UNIVERSITY OF
WEST LONDON
The **Career** University

Research at the University of West London
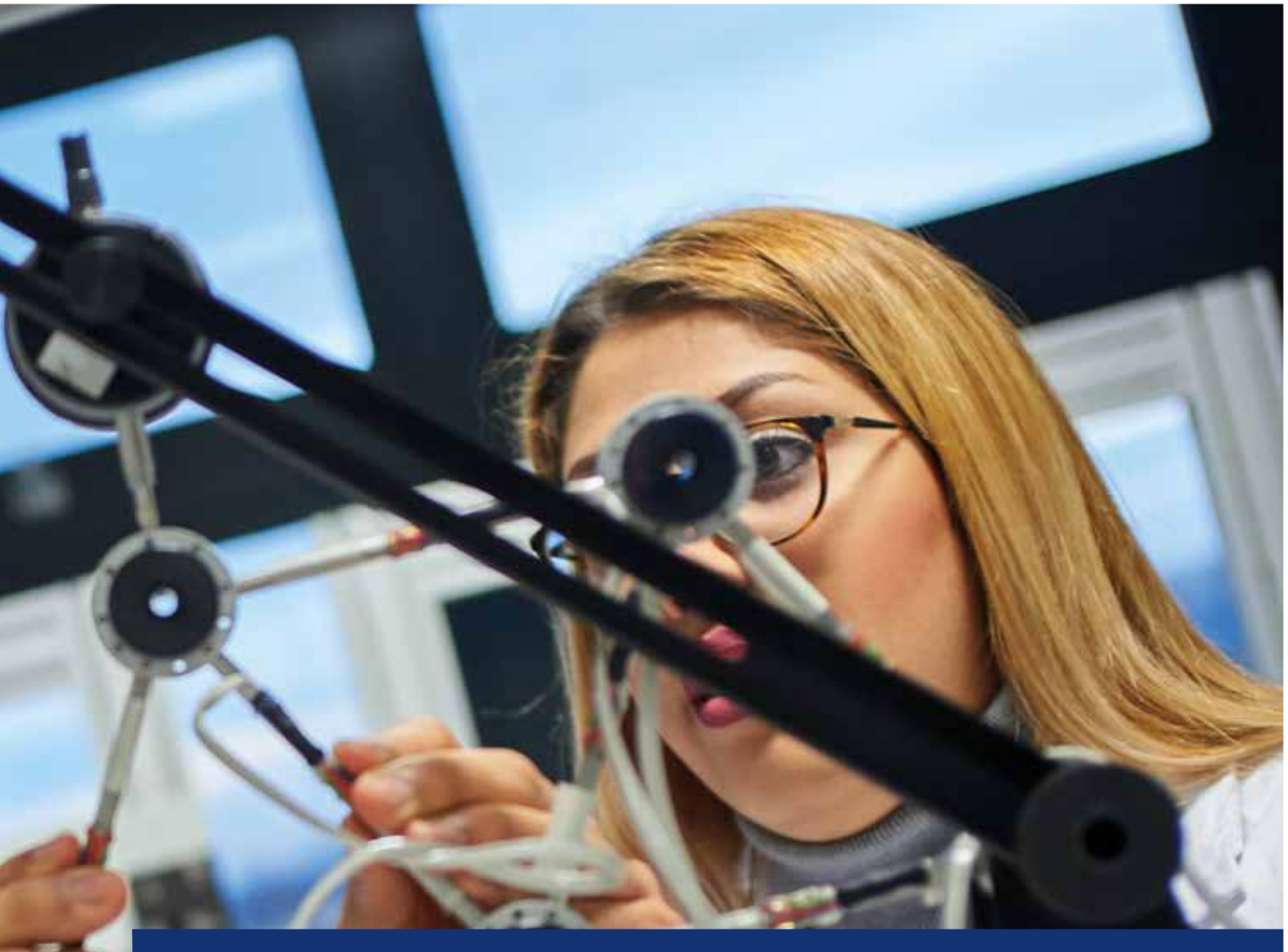
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Foreword by the Vice-Chancellor

