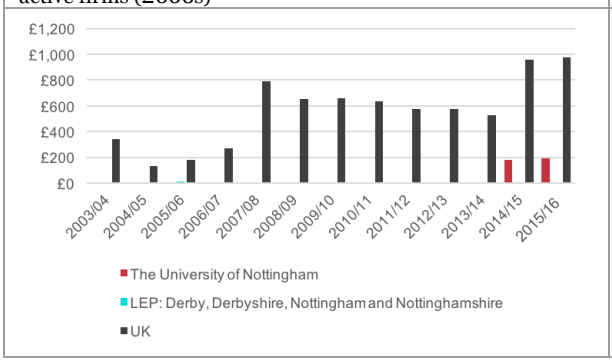
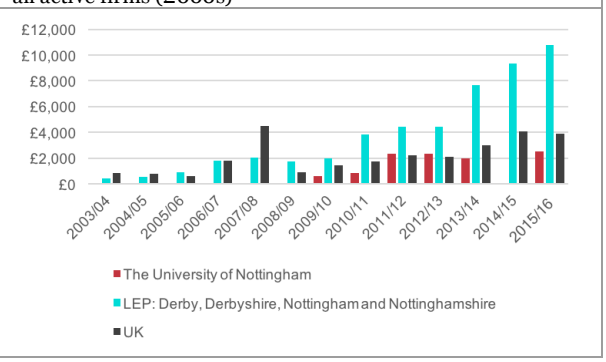


Figure 45: Graduate start-ups Estimated current turnover of all active firms (£000s)



Source: HEBCI

F.4 Liverpool: Sensor City

F.4.1 Contract research

Sensor City has two UEZ partner universities. In 2015/16 the University of Liverpool reported a total of 73 contracts with SMEs, representing 18% of total contract research. The count of contracts with SMEs

decreased from 86 in 2012/14. The value of total contract research with SMEs was close to £2.1m in 2015/16, which more than six times UK average (£339k).

In 2015/16 the Liverpool John Moores University reported a total of 4 contracts with SMEs, representing 3% of total contract research. The count of contracts with SMEs was at similarly low levels in preceding years. The value of total contract research with SMEs was just above £281k in 2015/16, which is 80% of the UK average. The average value of total contract research with SMEs of other universities in the LEP area (i.e. the performance of Liverpool Hope University, Liverpool School of Tropical Medicine, and the Liverpool Institute for Performing Arts) was insignificant in comparison (£2k).

Table 37 Contract research – Baseline for Sensor City and comparators

Figure 46: Total number of contracts

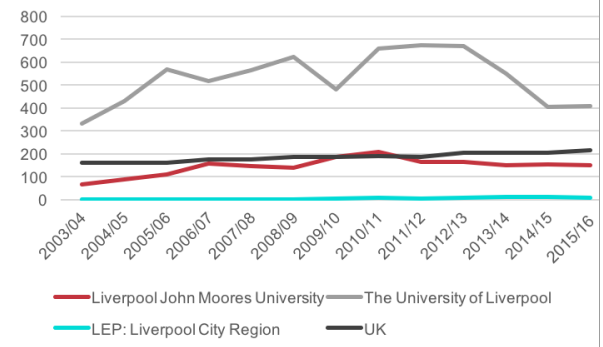


Figure 47: Total number of contracts with SMEs

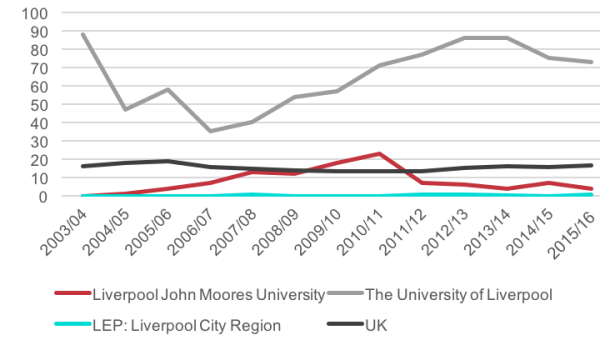


Figure 48: Percentage of contract research involving SMEs

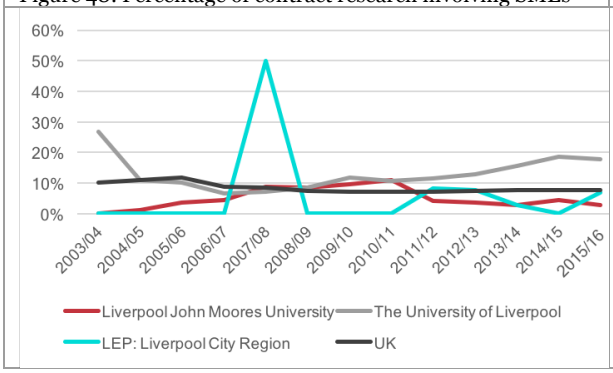
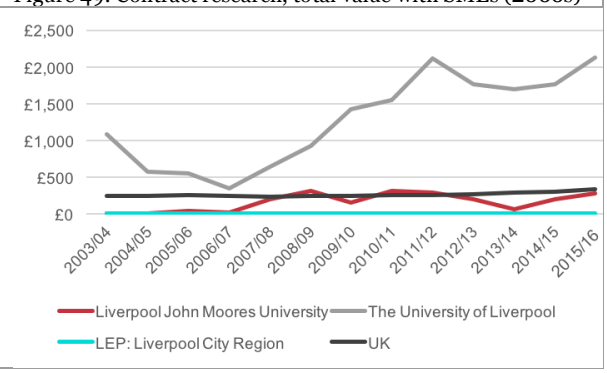


Figure 49: Contract research, total value with SMEs (£000s)



Source: HEBCI

F.4.2 Consultancy

The University of Liverpool has held a total number of 17,251 consultancy contracts, and 16,652 contracts with SMEs. In comparison, the UK average number of contracts was 676 and 408 respectively. The total income derived from consultancy contracts with SMEs has increased from £1.3m in 2003/14 to £104.8m in 2015/16 for the University of Liverpool.

In 2015/16, the Liverpool John Moores University has held 56 consultancy contracts in total and 6 with SMEs.

Table 38 Consultancy contracts – Baseline for Sensor City and comparators

Figure 50: Total number of consultancy contracts

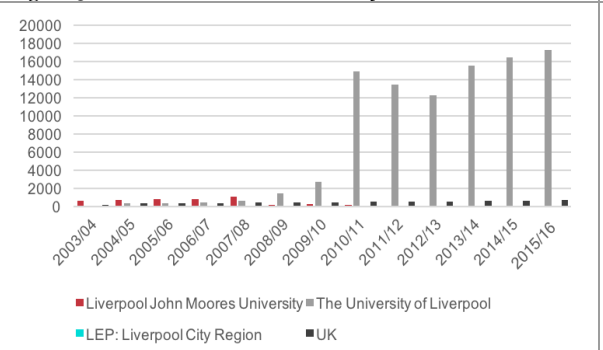


Figure 51: Consultancy number with SMEs

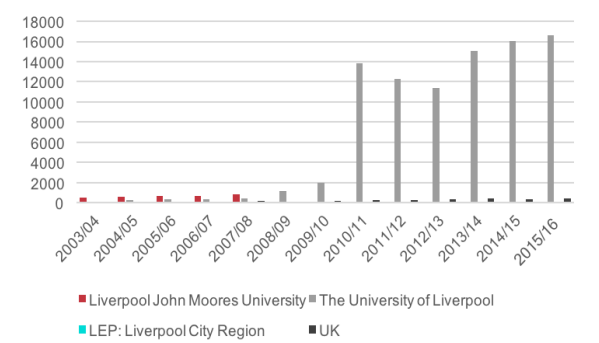


Figure 52: Total income from consultancy (£000s)

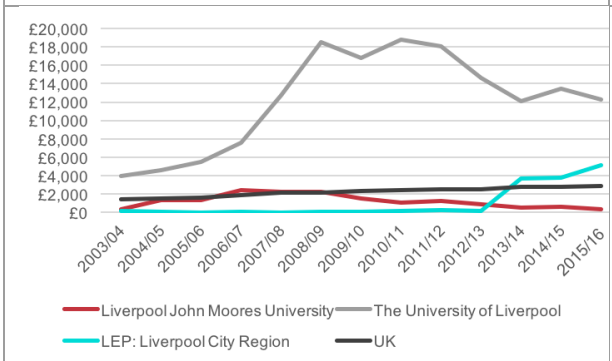


Figure 53: Total income from consultancy with SMEs (£000s)

