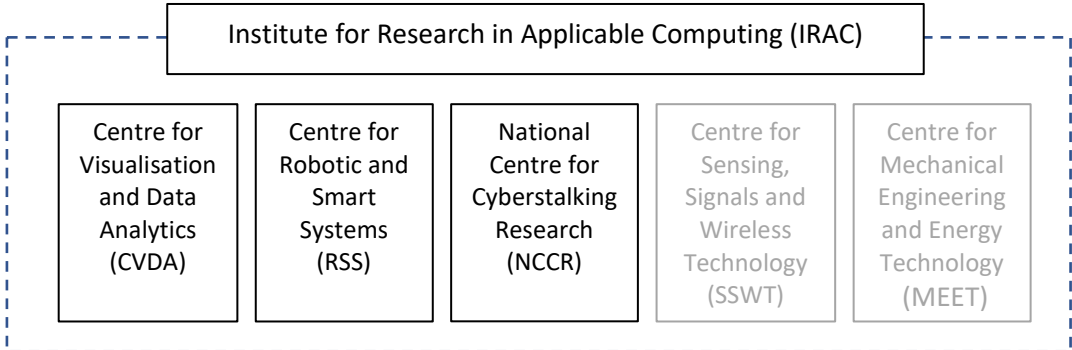


Institution: University of Bedfordshire
Unit of Assessment: 11
<p>1. Unit context and structure, research and impact strategy</p> <p>Structure and mission:</p> <p>Research submitted to this UoA is mainly undertaken in three of five research centres within the Institute for Research in Applicable Computing (IRAC), namely: the Centre for Visualisation and Data Analytics (CVDA); the Centre for Robotics and Smart Information Systems Studies (RSS); and the National Centre for Cyberstalking Research (NCCR), as shown in Figure 1. The other two centres focus on engineering-related research. Their achievements are submitted in a different UoA.</p>  <pre> graph TD IRAC[Institute for Research in Applicable Computing (IRAC)] CVDA[Centre for Visualisation and Data Analytics (CVDA)] RSS[Centre for Robotic and Smart Systems (RSS)] NCCR[National Centre for Cyberstalking Research (NCCR)] SSWT[Centre for Sensing, Signals and Wireless Technology (SSWT)] MEET[Centre for Mechanical Engineering and Energy Technology (MEET)] IRAC -.- CVDA IRAC -.- RSS IRAC -.- NCCR IRAC -.- SSWT IRAC -.- MEET </pre> <p>Figure 1. Structure of IRAC and three centres related to UoA11</p> <p>IRAC has the mission of becoming a world-leading, recognised institute of excellence in applicable computing through AI-focused, cross-disciplinary research and a positive contribution to society.</p> <p>Research and impact strategy:</p> <p>IRAC's research and impact strategy for fulfilling our mission can be summarised by the following:</p> <ul style="list-style-type: none"> • Encouraging wide participation among staff members in mission-oriented research; • Building up cross-disciplinary networks in the UK and across the world; • Promoting creative research and applications; • Engaging industry, society, local authorities and government in research; • Disseminating high-quality research outcomes to target audiences; • Expanding client and funding bases with the ability to deliver timely and bespoke responses from both technology and services perspectives; • Developing expertise among staff and post-graduate (PGR) students. <p>Under the research and impact strategy, this UoA has made significant advances in fulfilling our mission in this assessment period.</p> <p>The following research achievements enabled collaborations with hospitals in the UK, Greece and Lithuania to establish a digital healthcare framework. This framework uses AI to empower patients to manage their health, providing visualised information about their conditions, as well as a range of guidance and alerts about potential risks or harms. The framework has shown notable chronic disease control among patients, health literacy enrichment and patient health engagement for patients with diabetes, cancer, heart failure, renal disease and metabolic syndrome. The research was supported by a number of EU-funded projects, including h2020 iManageCancer, and FP7 CARRE and MyHealthAverta.</p>