As a multi-mission University at the heart of London we recognise that research, in all its forms, is vital not only to our institutional culture but also to our academic success. As you will see from this summary of our REF 2021 entry, we continue to be bold in our outlook, responsive to external needs in our impact, and professionally and socially responsible in terms of our outputs. The abridged document further highlights the growth in recent years of our research capacity and the range of high-quality research and innovation activity to which many of our staff now contribute. Our ambition therefore remains undimmed: to be ranked in the top 100 universities in the UK for research, and I hope this short pamphlet gives you reason to be optimistic.

**Professor Peter John CBE
Vice-Chancellor**

Introduction

The University of West London (UWL) is a progressive university situated at the heart of one of the most prosperous regions in the UK. This dynamic economy is served by a complex web of international transport and infrastructure systems that forms a hub for investment and migration. The region is culturally and ethnically diverse, with a vibrant dynamic multi-national population. The University has capitalised on this highly diverse and vibrant socio-economic context to build strong partnerships with industry, government organisations, and local stakeholders. Its educational mission is to give all students access to three fundamental transformative rights - the rights to participation, inclusion, and enhancement. Its research orientation is to bring sustainable solutions to the scientific, socio-economic, health and creative challenges society is facing today.

UWL has consistently been ranked as the best modern university in London with the best NSS scores in the capital for the last two years. It is consistently ranked in the top 50 in The Guardian and The Times/ The Sunday Times and it continues to be in the top 20 institutions for social and ethnic inclusion. We were 'University of the Year for Student Experience' in The Times Good University Guide 2021. We have the highest number of BAME and black professors per head in the country - 26 % compared to 17 % nationally of which 9 % are black compared to 2 % across the UK.

UWL Research Highlights

Research Centres

We have opened a number of inter-disciplinary research centres over the past few years, and have extended the reach of our *longstanding* Richard Wells Centre whose research into patient care and infection control is renowned in the UK and internationally.

These new centres are:
- The European Institute for Person-Centred Healthcare
- The Centre for Cybersecurity and Criminology
- The National Centre for Gang Research
- The Policy and Practice Research Institute for Screen and Music (PRISM)
- The Geller Institute for Ageing and Memory
- The International Centre for Hospitality and Aviation Resilience Management
- The Faringdon Centre for Non-Destructive Testing

In addition, we opened two research, policy and practice centres: The Centre for Levelling Up which explores inclusion and social mobility; and The Institute for Policing Studies which incorporates the training of Metropolitan Police Officers alongside research into the policy and practice of law enforcement.

We recently opened the School of Biomedical Sciences, with a research portfolio congruent with our allied health work, and a strong Biomedical Science Research Laboratory.

Allied Health

A research project on infection transmission in care homes, funded by the Department of Health Policy Research Programme, has led to the development of the first national guidelines on **infection control** which were published in 2001, and are updated periodically since that time. UWL was the lead team who produced these 'Epic' guidelines, now accredited by the National Institute of Health and Care Excellence (NICE).

Our patient safety and infection prevention is complemented by research on learning disability and work on **patient behaviours, resilience, and psychosocial wellbeing.** The recently established Biomedical Science Research Laboratory includes lead **research on cancers** that to date have no effective treatment and diagnostic pathways for early detection, such as mesothelioma and glioma. We also lead research projects on **antibiotic-resistance; musculoskeletal biomechanics** to improve the prevention of osteoporosis, and **bioinformatics.**

Research into **dementia care** has generated impact through the Imagination Cafés which, since 2017, have provided an activity and research space for people affected by dementia and their families; taking part in different musical and creative activities, and tying together sight, taste, sound, and smell in one experience to improve recall and appetite. This Imagination Cafés have been taking place at the University, and in local hospitality venues such as the Pitzhanger Manor and Gallery, bringing benefits to our local community, whilst serving the production of knowledge for world-wide societies.

