REF2021

Institution: Ravensbourne University London
Unit of Assessment: 32
1. Unit context and structure, research and impact strategy

1.1 Overview

Ravensbourne became a university in May 2018 following the grant of Taught Degree Awarding Powers (TDAP). Previously, Ravensbourne was a small specialist Higher Education institution with validation provided by University of the Arts London. Success in TDAP was underpinned by the presentation of a coherent mission for Research at Ravensbourne as reflected in our current Research Strategy, appropriate for a new university with concomitant growth expectations. The Strategy laid out the institution's aspirations to grow the number of research-active staff, attract more research funding; and to raise its profile within wider research networks where its peers are active. The University is submitting to REF for the first time, and solely to UOA 32 as befits its research profile, though several submissions are interdisciplinary.

Research at Ravensbourne University is supported by our Learning Technology Research Centre (LTRC Director is **C. Smith**), several subject specific research communities, and funded projects.

The Research Office (RO) was started in 2014 by the first Head of Research, **Jackson**. In 2015 the **Learning Technology Research Centre (LTRC)** was founded on the basis of the research work of **CSmith**, bringing with him a funded project from London Metropolitan University (Cr-EAM). The appointment of **Lambert** as Director of Research in mid-2015 saw the development of the Research Office with TDAP in mind. This involved discovering and supporting a broader range of staff research activity and also identifying thematic areas for growth. The Research Office also focused on Research-Informed Teaching. The Ravensbourne research community developed during the TDAP timeframe (2014-2018) in the following areas: Design & Illustration; Immersive Experience and UX/UI; Social Innovation; Fashion; Film & Digital Image; and Cultural History & Theory.

The intention to submit to REF was the next stage following the award of TDAP in 2018. The institution has invested in the positions of Director of Research (1.0 FTE), Research Administrator (0.8 FTE) and Research Fellow (0.8 FTE), with the latter two posts increasing from 0.5 FTE and 0.6 FTE during the REF period between 2018 and 2020. The Research Office provides costing and support for funding bids, a point of contact for research-active staff, organisational expertise for conferences, and a link into peer bodies such as GuildHE Research and the TCCE for cross-platform work with colleagues across the sector. **Prof Lawrence Zeegen** is the Pro-Vice Chancellor for Research, Innovation and Enterprise, line managing the Director of Research, and the RO also works closely with **Prof Gary Pritchard** as Acting PVC (Learning & Teaching, and Student Experience), along with the Directors of Compliance, HR and IT.

1.2 Research Strategy

We promote a research culture grounded in design, media and technology with a particular specialism in immersive technology and its application. This takes place alongside research into digital design, photography, film, television and the moving image. Our research strategy identifies several specific areas of particular interest that reflect the spread of research specialisms amongst

our staff. We maintain strategic collaborations with other institutions that have resulted in major funding bids and develop the innovative focus of our subject communities. In this way, the University aims to enhance its track record of research in key subject areas whilst also growing a new focus on pedagogical research and neurodiversity.

The key principles of the Ravensbourne 2018-25 Research Strategy are as follows:

•   Fostering a new research culture at Ravensbourne amongst staff and students.
•   Embedding Ravensbourne in sector-wide research and development networks within the creative industries.
•   Encouraging applied and practice-based research.
•   Enhancing Ravensbourne's reputation as an originator of new research ideas.
•   Innovating with technology in society

Research strategy is directed by the Research Committee, which nurture staff development of individual colleagues and by annual research-focused Away Days. There is an annual programme of seminars at which staff present their current research for discussion with colleagues. The Director of Research an annual budget to provide seed funding for research activities (c. £30,000 per annum for the past five years) that are reviewed on a competitive basis by two external advisers, and regarded as a proving ground for later external funding bids. Ravensbourne's research strategy is overseen by the PVC Research and Innovation and will be updated this year in response to changes in research policy brought about by the COVID19 crisis.

The University's professional services departments provide assistance to the Research Office for financial and HR oversight. The RO supports staff and applications to UK and international funding bodies, including: AHRC, InnovateUK, EU Horizon and structural funds. We will develop our funding process so that each member of research active staff submits at least one grant application per two years.