Research achievements

- A comprehensive data analytics and semantic knowledge discovery framework was developed by semantically integrating data from varied IoT and web data resources. The framework applies a hybrid database architecture of NoSQL and RDF repositories with the introduction of semantic oriented data mining and knowledge lifting algorithms. The algorithms transform raw data into semantic data and apply MapReduce computations to discover semantic patterns of significant events or symptoms, such as unrestful sleep, the absence of physical activity over the course of a week and high temperature or high blood pressure. The significant events or symptoms that are discovered provide valuable information for disease prediction and treatment or lifestyle recommendations.
- Information retrieval and search algorithms inspired by utilising Hilbert spaces and quantum probabilities, allow search engines to capture a rich set of user interaction, going beyond query-based state-of-the-art approaches. They are capable of modelling and combining the vagueness and dynamics inherent in interactive search systems, making search more effective.
- Topic mining algorithm enables thematic topics to be discovered using the explicit semantic association between thematic topics to the themes that are commonly used by humans in specific professions. The algorithm also connects to a set of visual components that are closely coupled with the underlying thematic topic detection to support interactive document retrieval.
- Predictive models that have been established based on a cutting-edge deep learning paradigm have achieved outstanding accuracy in the following areas:
 - Prediction of survival in trauma;
 - Recognition of abnormal brain development in new-borns;
 - Brainwave biometric.

The following research achievements contributed to *Harmful Online Communications: The Criminal Offences*, Law Commission consultation paper. Our collaborative research with Universities UK resulted in us presenting and providing expert evidence at UUK's AGM. The research was supported by the following projects: *Developing an Evidence Based Protocol for Assessing Risk and Managing Policing Operations in Response to Cyberstalking and Online Harassment* funded by Bedfordshire Police through the Police innovation Fund; *Cyber harassment: Platform for Evidence Gathering, Assessing Risk & Managing Policing* project, funded by the Home Office; and *Tackling Hate Crime* project, funded by HEFCE.

- Analysis of the psychological impact of cyberstalking:
 - Understanding of the psychological impact on victims and identification of the impact of victimisation on behaviour;
 - Formulation of risk assessments based on aggravating and mitigating factors present in historic cyberstalking cases;
 - Recognition of the need to psychologically support victims of online abuse and the subsequent development of guidelines for national training.
- Development of risk assessment in cyberstalking:
 - Provision of information and psychological expertise to the police to support identification risk, psychological impact and the extent of cyberstalking;
 - Provision of information and content for training courses delivered to national stalking advocates.

- Development of educational interventions for prevention:
 - Contribution to changing the culture initiatives in HE;
 - Creation of preventative strategies in educational environments;
 - Contribution to the creation of sector guidelines on responding to online harassment;
 - Awareness and recognition of online abusive behaviour in higher educational establishments.
- Research on trust in distributed software systems led to the development of a mobile application, CybHAPP (Mobile Cyber-harassment Application), equipped with features that identify, report and log malicious communication manually by the user and automated (GPS location, integrity hashes, time/date etc.) meta data. This provides digital investigators with reliable information to determine the integrity and value of the reported incident, and the identity of the perpetrator where possible

The University has established the joint RENEW Centre with TWI, a Cambridge-based company. The following research tightened up the collaboration with TWI under RENEW by improving robot autonomy in Industry 4.0. It also led directly to the recent award of a 6M Euro H2020 5GPPP project in 5G-enhanced robot autonomy (starting from 1st January 2021) with potential impact for autonomous robotic applications in transport, healthcare and Industry 5.0.

- An AI-based vagueness handling algorithm and intention recognition algorithms allow robots to understand human users' commands and intentions, leading to the increased degree of autonomy of robots in HRI;
- New protocols and algorithms for medium access control (MAC) and channel assignments, congestion control and resource management, channel characterisation and modelling, timely and reliable packet dissemination optimisation, and cooperative vehicular communications in Vehicular Ad-Hoc Networks (VANETs).