Computer Science

Research undertaken with funding the Department for Culture, Media and Sport (DCMS) and Innovate UK has led to the development of a novel tool - CyMonD - which offers protection against **cyber-attacks** in internet-connected consumer devices. This research helps to protect Internet of Things (IoT) devices by making them "secure-by-design" and thus less vulnerable to attacks. CyMonD was one of the 13 projects that won support to Minimum Viable Product (MVP) stage from the joint Department for Digital, Culture, Media and Sport and Innovate UK Year 2 *Cyber Security Academic Startups Accelerator Programme.* This scientific advancement has led to beneficial collaborations with SMEs and commercialisation through a new University-led start-up in 2020.

Innovate UK also supports research of a **secure mobile apps** universal converter using cybersecurity and automation technology.

The Intelligent Sensing and Vision Research Group (IntSaV), which is a specialised group coordinating advanced research in all aspects of Artificial Intelligence and Big Data, is presently doing research on **biomedical image processing**, funded by a British Heart Foundation grant to develop computer-aided diagnostic technologies.

Focusing on user experience, our **human-computer interaction** research, supported by t*he Sociotechnical Group for Innovation and User Experience* (SCIUX), addresses the design and development of systems that meet the needs of end-users globally. It investigates the sociotechnical and cultural differences inherent in the process and product of design and development of interactive systems. SCIUX has developed strong relationships with industry, national and international partners, and has been supported by several funding bodies.

Engineering

The Faringdon Centre (Non-Destructive Research and Testing Centre) is carrying out research using sophisticated methods, equipment and techniques to identify subterranean soil structures and features. These **non-destructive methods** can be applied to a variety of contexts, including the health monitoring of trees, roots systems architecture, integrity of structures, tunnels and bridges; as well as airfields, highways, and railway foundations and infrastructures.

Climate change-oriented research includes projects to enhance **building performance, civil and structural engineering**, with similar focus on energy and safety performance, and the impact on climate change of aircraft operations, and **aircrafts performance** models. A significant area of research includes **biomedical engineering** research on modelling of biological systems, the design and development of neural stimulators and recording amplifiers, and of recording techniques for ENG and EMG signals assisting patients' rehabilitation.

Our **built environment** programme of research on designing buildings with 'nearly zero energy' levels is focused on finding practical solutions for reducing energy demand and CO_2 emissions in existing buildings. This research is based on predicting future building performance and maintaining building resilience in the face of a changing climate. It has developed a methodology using computational fluid dynamic simulation combined with weather data, which was validated against the actual energy consumption of commercial and residential buildings and showed a difference of less than 10 % between actual consumption and validation. This research has enabled comprehensive assessments of the benefits of introducing specific energy efficiency measures into existing buildings.

Social Policy

Our social policy research addresses challenges in crime and policing, social exclusion and vulnerable groups or individuals. Their work is supported by 'The National Centre for Gang Research' researching youth violence, street criminality and county lines drug networks, and The Criminology and Cybersecurity Centre, an interdisciplinary centre focused on crime, organisations and national and international security; as well as cybersecurity and AI research.

Our **crime and policing** research includes police investigations of male and female rape, corruption and fraud, the security industry, police governance, and gangs. These areas of research feed directly into policy; and through them, the University has key advisory roles with HM Inspectorate of Constabulary, Fire and Rescue Services (HMICFRS), Serious Organised Crime Expert Reference Group, Metropolitan

Police and other police forces, the Alzheimer Society of Bangladesh, the Henry Jackson Society, and the Centre for the Response to Terrorism and Radicalisation. Research has been used to provide evidence to the Home Affairs Select Committee, and presentations to the Home Office and the Department for Education (DfE).