1.3 Achievement of Strategic Aims in the period
After confirmation of university status in 2018, Ravensbourne set a goal of entering REF and broadening its base of research-active staff. In the period 2018-20, as reflected in our annual **Staff Research Conferences** and Mock REF activity, the number of submittable researchers grew from under 10 to over 20, and a group of emerging researchers was also identified and supported. The range of research activities has also grown, as evidenced under our Section 4 of this document; and our research income has increased to at least £100K per annum. Also research staff actively participate at international conferences, industry bodies, learned societies and in knowledge exchange with industry, where Ravensbourne maintains a significant presence.

1.4 Future goals for research and impact
With the development of the **Institute for Creativity and Technology**, a project guided by the **PVC for Research, Innovation and Enterprise**, the Research Office and LTRC will benefit from enlarged space, improved technology and a dedicated research lab facility. In addition, the building will promote interconnectivity with our postgraduate students and the SMEs housed in our Incubation space, as well as outside bodies including the Royal Borough of Greenwich. This is with a view to improving our KE in readiness for the KEF. The Institute represents a significant investment of £1.9m in the building and fit-out alone, with additional facilities (including a fully immersive VR/AR Lab) being contributed by industry partners such as Hobs 3D.

Ravensbourne is also launching a **PhD programme** jointly with University of East London, with PGRs focusing on industrial research in UX/UI, creative computing and social innovation. UEL also supports doctoral supervision training for our staff with doctorates who want to engage in supervision; this will broaden our experience and enable more PGRs to be taken on in future. We will also strengthen our ECR base and add more researchers in strategic areas.

Through the Institute, Ravensbourne has initiated a strategic partnership with Brandmovers International to support research and teaching activities with direct funding over five years from 2021, up to £100K per annum over 5 years. Some of this funding is intended to support PhDs in the area of digital marketing and computation.

For the **Learning Technology Research Centre**, our strategic goal is to connect with international centres of excellence in augmented reality research, with a particular application to the creative industries as seen in the WEKIT project, collaborations with Microsoft, and other partners. The University is also pursuing international funding from industry sources, including the Epic Megagrant and the XPRIZE. Ravensbourne is looking to build on its Digital First strategy for learning with more research strands in this area, and an increased focus on pedagogy and inclusivity regarding neurodiversity. This will be achieved with upcoming Visiting Professorships and internal funding to drive research in this area.

There is considerable strategic potential in developing **research clusters** around shared research interests that have emerged organically from departments. Here, researchers are already collaborating internally to run symposia, write bids and expand their own networks. These will strengthen our nascent PhD programme. Discussions have begun concerning possibilities for funding further collaborative PhD studentships in designated areas of research and supervision strength.

The research clusters will also provide a source of new funding bids in their respective areas that will enable more researchers to serve as PIs or Co-Is on collaborative projects. We intend to equip our doctoral staff to apply for Early Career funding schemes and encourage more experienced researchers to apply for Leadership funding. Our expertise in European bids, and existing partner networks, will also support applications to new structural funds and the Horizon programme; and we intend to apply to ARIA and Turing funds as well.

1.5 Relation to the UOA, and emergence of new UOAs at Ravensbourne
For REF2021, Ravensbourne focused on UOA 32, given our historic area of specialism and the broad affiliation of our staff to this area. However, as the Institute, LTRC and new postgraduate courses engage further with technology, computation, AI and augmented reality, we anticipate a submission to UOA 11, Computer Science and Informatics; and potentially also UOA 33, Film and Screen Studies.

1.6 Implementation
As the range of centres, clusters and research active staff grows, we will appoint Research Coordinators in each department, who will be members of the Research Committee and feed back on work in their areas. These will be line managers who are both research active in their own right, and manage research active staff; they will utilise the individual Annual Research Plan (ARP) to keep track of staff work and guide them towards new outcomes. The Research Office will also train staff in Research Ethics and develop our CPD for researchers; and funding from both public and private sources will be used to enhance the research infrastructure to encourage industry collaborations.