Our achievements also include:

- Micro/nano robotic cell manipulation revealing the mechanical properties of living cells is believed to be significant in the early diagnosis and treatment of cancer (supported by EU FP7 BioRA and H2020 MNR4SC projects);
- Providing consultancy support to a number of SMEs in South-east England (supported by the EU Innovation Bridge and ICT Escalator projects).

Our achievements can also be evidenced by:

- High quality publications publishing our internationally recognised research outcomes , including IEEE Transactions on Network and Service Management, Sensors, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Systems, Man and Cybernetics: Systems, IEEE Transactions on Vehicular Technology, IEEE Transactions on Antenna and Propagation, International Journal of Neural Systems/World Scientific, Integrated Computer-Aided Engineering, Pattern Recognition, Telematics and Informatics, Computers & Graphics, etc.

This UoA recognises the significance of 5G to the enhancement of autonomy in robotic and smart systems with respect to effective resource sharing, such as data, information, intelligence and computation power due to its larger capacity and ultra-low latency. While continuing our research in data analytics, IoT and cyber security, this UoA endeavours to establish us as a world-recognised institute of excellence in research in this area in the next REF period.

This UoA will apply the same research and impact strategy to the next REF period as to the previous one, but will give high priority to the development of 5G vertical applications of autonomous robotic systems, data analytics, IoT and cyber security. More specific, this UoA will:

- Encourage the form of critical-mass for high-priority research, involving wide participation in research from staff;
- Develop new, cross-disciplinary networks in cloud computing, 5G orchestration and ML, and sustaining existing links for data analytics, IoT and cyber security;
- Promote creative applications, particularly 5G-cloudified robotic systems;
- Engage industry, society, local authorities and government, with the emphasis on healthcare, cyber security, transport, and manufacturing, particularly through Innovation Bridge, ICT Escalator, and KTP projects;
- Focus on generating REF-able research outcomes;
- Develop a stream of external funding to support high-priority research, such as Research Councils, Horizon Europe, UKRI, Innovate UK, etc.
- Focus on high-priority research regarding the development of staff members and PhD students.

This UoA has already started new cross-disciplinary research into 5G-cloudified robotic systems and their applications to healthcare, transport and manufacturing. This UoA has established new links to international institutions in Japan, Korea, China, and Canada, in addition to the existing links to research, industry and healthcare sectors in Europe. The UoA has also increased engagement with UK research councils and authority bodies, for example, UKRAS, APPG and UUK, and to strengthen the connection with UK universities and industries for high-priority research.

2. People

IRAC endeavours to create an equal and encouraging environment for all its members, including those who are submitted with this UoA.

Staffing strategy and development:

Our mission is to encourage our Early Career Researchers (ECR) to grow and develop, to sustain our strength in research on existing foundations and to establish research collaboration when they leave. Our staffing strategy is built around recruitment, promotion, nurturing new staff and staff development.

- **Recruit:** The recruitment of staff members in this UoA is via two channels. One is the School of Computer Science and Technology (CST) within the university to which almost all IRAC members belong. Staff recruited through this channel in the main, have permanent teaching and research contracts with the university. The other route is via externally funded projects. Staff members recruited through the projects have fixed-term, research only contracts. Most people recruited via either channel (and who have significant research responsibility) have been successful in bidding for external research funding, producing excellent research outcomes.
- **Retain:** IRAC encourages staff promotion. In this REF period, one professor and two readers have been promoted in this UoA. Working with CST, IRAC ensures that staff members with significant research responsibility have 25% of their annual workload assigned to research.
- **Nurture:** All newly recruited staff have been assigned a mentor (for permanent contract holders) or a supervisor (for fixed-term contract holders) to help make headway with their research and to establish a research profile. Along with the university's three-month reviews during the first year in post, mentors and supervisors help new staff to identify any training requirements. The university's Innovation & Enterprises Services Department provides staff,

especially new members, with information about funding opportunities, and help with bid development and project management. IRAC offers individualised advice to new staff through the director of the institute and the centre heads. It also provides funds from the QR budget, in conjunction with CST's staff development fund, to help staff disseminate their research and develop a research network. People nurtured at IRAC develop their career here in UoB and beyond. Dr Yue Zhang, for example, is now leading 5G research at Leicester University; Dr Gregory Epiphaniou became a reader and leads research in cybersecurity at Wolverhampton University; and Professor Edmond Prakash also leads research in cyber security at Cardiff Metropolitan University. Professor Amar Aggoun is leading the School of Mathematics and Computer Science, also at Wolverhampton University.