A highly influential contribution bears on the government's pledge to provide **affordable housing** on the Queen Elizabeth Olympic Park, as part of the 2012 Olympic and Paralympic Games legacy. This research showed the gap between commitments and intentions, and the failure to provide meaningfully affordable housing for local residents, in spite of an urgent need for it. This forensic examination of the housing legacy of London 2012 has also informed Citizens UK campaigning on the legacy from the upcoming Birmingham 2022 Commonwealth Games.

Leisure and Tourism

Research in these areas is supported by two research centres: the International Centre for Hospitality and Aviation Resilience Management (ICHARM), founded in 2014; and the West London Food Innovation Centre (WLFIC) co-funded with the European Regional Development Fund (ERDF) in 2017.

The ICHARM works with leading businesses to address in a scientific and commercially pragmatic way many of the challenges that the hospitality and tourism industry is facing globally in its complex value chains. One stream of research is on **risk, crisis, and resilience management** with studies looking at broader strategic risks ranging from international business expansion and its associated risks to terrorism, disaster response and reputational risk management. Significant work has been dedicated to **human rights risks** with an emphasis on **human trafficking** in hotels and their supply chains. A second stream of research concerns the international **tourism industry dynamics** and **sustainability** in the context of changing consumer trends and needs in tourism cities and destinations with a particular emphasis on the **wellbeing of elderly tourists.**

In the aviation sector, ICHARM's research looks at **airline** and **airport risks** and safety and explores **accident prevention** through human error elimination.

The West London Food Innovation Centre (WLFIC) focuses on nutrition for **groups with specific dietary needs** (religious groups, athletes, people with health conditions), the use of **alternative plant-based proteins** in food product development, the multi-sensory experience of food consumption and on the sustainability and integrity of food supply chains.

Music

Research in music spans centuries and repertoires; it embraces the fields of **production, musicology, and composition**. Researchers in this discipline are attentive to the relation between theory and practice, to the inter-textuality of the repertoires, and to expanding the experience of listeners through technology. They have taken leading roles in developing new models of open access research though new publication models – often based on public platforms such as Vimeo, YouTube and WordPress.

Researchers in music are all closely related to the 'Policy and Practice Research Institute of Screen and Music' (PRISM), an interdisciplinary 'music and screen' research centre created in 2017 to support music and screen research. It proactively fosters a common interdisciplinary approach combining musical analysis, historical phono-musicology, new technologies, and science and technology studies.

Production researchers includes autoethnographic research investigating sampling technologies and cultural theory within Hip-Hop; work on artificial-intelligence-based approaches to audio mixing using haptic control of sound in mixed reality, and production techniques that suggest musical meanings. Some research is also concerned with the teaching of music, and in particular, 'practical musicology'.

Musicology research is focused on twentieth-century music, investigated through analytic, aesthetic, hermeneutic, historical, semantic and semiotic methodologies, including practice-based approaches with composer-specific expertise, principally in the works of Stravinsky, Messiaen and Pärt.

Composition research bears on contemporary re-inventions of methods and models of composition from past centuries. We produce research that uses early 15th century Hispanic liturgical settings to explore stasis through melisma; and compositions that extend and transform mid-late 20th century compositional harmonic languages, exploring systems of closed chordal arrays. Some of our research also focuses on works testing the limits of reconceived 15th and 16th-century contrapuntal techniques.

Communication, Cultural and Media Studies

This area of research is supported by the 'Policy and Practice Research in Screen and Music' (PRISM), jointly with researchers in music.

Research in the intertwining strands of **film, screen, genre and adaptation** has produced outputs in film studies, pornography, disability, James Bond, televised sport, music video and genre studies. The researchers published worked on Deleuze, articles on adaptation and history, and on the recurring character. Other publications included *Genre Trajectories* (2015) and *James Bond Uncovered* (2018).