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2. People

2.1 Staffing Strategy and Staff Development
There are 22 research active academic staff (18.2 FTE) submitting to REF in Ravensbourne; along with another 10 Emerging Researchers (including 3 who are studying for doctoral degrees). The number of active researchers has more than doubled since the Research Office began in 2014.

2.2 Staffing Strategy
During the reorganisation of Ravensbourne's academic departments in 2018-19, the Programme Directors appointed to major teaching departments (**Gridneff** in Design & Graphics; **Lapthorne** in Fashion; **Drabble** in Media Lab) brought a new focus to each area's research. These senior staff have encouraged the recruitment of lecturers with research backgrounds. Of our cohort of academics in REF, seven were recruited after 2017: **Ali, Carter, Drabble, Fauchon, Gridneff, Lapthorne** and **Manolas.** A further seven Emerging Researchers arrived in this period.

Our ongoing strategy is to encourage recruitment of research-active staff to the posts of Senior Lecturer and above, whilst also looking to expand the number of 100% Research posts (currently **Lambert, Rasool**, **C. Smith** and **Shand**). We aim to do this by attracting further research grants and developing our pool of staff with research experience.

2.3 Career Development
The Research Office aims to support research career development by enabling early-career academic staff to expand their research profiles, whilst also attracting research-active academics at later stages in their careers. Because the practice-oriented staff in arts and design frequently come from industrial backgrounds and develop their academic later in their careers, we have some ECRs with recent doctorates who are more senior in academic standing (e.g. **Loftin**) whilst others fit the profile of ECRs in other UOAs (e.g. **Fauchon**).

As mentioned, there is a small cadre of 100% Research staff but the development of a dedicated Research and Teaching pathway was implemented in 2019, and research-active lecturers are provided with up to 20% time for research and scholarly activity. In practice, this often involves buyout of teaching time using Research Office funds; a new Annual Research Plan has been set up so that line managers, academics and the Director of Research can liaise to ensure that staff research is suitably guided. This also assists in the development of each academic's research profile. Prior to this, we used an annual Mock REF to assess staff readiness and review their research profiles.

From 2015 onwards, the Research Office implemented a mentoring scheme for staff with research potential who have not previously submitted to REF, whilst ensuring our newer hires who bring research material are also able to submit. To this end the RO works with Professor Stephen Scrivener (formerly of Chelsea College UAL) to advise on practice-based research and general staff mentoring; Professor David Crawford (University of Essex) to assist with bids to research councils and issues around IP and commercialisation; and Dr Lisa Mooney (PVC Research & Innovation at Sheffield Hallam), who was appointed to the Board of Governors to enhance the profile and representation of research. Our network membership with GuildHE Research is very helpful for enabling best practice to be shared amongst our peers and this will provide us with an important avenue for research student participation and support.

The Research Office:
- Hosts regular workshops for exchanging best practice and developing staff knowledge of research writing and funding;
- Sets up PhD workshops for staff who are or wish to become research students;

- Supports LTRC and individual staff members in submitting research bids
- Hosts annual staff research conferences featuring invited speakers and staff presentations
- Contributes to conferences including LearnX Design (2017) and VRUK (2016 and 2017) that were set up at Ravensbourne
- Links to outside bodies such as TCCE; GuildHE Research; CHEAD
- Implemented the first Teaching and Research contracts at Ravensbourne
- Developed the Repository for staff outputs
- Updates the Research and LTRC pages on the website

Nine Emerging Researchers whom we believe will contribute to the next REF and achieve SRR. These include three current PhD candidates whose work is being supported by the institution through allocations of time or funding, and at least one possible PhD candidate.

The Research Committee and the PVC for Research and Innovation identify areas for staff support in terms of:

- research opportunities
- knowledge exchange and transfer
- career development

with regard to our Strategy. Using internal funds, we support emerging and early researchers; and enable more established researchers to develop their work in line with strategic priorities. Researchers including **Ciokajlo, Cumber, Durham, Hunter** and **M. Smith** have developed their work over several years' mentoring with the RO; we have also that all benefit from the sharing of research knowledge within Ravensbourne. The annual <u>Staff Conferences</u> and monthly / bi-weekly workshops are useful in this regard.

