



**Report of the Quality Review Group
to the
Department of Computer Science & Information
Systems**

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1 Introduction

University of Limerick's (UL) quality review process, as applied to academic, research institutes, professional services units, affiliates and thematic areas, was developed and continues to evolve in order to satisfy the University's quality policy and meet legislative QA requirements. UL complies with the [Qualifications and Quality Assurance \(Education and Training\) Act 2012](#), as amended by the [Qualifications and Quality Assurance \(Education and Training\) \(Amendment\) Act 2019](#), which places a legal responsibility on universities to establish, maintain and enhance QA procedures relating to their activities and services (Part 3, Section 28). These QA procedures reference the European Standards & Guidelines for Quality Assurance in the Higher Education Area (ESGs) and must take due account of relevant quality guidelines issued by [Quality and Qualifications Ireland](#) (QQI). QQI is the statutory body responsible for reviewing and monitoring the effectiveness of QA procedures adopted and implemented by higher (and further) educational institutions within Ireland.

All academic units are reviewed according to the terms of reference as described in the [Academic Quality Review Framework](#) and tailored quality review guidelines, which are available on the [QSU website](#). The planned schedule of quality reviews is also published.

The UL academic quality review process comprises the following three phases:

1. Pre-review phase, in which the unit under review conducts self-evaluation exercises and writes a department self-assessment report (DSAR) and a programme self-assessment report (PSAR).
2. Review phase, in which a quality review group (QRG) comprising external experts, both national and international, reviews the DSAR and PSARs, visits the unit, meets with stakeholders and produces a report (this report), which is made publicly available on the [QSU website](#).
3. Post-review phase, in which the unit considers and formally responds to the recommendations of the QRG, devises plans to implement them and reports implementation progress to the University Quality Committee and UL senior management.

The recommendations made by the QRG form the basis of a quality improvement plan (QIP) prepared by the QSU for the unit under review. Once the site visit is over, the unit sets about evaluating and implementing the recommendations, as appropriate. Approximately seven to nine months after receiving the QIP template from the QSU, the head of unit provides a summary overview of progress to the university's Quality Committee. Committee members are afforded the opportunity to discuss and evaluate progress.

Approximately 18 months after receiving the QIP template, the head of unit, Provost and Deputy President, Dean and Director of Quality meet to formally review progress and to agree on any remaining actions to be taken.

2 Department of Computer Science and Information Systems (CSIS)

The Department of Computer Science and Information Systems (CSIS) is one of the oldest in the university, having its origins in the Department of Management Systems, founded in 1983. In its early years, its focus was teaching, with a rapid expansion in undergraduate and taught postgraduate numbers.

CSIS differentiates itself by encompassing a wide range of digital disciplines, including human-centred computing, music technology, digital arts, games, software engineering, software localisation, and bio-inspired intelligent systems. This diversity and uniqueness in teaching and research areas set it apart from other departments within UL.

2.1 Portfolio of CSIS programmes

Undergraduate programmes:

- Bachelor of Science in Computer Science (Common Entry) *leading to*
 - Bachelor of Science in Computer Systems
 - Bachelor of Science in Computer Games Development
 - Bachelor of Science in Cyber Security and IT Forensics

- Bachelor/Master of Science in Immersive Software Engineering BSc/MSc
- Bachelor of Science in Interaction Design BSc
- Bachelor/Master of Science in Artificial Intelligence and Machine Learning BSc/MSc
- Bachelor of Science in Music, Media and Performance Technology

M.Sc. programmes:

- Artificial Intelligence and Machine Learning
- Health Informatics
- Interaction and Experience Design
- Software Development: International Systems
- Software Engineering

2.2 Research Strategy

"Wisdom for Action" is a guiding strategy that reflects UL's commitment to transforming knowledge into meaningful, real-world impact which is structured around the four key pillars of Sustainable, Inclusive, Smart, and Healthy Society.

This strategic alignment permeates every faculty but finds particularly rich expression in the CSIS's dynamic intersection of technology, creativity, and design.

In CSIS, this principle is reflected in a curriculum that integrates theoretical foundations with hands-on innovation. Students engage with advanced topics such as artificial intelligence, data science, cybersecurity, and software engineering, while being encouraged to apply their learning to address societal and environmental challenges.

Strong collaboration with Lero (devoted to software research) illustrates its commitment to a smart society. Likewise, collaborations with the Health Research Institute @UL, the Limerick Digital Cancer Research Centre, ATLAS@CERN, LHCb@CERN, and Autism@UL Special Interest Group — ensure that graduates are not only technically proficient but also ethically aware and impact-driven towards an inclusive, healthy society.

This ethos extends into DMARC and the IDC, where digital arts, computer music, and interaction design converge to explore how interactivity, sound, and visuals can be used to communicate complex ideas, evoke emotion, raise awareness and foster public engagement.

2.3 CSIS Partnerships

Internal stakeholders

CSIS demonstrates a strong and strategic collaboration with internal and external stakeholders, which significantly shapes the CSIS teaching, learning, and research activities.

Internal stakeholders include academic staff, researchers, technical and support staff, university leadership, administrative staff, career services personnel, and undergraduate, postgraduate, and doctoral students.

These groups contribute by delivering high-quality teaching, conducting innovative research, maintaining operational and technological infrastructure, guiding strategic governance, and providing essential administrative and career development support.

Students themselves play a critical role by actively engaging in learning, participating in feedback mechanisms, and co-creating curriculum enhancements. Through platforms like Brightspace, CSIS ensures that students' voices are consistently integrated into the Department's continuous improvement efforts.