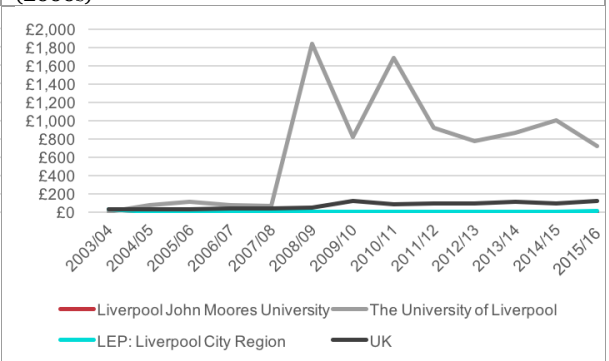


Figure 54: Percentage of consultancy contracts involving SMEs

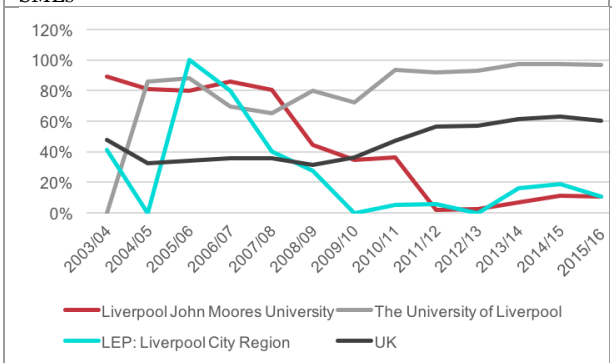
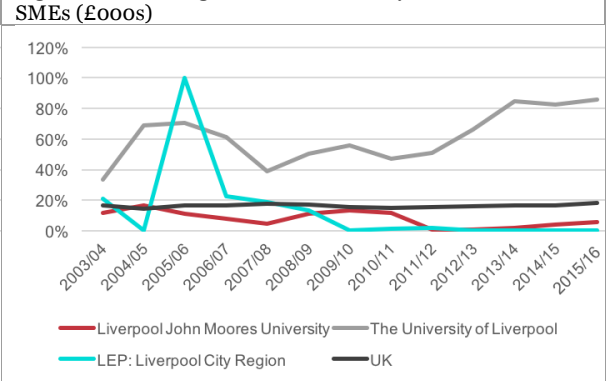


Figure 55: Percentage of total consultancy value that involves SMEs (£000s)



Source: HEBCI

F.4.3 Facilities and equipment

The University of Liverpool was involved in about 720 facilities and equipment related services to SMEs in 2015/16. This is three times the UK average (221 in 2015/16). Income from facilities and equipment related services that involve SMEs for the University of Liverpool have dropped in recent years from £1.5m in 2008/09 to close to £0.2m in 2015/16 and below national average (£388k in 2015/16).

In recent years, Liverpool John Moores University has not registered any or has only a few cases where it provided facilities and equipment related services to SMEs. The University has not registered any substantial income from facilities and equipment related services that involve SMEs in 2015/16.

Table 39 Facilities and equipment related services– Baseline for Sensor City and comparators

Figure 56: Total number of facilities and equipment related services

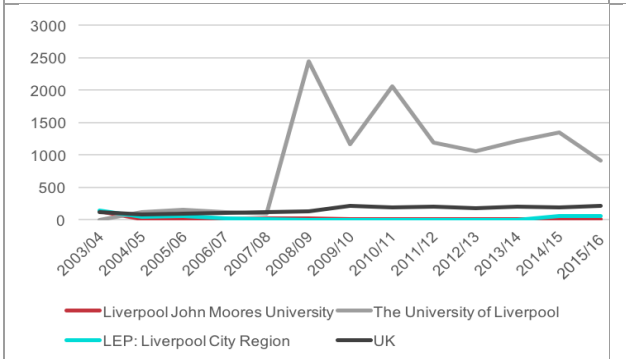


Figure 57: Total number of facilities and equipment related services - SMEs

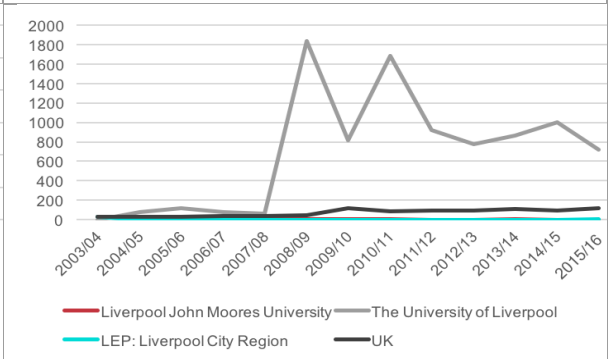


Figure 58: Facilities and equipment related services - total value with SMEs (£000s)

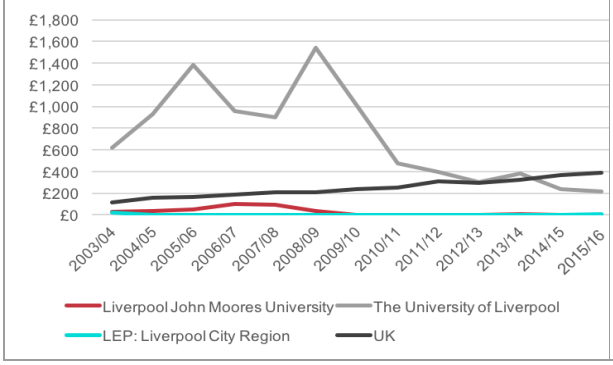
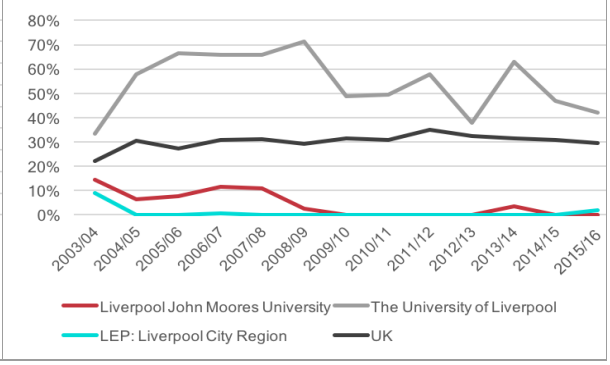


Figure 59: Percentage of facilities and equipment related services that involve SMEs (£000s)



Source: HEBCI

F.4.4 Intellectual Property

The University of the Liverpool has registered £85k of income from non-software licences and from SMEs in 2015/16. This is about 75% of the average income from non-software licences to SMEs (£114k in 2015/16).

Liverpool John Moores University has not registered any income from IP from SMEs in recent years (excluding 2011/12), which, altogether, is not uncommon.

Table 40 Intellectual Property Income from SMEs (£000s) – baseline for Sensor City and comparators

	Type	2011/12	2012/13	2013/14	2014/15	2015/16
The University of Liverpool	Software licences	£0	£5	£3	£4	£1
	Non-software licences	£52	£97	£96	£76	£85
	Other IP	£0	£0	£0	£0	£0
Liverpool John Moores University	Software licences	£0	£0	£0	£0	£0
	Non-software licences	£5	£0	£0	£0	£0
	Other IP	£5	£1	£0	£0	£0
LEP: Liverpool City Region	Software licences	£0	£0	£0	£0	£0
	Non-software licences	£0	£0	£0	£0	£0
	Other IP	£0	£0	£0	£0	£0
UK	Software licences	£4	£8	£6	£8	£7
	Non-software licences	£52	£51	£54	£70	£100
	Other IP	£10	£9	£6	£8	£7

Source: HEBCI

Both UEZ partner universities have registered only few staff start-ups in the years 2003/04 -2015/16. Liverpool John Moores University estimated between 127 and 61 graduate start-ups in the last years. By contrast the University of Liverpool only registered between 4 and 21 in the same years.

Estimated current employment of all active firms (FTE) for Liverpool John Moores University was 431 in 2015/16, about three times the national average (141). Moreover, graduate start-ups' estimated current turnover of all active firms was £17.1m in 2015/16 for Liverpool John Moores University and this is four times the UK average figure (£3.9m).