2.4 Support
Going forward, we will be providing opportunities for doctoral supervision training via UEL; development of research roles and responsibilities in line with the Concordat to Support the Career Development of Researchers; and review of research activity and outputs in line with updated Research Strategy that will be produced in 2021. We currently have two staff with doctoral completions (Lambert and Pritchard) and are building our capacity for more research active staff to supervise PGRs.

All research staff can claim up to £2000 p.a. for research expenses via a competitive funding process, and we have been supporting their projects since late 2014.

2.5 Equality and Diversity
Our Code of Practice outlines the commitment to equality and diversity within our research group. As regards EDI, Ravensbourne University London is a relatively small university with 140 academic staff, with 22 submitting to REF (16%) and analysis shows there is no significant bias.

For Gender: Ravensbourne University has been steadily growing its female academic representation. Just under one third of the staff submitted are female, which is comparable to our overall academic female staff data which equates to 41%. A slight negative bias however where overall numbers are small, this percentage could increase significantly by a shift of one or two.

For Ethnic origin: the university has an overall academic BME of 11.5%. For research eligible staff a representation of those submitted represents 13.5%, a positive bias. For Disability: 10.5% staff of the university's academic staff have a declared disability, thus a positive bias is demonstrated for those undertaking research which is at 18%.

For Age: The highest proportion of submitters was in the 55-64 age group with 36.5%, and this reduced for the remaining age groups. For the extremes of the age chart Ravensbourne has no submitters, however, overall of figures in these areas are very low. Typically there is a higher

percentage in three of the age groups except for the 25-34 grouping, which is 4.5%. This is likely to reflect Ravensbourne's desire to recruit academics who also bring with them industry knowledge which would need to be acquired with some years' experience. No cause for concern at this stage as relatively balanced as follows: 35-44 is 27% and 45-54 is 32%.

2.6 Support for Staff with Protected Characteristics
Ravensbourne is working towards an increased BAME representation among our staff. We ensure that job adverts encourage applicants from BAME backgrounds and other underrepresented groups. HR scrutinises adverts to ensure the use of inclusive language, and these are disseminated as widely as possible to bring in more representation.

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3. Income, infrastructure and facilities

3.1 Funded research
Our 2018 Research Strategy aimed to continue our success with European grants whilst also diversifying towards other sources, including industrial and charity funding. This research would result in both academic outputs and impacts in the public sphere.

Our annual research income averages £100K, which we intend to grow considerably in the period to 2025, and aim to submit a wider range of funded projects to the next REF.

Research income 2015 – 2020
2015:   £19000
2016/17:   £112000
2017/18:   £118000
2018/19:   £45000
2019/20:   £131000

This totals £425K, roughly equivalent to £23,350 per FTE of our research academics.

The RO's support for researchers includes training in bid writing and we will ensure that at least one bid per FTE is submitted within a two year cycle. The Director of Research and the Director of LTRC have brought in a significant share of the funding, but other colleagues have also been successful.

3.2 Major projects
2014 FP7 CRe-AM Total budget: €1 million (Ravensbourne £29,178)
This project aimed to bridge communities of creators with communities of technology providers, in a collective, strategic intelligence/road mapping effort. Addressing the needs of different sectors of the creative industries - Gaming, Media + Epublishing, Design, Art and Architecture. Ranked number 1 in the call. Duration: 24 months.

2016 Horizon 2020 WEKIT: Total budget of €2,753,143 (Ravensbourne £122,313)
Wearable Experience for Knowledge Intensive Training http://wekit.eu/ Call: ICT – 2015 b: RIA Topic: ICT-20: Technologies for better human learning and teaching. Project Description: This project aims to create a new form of media: 'Wearable Experience'. This will be achieved by building a system for exploring, preserving and retrieving knowledge that resides in collaborative activities conducted in mixed reality settings. Duration: 36 months.