- **Staff development programmes with examples:**

- **Annual PDR:** This provides a formal channel for staff members, including RFs, to identify any needs for research training with their line managers.
- **Investment in quality research:** IRAC has received over £1.2m in QR funding for research and researcher development over this REF period. This UoA has used part of the fund to invest in staff, for example; GPU computers to support Professor Feng Dong, Dr Hong-Qing Yu, and Dr Ingo Frommholz; data analytics, optical tables and robotic systems to support Dr Renxi Qiu; and robotics study and eye tracking systems to support Dr Haiming Liu in semantic analysis.
- **Conference fund:** This UoA, through QR funding, supports staff members to participate in top-tier national and international conferences, to enable effective dissemination of findings, ensure targeted impact, form new collaborations and develop existing ones.
- **UoB Conference:** Researchers of all levels produce posters and research presentations.
- **Visiting Professorships:** This UoA now has three visiting professors, Professor Zuobin Wang, Professor Changsi Peng and Professor Yong Yue. They are distinguished top-tier researchers in computer controlled nano manipulating, measuring and manufacturing. This helps staff and student development in the UoA by providing close interaction with these visitors. Faculty members also visit top-tier research institutes nationally and internationally, assisting staff development and bringing new knowledge back to IRAC.
- **Funding bid preparation workshop:** UoA workshops on successful bid-writing targeting specific funding bodies have been organised, covering: selection of the right funding body and calls to apply for; how to use full economic costing; reviewing previous bids for lessons learnt and best practice. workshops use live bids to show the process. Prof Clapworthy and Prof Feng who together have more than 25 successful EC bids, regularly share their expertise in bid development. This UoA has actively participated in institution-level bid support seminars organised by the university's Innovation & Enterprise Service Department.
- **Research student supervision inclusion:** Early career research staff without supervision experience are included in teams as a way to upskill them.
- **ECRs development:** The recruitment and development of ECRs brings vitality to the environment, ensuring sustainable growth, and is an important part of the strategy. This UoA has seen 25 academics begin their lecturing careers during this assessment period and research fellows (RFs) recruited under externally funded research grants. This UoA supports all ECRs by providing mentors/supervisors, encouraging collaborative research through bids and outputs and supporting them with their

teaching load. As a result of ECRs' development, several took up challenging roles in top organisations. For example, Dr Beisheng Liu, who was employed under the EU FP7 ICT SRS project, is now leading management software development as a senior engineer in the China Academy of Railway Sciences. Dr Nigel McFarlane and Dr Farzad Parvinzamid, who worked in a number of FP7/H2020 projects, are now a bioinformatics scientist at Illumina and a senior engineer at Queen's University Belfast, respectively,

Research students

This UoA values the development of research students towards young researchers and engineers. In this REF period, the UoA has made 42.75 PhD awards, as shown in Table 1.

13/14	14/15	15/16	16/17	17/18	18/19	19/20
8.00	7.25	9.00	5.50	5.00	4.00	4.00

Table 1. PhD awards in REF 2021 period

The awarded students continue their research and technical development in universities and in industry. Some excellent examples are: Dr Yu Hou, whose PhD study is on nano-technology, is now a senior engineer in the Chinese Academy of Science and the director of laser laboratory; Dr Haider Al-Khateeb, whose PhD is in cybersecurity, is now a senior lecturer at Wolverhampton University, Dr Jinyun Liu is now the deputy head of the Computer Science Department at Huabei University of Science and Technology of China, Dr Hamed AL-Rubaieeb, whose PhD work is on integrating Arabic sentiment analysis into CRM, has been appointed as the technical support manager of MOD Saudi Arabia.