The well-established affinities between film/ screen studies and broader **visual cultures,** central to PRISM, has generated research in photography and cinema. Research on Ilford Limited and its subsidiaries in the war/interwar period has brought to light archival materials and little-read texts (through access to Ilford Archives) that reveal the emergence and development of key photographic terms and concepts.

The **creative industries** strand of research has generated work on music videos as a 'hidden screen industry', which has brought to light the need to preserve these artefacts for future generations. Research on branding, televised sport, and art markets also address some crucial issues in the relation of art/media to the market.

Recent research, originally grounded in **cultural studies,** sets out an approach to connections between contemporary technologies and gendered forms of labour, particularly those associated with biological procreation and social reproduction.

The multi-disciplinary nature of the research in this group, is further evidenced by their extending into research in linguistic expression in 'deejay' culture, and the challenge the monolingual bias inherent in the native and non-native speaker distinction.

UWL Research Impacting Society

Allied Health

I-Hydrate: Improving hydration in older people in health and social care settings

Hydration is a fundamental care need which, if neglected, can lead to numerous adverse health outcomes, including infection, especially in the elderly. The research was undertaken in units for the frail elderly in two West London care homes, and found that residents were not drinking the recommended minimum of 1.5 liters of fluid per day. A series of interventions to improve fluid intake were tested in the homes, which included getting residents' views of their favoured drinks and drinking vessels. Based on these findings, the UWL research team created practical online resources for care homes, a video series for use in care homes; and infographics to promote hydration in older people. These resources were all made freely accessible on the University website, and the resource pack has been downloaded more than 550 times. These recommendations have been used by Public Health teams, NHS Trusts and Social Care providers. I-Hydrate was featured in the Universities UK's *MadeAtUni campaign, the Lifesavers: "100+ ways universities are saving lives and keeping us healthy".* [(MadeAtUni | A campaign showing how universities improve our everyday lives).](#) Public Health Wales commissioned the I-Hyrdate research team to train over 100 residential and care staff as part of a national initiative on reducing the incidence of urinary tract and E. coli bloodstream infections amongst the elderly. Similar successful hydration initiatives were undertaken across Hertfordshire and in two West Yorkshire metropolitan districts. A Sheffield-based commercial provider of digital health products is presently incorporating the I-Hydrate resources into an app for social care staff to use to improve their clients' hydration.

Engineering

Applications of Non-destructive Technologies

Researchers in the Faringdon Centre (Non-Destructive Research and Testing Centre) have used Ground Penetrating Radar (GPR) and the Interferometric Synthetic Aperture Radar (InSAR) satellite imaging techniques in projects involving health monitoring and assessment of trees (early decay and trunk integrity); highways and airfield infrastructures (bridges, tunnels, pavements, taxiways and runways); railway tracks (foundation and ballast conditions); and archaeology sites (ancient structures and monuments). The team's research has generated a series of enhanced imaging algorithms and methods that have attracted the interest of leading industrial partners, including the European Space Agency and Japan's New Energy and Industrial Technology Development Organisation. Work with international giants, such as IDS GeoRadar (Part of Hexagon), an Italian-based leading manufacturer of Aerospace and NDT testing systems and equipment, has been instrumental in widening the Centre's engagement with international projects. The team's research has been applied to monitoring railway lines and airport runways in Italy, important road and railway bridges in the UK, and archaeological sites in Greece. The Faringdon's Centre's outstanding research on trees, using an innovative detection framework (tomographic migration), has been able to predict the location and scale of decay in tree trunks, with application in forestry management and arboriculture, leading to collaborations with tree conservation managers in Ealing and across London.