Table 41 Spin-off activity – Baseline for Sensor City and comparators

Figure 60: Staff start-ups

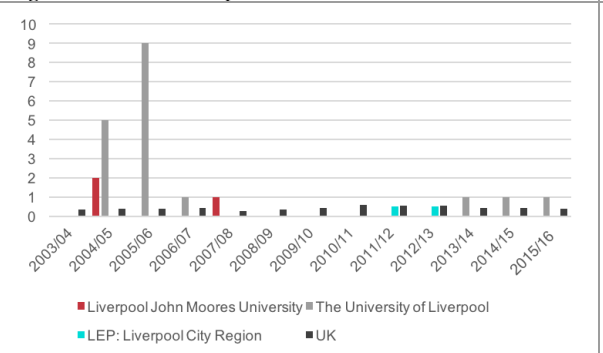


Figure 61: Graduate start-ups

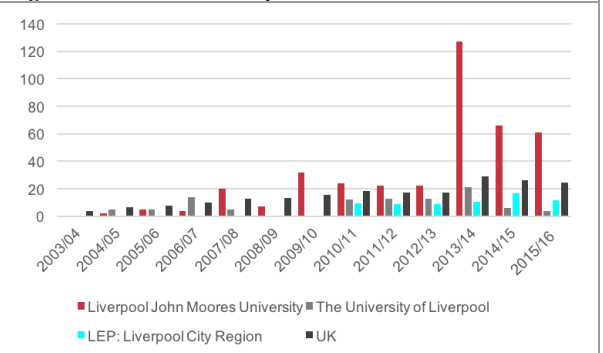


Figure 62: Staff start-ups - estimated current employment of all active firms (FTE)

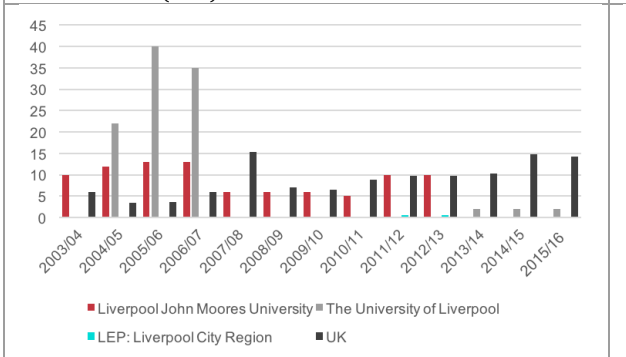


Figure 63: Graduate start-ups - estimated current employment of all active firms (FTE)

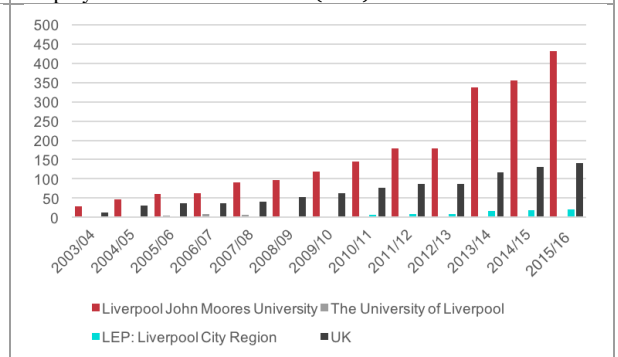


Figure 64: Staff start-ups Estimated current turnover of all active firms (£000s)

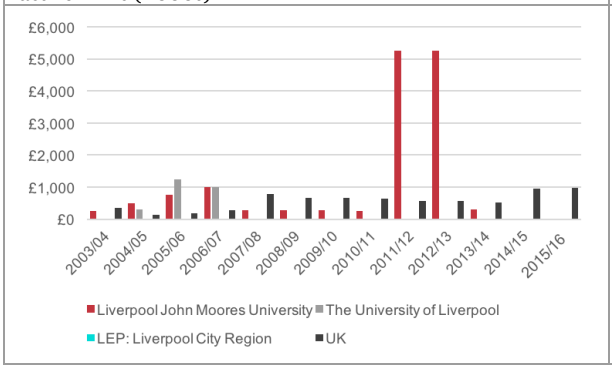
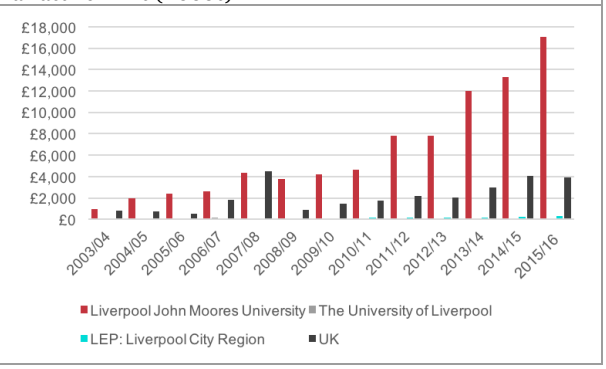


Figure 65: Graduate start-ups Estimated current turnover of all active firms (£000s)



Source: HEBCI

F.5 Bradford Digital Health Enterprise Zone

F.5.1 Contract research

In 2015/16, the University of Bradford has reported 107 contracts in total and 34 (32%) with SMEs. The number of contracts with SMEs dropped from 99 in the preceding year. As a result of this drop, the university's track record of contract research overall has fallen closer to the UK average. Over these years, the University of Bradford has increased its engagement with contract research involving SMEs. As illustrated in the figure below, the proportion of contract research involving SMEs was 58% in 2014/15.

In 2015/16 University of Bradford held about half of the average total number of research contracts for the UK overall and double the average of SME contracts. It held about three times the number of SME contracts of the average of the LEP region (i.e. Leeds Beckett University, Leeds College of Art, Leeds

College of Music, Leeds Trinity University, University of Huddersfield, University of Leeds, University of York, and York St John University).

Table 42 Contract research – Baseline for DHEZ and comparators

Figure 66: Total number of contracts

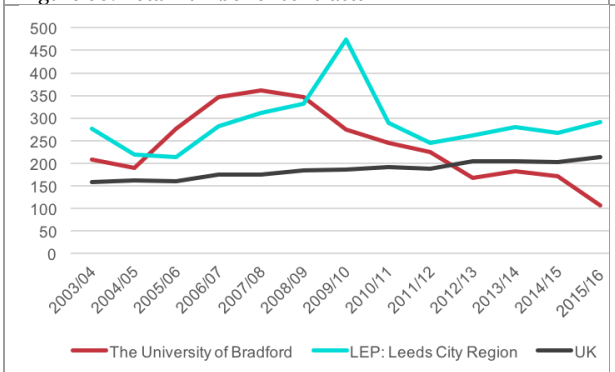


Figure 67: Total number of contracts with SMEs

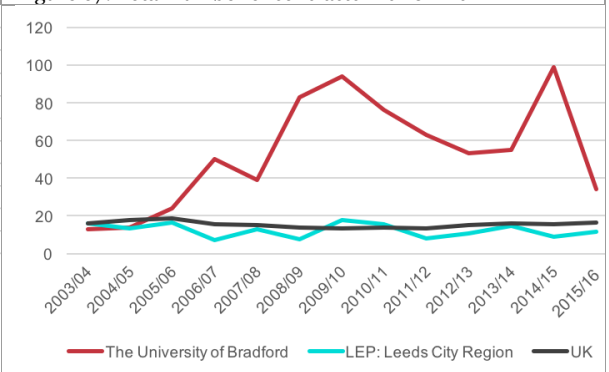


Figure 68: Percentage of contract research involving SMEs

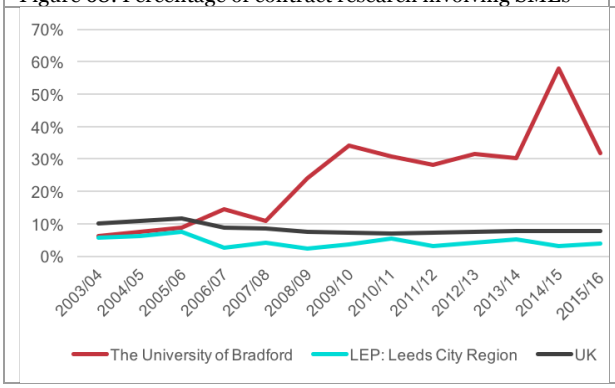
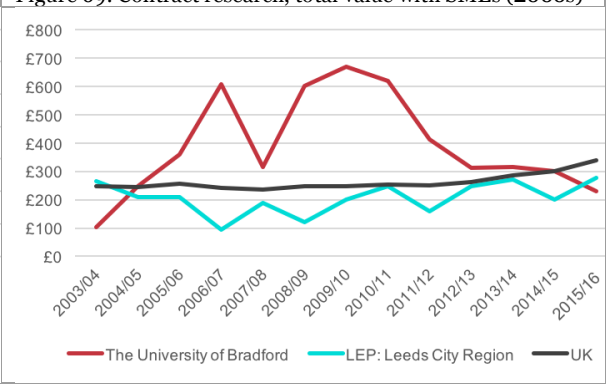


Figure 69: Contract research, total value with SMEs (£000s)



Source: HEBCI

F.5.2 Consultancy

In terms of consultancy contracts, the University of Bradford has held 38 contracts with SMEs in 2015/16. This is about 15% of the number of contracts held on average by other universities in the region (257) region and less than ten percent of the average contracts held across the UK.

The University of Bradford received £322k in total from consultancy in 2015/16. The total income derived from consultancy contracts with SMEs was £100k in 2015/16 and £144k on average for 2003/04 -2015/16. It has fluctuated over the years, as has consultancy income from SMEs in other universities in the region.