This UoA nurtures PGR students with the following foci:

- Research and technical development capabilities through supervision, PGR fund, workshops/seminars, and participation in staff exchange programmes.
 - Supervision - Each PGR student has a supervisory team of two supervisors, at least one of whom must have successfully led a student to completion. Where appropriate, students may also have an external expert from industry or other universities as the third supervisor. The supervisory teams provide the students with suggestions on research directions and detailed research tasks on a monthly basis.
 - PGR fund – Each PGR student is allocated a certain amount of funds to support their research, including facilities (computers, lab equipment, software, etc.) and activities (research visits and conference presentations).
 - Workshops and seminars – Workshops on various topics have been organised for PGR students to help them make progress with their research, particularly regarding literature review when the students start their studies.
 - Participation in staff exchange programmes – The UoA has been granted four EU FP7/H2020 MSCA projects. More than 12 PhD students participated in the staff exchange programmes.
- Entrepreneurship via an Innovate UK KTP project and collaboration with industry:
 - KTP project – This UoA worked with DRAX (UK) in a KTP project to help the company shift its traditional business from hardware/software reseller and panel installer to a provider of information gathered from fire alarms managed by DRAX on customers' premises, back to the customers and other stakeholders. Along with the project, company personnel were developed in technical skills: IoT, ML, AI and ICT.

- Collaboration with Industry – This UoA has developed wide connections with local and regional industry, especially through the EU H2020 projects, Innovation Bridge and ICT Escalator, in recent years, to help industry develop digital businesses. Together with their supervisors, some PGR students have been involved in the collaboration, developing, for example, IoT and mobile apps products.

This UoA also encourages the PGR student voice to be heard. A PGR student representative collects opinions on research management and reports to the IRAC board meeting every three months. Supervisors are the first contact point for PGR student matters relating to research management or students' registration.

Equality and diversity:

This UoA is committed to providing equal encouragement and support to all researchers, regardless of their gender, age, religion, ethnic background and disability. Female staff and research students in ICT and engineering have always been encouraged. They have been equally supported with respect to research hours, research training and equipment and research activities and dissemination. Among the staff who have significant research responsibility in this UoA, three out of 10 are female. All have led, and participated in, externally funded research projects. Among the staff who have significant research responsibility in this UoA, four out of 10 are white.

3. Income, infrastructure and facilities

This UoA is proactive and successful in bidding for research funding to support research and expertise development. The UoA values research income as recognition of our research. We have led and participated in seven new EU funded projects and five new projects funded by national funding bodies, including the EPSRC. These new and legacy projects account for £3.8m of our external research budget in this REF period, as can be seen in Table 2. The total research income from external funded projects is nearly £4m. The details are given in Table 3.

In addition, the UoA received approximately £1.2 million in QR funding. This UoA also received £72k by collaborating with local industry on digitalisation processes.

Project	Funding body	Budget to UoB
MyHealthAvatar	FP7	425,000
CHIC	FP7	510,000
CARRE	FP7	360,000
MyLifeHub	EPSRC	190,000
Inventor	FP7	360,000
iManageCancer	H2020	510,000
Developing an Evidence Based Protocol for Assessing Risk and Managing Policing Operations in Response to Cyberstalking and Online Harassment	Bedfordshire police	13,300
DRAX (UK) Intelligent Alarm systems	Innovate UK	110,000
Cyberharassment: Platform for Evidence Gathering, Assessing Risk & Managing Policing.	Home office	758,000
MNR4SCell	H2020	114,750
QUARTZ	H2020	399,943
Tackling hate crime	HEFCE	48,885

Table 2. Major externally funded projects started in this REF period and the corresponding budget

13/14	14/15	15/16	16/17	17/18	18/19	19/20
£696,741	£708,239	£657,788	£873,089	£725,355	£149,401	£144,001

Table 3. Research income from externally funded projects in this REF period:

The university invested £40m on a new STEM building that was officially opened in 2019. This UoA has benefited by having full access to these facilities. This UoA has the following facilities arranged in three labs, namely, CVDA lab, AI & robotics lab and Computer networking and cybersecurity lab to support research activities in CVDA, RSS and NCCR.