External stakeholders

External stakeholders comprise a wide range of collaborators, including industry partners, government and non-government agencies, educational institutions, local community organisations, professional associations, and alumni. Industry partners, particularly more than 40 companies associated with the Immersive Software Engineering (ISE) programme, offer valuable input through work placements and curriculum feedback. Cooperative Education at UL is a compulsory six-to-eight-month work placement for undergraduate students which provides a valuable opportunity for students to build self-confidence and enhance their employability. It helps students develop their essential skills such as teamwork, communication, and decision-making, while gaining insight into workplace culture and operations. They also learn more about themselves, expand their knowledge, and make informed decisions about their future career.

2.4 Conclusion

CSIS is a dynamic and innovative department within the Faculty of Science and Engineering. Its programmes span a wide range of digital disciplines, including human-centred computing, music technology, digital arts, games, software engineering, software localisation, and bio-inspired intelligent systems.

The department aims to foster a collaborative and inclusive environment that supports innovative research and teaching. The mission of CSIS is to provide high-quality education and research in computer science and information systems, preparing students to become leaders in the digital world.

3 Panel Membership

Professor Karen Rafferty, Professor Head of School, School of Electronics, Electrical Engineering and Computer Science, Queen's University Belfast, Northern Ireland (Chair)

Over the past six years, Karen has served as the Head of School, managing one of the largest and most complex schools within the University. During her tenure, the School of Electronics, Electrical Engineering and Computer Science has achieved considerable advancements and successes in education, research, and within its staff body.

Karen has a sustained publication track record in high-impact journals and conferences and is internationally recognised. She has published over 110 research papers and two books. She has been PI or CI on 16 awarded projects to Queen's, and her currently active awards have a value of £7M. She is currently supervising six PhD students and has graduated 13 PhD students.

During the past year, the school has received Silver renewals in both its Athena Swan and Investors in People Awards. One of her core achievements as Head of School has been the successful implementation of initiatives that have significantly enhanced their educational offerings and research capabilities. These initiatives include the introduction of innovative teaching methodologies, the expansion of interdisciplinary research projects, and the development of a supportive and inclusive culture for both staff and students.

Professor Anne Condon, Professor of Computer Science at the University of British Columbia, Canada (Senior Peer 1)

Anne is a Professor in the Department of Computer Science at the University of British Columbia, where she has served as Department Head and Associate Dean in the Faculty of Science.

Anne's current research interests are in biomolecular computation and computational prediction of RNA and DNA reaction kinetics. More broadly, her research contributions span computational complexity theory, hardware verification, bioinformatics, biomolecular computation, and combinatorial auctions.

Anne received her Bachelor's Degree in Computer Science and Mathematics from University College Cork, Ireland (1982), and her PhD in Computer Science at the University of Washington (1987). She is an ACM Fellow, a Fellow of the Royal Society of Canada, and a recipient of the Computing Research Association's Habermann Award for her work on increasing the number and success of women in computing research.

Professor Giuseppe Liotta, Department of Engineering, University of Perugia, Italy (Senior Peer 2)

Giuseppe is a Professor of Computer Science at the Department of Engineering of the University of Perugia, Italy. He received a PhD degree from "Sapienza", University of Rome. His post-doc appointment was at Brown University, US. He has conducted long-term research visits at McGill University (Canada) and the University of Sydney (Australia), and short-term visits to several research institutions worldwide.

His research interests are mainly directed at the analysis and design of algorithms and systems that have applications in the fields of network science, information visualisation, and graph drawing. On these topics, he has edited special issues, written survey papers, book chapters, published more than 300 research papers, and given lectures worldwide.

He regularly serves on international scientific boards and in programme committees of international conferences. He had the privilege of serving as the chairperson of the Steering Committee for the International Symposium on Graph Drawing and Network

Visualisation and was recently honoured to join the conference's Advisory Board. He is also a member of the Steering Committee of the International Conference and Workshops on Algorithms and Computation.

He served as the editor-in-chief of the Journal on Graph Algorithms and Applications, and he is now acting as co-editor-in-chief of Computer Science Review. Over the years, his research has been supported by several grants issued by both public and private sponsors.

He has gained administrative experience by serving his university in different management roles, including being a member of its academic senate and acting as a deputy chancellor. He currently serves as the head of the PhD School in Industrial and Information Engineering of the University of Perugia.

Mike Keegan, Head of Research and Development at Ei Electronics, Shannon, Ireland (Employer Representative)

Mike is an experienced technology professional with 35 years of experience across product design and development, software development, programme and project management and commercial roles.

He has worked in Telecoms Enterprise Software, Vision Inspection, Telecoms and Consumer Electronics product development in Ireland, the UK, Latin America and the UAE.

He is currently Head of Research and Development at Ei Electronics, based in Shannon, Ireland.

He holds a B.Eng from the University of Limerick (formerly NIHE), 1987.

Freya Farrar, Brand Ambassador (Student Representative)

Freya is a recent graduate of MMPT, UL. They were awarded a first-class honour in their degree and was also awarded the FYP Prize Award for their final year project titled The Experience of Queer Cinema Through Colour and Floriography.

They carried out their cooperative education in Telegael, Galway and worked as a sound designer on a show called Cat & Keet during their time there. After their co-op period was over, Telegael kept them on, on a freelance basis, to finish the series and has credits of over 70 episodes of Cat & Keet.

Professor Ken Byrne, Department of Biological Sciences, University of Limerick, Ireland (Internal Representative)

Ken's background is in forestry and soil science and a central theme throughout his career has been the use of field-based studies to investigate the impact of land use and land use change on soil carbon stocks on greenhouse gas emissions (GHGs). This has largely focused on forest and peatland ecosystems with traditional sampling methods to investigate soil carbon stocks and chambers to investigate biosphere-atmosphere exchange of GHGs.