Table 43 Consultancy contracts – Baseline for DHEZ and comparators

Figure 70: Total number of consultancy contracts

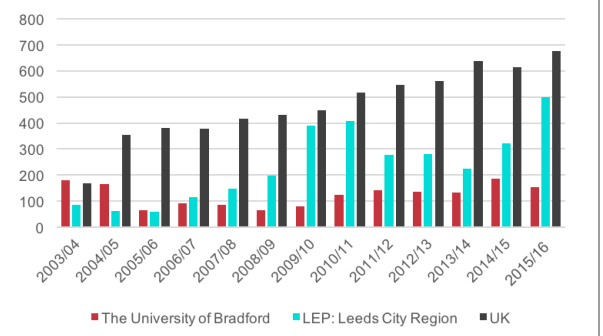


Figure 71: Consultancy number with SMEs

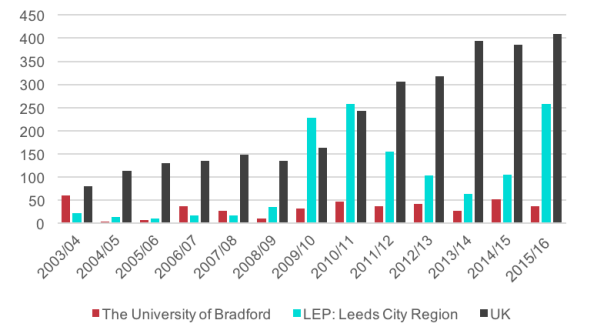


Figure 72: Total income from consultancy (£000s)

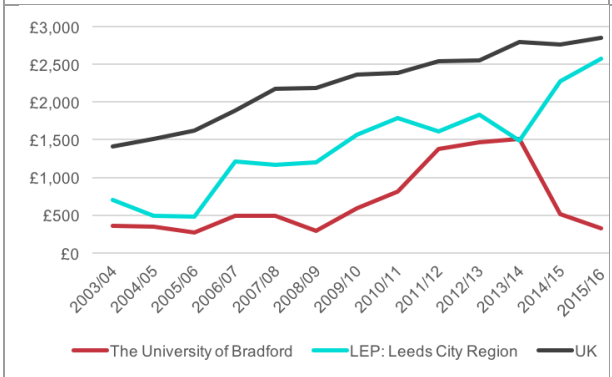


Figure 73: Total income from consultancy with SMEs (£000s)

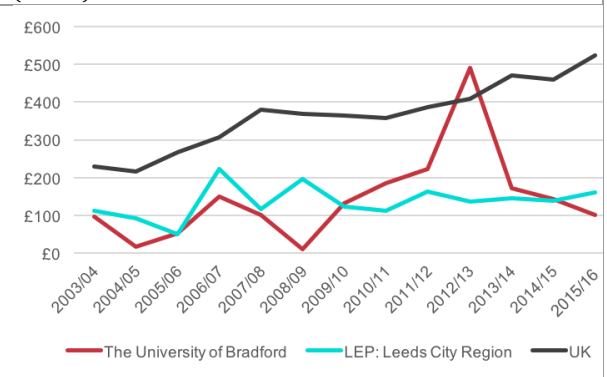


Figure 74: Percentage of consultancy contracts involving SMEs

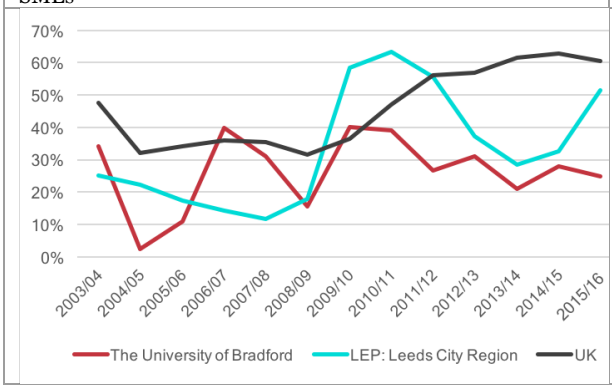
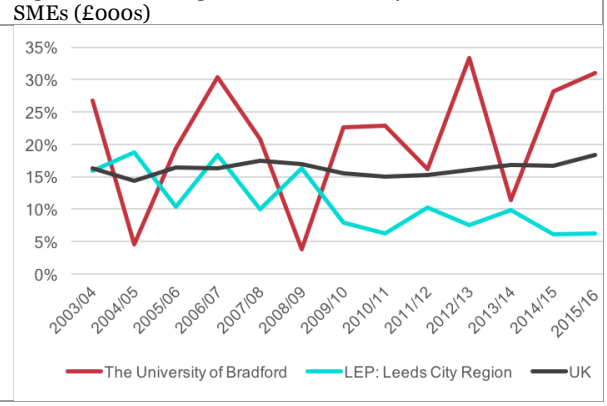


Figure 75: Percentage of total consultancy value that involves SMEs (£000s)



Source: HEBCI

F.5.3 Facilities and equipment

The University of Bradford was involved in 27 facilities and equipment related services in 2015/16. By contrast, the average total number of facilities and equipment related services of other universities in the region was substantially higher: up to 1,294 in 2015/16, which also is considerably higher than the average across UK HEIs.

In 2015/16, the university provided facilities and equipment related services to 16 SMEs.

Table 44 Facilities and equipment related services– Baseline for DHEZ and comparators

Figure 76: Total number of facilities and equipment related services

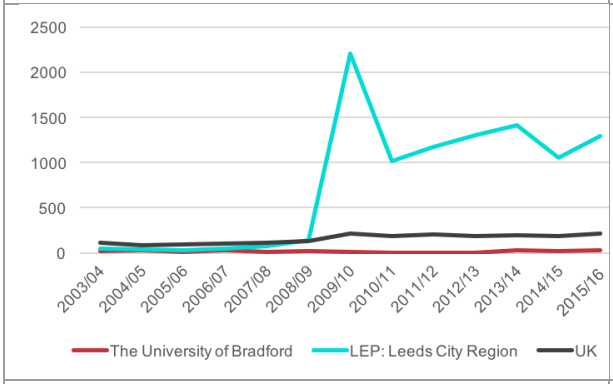


Figure 77: Total number of facilities and equipment related services - SMEs

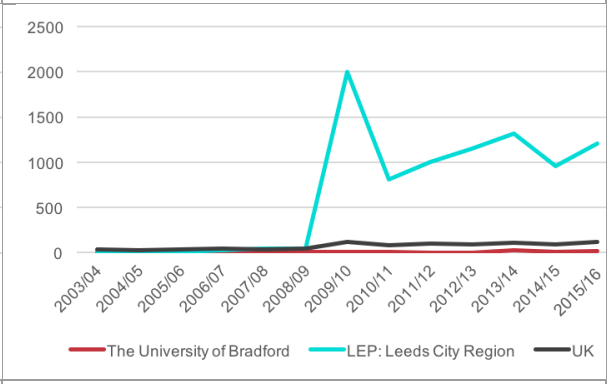


Figure 78: Facilities and equipment related services - total value with SMEs (£000s)

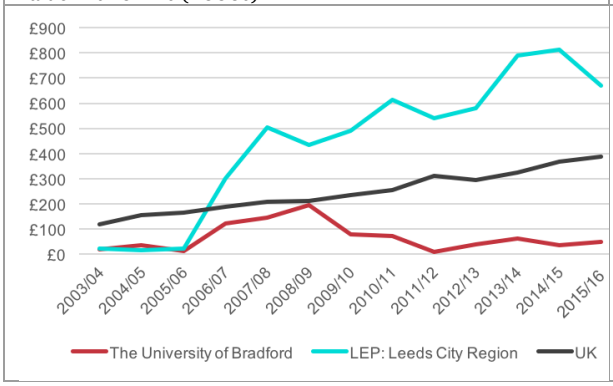
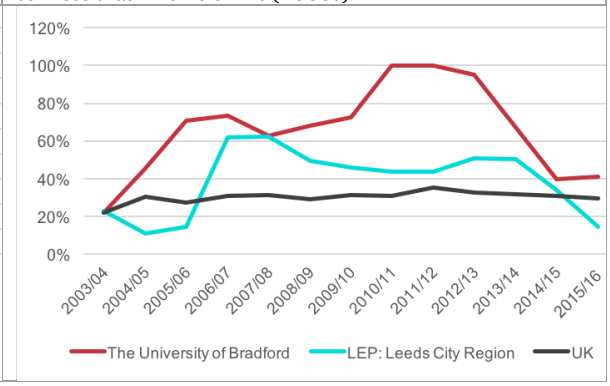


Figure 79: Percentage of facilities and equipment related services that involve SMEs (£000s)



Source: HEBCI

F.5.4 Intellectual Property

The University of Bradford has registered £62k income from non-software licences with SMES in 2015/16 and a similar figure in the previous year. The combined income from IP from SMEs in 2015/16 is above half of the UK average and 85% of the average of other universities in the region.

Table 45 Intellectual Property Income from SMEs (£000s) – baseline for DHEZ and comparators

	Type	2011/12	2012/13	2013/14	2014/15	2015/16
The University of Bradford	Software licences	£0	£0	£0	£0	£0
	Non-software licences	£0	£0	£0	£57	£62
	Other IP	£0	£0	£0	£0	£0
LEP: Leeds City Region	Software licences	£1	£16	£0	£4	£0
	Non-software licences	£4	£7	£21	£25	£23
	Other IP	£34	£53	£31	£60	£51
UK	Software licences	£4	£8	£6	£8	£7
	Non-software licences	£52	£51	£54	£70	£100
	Other IP	£10	£9	£6	£8	£7

Source: HEBCI

Since 2013/14, the University of Bradford has not registered any staff spin-offs. Up until 2013/14 it registered a steadier flow of graduate spin-offs (between and 7 and 18). In 2014/15 and 2015/16 only one or two graduate spin-offs were registered and the estimated current employment of all active firms (FTE) and current turnover of all active firms dropped close to zero in these years.