2017 ERASMUS+ mRIDGE: Total budget of €589,514 (Ravensbourne £48,734)
Using mobile technology to improve policy Reform for Inclusion of Disadvantaged Groups in Education. Duration: 24 months, starting November 2015. The aim of the project is the creation of digital learning resources for mobile devices to improve the educational integration of disadvantaged learners in the educational system - groups in risk whose ethno-cultural

characteristics, special needs or socioeconomic status significantly restrict their ability for adequate education. Duration: 24 months.

2017 ERASMUS+ mEQUITY: Total budget of €785,941 (Ravensbourne £72,319)
'Improving Higher Education Quality using Mobile Technologies for Better Integration of Disadvantaged Groups to Socio-economic Diversity'. The Call: 'Capacity building in the field of higher education' (CBHE). Duration: 36 months.

2017 AR4EU (Code Reality) c.£300K (Ravensbourne €60,000)
Educational offers in Europe (and globally) for Augmented Reality (AR) are falling behind and failing to produce the graduates required today by one of fastest growing industries in the world. AR-4-EU will help to prepare professionals for the creative and digital industries of tomorrow and contribute to making European economies more research-intensive, knowledge-based, and competitive within the global digital market. Duration: 3 years starting Sept/Oct 2017
Project website: http://codereality.net/

2018 MoneyLab UK Government - Money Advice Service Grant: £94,723
The MoneyLab was a one-year project designed by Ravensbourne and funded by the Money Advice Service. Its aim was to explore the impact a co-creation project can have on the attitudes and behaviours of young adults in Higher Education. The intervention was a series of active engagement activities and workshop modules directly exploring the student experience around financial capabilities. This was based on the principle of students as 'co-creators' in order to better understand students' financial awareness, capabilities and managing financial challenges on a day-to-day basis.

2018 Interreg NW EYES: Total Funds €4,277,312 (Ravensbourne €288,725)
EYES develops, tests and implements a new methodology for NWE cities to promote youth entrepreneurship/employment for NEETs aged 15- 34 years. The method will use digital tools and personal coaches to make NEETs develop their entrepreneurial skills such that they feel encouraged to make use of regular business and employment support schemes offered in the participating cities (which they would not consider using otherwise). By doing this, EYES turns entrepreneurial education into a feasible and scalable instrument of regional policy to bring NEETs back to the NWE labour market. Duration 36 months – extended into 2022 due to COVID

2019 ESF/GLA AGILe: Accelerating Growth of the Digital and Creative Economy through Innovation, Work-force and Leadership Development (ESIF Grant with London South Bank University) Total: £1,889,316 (Ravensbourne: £565,000)
The aim of Accelerating Growth of the Digital and Creative Economy through Innovation, Work-force and Leadership Development (AGILe) project is to upskill individuals working in the digital and creative sector and community businesses with improved Communication, Digital and Business Leadership skills. The objective is to enable beneficiaries to enhance their individual levels of employability, innovation and employment success.

2019 London Legacy Development Corporation: 3D Skills Academy Ravensbourne collaboration with Hobs Studio (https://hobs3d.com): £61,000 to Ravensbourne over 2 years
The Academy is a centre of excellence, which businesses across different industries use to recruit diverse talent into roles in the fields of 3D and VR and AR. The mission is to establish an industry-education partnership to deliver a 3D & VR skills academy, providing demand-led training that meet skills gaps and experiences to prepare young people, particularly those from under-represented groups to access a range of employment opportunities.

3.3 Selected smaller grants

M. Smith:
2018: Leonardo's Impossible Machines: £6,000 from Museo Galileo Florence
– immersive experiences for museum, based on Leonardo's perpetual motion machines.

Lambert:
2017: Holodash project with DoubleMe, financed by the company: £15,762
2020: GenieMo - InnovateUK COVID Grant: £47,000 to PlayLa.bZ, an SME based in Ravensbourne's Holoportal who collaborate closely with LTRC and our students ()

Cumber: Grants from agencies for "Accumulate" project including:
2019 - Nesta Amplified Grant: £13,000
2018 - RSA Catalyst Grant: £10,000
2017 - National Lottery Grant: £10,000

Ciokajlo:
2016: Arts Council £25K for MarsBoot

Hunter:
2016: Barbican £15K for "Approximate" commissioned work for the Foyer

Rothwell:
2020: £40K for "Winter Lights" from Canary Wharf.