Beyond this, he has worked on a range of research topics such as carbon storage in harvested wood products and the use of process-based biogeochemical models to simulate carbon cycling and GHG exchange at temporal and spatial scales. Alongside this, he has also contributed to the IPCC and IPBES.

More recently, he is a PI of the Co-Centre for Climate + Biodiversity + Water where he is Co-lead of Spoke 4 –Investing in Carbon and Nature. He is a co-ordinator for the Department of Agriculture, Food and the Marine funded 'PeatFor' project 'Management of Peatland Forests for Climate and Biodiversity'.

He is a member of the Editorial Boards of PLOS Climate, Discover Forests, and Frontiers in Forest and Global Change.

Mr Mark Collins (Technical Writer) (Recording Secretary)

Mark works as an editor and technical writer for various organisations, ranging from government departments and third-level institutions to SMEs and individuals. He is a freelance contractor and promotes his work via www.writer.ie

He started working on Quality Reviews with the Royal College of Surgeons in Ireland (RCSI) in 2015 as a rapporteur. Since then, he has worked on 25 reviews for the RCSI and two for Dublin City University.

He graduated from Trinity College Dublin with a degree in Philosophy (1994).

4 Preliminary Comments of the Quality Review Group

The QRG wishes to express its gratitude to CSIS for the warm welcome and high level of cooperation throughout the review process. The review was well organised, and the QRG found the Department's self-assessment reports (SARs) and programme documentation to be generally thorough and informative, though some reporting lacked consistency in structure and level of detail across programmes. Meetings with course teams, departmental staff, students, and external stakeholders were open,

constructive, and provided valuable insights into the Department's activities, strengths, and areas for development.

The QRG was particularly impressed by the dedication, professionalism, and expertise of CSIS academic, technical, and administrative staff, and their clear commitment to student success. This was corroborated by discussions with undergraduate and postgraduate students, who expressed enthusiasm for their programmes and appreciation for the quality of teaching, learning resources, and student support. CSIS offers a broad and distinctive portfolio, spanning traditional computer science and software engineering to emerging areas such as AI/ML, Immersive Software Engineering, Interaction Design, and Music, Media and Performance Technology. These programmes demonstrate both regional and national relevance and are strengthened by strong engagement with industry and the wider community.

Research activity in the Department is robust, particularly in software engineering and collaborations through Lero, as well as interdisciplinary research across health informatics, creative technologies, and digital arts. While areas of research excellence were evident, the QRG observed variability in research visibility, outputs, and collaboration across the Department, and noted the need for a strategic research plan to support growth, sustainability, and international impact. The Faculty leadership has indicated clear support for recruitment in key strategic areas, which will be critical in strengthening the Department's research capacity and teaching provision.

The Department's engagement with industry and external stakeholders is extensive and well-developed, notably through co-op placements, work-integrated learning, and research partnerships. Student facilities and resources are generally strong, particularly for specialised programmes, and staff demonstrate flexibility and innovation in supporting learning and employability.

Overall, the QRG concludes that CSIS is a dynamic and innovative academic unit that delivers substantial value to UL, its students, and regional and national stakeholders. The Department should be proud of its achievements in education, research, and engagement. The recommendations in this report aim to support CSIS in strengthening its strategic direction, improving consistency in reporting, enhancing governance, and ensuring sustainable growth and impact into the future.

5 Findings on Departmental Strategy and Alignment with University Policies

CSIS demonstrates strong alignment with UL's educational mission through innovative and industry-engaged programmes. These reflect the University's Learning, Teaching and Assessment Strategy, with an emphasis on applied learning, employability, and partnership with the technology sector.

The Department demonstrates a clear commitment to high-quality education and student experience and contributes meaningfully to the University's mission through its engagement with industry and society. The department's programmes are well aligned with national and regional needs in computing and digital transformation, and there is evident dedication among staff to maintaining strong teaching standards and student support.

However, the Department's strategic direction and priorities are not clearly articulated, and it is not evident how they align systematically with the University's broader Learning, Teaching and Assessment, Research, and Equality, Diversity and Inclusion strategies.

While there are strong research activities in areas such as software engineering and collaboration through Lero, the wider research strengths, outputs, and impact measures were not clearly presented. There is also limited visibility of how research ambitions are supported or evaluated at Department level, and how these activities connect to teaching excellence and civic contribution. Similarly, while the commitment to high-quality teaching is evident, there is less clarity about how innovation in education is embedded or how the Department intends to enhance its international reputation and external partnerships.

To address this, **the QRG recommends that the Department develops a clear strategic plan that defines its core priorities across research, education, and civic engagement, and establishes mechanisms to track progress and impact.** This plan should articulate what the Department intends to be known for academically and societally, and how resources, structures, and partnerships will be aligned to achieve these ambitions.

A clearly defined and communicated strategic vision will provide coherence across activities, strengthen governance and accountability, and ensure that both teaching and research excellence are pursued in a balanced, sustainable, and externally visible manner. With this in place, the Department is well placed to enhance its contribution to UL's mission and strengthen its national and global standing.

6 Findings on Organisational Structure and Management of the Department

The Department demonstrates strong collegiality and commitment to student learning, with effective collaboration across academic, professional, and technical teams. The Department is undergoing changes in both teaching and research, and clearly defined and transparent governance will enable this to be managed efficiently. However, the governance and decision-making structures are not clearly defined or communicated, making it unclear how departmental committees operate, how decisions are reached, and how long-term priorities are set and monitored. **The QRG recommends that the Department formalise and document its governance framework, clearly outlining committee structures, responsibilities, reporting lines, and how strategic priorities are overseen and reviewed.**

While a workload model exists, feedback indicates that its application is not always transparent or consistently understood, leading to concerns about equitable distribution of teaching, supervision of undergraduate and MSc research projects, research, and administrative duties.