Table 46 Spin-off activity – Baseline for DHEZ and comparators

Figure 80: Staff start-ups

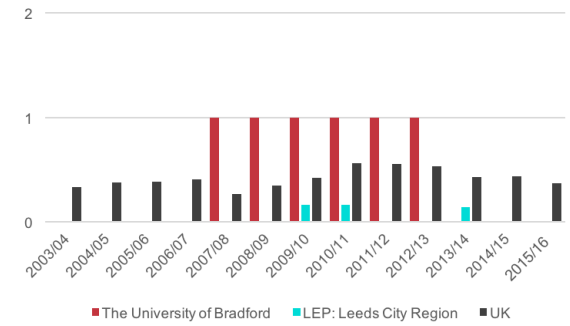


Figure 81: Graduate start-ups

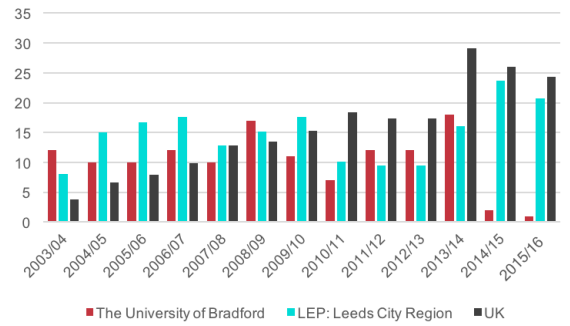


Figure 82: Staff start-ups - estimated current employment of all active firms (FTE)

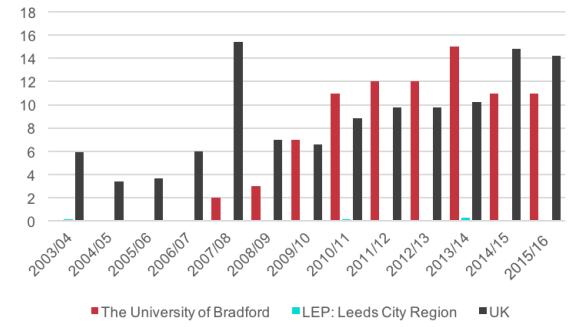


Figure 83: Graduate start-ups - estimated current employment of all active firms (FTE)

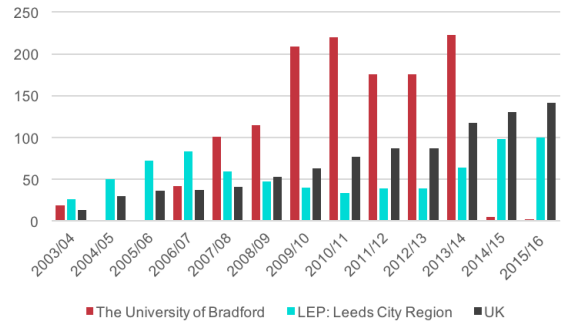


Figure 84: Staff start-ups Estimated current turnover of all active firms (£000s)

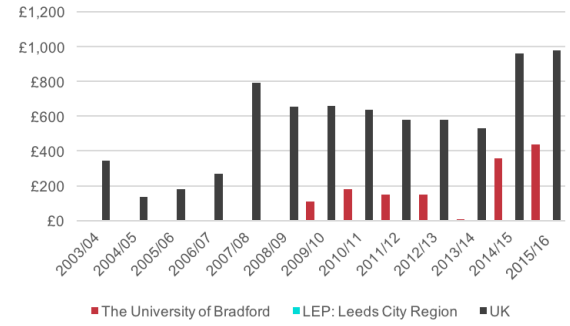
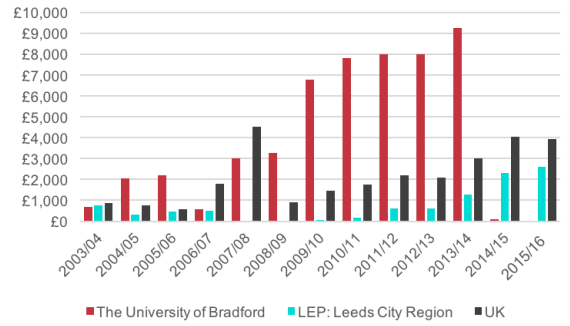


Figure 85: Graduate start-ups Estimated current turnover of all active firms (£000s)



Source: HEBCI

Appendix G Existing business space provision in the UEZ regions

As shown in Table 47, some of the regions in which the UEZs are located already have a number of other business accelerators and incubators. The North West (home to Liverpool) has amongst the largest distribution of accelerators and incubators outside London and the South East. However, the majority of these north west-based accelerators and incubators have no overlap with Sensor City's focus on sensor technologies (albeit that L Marks in Manchester, the Up Accelerator in Manchester, Open Future North in Oldham, and the Sci-Tech Daresbury Incubator in Warrington all focus on digital technologies).

In contrast, the East Midlands (home to Nottingham), Yorkshire and Humber (home to Bradford) and the South West (home to Bristol) all have less than 30 accelerators or incubators, putting them amongst regions with the lowest numbers of incubators and accelerators in the UK.

For each of the four regions where there is UEZ, start-up rates are comparatively low. As shown, the business births per 1,000 population in each of the four regions is below the equivalent UK-wide rate.

Table 47 The distribution of accelerators and incubators across the UK

UK region	No. of accelerators[12]	No. of incubators[13]	Total	Business births per 1000 population[14]
East Midlands	9	17	26	5.20
East of England	7	17	24	5.50
London	80	33	113	11.21
North East	5	6	11	3.50
North West	12	19	31	4.89
Northern Ireland	3	3	6	2.80
Scotland	10	22	32	3.87
South East	13	33	46	5.90
South West	7	20	27	4.46
Wales	3	6	9	3.47
West Midlands	11	21	32	4.90
Yorkshire and Humber	9	17	26	4.45
UK total	169	214	383	5.62

Source: Technopolis analysis of BEIS and ONS data

Table 48 shows the distribution of accelerators and incubators in each of the UEZ cities. Bradford only has one other incubator but the other three cities all have a number of other incubators and accelerators. Start-up rates also vary across the four cities. Bristol's is above the national average but Bradford and Nottingham's are substantially below.

[12] Drawing on latest available data, BEIS *UK Business Incubators and Accelerators Directory* (2017)

[13] Ibid.

[14] Figures for 2015 from the Office for National Statistics

Table 48 The distribution of accelerators and incubators in UEZ cities

City	No. of accelerators[15]	No. of incubators[16]	Total	Business births per 1000 population[17]
Bradford	0	1	1	4.24
Bristol	3	3	6	5.79
Liverpool	2	5	7	4.94
Nottingham	2	4	6	4.15
UK total	169	214	383	5.62

Source: Technopolis analysis of BEIS and ONS data

[15] Drawing on latest available data, BEIS *UK Business Incubators and Accelerators Directory* (2017)

[16] Ibid.

[17] Figures for 2015 from the Office for National Statistics, using equivalent local authority districts for each city

Appendix H Case studies

H.1 Introduction

This section presents a descriptive overview of each UEZ in turn. Each UEZ is run in a different manner and in a very different context so this section examines each one, setting out the delivery approach adopted. It draws on information gathered through the scoping consultations, findings from the site visits, each UEZ's bid documents, and publicly available literature.

H.2 Future Space

H.2.1 Introduction

Future Space, the West of England University Enterprise Zone, is located within the University of the West of England's (UWE) Frenchay Campus, approximately 8 miles from Bristol city centre. Covering 4,000 sqm, the premises provide a range of offices, workshops, labs and more informal space that is designed to foster a collaborative culture. Within this larger area, Future Space has 2,199 sqm set aside for lettable business space and lab space.

Housed inside a former Hewlett Packard R&D fabrication facility, Future Space sells itself not only as modern, state-of-the-art business accommodation, but also as somewhere that sits at the heart of a much broader technology and innovation ecosystem. It is co-located with the renowned Bristol Robotics Laboratory (BRL) and with UWE Launch Space, which is an innovative incubation and acceleration programme for graduate start-ups underpinned by an MA in Entrepreneurship. It is situated at the centre of UWE's Frenchay Campus, providing easy access and close links to the university's facilities (including the Bristol Business School located on the campus), research, staff, and students. The Future Space brand has been applied to the entire building housing the UEZ, BRL and Launch Space rather than just the areas that have been UEZ-funded although this evaluation has only examined the UEZ-funded components of Future Space (i.e. it excludes BRL and Launch Space).