Social Policy

Improving Rape Investigation in London and Male Victim Support Nationally

Improving the response rates in cases of rape allegations is a challenging issue for public authorities and the police in the UK and elsewhere. Research undertaken at UWL in collaboration with the Mayor's Office for Policing and Crime – published as The London Rape Review in 2019 - provided predictive models of attrition (i.e. drop-out of cases) in rape allegations, generated from coded London case data. A total of 501 rape cases reported to the MPS in April 2016 were assessed, and found that of the total alleged cases, 86 % were not submitted to the Crown Prosecution Service (CPS); 9 % were charged by the CPS; 6 % proceeded to trial; and only 3 % resulted in a conviction. The review's details of the specific case characteristics responsible for the high levels of attrition has been used by the Metropolitan Police Services to improve their response to rape cases and it informed the delivery of the London Mayor's Police and Crime Plan and the London Violence against Women and Girls Strategy. Novel findings related to male-on-male cases have also contributed to the inclusion of male victim-survivors of domestic and sexual violence in Crown Prosecution Service and Home Office policy, leading up to the first CPS Position Statement on male victims for crimes covered by the CPS Violence Against Women and Girls (VAWG) Strategy. Research into police officers' attitudes have directly resulted in changes to Metropolitan Police Services training, delivered to c10,000 first-responding officers and to 56 specialist officers. A subsequent replication study showed that officers' attitudes towards "rape myths" had changed over time.

Leisure and Tourism

The COMBAT Toolkit: Tackling Trafficking in Human Beings within the Hotel Sector

The EU-funded COMBAT research programme revealed for the first time the hotel sector's vulnerabilities to human trafficking. A UWL-led research consortium of UK and European researchers developed original risk assessment techniques and proposed mitigating policies and strategies for the full range of human trafficking risks in hotels and their supply chains, encompassing them into the COMBAT Training Toolkit. In the wake of the UK Modern Slavery Act in 2015, the Toolkit was endorsed by the Institute of Hospitality and has proven a valuable resource for hotel businesses in training their staff and meeting their legal obligations. It also provided the basis on which Shiva Foundation, a UK-based charity, developed their Stop Slavery Blueprint, which was endorsed by UK Hospitality and is now widely considered as the UK hospitality industry standard against human trafficking. COMBAT Toolkit material was adopted by Hilton Hotels in their anti-trafficking training which is compulsory for all employees and managers in hotels across the world. The Toolkit was also used locally by the Welsh Government alongside their initiatives to raise awareness in hotels and other hospitality settings to ensure a consistent anti-trafficking approach, and internationally by the Vienna-based International Centre for Migration Policy Development in an EU-funded project aimed at combating human trafficking with partners in Albania, Azerbaijan, Bosnia-Herzegovina, Moldova, Pakistan, and Turkey.

Communication, Cultural and Media Studies

Revising and Conserving Britain's Music Video Heritage 1966 - 2016

An extensive music video heritage research programme led by UWL has resulted in significant changes at the British Film Institute (BFI). The research programme, funded by two research council awards, undertook a novel analysis of the economic and cultural significance of British music video. In consultation with a panel of industry experts spanning five decades of production - starting from a database of 234,000 titles compiled by the researchers - it identified 200 British music videos with the most potential for curators, teachers, journalists and the public , with a view to preserve the final collection for posterity. The master files and detailed programme notes for each video (including full credits) were formatted to allow their export into the main BFI and British Library (BL) catalogues. The 200-video landmark collection set was distributed to audiences and schools across the UK as a 6-disc Special Edition DVD boxset sold on Amazon. By the end of 2020, 1,312 copies of the boxset had been purchased on Amazon with an average score of 4.7 out of 5 stars. The research created greater access to music video for new audiences and has offered curators a revised paradigm through which to exhibit the work. Press reviews showed that the box set had been successful in changing people's mind about the negative gender stereotyping of British music video. The research contributed to a significant policy change at the BFI who, prior to 2015, excluded music video from their collections. The BFI now recognises music video as a significant sector of the screen industries and, as a result of this research, now has an active collecting policy in music video.

National and International Networks

We network widely with collaborators in hospitals and health promotion agencies; with many industrial partners; government departments, local authorities and public agencies such as the police; leading arts and cultural bodies; and civil society and complaining bodies. These collaborations underpin much of the impact from our research, directly addressing real-word problems.