The QRG recommends that the Department review and communicate workload allocation processes to ensure transparency and fairness, with regular monitoring to address any disparities or concerns.

The voice of staff — academic, professional services, and technical — should be actively incorporated into departmental planning. Career progression was raised as an issue, particularly for professional services and technical staff, who do not appear to have structured progression frameworks comparable to academic staff. **The QRG recommends that the Department establish mechanisms to gather and act on feedback from all staff groups and review career progression and resourcing for professional services and technical staff to ensure sufficient support and equitable development opportunities.**

Current facilities and learning resources are used effectively, but future planning for staffing, space, and budgetary requirements appears informal. **The QRG recommends that the Department develop a comprehensive resource and staffing plan aligned with its strategic priorities, ensuring that teaching, research, and administrative needs are balanced and future requirements are proactively addressed.**

7 Findings on Programme Portfolio and Curriculum

The QRG notes that the Department offers a broad range of undergraduate and postgraduate pathways relative to its staffing levels. As part of the review, the QRG received self-assessment reports (SARs) for each of the programmes offered by CSIS.

The SARs were reviewed by the QRG and a desk report for each programme was provided in advance of the review. The QRG met with each of the programme teams to discuss the reports and programmes during the review period. The different programmes offered by the Department were grouped into three clusters reflecting the three main teaching directions of the Department: LM361, LM113, and LM114, which focus on creative topics supported by digital technologies (including music or movie making) and human-computer interaction. The second cluster includes LM121, LM051, LM110, LM173 and addresses more traditional legacy courses in Computer Science. With LM174, LM338, LM365, and LM805, the third cluster reflects emerging topics by specialising the education in directions such as AI-ML, Health Informatics, and Software Development International Systems.

The Immersive Software Engineering (ISE) programme has started well and is enthusiastically supported by students, ISE staff, CSIS staff and industry representatives. The curriculum and work placements seem to be delivering what employers are asking for, while the first graduates are emerging and starting their industry careers. It will only be after three to five years that the longer-term performance of graduates in industry becomes clear. The programme is not fitting comfortably into the wider university structures, and this is a source of tension. It would be sensible to ‘clear the air’ and agree on a workable path forward. There is an appetite for growth of the programme, from industry and applicants, yet thought should be given to how effectively the model will scale and perform with larger numbers and (likely) lower entry points.

Computer Science, Software Engineering, etc. (‘traditional/legacy’) are seeing reduced applicant numbers and a consequent drop in entry level points. This can partially be attributed to the growth of ISE and AI/ML, though it is not yet clear if there are other factors at play, e.g., AI hype creating doubt about employment opportunities in the future. This trend is relatively recent, and it is difficult to predict the likely demand for 2026/2027. The new AI/ML programmes are establishing themselves and attracting high-calibre candidates. Given industry trends, it is likely that these programmes will present an opportunity for growth. AI/ML fundamentals are long-established, and the base modules will remain relevant over time. But there will be a challenge for the curriculum to evolve and stay current as the AI/ML area rapidly develops.

Unique aspects of the Department’s offerings are the Interaction Design and Music, Media and Performance Technology courses, which integrate technology and the arts, and attract students with a strong creative bent. The Department has made a significant investment in specialised facilities and a Maker Space for students in these courses; these facilities support and encourage students to learn in a hands-on manner. Students and faculty in these programmes are also strongly engaged in the broader arts community in the city and beyond. Unfortunately, these programmes were largely

underrepresented in this review, both in the faculty and students chosen to meet with the QRG. A concern of the QRG is that the intake in these programmes has been in a steady decline, with a particular fall in intake in LM114 BSc Music, Media and Performance Technology, with the enrolments dropping from 22 students in 2019/2020 to only nine in 2023/2024 (verification needed). This is a concern as this is a unique course, not only to UL, but nationally.

There is regular contact with industry/employers across all the programmes, some more than others. ISE initial course design, ongoing ISE work placements, co-op placements for all the other programmes, as well as research collaborations, all facilitate regular contact with companies. This should provide an informal flow of feedback on course content and future requirements.

We heard that some modules have traditionally been offered to students in different educational pathways, with the result that sometimes the content is not well tailored to any one demographic. Faculty are already working to address this problem. The ongoing development of ATOM (Academic Transformation Operating Model) provides a valuable opportunity to continue this work. ATOM also provides further opportunity for the Department to restructure and streamline its modules and credit system so that it is more in line with European standards. This could go hand in hand with the development of modules that are targeted at Science undergraduate or graduate students, as well as students in Arts, Humanities and Social Sciences, all of whom are using computational thinking in increasingly sophisticated ways in their work.

Overall, the diversity of educational provision within the Department reflects a commendable commitment to meeting educational and regional needs, it also places significant demands on staff time and resources. It is not clear that all programmes are sustainable in the long term, particularly where student numbers are low. The balance between maintaining regional relevance and ensuring economic viability requires careful consideration.