Although led by UWE. The UEZ also receives more informal support from the University of Bristol, a partner in BRL. Both universities have publicly stated their commitment to facilitate increased knowledge exchange, especially enterprise and innovation linked to research led by their universities.[18]

UWE's approach to engaging with SMEs, spin-offs and start-ups

UWE has developed and implemented a strategic plan for business engagement. UWE has in-house capability to seek out IP licensing opportunities. In order to provide support to SMEs, UWE has an enquiry point, offers assistance to SMEs in specifying their needs and has a required contracting system for all staff business and community interaction activities. UWE has science park accommodation for spin-offs and start-ups and can help venture funding through various partner organisations (e.g. IP Group, Imperial Innovations, Fusion IP). Moreover, the university provides entrepreneurship training to spin-offs and start-ups but do not provide (support with) raising seed corn investment and venture capital to spin-offs and start-ups.

Source: HEBCI data for 2015/16 - see also Appendix A

H.2.2 Objectives

The West of England UEZ bid set out the overarching objective of "increas[ing] long-term innovation and growth through university-business collaboration" and "facilitating the growth of technology-based business and the synergy between R&D and applied research and new business growth." By fostering and hosting such activity, the UEZ would be at the heart of a dynamic and innovative cluster. To achieve these overarching goals, the bid also presented some more specific objectives focusing on:

[18] See the *UWE Bristol Strategy 2020 and the* University of Bristol's *Research and Enterprise Strategy 2009-2016*.

- Stimulating and supporting university / business collaboration, especially early-stage, small, and innovative businesses
- Facilitating research and knowledge exchange between business and academic researchers, and the student community
- Addressing a shortage of private investment in suitable office, workshop and laboratory space
- Making technical support as well as business support more easily available to start-ups and small businesses
- Facilitating the recruitment of skilled graduates and postgraduate students by businesses in the UEZ

Supporting these strategic objectives, the West of England's bid also included a series of economic targets. The bid envisaged the UEZ accommodating approximately 56 companies, providing 190 jobs in tenant companies. It also forecast knock-on benefits to the rest of the local economy, enabling local growth by encouraging business-to-business collaboration and innovation. The project was therefore expected to generate around 520 gross jobs and additional GVA of £5.2 million at the local level during the first ten years of operation.

H.2.3 Focus

The West of England UEZ's core focus is on 'deep-tech' and its application in the following 10 sectors: robotics & autonomous systems, biotech & medtech, small pharma, digital healthcare, assisted living, cleantech, product design, and export & sourcing. In practice, the UEZ makes their facilities and support services available to any business that feel could benefit from them. As noted by one consultee during the evaluation visit, Bristol's innovation focus is very broad and as such, Future Space feels it can secure innovative clients without placing explicit sector restrictions. Nevertheless, in Future Space's early days, it did tend to attract a higher proportion of robotics-centred firms owing to its co-location with BRL. UWE has also been interested in taking research to the higher Technology Readiness Levels (TRLs), acknowledging universities alone struggle to get research beyond TRL 7 (technology demonstration). Part of the UEZ's focus has been to help take UWE-linked research much closer to commercialisation.

H.2.4 Overview of facilities offered

The West of England UEZ has provided a variety of different services ranging from[19]:

- **Provision of office space:** workspace options range from:
  - Virtual membership: this offers a mailing address, reception services, and meeting room discounts (from £40 p/m)
  - Hot desk membership: provides ad-hoc space in collaborative shared space (from £125 p/m)
  - Shared office memberships: provides dedicated desks in shared space alongside business support, and meeting room discounts (from £250 p/m)
  - Dedicated offices: a private office for 1-15 people (from £500 p/m)
- **Lab space:** including shared, equipped labs; and dedicated labs and workshops, tissue culture lab, microbiology lab, general bioscience lab
- **Meeting space:** these cover formal ones such as meeting rooms, but also more informal meeting and collaboration space, most notably through the Hub, a large café with several semi-private meeting pods
- **Business support:** the UEZ provides dedicated business support advisers at Future Space who cover topics such as strategic and growth planning, business modelling, finance sourcing and planning, market analysis, and business coaching.

[19] https://www.futurespacebristol.co.uk/office-space-in-bristol/

- **Sector expertise:** Future Space highlights the links it has with UWE research experts in robotics and autonomous systems, assisted living, biotech and medtech, cleantech, small pharma, product design, digital healthcare and export and sourcing.
- **University links:** the UEZ provides its tenants with access to graduate recruitment services, to internship programmes, and wider facilities such as catering, libraries and sports complexes.

Implementation of the UEZ has followed the plans set out in the bid. Site visit consultees added that the goals, activities, and intended outcomes remain the same as those set out in the application process. The only notable deviation from the bid was a reconfiguration to the building's layout, brought about by a change in demand for the proposed biotech/medtech space.

H.3 Ingenuity Centre

H.3.1 Introduction

Opened in 2016, the Ingenuity Centre is a purpose-built structure, part-funded using UEZ capital funding. It is located on the University of Nottingham Innovation Park (UNIP), within the Jubilee Campus of the University of Nottingham, close to the city centre. A business incubation site for technology-driven start-ups and new businesses, it includes 11,000 sqm of lettable business space and also contains as an anchor tenant the Haydn Green Institute's Ingenuity Lab: co-working and informal space, and entrepreneurial support available to the University's students and alumni.

The Ingenuity Centre has 2,000 sqm business space. As well as being an innovation community in its own right, the Ingenuity Centre is part of the wider eco-system of the University of Nottingham Innovation Park (UNIP). UNIP provides a good stepping-off point for wider collaborations too, including for example with the East Midlands Centre of Excellence in Satellite Applications at the University of Leicester (one of five regional centres of excellence supported by the Satellite Applications Catapult). As another example, the Ingenuity Lab (part of the Ingenuity Centre) is run by the Haydn Green Institute for Innovation and Entrepreneurship (HGI); the HGI has close links to the Nottingham Business School and its larger pool of leading academic experts and practitioners (able to give advice / lead seminars on topical issues from raising finance to internationalisation.

Unusually, the University of Nottingham has designated the whole of the University of Nottingham Innovation Park as a University Enterprise Zone, in recognition of the potential for greater interaction and overall support for all of its research centres and business support activities. The Ingenuity Centre is the UEZ in formal terms, as defined by the BEIS grant). For information however, UNIP includes the following buildings and centres:

- Sir Colin Campbell Building: a business innovation centre with over 2,000 sqm of accommodation for innovative businesses with units ranging from 30 sqm to 120 sqm
- Nottingham Geospatial Building: provides office space for high tech companies operating in satellite navigation, and geodetic engineering. The building offers business and incubation services
- Institute of Mental Health Building (IMH): the IMH is a partnership between The University of Nottingham and Nottinghamshire Healthcare NHS Trust that aims to enable innovative research and pioneering educational activities in the field of mental health. The building provides specialist laboratories, training rooms, offices and meetings rooms for use by the IMH
- Aerospace Technology Centre (ATC): an 1,800 sqm research and knowledge transfer centre dedicated to aerospace. It houses multidisciplinary projects, provides space for large-scale demonstrators, and provides links to industry
- Energy Technologies Building (ETB): a 2,500 sqm showcase building for low carbon technologies, it includes laboratory space for low carbon innovations, office accommodation, and seminar and exhibition rooms
- The Romax Technology Centre: a 3,100 sqm building housing activities for Romax Technology, a gearbox, driveline simulation and engineering company

- GSK Centre for Sustainable Chemistry: a building designed to act as hub to catalyse new collaborations with industry in the field of sustainable chemistry. The building covers 4,500 sqm and provides lab space for approximately 100 researchers as well as dedicated instrument rooms and a teaching laboratory for advanced undergraduate classes

A central UNIP team manages all these facilities, giving tenants in all buildings (and virtual tenants) access to events, support services, and networking opportunities.

UEZ clients have a choice of different memberships, which determines the buildings they can access. Virtual members pay £65 per month and have access to the networking and support events, as well as a mailbox at The Ingenuity Centre. The UEZ also rents out the following types of office space: co-working space (£99 pcm), single desks (£200 pcm), and office space, all charged by the square metre. At the time of writing, the UEZ had not marketed all of its office space, as fit out was not complete in all parts of the building. Two organisations currently hold leases at the Centre. Its anchor tenant is the Haydn Green Institute's Ingenuity Lab, which takes up most of the top floor of the Ingenuity centre. The University's IP Office is the second leaseholder, taking up the remaining space on the top floor.

The University has seen the Ingenuity Centre as a way to expand and diversify its business support model (and associated facilities and services). In particular, it is viewed as a way to facilitate very many more people 'bumping into one another,' as well as providing good additional space to hold events.

The UEZ is managed by UNIP Management Limited (UML), a private company wholly owned by the University. UML advises prospective clients on which of the facilities on the UNIP (or elsewhere) are most suitable. UML also works closely with the university's Technology Transfer Office.