- The CVDA lab, for the collection and analysis of data, is mainly funded through EU research projects and some QR funding. Available technology includes:
 - Eye Tracking 101, made by Eye Tribe, can track eye interactions and SDK developer kit for eye control development and supports the study of users' interaction, behaviours and preferences. The user's eye movement is recorded during interaction with the application on the screen. The recorded data can be analysed using the built-in eye tracking software to identify where the user has focused during the interaction. Together with the other data such as interview scripts, the eye tracking data can provide accurate indicators of behaviour and preferences. The data can be exported as a CSV file, for analysis using other software.
 - Emotiv's Brain Computer Interface (BCI), and Insight Headset that boasts advanced electronics, fully optimised to produce clean, robust signals in any environment about users' interactions, behaviours and preferences. Brain wave frequency is recorded during the experiments and data can be analysed, u to examine users' engagement, and emotions.
 - Shimmer3 GSR+ Unit emotion detector provides connections and preamplification for one channel of Galvanic Skin Response data acquisition (Electrodermal Resistance Measurement - EDR/Electrodermal Activity (EDA)). The GSR+ unit is suitable for measuring the electrical characteristics or conductance of skin, as well as capturing an Optical Pulse/PPG (Photoplethysmogram) signal and converting it to estimate heart rate (HR), using the Shimmer ear clip or optical pulse probe. It is used to study users' interaction, behaviours and preferences. The GSR signal is collected by an emotion sensor and embedded software can indicate whether the user is in a heightened or lower state of emotion. Together with the tracking of facial expressions it is possible to identify if the user is feeling positive or negative during their interactions with the technology.
 - The high-performance computer MPC-2000 provides multiple dataflow engines as shared resources on the network, allowing them to be used by applications running anywhere on the cluster. It provides maximum flexibility and performance density for the widest range of HPC applications.
 - GPU computers, and specialised software for data analysis.
- The AI & Robotics lab has been established under the EU projects SRS, ECROBOT, BioRA and MNR4SCell to support research in AI, robotics and smart systems development. The lab has a 6-DoF Schunk robot arm with a XX grasper and 1 3D-camera for studying vision-based motion control; Turtlebot robots for mobile robot research; and in-house developed robot head and robot chair to study HRI. The lab also has a Thorlabs XX Atomic Force Microscope with open access to a control system, allowing research to be carried out on robotic applications to micro/nano manipulation and measurement.

The Computer Networking and Cybersecurity lab has Cisco Networking Academy hardware and a VMWare Workstation virtualisation environment offering full control (administrator or superuser

level) over multiple virtualised machines (VMs) running as a virtual internal network that can be connected to the Internet (if required). It also has specialist software, such as Wireless Security appliances, Kali Forensic Tools, ProDiscover, and The Sleuth Kit. The lab allows any networking to be set up where either actual or virtual machines are needed and, so supports protocol development (though this can also be done using simulators like NS2/NS3/OMNET++); wired and wireless networking research; network cybersecurity studies with attackers, victims and other systems that mimic a realistic organisation network; and wireless and mobile networking and network security research using the hosts and VMs along with Access points.

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

This UoA has developed a wide-range of collaborations with academics, industry, society, local authorities and the UK government, contributing significantly to research and to society.