The QRG therefore recommends that the Department undertakes a systematic review of all undergraduate and postgraduate pathways to assess their strategic fit, resource implications, and long-term sustainability. This review should identify programmes that are essential for regional or disciplinary needs and, where appropriate, develop targeted strategies to increase student recruitment and strengthen viability. To feed into this process, the **QRG also recommends the creation of an Industrial Advisory Board that will meet quarterly with the Department to review and advise on curricula updates and department strategy.** The department may want to consider:

- Planning for more frequent curriculum/course content adjustments than might be typical in other programmes (e.g. AI/ML pathways). Identify and address in advance any potential impediments to this.
- Specifically concerning the ISE programme, it is recommended to review and agree target intake numbers for the coming five years and plan teaching and support resourcing (in ISE, CSIS and the wider university) accordingly.
- It may be strategic to further diversify the more traditional curriculum in Computer Science (CS) from the one in ISE. Such diversification could be pursued through various approaches; for example, by orienting the CS curriculum more strongly toward process management, system integration, and foundational areas of applied research. This orientation would serve a dual purpose: on the one hand, it would address the increasing demand from industry for the dynamic reorganisation of production chains in response to rapidly evolving technological landscapes; on the other hand, it would contribute to the advancement and consolidation of their research and development sectors.
- There may be value in offering some of the differentiating module content from ISE in the CS or Software Engineering programmes; possibly the ‘non-core’ topics like requirement management, SCM, DevOps.
- It may be necessary to choose between maintaining the intake level and accepting that the entry points of traditional CS curricula are likely to drop or reducing the intake level to boost the entry level points, and hence the attractiveness of the course in future years.
- Concerning industry feedback, it is not clear if there is a formal structure in place whereby this feedback is sought, collated, reviewed and fed into curriculum development. It would be important to ensure that the consulted industry representatives are at the appropriate level in their companies.
- Engaging in the ATOM process can provide opportunities to streamline offerings and add content of value to students at UL outside of CSIS.

8 Findings on Teaching, Learning and Assessment

The QRG was impressed with the dedication of the teaching staff and their efforts to enhance teaching and learning. The teaching staff who met with the QRG were highly engaged, clearly dedicated to the teaching mission of the Department, and interested in our feedback. They offer an impressive range of programmes, including six undergraduate programmes and six graduate programmes, some with a significant cross-disciplinary component. These programmes benefit from strong connections with industry, including the ISE programme and co-op placements, both of which are well regarded by employers, and strong uptake of graduates to industry. Students have access to high-performance computing infrastructure and cloud services for their projects.

The Final Year Projects (FYPs) help students push themselves to create something that they can be proud of and put in their portfolio, and showcase. Having these FYPs displayed for the public on Demo Day is also a great outlet for them to demonstrate their abilities as well as get feedback if they wish to develop the projects further. Providing licences for programmes and software that students would otherwise have to pay for is a great way to allow students to explore these materials in their own time and work on projects at home, given the time restrictions on entering the labs.

The QRG was impressed with the passion and dedication of the students, however, the undergraduate students chosen to meet with the QRG were not from a wide range of disciplines. The QRG met with seven undergraduates, three of whom were from ISE. The QRG was unable to get the view of students from Music, Media and Performance Technology, Interaction Design or Computer Games Development. These programmes have a large number of facilities and equipment available to them, and the QRG was unable to ask the students about these facilities and their access to them, when this was an issue presented in the PSAR of these programmes. **The QRG recommends getting feedback from students, particularly in these programmes, in relation to the equipment and facilities available to them in order to improve the students' experience and knowledge and better prepare them for industry.**

Primary concerns of undergraduate students include feedback and co-op. Students reported a lack of feedback in many modules, and even no response from lecturers when going directly to them for one-to-one feedback. This lack of feedback is causing students who think they may be doing well throughout the semester to be surprised by their final grade, when they could have been improving if given that bit of feedback. **The QRG recommends a more continuous form of feedback, as well as more detailed and personalised feedback for the students to assist them in improving and growing throughout the semester and indeed the course.**

Co-op is a big concern for many students, with their main worry being that they are prohibited from having a say in the company they are placed with, unless they choose to seek their own placement, something that they feel discouraged to do, as they state there is a lack of support from the co-op office if they choose to find their placement this way. Another concern in relation to co-op is that students have been placed in roles unrelated to their field of study. Students have raised these issues with the co-op office, lecturers and their co-op supervisors, who have all been unreceptive to their grievances. A further issue raised with the co-op system is the CV template. This is something mentioned by both the students and the employers. Both parties agreed that the CV leaves little room for students to sell themselves, which is a possible cause for students receiving an offer for a position that is not relevant to their interests. A final concern from students is the timing of when they receive their placement offer, with many of them reporting having received their offer only one or two months before the

placement period, causing pressure in finding accommodation at the last minute if the placement is outside of the Limerick area.

Students in ISE have a very different experience. Due to ISE having their own co-op officers, they get placed in relevant roles and feel nurtured throughout the co-op process. ISE students mentioned that each company has an ISE Champion who is their point of contact and who supports them during their time in the company. This was stated by ISE students to be a big help during their transition into the company.

The QRG recommends a review of the CV template in order for students to outline their experience and interests, and for employers to get a better picture of the candidates. A further recommendation is for students to be given a list of potential employers and rank their preferences, for the purpose of giving the students more of a choice in where they are sent on their placement. A final recommendation is to give more personalised feedback to the students to help them make adjustments where needed and place them sooner.

Other concerns were more programme specific, with one student mentioning a higher dropout rate in Computer Science due to the low maths requirement. This is reflected in the exit and progression data provided to the QRG in the LM121 PSAR, with exits averaging 17.4 over the past five years and the number of students who have not progressed averaging 24.4. The ISE students had a concern about the level of maths in the course, stating that they believe there should be more maths at a harder level.

The QRG recommends reviewing the maths requirement for the common entry computer science course to lower the exit and non-progression rate of the course. It is also recommended to review the level of maths taught in the ISE programme to ensure students are adequately prepared for industry.