University of Nottingham's approach to engaging with SMEs, spin-offs and start-ups

The University of Nottingham has developed and implemented a strategic plan for business engagement and for public and community engagement. The university has in-house capability to seek out IP licensing opportunities and in order to provide support to SMEs, the University of Nottingham has an enquiry point, offers assistance to SMEs in specifying their needs and has a required contracting system for all staff business and community interaction activities. The university provides entrepreneurship training to spin-offs and start-ups and (support with) raising seed corn investment and venture capital.

Source: HEBCI data for 2015/16 - see also Appendix A

H.3.2 Objectives

For the University of Nottingham, the main objective of the Ingenuity Centre is to help diversify and extend their pre-existing business support. In particular, they recognised some deficiencies in (i) their offer to virtual tenants and in (ii) the amount of co-working space. The bid set out a series of more specific objectives, namely:

- To be recognised as a national exemplar of university-business interaction
- To become a key UK asset for the attraction of overseas investment
- The Ingenuity Centre to spawn high-growth businesses in the Derby, Derbyshire, Nottingham and Nottinghamshire (D2N2) LEP's priority sectors, which move on to grow-on space elsewhere on campus or elsewhere in the locality, and have the potential to become major economic players
- To be fully integrated into wider D2N2 business accommodation and job creation activities

Underpinning these goals is a desire to create a "community of technology entrepreneurship" encompassing local entrepreneurs, entrepreneurial students, academics and professors of practice.

Supporting these strategic objectives, the University of Nottingham's bid also included a series of economic targets:

- Assist in the creation of 50 new businesses by 2019, generating 350 new jobs and delivering a combined turnover of £25 million by 2021
- Maintain the Ingenuity Centre's occupancy at 85%+ from 2019 onwards
- Double the number of business tenants on the campus by 2019
- Secure four new inward investment projects on UEZ expansion land within three years of its development

H.3.3 Focus

The University of Nottingham decided against having a thematic or sectoral focus at the Ingenuity Centre, offering support to businesses covering diverse themes such as zero carbon chemistry, aerospace, and advanced manufacturing. Nevertheless, UNIP has been somewhat selective in selecting clients. One requirement for taking space at the Ingenuity Centre is having some connection with the university (e.g. be alumni, have research links, or be existing users of its research facilities), or be looking to develop some (e.g. want to take on students as interns, want to work with specific researchers). Indeed, UNIP staff said they would rather keep some space vacant than have it occupied by firms who do not stand to benefit from the association with the university.

UML staff said most of the Ingenuity Centre tenants operate at Technology Readiness Levels (TRLs) 3, 4 and 5 although there is a limited number operating at TRL 6.

H.3.4 Overview of facilities offered

The UEZ's implementation has followed what was proposed in the bid. Built as a circular building, the Ingenuity Centre has a large lobby/reception area that also serves as an events venue. A bar and coffee area will also be set up adjacent to the lobby area (replacing vending machines currently located there), again to encourage greater interaction. The building also provides a lecture room, two other meeting rooms, and office space which can easily be extended.

The Ingenuity Centre's anchor tenant is the Haydn Green Institute's Ingenuity Lab. It currently occupies 30% of the space, which is close to the upper limit for any one occupant. The Centre's facilities include office pods, hot-desk areas (both 'noisy' and 'quiet'), two (stand-up) meeting rooms, a lounge and several whiteboard rooms.

A university representative also spoke about how university researchers are becoming more aware of the Ingenuity Centre and the UNIP, partly because the buildings are so striking and accessible.

H.4 Sensor City

H.4.1 Introduction

The Liverpool City Region University Enterprise Zone, "Sensor City", is located in the city centre, in the Copperas Hill redevelopment zone.[20] The site sits within the Liverpool Knowledge Quarter,[21] and is adjacent to the universities, the business district and transport links (e.g. Liverpool Lime Street train station). Sensor City is a collaboration between the University of Liverpool (UoL) and Liverpool John Moores University (LJMU) and is located walking distance from the university buildings.

Sensor City is housed in a new, purpose-built building, covering 26,845 square feet, with the majority of space over its three floors comprising offices of varying configurations and informal meeting or breakout spaces intended to foster collaboration. Sensor City has 1,738 sqm business space and 756 sqm support space. On the ground floor, the building contains mechanical, electronics and software laboratories with additional specialist optical equipment. The ground floor also features a large open space for receptions

[20] The Coperras Hill redevelopment zone is a designated Mayoral Development Zone

[21] The two universities are represented on the Liverpool Knowledge Quarter board. The site has been identified in the Knowledge Quarter Strategic Investment Framework as a principal site for economic redevelopment

and events, which has hosted hackathon-type events with participants from businesses, the universities and members of the public. The upper floor features a conference room, suitable for up to 50 attendees, and a roof terrace for events.

Overview of the approach of Liverpool John Moores University and the University of Liverpool for engaging with SMEs, spin-offs and start-ups

LJMU and UoL have both partially developed and implemented a strategic plan for business engagement. Both universities have in-house capability as well as an external agency to seek out IP licensing opportunities. In order to provide support to SMEs, the universities each have an enquiry point for SMEs, offer assistance to SMEs in specifying their needs and have a required contracting system for all staff business and community interaction activities. LJMU has science park accommodation for spin-offs and start-ups via the university and via a partner organisation (e.g. IP Group, Imperial Innovations, Fusion IP). UoL has science park accommodation for spin-offs and start-ups via a partner organisation only. The universities provide entrepreneurship training to spin-offs and start-ups and provide (support with) raising seed corn investment and venture capital.

Source: HEBCI data for 2015/16 - see also Appendix A

H.4.2 Objectives

The original UEZ proposal sets out five main objectives for Sensor City:

1. To foster urban regeneration through business start-ups and growth, creating over 300 new businesses and 1,000 new jobs over a 10-year period
2. To establish and sustain a unique best practice hi-tech sensor business incubator
3. To assist graduate entrepreneurs in forming hi-tech businesses, using coaching, mentoring and networks to sustain them and facilitate access to investment
4. To increase SME innovation through exploitation of state of the art facilities and academic expertise within the Universities
5. To integrate an established academic base, existing businesses and new partners to take the sensor sector to critical mass and scale

The proposal further sets out an objective "to establish a unique sensor-systems business incubator focused on creating, nurturing and establishing commercially-viable, hi-tech companies", and to "help to expand enterprise activities in sensor systems," especially wearable sensors, and a mini mass spectrometer.

Sensor City representatives see the UEZ's rationale as being to boost university-business cooperation. They saw the main beneficiary group as being the SME community, start-ups, academic entrepreneurs, and individuals who want to spinout a company. Marketing has focused on highlighting how Sensor City provides clients with improved connectivity to knowledge, networks and resources. In interview, it was acknowledged that the UEZ objective of 'creating over 300 new businesses in the space of 10 years' was hugely ambitious and that the UEZ may possibly emphasise the 1,000 new jobs and focus a good deal of its efforts on 'expanding existing businesses'.

Sensor City was described as 'completely game changing'. Those involved in the bid writing believed that Sensor City would underpin the creation of a culture that would 'nurture talent', attract students, and support up-skilling and growth. Furthermore, they felt that conventional structures such as science parks do not typically set out to transform university business cooperation or deliver the kind of ambitious growth foreseen here. The Liverpool City Region was also described as a 'beneficiary', with Sensor City seen as a flagship and a significant regional asset. One interviewee saw this as key to attracting and growing high-tech industry, from the region and further afield. Sensor City was also described as a structure that could inspire future generations.

H.4.3 Focus

Sensor City has a particular technology focus, aiming to "…develop and implement novel sensor systems that integrate sensors, firmware programming and advanced algorithms." The bid stresses that the applications of sensors are broad; an enabling technology that will underpin much of the technological advances being targeted by the Government's industrial strategy. Sensor City partners were strongly positive about the focus on sensor technology in general rather than taking a narrower, sectoral approach.

To ensure that tenants match the focus of Sensor City, the UEZ's Project Operational Control Group (POCG), set up by the two partner universities, applies eligibility criteria (termed 'Gateway criteria'). The criteria are that new tenants must i) be an SME, and ii) be involved in sensor-related activities (or clearly and concretely aim to become involved in sensor-related activities). The types of companies Sensory City is currently engaging with includes a start-up in wearable technology and another start-up using sensor technology to detect counterfeit whisky.

Sensor City aims to concretely deliver added value to the region, but also has an international dimension and, believing it can help attract events and business into the city, from other countries in the EU and further afield.

H.4.4 Overview of facilities offered

Sensor City provides a mix of business space and open lab facilities, offering 'hands-on' support to each business (to facilitate engagement with the university), and to also provide tenants with a 'home' for their project development. Sensor City totals 18,708 square feet of co-working space, SME/Start-up workspaces and hot-desking and 8,137 square feet of meeting/event rooms, workshops, and communal areas.