Robotics and Smart systems

- Following the successful completion of FP7 ICT SRS project, collaborations with RobotNik (a leading company in the market for service robotics in Europe) and BUT (a leading contributor for open source robotic middleware ROS) continue on robot autonomy and self-motivated learning. This has led to a fundamental study on fuzzy logic-based robot learning mechanism, in particular towards integrating the fuzzy logic and symbolic AI with emerging transfer learning. The collaboration has been extended to 5G-orchestrated robot autonomy and onto an international scale, involving NEC (Germany), OTE (Greece), IQU (Spain), TWI-Global (UK), Hal-robots (UK) and partnerships with BJUT and BPTU from China, Hosei University in Japan, KHU in Korea and Ryerson University in Canada.

Data analytics and applications in digital health

- Supported by European Regional Development Fund, a collaboration with Fusion Radiology (UK) and with Stavropol regional hospital (Russia) was established in the area of quantitative imaging for early detection of osteoarthritis, leading to the development of predictive models using machine learning algorithms.
- We collaborated in an EU CAREER project (<https://www.carre-project.eu/>) on 'investigated information and communication technologies for empowering patients with comorbidities (multiple co-occurring medical conditions), or persons with increased risk of such conditions, especially in the case of chronic cardiac and renal disease patients'/Produced a visual analytic tool for risk associations and time lined personal data.
- We collaborated under EU H2020 MyHealthAvatar Project with Saarland University, Foundation for Research & Technology; Hellas, Institute of Communications and Computer System, Greece; Leibniz Universität, Hannover; Technological Educational Institute of Crete; and the University of Lincoln, on semantic health IoT modelling and reasoning, and a data analysis framework.
- We worked with Beijing University of Post & Telecom on research into wireless communications, producing joint publications and proposals submitted on both sides
- We collaborated with the University of Padua (Italy), The Open University (UK), Free University Brussels (Belgium), the University of Copenhagen (Denmark), Brandenburg University of Technology (Germany), and Linnaeus University (Sweden) on quantum-inspired information retrieval, producing algorithms for user-centric search.
- We worked with the University of Toulouse (France) and GESIS - Leibniz Institute for the Social Sciences (Germany), on bibliometric-enhanced information retrieval disseminating discoveries in scholarly research.

- We collaborated with South China Normal University (China), on user-centred information access for E-Learning, producing discoveries, user models, technologies, etc.

Cyber stalking

- Consultation with Paladin, National Stalking Helpline/Suzy Lamplugh Trust, Veritas, Sussex Stalking Services, Aurora, Revenge Porn Helpline, Hampshire Constabulary Stalking Clinic, the Integrated Stalking Unit – Cheshire Police and the Parliamentary security team to understand the breadth of experience and impact of online abuse, stalking and image-based sexual abuse.
- Collaborations with Greater Manchester Police, Hampshire Constabulary and Bedfordshire Police in the development of Risk Assessment. Each force shared data with us from case reports of cyber related abuse, which we analysed. The reports were delivered to each force. From this material we were also able to develop a prototype risk assessment of cyber behaviours that has been adopted by some service providers, such as Aurora New Dawn and Paladin – the National Stalking Advocacy service.
- Cyberstalking advocacy training has been delivered to case workers on the National Training program for ISACs (Independent Stalking Advocacy case worker) through Paladin since 2016.
- We worked with Bedfordshire Police, victim advocacy groups (mentioned above) and the Crown Prosecution Service to develop CybHAPP, an evidence gathering mobile application that meets the requirements of all stakeholders.
- We collaborated with the author of the CARA (Community based intervention for First offenders of Domestic Abuse) project from Hampshire Constabulary and the University of Liverpool to develop a community-based, awareness-raising training route for standard risk cases and offenders via a Cyber Awareness Course (CybAC). The course was delivered to university students to ascertain attitude change to cyber behaviour at Liverpool University and the University of Bedfordshire.
- We worked with Universities UK and the Office for Students to develop (with a wide range of stakeholders) and disseminate National Sector Guidelines for responses to Online Harassment.
- We worked with the Law Commission to share our research about the impact of online abuse for a scoping report released in 2018 and the Law review into online harms which is currently underway.