While some modules are of high quality and use effective teaching practices, there are few mechanisms to ensure consistently high-quality teaching across modules and courses, and the use of student feedback is inconsistent. Students from ISE, and indeed students across CSIS, report that there is overlapping material taught in a small number of modules. Students across CSIS also report that some modules taught are not relevant or should be replaced by a module more suited to the industries in which graduates have entered in to. **The QRG recommends evaluating the modules across all programmes in CSIS to consolidate modules with overlapping information and make space for more specialised modules.**

Several initiatives to support students, ranging from clinics, tutorials, and peer-led study sessions offered by the ICT Learning Centre were highly praised by the students, such as participation in the Athena Swan charter, and other efforts help to be inclusive and increase the diversity of the student body. **The QRG recommends ensuring that**

students are aware of these supports and recommends them to students who may be struggling.

We applaud the Department for its diverse offerings at the graduate level, and the dedication of faculty in nurturing these programmes. There is strong demand for these programmes, particularly from international students. The QRG had the opportunity to meet with just one postgraduate student, but it appears that students are well supported in their learning and projects. Faculty noted that those responsible for the graduate programmes, particularly postgraduate course directors, have a significant workload particularly relating to dissertation review. This limits the size to which these popular programmes can grow.

The QRG recommends finding new ways to spread the load, involving a broader cross-section of faculty and teaching staff in the process of reviewing dissertations (undergraduate and postgraduate) and this should be acknowledged in the work allocation process. Regional need and cost analysis for the programmes should form part of a formal yearly review for the Department, tracking alignment with the five-year strategy as per recommendation 1.

Employment rate across the undergraduate programmes seems relatively high, with the exception of LM114 Music, Media and Performance Technology, which had a recorded 68% of graduates in employment in 2023. This programme teaches a wide variety of modules over a number of topics, which perhaps makes the course too broad. Some postgraduate programmes are reporting strong industry uptake of graduates. For other programmes, limited data was provided: for example, MSc Health Informatics reported only on employment for three students from the 2023 graduating cohort. During the in-person sessions, we learned that spoken language and cultural barriers are impeding some international graduate students in finding employment. There are language resources available to students, but they are not necessarily availing of them early in the programme. There seems to be a healthy mix of graduates finding work in Ireland and abroad in both the graduate and undergraduate programmes.

The QRG recommends that a closer look be taken at the employability of the programmes, with particular focus on LM114 and refine the course content to better prepare students for industry. It is also recommended that graduate students with poor oral English language skills be identified early on and strongly directed to address their deficiencies. Also, culture-specific interview support to assist international students in finding work in Ireland would be useful more broadly for the university.

9 Findings on Research

CSIS includes a large variety of research interests and enthusiastic faculty members, which showcases a clear potential in achieving excellence in research.

During the group and individual interviews, a broad consensus emerged indicating that, while certain areas of research demonstrate excellence, the overall number of active researchers and high-performing research domains within the departments remains limited. It was observed that a substantial proportion of faculty effort is currently dedicated to teaching across a wide range of programmes, which appears to constrain research activity and outputs. Another challenge is that, while some faculty, particularly those with support from Lero, have a strong collaborative network, others are somewhat isolated. We were pleased to learn of one example where the expertise of a faculty member with social science expertise was valuable in securing funding for a software engineering research project, so the potential is there for more integration of this kind.

Furthermore, it was noted that a significant share of the Department's research funding is currently derived from Lero. This concentration of funding presents a potential vulnerability, particularly given the recent or impending retirement of three senior academics who have played leading roles within Lero. This development may pose risks to the Department's future research capacity, funding stability, and external visibility.

A concern of the QRG is that some of the faculty-wide measures of research accomplishment and impact may not be appropriate for all the Computer Science faculty. For example, publications in top computer science conferences are rigorously reviewed, full-length papers (not abstracts), and it is common to publish in these forums rather than in journals. The ICORE portal (<https://www.core.edu.au/icore-portal>) provides useful rankings of such conference proceedings. By contrast, performances and creative works are important outputs for faculty members in Digital Media and Arts that can have significant artistic and cultural value for the region and beyond but cannot be assessed by standard Computer Science output metrics.

Recommendations

- **Development of a Strategic Research Plan:** The Department should formulate a comprehensive strategic research plan encompassing short-, medium-, and long-term objectives. To this end, it is recommended that an ad hoc committee be established, potentially including representatives from relevant industries. The committee would identify key research priorities, which should in turn inform and guide future recruitment strategies within the Department. Such priorities could be aligned with graduate programmes that are understaffed. The plan could also encompass mentoring and support of faculty who are applying to new funding sources for the first time (building on

what is already happening), as well as strategies to increase collaborative research in the department.

As part of this research plan, the Department should also consider:

- **Participation in European Research Networks:** The Department should seek greater engagement in European research networks to promote research exchanges and collaborations at both the faculty and graduate levels. Such participation would enhance international visibility, foster interdisciplinary cooperation, and support the professional development of staff and students alike.
- **Hiring strategy:** Once the strategic research areas have been identified, it is recommended that the Department pursue a targeted recruitment strategy aimed at attracting both established scholars with international standing in the relevant fields and early-career researchers with strong potential. This approach would support the development and long-term sustainability of ambitious research initiatives within the Department.

10 Findings on Stakeholder Engagement

The Department has well-established relationships across the university, including academic support services, research office, and co-op.

The Department has an extensive network of industry stakeholders through co-op and research collaboration. These are a strong asset for the Department in ensuring that students gain high-value experience during work placement and enhance their employment opportunities. Each course board meets industry peers annually to gain insights on emerging trends, evolving skills and developing technologies.

The Department engages in a range of outreach activities such as Science week, CodePlus and school visits. Outreach to arts and media is not explicitly mentioned.

The QRG recommends that the Department work with the Co-op office to enable students to be more prepared for their Co-op placement.