These are additional to the University income as they have gone to individuals' projects; they total at least

3.3 Infrastructure
Equipment includes:
- HoloLens 2 and similar headsets
- Doubleme body capture camera system
- Holoportal specialist virtual reality development studio
- Oculus Rift
- HTC Vive
- Sensors, 3d scanners
- 3d printing
- Virtual reality
- Immersive 360 cameras
- Magic Leap
- Microsoft Kinect-based live 3D capture
- 3D workstations and Unity development

The BBC Motion Graphics Archive was recently established as a new resource for the University, with a digital archive of the BBC's historic motion graphics extending back to the 1960s. CreativeLab
Outcomes from PlayLa.bZ, e.g. JISC Digifest 2020,
Brandmovers *from 2021*: £100K per annum for 5 years.

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4. Collaboration and contribution to the research base, economy and society

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4.1 Collaborations
Institutional collaborations include partnerships with Amazon Web Services; with Brandmovers International; the University of Greenwich for the EYES Interreg NW project and funding bids; London South Bank University for the DAGILE project and structural bids; the BBC for our new Motion Graphics Archive; the Royal Shakespeare Company for digital television and online

platforms; the GLA as funders; The Culture Capital Exchange for funding bids and peer connections; with the Royal Borough of Greenwich and Visit Greenwich for knowledge exchange; with the City of Hamburg and Ministry of Culture Hamburg; with University of Colorado at Boulder and Ontario College of Art & Design University for KE and staff exchanges; with Social Enterprise Mark for funding projects; and with GuildHE Research, CHEAD, ImmerseUK and London Higher for professional networks. Cambridge Wireless on communications technologies; and the Digital Catapult.

LTRC's **collaborations include** Epic Games in the development of a new digital fashion course and end of year show; Hobs 3D and the London Legacy Development Corporation for a new industrial skills digital course; building on research outcomes from the WEKIT and AR-FOR-EU projects. Also, with the universities of Oxford Brookes, Molde (Norway), Plovdiv (Bulgaria) and University of Jordan on LTRC EU-funded projects; with the European Space Agency and Microsoft on outcomes from those projects. Via the collaboration with DoubleMe (S. Korea) working with Kia and Hyundai; O2 and BT; and the University of Surrey. With Play.la,bZ in the Holoportal, a long-established hub for staff and students to work with immersive technologies that also links to numerous projects including the V&A, Sci-FI London and

C.Smith with Microsoft, **M.Smith** with the National Maritime Museum, Birkbeck University of London and the Museo Galileo, Florence. **Cumber** with the Photographer's Gallery, Saatchi Gallery, Autograph Gallery, Somerset House, also Levi's, the Guardian, the RSA and Ted Baker. **Hunter** with the Barbican and X for exhibitions. **Shand** with the BFI and NFT. **Lambert** with the Victoria & Albert Museum; the Science Museum; the Institute of Contemporary Art; University College London; Fraunhofer Fokus, Berlin; the University of Florence; University of Plymouth; Leicester De Montfort University; New York Tech Week; the School of Visual Arts, New York; the Royal College of Art; the Lumen Prize. **Lapthorne** with the Shakespeare Birthplace Trust. **Drabble** with the Photographer's Gallery, the Martin Parr Foundation, and Paris Photo. **Manolas** with Sky Arts, Smoke and Mirrors, Big Buoy Big Chop and SOVA Audio. **Fauchon** with the Bishopsgate Institute, the Illustration Research Network, the MayDay Rooms and the Museum of Croydon

Panels, editors, reviews:
Durham reviewing for New Interfaces for Musical Expression (NIME) Conference
Gridneff Institute for the Society of Typographic Designers Student Assessment Panel, Advisory Panellist for the AHRC Network *Letterpress: Past, Present, Future* (University of Leeds, 2017)
Lambert *Leonardo (MIT Press), Digital Creativity,* AHRC Panel Member; Chair of the Computer Arts Society, British Computer Society;
Manolas Reviewer for the *International Academic Forum Journal (IAFOR)* and *Convergence (SAGE)*
C.Smith on EU RTD Framework Programme as invited expert on XR technologies