- **Office space:** Sensor City incorporates configurable office and co-working space, offering 21 offices to let and hot-desking space. The space includes a variety of office sizes.
- **Meeting space:** Sensor City includes shared meeting rooms, break out areas and refreshment facilities. The space is designed to encourage interaction, foster creativity and present an attractive environment for entrepreneurs and businesses to collaborate
- **Provision of lab space:** The 'Technology Development Zone' incorporates integrated open laboratory services, software development support, an electronics lab and shared equipment. The technical equipment is currently accessible only on a commercial basis. The labs are intended as space for SMEs to develop their prototypes, which will help push the digitalisation of industry
- **An 'Open Innovation Lab'** is also in place, based on the University of Liverpool's Virtual Engineering Centre's (VEC) 'sandpit' model, which provides toolkits to support innovation and collaborative design between university and industry
- **University links and sector expertise:** Liverpool John Moores University and the University of Liverpool are equal partners in the Sensor City venture, bringing together the assets of the two universities in the field of sensors (86 academic groups from 16 departments)
- **Other city-regional links:** Sensor City provides clients with improved access to other existing regional infrastructure, including Liverpool's network of Knowledge Exchange Centres, the Liverpool Science Park, and, further afield, Sci-Tech Daresbury. The latter includes grow-on space
- **Business support:** This focuses on two areas: i) the provision of coaching and skills training for managers and future CEOs via links with the LJMU Centre for Entrepreneurship, Liverpool Business School and the University of Liverpool Management School; ii) access to funding via the creation of pre-seed and Proof of Concept funds and Enterprise Scholarships.

The facilities and services implemented are in line with the original UEZ bid, although the development of business support services was not fully operational at the time of the site visit, due to the delayed start and the early stage of development of the UEZ.

H.5 DHEZ

H.5.1 Introduction

Bradford Digital Health Enterprise Zone (DHEZ) is a partnership between the University of Bradford (UoB) and the City of Bradford Metropolitan District Council (CBMDC).

DHEZ is split into two components, a business one and an academic one:

- DHEZ Ltd., the 'business' component, provides managed incubation space. The company is a subsidiary of the University of Bradford, mostly owned by the university, and part-owned by the City of Bradford Metropolitan District Council (CBMDC).
- DHEZ Academic focuses on encouraging academic collaboration, fostering multidisciplinary work, and bringing through digital health technologies. DHEZ Academic is further split into four constituent parts: an optometry clinic, a physiotherapy clinic, a digital diagnostics lab (including pathology and phlebotomy), and a medicines-optimising service (or medicines advice service). DHEZ Academic also hosts health services researchers that are working on competitive bids.

The main part of DHEZ Ltd. (the Digital Exchange) is located centrally in Bradford's business district, Little Germany, approximately a 10-minute walk from Bradford Interchange and Forster Square railway stations. This refurbished former textile warehouse totals 2,316 sqm and offers 1,261 sqm of lettable incubation space, including 287 sqm of co-working space. The building also has space over six floors. The smaller part of the capital fund was spent on refurbishing the Digital Exchange building.

DHEZ Academic is located on campus in the refurbished Phoenix Building (the Health and Wellbeing Centre). DHEZ Academic takes up the ground floor of this building. With DHEZ Ltd. having office space on the first and second floor. DHEZ Academic also provides the UEZ clients with access to the Bradford Evaluation and Trials Unit (BETU), which offers advice on clinical trials, from initial evaluation through to product refinement and on to large scale testing. DHEZ Academic sees this as a way of helping clients expedite the commercialisation of their new therapeutics and technologies.

The University of Bradford's approach to engaging with SMEs, spin-offs and start-ups

The University of Bradford has developed and implemented a strategic plan for business engagement. The university has in-house capability as well as an external agency to seek out IP licensing opportunities. The University of Bradford has an enquiry point for SMEs, offers assistance to SMEs in specifying their needs and has a required contracting system for all staff business and community interaction activities. The university offers science park accommodation for spin-offs via a partner organisation (e.g. IP Group, Imperial Innovations, Fusion IP) but does not offer science park accommodation for start-ups. The university provides entrepreneurship training to both spin-offs and start-ups and provides (support with) raising seed corn investment and venture capital.

Source: HEBCI data for 2015/16 - see also Appendix A

H.5.2 Objectives

The original proposal summarised DHEZ's aim as "establishing Leeds City Region (LCR) as the best place in the UK to innovate and grow businesses in communications-enabled healthcare." More specifically, the proposal set out five high-level objectives:

1. Lead a step-change in communications-enabled healthcare
2. Establish a world-leading cluster in communications-enabled healthcare in the Leeds City Region
3. Promote internationalisation of communications-enabled healthcare
4. Integrate innovation and skills provision for regional competitiveness
5. Develop a sustainable innovation cluster in the Leeds City Region

Each of these high-level objectives included a series of sub-objectives, for example, for DHEZ to take a lead role in the public discourse around communications-enabled healthcare. Other more ambitious sub-objectives included reaching more than one million UK patients and one million overseas patients with DHEZ innovations by March 2019.

In interview, the creation of an ecosystem "where innovation can happen" was also described as a key objective for the UEZ, especially as although affordable business space is plentiful in Bradford, a critical mass of activity is currently 'missing'.

Consultees described the beneficiaries of DHEZ as primarily being the companies that take residence or otherwise benefit from UEZ support. The public health sector was also described as a beneficiary of DHEZ. Further, it was suggested that DHEZ will benefit academic researchers by facilitating more academic cross-working and thus will increase the potential for Knowledge Transfer Partnerships in the future. Finally, residents of the city region were described as beneficiaries in terms of DHEZ's focus around healthcare and the management of long-term conditions for people in Bradford.

H.5.3 Focus

The focus of DHEZ is communications-enabled healthcare, including telehealth (telecare, telehealth and/or telemedicine). The proposal states that DHEZ "will bring together actors in the technology and service segments of the telehealth market to develop new person-centred care pathways", while "offer[ing] SMEs and healthcare providers facilities to develop products, services and skills pathways in digital and communications technology."

Tenants of the Digital Exchange must focus on healthcare-related information and communications technology, and operate in the areas of: Analytics and big data, Healthcare consumer engagement; Digital medical devices; Telemedicine; Personalised medicine; or Population health management. In addition, businesses that wish to take space at the Phoenix Building must have existing academic links or intend to form links with academic researchers on the campus.

H.5.4 Overview of facilities offered

Interviewees reported a good relationship between DHEZ Ltd. and DHEZ Academic, each one using the other's facilities. Across the two facilities, DHEZ has capacity to house up to 140 innovators from the digital and healthcare sectors, alongside 50 practitioners, carers, students and researchers delivering health services to the community.

- **Provision of office space:** The Digital Exchange provides 13,573 square feet of lettable incubation space and 2,809 square feet of co-working space to support technology development. The space is designed flexibly, allowing rapid re-configuration to suit tenants of different sizes and growth rates. The office space for DHEZ Ltd. tenants within the top floors of the Phoenix Building exist to facilitate business and clinician interaction. Interviewees suggested that DHEZ Ltd. tenants at the Phoenix Building tend to have more academic research interests, while those based at the Digital Exchange will be working at higher TRLs.
- **Provision of specialist facilities:** The Health and Wellbeing Centre (at the Phoenix Building) provides 21,528 square feet of space to pilot new products and processes in healthcare. The Health and Wellbeing Centre incorporates working clinical practices, with relevant specialist facilities (including client-facing optometry facility, physiotherapy, phlebotomy and digital pathology, technology house, and medicines advice centre). Adjacent to the building is a specially-built 2-story, 2-bedroom domestic house/'Living Lab' to simulate in-home care. The house will be populated on a short-term basis by patients (or pseudo-patients) and is/will be fitted with sensor technology, enabling DHEZ tenants to conduct research in clinical, laboratory and domestic settings. Interviewees stressed that this is not a teaching facility for undergraduate students. The Health and Wellbeing Centre has public-facing 'retail' and practice aspects, including a fully-functional optician.

- **Learning and demonstration spaces:** The Health and Wellbeing Centre includes a 50-seat lecture theatre that is connected to the specially-built house, for the demonstration of products and services.
- **Links to other facilities:** Grow-on facilities in the city region that were identified in the proposal include: Listerhills Science Park, Bradford Chamber Business Park, and Baildon Business Park (specialising in advanced engineering and digital industries).

H.5.5 Summary

- All four UEZs have broadly the same fundamental objectives: placing both the UEZ and their university as a whole at the centre of a wider innovation ecosystem
- Each UEZ offers workspace, as well as access to University researchers, students, and facilities
- The UEZs all adopt a mixture of delivery models:
  - Three have placed the UEZ at the heart of the university campus (Future Space, Ingenuity Centre and DHEZ) while Sensor City has chosen a city centre location
  - Two of the UEZs are largely sector agnostic (Future Space and Ingenuity Centre) while DHEZ and Sensor City only accept clients who are looking to work in particular sectors.

technopolis |group| United Kingdom
3 Pavilion Buildings
Brighton BN1 1EE
United Kingdom
T +44 1273 204320
E info@technopolis-group.com
www.technopolis-group.com