The QRG recommends that the Department establish an Industry Stakeholder panel to gain industry feedback on curriculum and build research collaboration.

The QRG recommends that the Department develop an outreach plan to assist in promoting its programmes to potential students and to raise the profile of the Department. This should include the arts and media activities of the Department.

11 Conclusion

The Department demonstrates a strong commitment to high-quality education, innovative research, and engagement with industry and society. Its diverse programme portfolio spans traditional and emerging digital disciplines, including AI/ML, Immersive Software Engineering, Interaction Design, and Music, Media and Performance Technology, reflecting both regional and national relevance.

The QRG acknowledges the dedication and expertise of staff and the enthusiasm of students, while also noting areas for improvement in strategic planning, governance, research visibility, curriculum alignment, and stakeholder engagement. Implementing the recommendations outlined in this report—ranging from strategic research planning, structured industry engagement, curriculum enhancements, outreach initiatives, and strengthened co-op support—will further enhance the Department’s impact, sustainability, and reputation.

With these measures, CSIS is well positioned to continue its trajectory as a dynamic and forward-looking department, fostering excellence in teaching, research, and societal contribution, and preparing students to excel in an evolving digital world.

11.1 Commendations

The QRG commends the following:

1.	The outstanding commitment of the academic, professional services and technical staff to the success of the students and the Department.
2.	The Department demonstrates a strong commitment to innovative, practice-based learning. The integration of real-world projects, agile methods, and industry collaboration represents a progressive model for computing education.
3.	The close partnerships with industry are a clear strength. These relationships ensure graduates are well-prepared for employment and maintain the relevance of curricula to current and emerging industry needs.
4.	Strong progression and retention rates, particularly in newer programmes, indicate effective teaching practices and strong student support. Staff commitment to student success is evident and should be commended.

5.	The Department contributes meaningfully to the regional ecosystem through its graduate pipeline, applied research, and partnerships with local enterprises and public bodies, supporting regional development in line with UL's civic mission.
6.	The high regard in which the Department is held by senior leadership at the Faculty and University levels is something the QRG considers should be acknowledged specifically.
7.	Several initiatives to support students, ranging from clinics, tutorials, and peer-led study sessions offered by the ICT Learning Centre and participation in the Athena Swan charter.
8.	Across both academic and professional services, staff demonstrate strong dedication, professionalism, and student-centred values, often achieving impact beyond what might be expected given current resource levels.
9.	The Department has an extensive network of industry stakeholders through co-op and research collaboration. These are a strong asset for the Department in ensuring that students gain high-value experience during work placement and enhance their employment opportunities.

11.2 Recommendations

The QRG recommends the following:

Level 1 Recommendations

No.	Recommendation	Commentary
1.	The Department should develop a clear strategic plan that defines its core priorities across research, education, and civic engagement, and establishes mechanisms to track progress and impact.	Given available resources, CSIS must identify its core priorities and allocate resources accordingly. An integrated research and education approach to planning will enable the Department to grow strategic areas of importance and plan accordingly (people and space resources).
2.	As part of the longer-term strategic vision from recommendation 1, the Department should formalise and document its governance framework, clearly outlining	To help deliver the strategic vision, the whole Department should feel ownership. It should provide clear decision-making structures and publish the organisational chart for the Department, which will outline reporting lines and communication flows.

	committee structures, responsibilities, reporting lines, and how strategic priorities are overseen and reviewed.	
3.	The Department should develop a comprehensive resource and staffing plan aligned with its strategic priorities, ensuring that teaching, research, and administrative needs are balanced and future requirements are proactively addressed.	This recommendation recognises the importance of strategic workforce and resource planning to support sustainable delivery across all areas of activity. Developing an integrated plan will enable the Department to align staffing with its long-term priorities, ensure an appropriate balance between teaching, research, and administration, and anticipate future needs arising from growth, curriculum development, and emerging research opportunities.
4.	The Department should review and communicate workload allocation processes to ensure transparency and fairness, with regular monitoring to address any disparities or concerns.	This recommendation highlights the need for clarity and consistency in workload management. Transparent and well-communicated workload allocation processes help promote fairness, staff wellbeing, and trust within the Department. Regular review and monitoring will ensure that workloads remain equitable and responsive to changing teaching, research, and administrative demands. During the review, some disparity was observed, especially in relation to project supervision.
5.	The Department should review career progression and resourcing for professional services and technical staff to ensure sufficient support and equitable development opportunities.	This recommendation emphasises the importance of recognising and supporting the contribution of professional services and technical staff. Reviewing career progression pathways and resource allocation will help ensure these staff have equitable access to development opportunities, fostering engagement, retention, and a well-supported departmental environment.
6.	The Department should review academic pathways for progression, recognising the importance of contribution	This recommendation underscores the value of recognising diverse academic contributions. Reviewing progression pathways to reflect excellence across research, teaching, and civic engagement will promote inclusivity, motivate staff, and