Keynotes and chaired panels:
Gridneff at Cumulus International Conference (Rome), AdvanceHE Teaching and Learning Conference (2020), Makeready Conference, Maryland Institute College of Arts USA (2019);
Lambert at the Onassis Centre, Athens (2015), New York Tech Week (2016) and Nanjing Creative Design Week (2019);
C. Smith. 2019 Keynote with Ray Kurzweil (Director of Engineering at Google) in Melbourne on using XR Technologies for Intelligence Augmentation; Keynote at the European Economic Congress on XR technologies and Industry 4.0 training Focus: the use of XR technologies for the

'Future of Work' and Industry 4.0 training and the importance of the Creative Industries for the European and World economies; also Smith. Mentoring eighteen tech start-up companies (the finalists of the European Startup days competition) 'European Startup Days'; also at TedX.

4.2 Impact

With Ravensbourne's strong industry connections and our inclusive ethos, we have hosted some impactful projects in recent years. The ongoing collaboration with **Cumber**'s Accumulate Project has resulted in significant uptake of university places by the homeless. Accumulate is a longitudinal social change practice-based research project intervenes in situations of homelessness in order to achieve lasting change. Commencing from 2014, in annual cycles, the project has developed both in terms
of long-term impact and sustainability, the latter via charity status and the establishment of the Art School for the Homeless. The research narrative of the project is embodied in public-facing videos and artefacts that communicate the ambition of the work, the change instruments (workshops, etc.) and outcomes of the project. It has featured in The Guardian, Creative Review, Shutterhub, the Big Issue and the Evening Standard, as well as BBC London.

Ciokajlo's MarsBoot was commissioned for a 2017 exhibition at MoMA, 'Items: Is Fashion Modern?', and the first fashion exhibition at MoMA since the 1940s. For the duration of the exhibition, MoMA estimated that 588,000 people visited the exhibition, a daily average of 4,985 people during its 118 day run, including visitors from France, Italy, UK, Germany and Canada.

The project received further public exposure and engagement with the Design Museum London, being exhibited twice, which is unusual for the Museum, first as part of Beazley Design of the Year 2018, Design Museum London's internationally-renowned exhibition, for which it was shortlisted for the Product Design category Award

LTRC's succession of EU-funded projects have had significant international impact. WEKIT ECS has recently been accepted as one of 10 Qualified Teams, from 118 teams from 20 countries, in the $5M XPRIZE Rapid Re-skilling Competition. The team will develop a Neuro-Adaptive Mixed Reality Training platform (REAP) to place 350 participants into full-time jobs, re-skilling solutions for individuals most vulnerable to employment loss in the United States.

Through the WEKIT project, LTRC developed a wearable sensor for astronaut trainees, enabling measurement of the affective state of the learner including stress but also concentration. Real-time measurement of the affective state enabled a redesign of instruction sets to overcome the challenge faced by users. This is now being actively considered by the European Space Agency for astronaut training.

South Korean tech startup DoubleMe first collaborated with LTRC in 2016, resulting in production of the HoloPortal, which has become a fixture in Ravensbourne's foyer. The relationship with LTRC allowed DoubleMe to develop products for UK and overseas markets and to enter new markets, and engage major Telco companies, including BT, Vodafone and O2.

AR-FOR-EU (CodeReality) brought together five internationally-renowned institutions to validate a course offering for teaching AR in HEIs. This led to a successful online course and paved the way for the Hobs Academy – a 2018 collaboration between Hobs 3D at Stratford and the London

Legacy Development Corporation (LLDC, established to develop the Olympic Park site) had a focus on tackling social integration and working with the surrounding communities

Finally, mEQUITY and mRidge an ERASMUS+ collaboration between LTRC and the Universities of Plovdiv (Bulgaria) and Jordan, saw the development of an inclusive curriculum in engineering education based on digital learning resources for mobile devices. The project aimed to improve education provision to high-risk groups whose special needs or socioeconomic status restricted their access to adequate education.