Our staff also contribute significantly to and influence developments in their academic disciplines through editorships of academic journals and membership of editorial boards; convening conferences and delivering keynote speeches; taking up roles of visiting professorships and fellowships at other universities; and through participation in learned societies.

International Research Collaborations

Our researchers have extensive academic collaborations with universities in the UK and internationally. This has been the basis of successful research funding applications and programmes; many joint publications and the development of new research strands.

Allied Health
- University of Los Angeles, California
- World Health Organisation
- German Centre for Neurodegenerative Disease, Germany
- King Faisal University, Saudi Arabia
- Trinity College Dublin, Republic of Ireland
- University of Adelaide, Australia
- Huazhong University of Science and Technology, China
- Cermes3 and École des Hautes Études en Sciences Sociales, France

Computer Science
- Aalto University, Finland
- Copenhagen Business School
- University of Oulu, Finland
- IIT Bombay, India
- IT University of Copenhagen,
- KU Leuven, Belgium,
- Instituto Superior Tecnico Lisbon,
- University of Madeira, Portugal

- Interactive Technologies Institute / Larsys, Portugal
- Dalian Maritime University, China
- Columbia University, USA
- University of Verona, Italy
- University of Florence, Italy
- Beijing University of Post and Telecommunications, China
- Cape Peninsula University of Technology, South Africa
- University of Fort Hare, South Africa
- University Tunku Abdul Rahman, Malaysia

Engineering
- Delft University of Technology, The Netherlands
- National Technical University of Athens, Greece
- Roma Tre University, Rome, Italy
- University of Illinois Urbana-Champaign, USA
- The National Institute of Advanced Industrial Science and Technology, Japan
- The National Research Council of Italy, Institute for Electromagnetic Sensing of the Environmental (GPR Division)
- Eurocontrol (Research and Development Centre), France
- Democritus University of Thrace, Greece

Social Policy

- University of Minnesota, USA
- University of Utrecht, The Netherlands
- National Gang Crime Research Centre in Chicago, USA
- Kansei Gakuin University, Japan
- Ritsumeikan University, Japan
- Netherlands Institute for the Study of Crime and Law Enforcement
- Meji University, Japan
- Pacific University, USA
- University of Texas at Austin, USA
- University of North Texas, USA
- Rennes 2 University, France

Leisure and Tourism

- Lapland University of Applied Sciences, Finland
- University of Zaragoza, Spain
- Technological Educational Institute of Athens, Greece
- University of Jyväskylä, Finland
- Bologna University, Italy

Music

- Ligeti Quartet , Lincoln Performing Arts Centre , USA
- Phacelia Ensemble, Germany
- Rowan University, USA
- Akademia Muzyczna im Karola Lipińskiego, Poland
- Harvard University, USA
- Hochschule der Künste, Switzerland
- Trondheim Science Centre, Norway
- Swedish Museum of Performing Arts, Sweden

Communication, Cultural and Media Studies

- Universita' Cattolica di Milano, Itatly
- City University of New York, USA
- New York University, USA
- Harvard University, USA
- Aarhus University, Denmark

Where Next?

Over the next five years, we are intending to consolidate the areas of research expertise we have, to deepen their reach and impact; and to develop new areas of strategic interest. We will:

- Secure more industry-based research collaborations and networks; grow our intellectual property base and maximise use and revenue via knowledge exchange
- Promote equality and diversity in all aspects of our research activities
- Continue to create a talent pipeline, recruiting high performing staff, and developing academic staff, supported by expert training and sabbatical systems

- Build capacity and infrastructure through partnerships, specialist space; and increasing our doctoral capacity to 400+ students
- Align Research and Knowledge Exchange Strategies, with clear target communities for impact
- Support the Open Research agenda including research data, and gold publishing.

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