	across all areas (research, teaching, civic engagement).	ensure that all forms of academic achievement are appropriately valued and rewarded.
7.	The Department should undertake a systematic review of all undergraduate and postgraduate pathways to assess their strategic fit, resource implications, and long-term sustainability.	There is a need for a strategic and evidence-based approach to programme management. A systematic review of all undergraduate and postgraduate pathways will enable the Department to evaluate alignment with institutional priorities, assess resource efficiency, and make informed decisions about the future sustainability and viability of its portfolio.
8.	The creation of an Industrial Advisory Board that will meet quarterly with the Department to review and advise on curricula updates and Department strategy.	The Department has strong industrial engagement. Establishing a Department Industrial Advisory Board will provide an effective mechanism for ensuring curricula remain aligned with sector needs, enhance employability outcomes, and offer informed external perspectives to support the Department's strategic planning and development.
9.	Develop a structure to enable a more continuous form of feedback, as well as more detailed and personalised feedback for the students to assist them in improving and growing throughout the semester and indeed the course.	During the review, it was noted that practices varied across pathways and modules, with some excellent practices highlighted. Developing a structured and continuous approach to feedback will support student progression, encourage reflective learning, and provide more personalised guidance to help students achieve their full potential throughout their studies. This should inform good practice across the Department rather than on an ad-hoc basis.
10.	Based on the strategic research areas identified as part of recommendation 1, the Department should pursue a targeted recruitment strategy aimed at attracting both established scholars with international standing in the relevant fields and early-career researchers with strong potential.	A targeted recruitment strategy aligned with the Department's identified strategic research areas would enable a more coherent and sustainable approach to research growth. Attracting established scholars with strong international reputations would bring immediate visibility, leadership, and experience in securing external funding, while recruiting high-potential early-career researchers would ensure long-term capacity building and

		innovation. Such a balanced approach would strengthen the Department's research culture, foster interdisciplinary collaboration, and position it competitively for future funding opportunities and partnerships. It would also help create a clear identity around the Department's research strengths, making it more attractive to postgraduate students and industry collaborators.
11.	Evaluate the modules across all programmes in CSIS to consolidate modules with overlapping material and make room for more specialised modules.	An evaluation of the modules across all the programmes in CSIS will help in furthering the learning outcomes of the courses by consolidating modules with overlapping material and the creation of more specialised modules will give students a deeper knowledge in their field of study.
12	Implement programme level recommendations as set out in each programme review report	

Level 2 Recommendations

No.	Recommendation	Commentary
1.	The Department should seek greater engagement in European research networks to promote research exchange and collaborations at both faculty and graduate levels.	Enhanced participation in European research networks would provide valuable opportunities for knowledge exchange, joint projects, and access to diverse funding streams. For faculty, this engagement can lead to international collaborations, increased visibility, and stronger research outputs. For graduate students, it offers exposure to broader research environments, professional development, and potential mobility opportunities. Overall, stronger connections with European networks would support the Department's strategic objectives, foster interdisciplinary collaboration, and help position it as a competitive player on the international research stage.
2.	The Department should evaluate whether to maintain current intake levels for traditional Computer Science programmes, accepting a potential decline in entry points,	Balancing intake numbers with entry standards is a strategic decision that directly affects the programme's reputation, student profile, and long-term sustainability. Maintaining current intake levels may ensure consistent enrolment but risks lowering the perceived competitiveness

	<p>or to reduce intake in order to raise entry standards and enhance the programme's attractiveness in future years.</p>	<p>of the course if entry points decline. Conversely, reducing intake could raise entry standards, attract high-achieving students, and strengthen the programme's market position, though it may temporarily reduce enrolment numbers. A careful evaluation of demand, regional educational needs, and long-term objectives will support an evidence-based decision that aligns with both the Department's academic mission and strategic goals.</p>
3.	<p>The Department should establish a formal process for collecting, reviewing, and integrating industry feedback to inform curriculum development. This should link directly to the work of the Industry Advisory Board as per the main recommendations.</p>	<p>A structured approach to industry engagement would ensure that curriculum design remains aligned with current professional standards, employer expectations, and emerging sector trends. Formalising the process—through advisory boards, regular surveys, or targeted consultations—would enable timely and actionable input, support continuous improvement, and strengthen the relevance and employability outcomes of the Department's programmes. This would also foster stronger relationships with industry partners, enhancing opportunities for student placements, collaborative projects, and research partnerships.</p>
4.	<p>The Department should consider offering some of the differentiating module content from the ISE programme, particularly non-core topics such as requirements management, SCM, and DevOps, within the Computer Science or Software Engineering programmes.</p>	<p>Integrating select ISE modules into CS or Software Engineering curricula could enrich the programmes by exposing students to practical and in-demand skills that differentiate graduates in the job market. Topics like requirements management, SCM, and DevOps are highly relevant to industry and can enhance employability, while also providing a bridge between academic learning and professional practice. Offering such content would help align programme offerings with evolving industry expectations and ensure students acquire both theoretical knowledge and applied skills valued by employers.</p>
	<p>The Department develop an outreach plan to promote its programmes to potential students and raise the Department's profile, incorporating its arts and media activities.</p>	<p>A structured outreach plan would help the Department increase visibility, attract a broader and more diverse student body, and communicate the unique strengths of its programmes. Including arts and media activities would showcase the Department's interdisciplinary and creative initiatives,</p>

		<p>highlighting opportunities beyond traditional computing pathways. This proactive engagement could strengthen recruitment, build external partnerships, and enhance the Department's reputation both regionally and nationally. Central services should help develop and participate in these activities.</p>
	<p>The Department works with the Co-op office to enable students to be more prepared for their Co-op placement.</p>	<p>Closer collaboration with the Co-op office would help ensure that students develop the necessary skills, knowledge, and professional awareness before entering placements. This could include pre-placement workshops, guidance on expectations, and targeted support to address gaps in technical or soft skills. Enhancing preparation not only improves student performance and confidence during placements but also strengthens the Department's relationships with industry partners, ultimately supporting employability and positive outcomes for graduates. Students highlighted timing issues with their engagement with the Co-op office and decisions on pathways/placements. This needs to be rectified.</p>

Appendix A

Membership of the CSIS Quality Team

Patrick Denny	Chair, Quality Team
Jim Buckley	Quality Team
Meghana Kshirsagar	Quality Team
Abdul Razzaq	Quality Team
Salim Saay	Quality Team
Mark O'Neill	Quality Team
Cristiano Storni	Quality Team