1. Vision for the School in 2020-23

The School foresees modest overall growth in taught student numbers over the planning period with targeted growth in specific areas where there are opportunities for new programmes. This will serve to create more equitable sharing of workload between institutes within the School while allowing for some increase in student numbers and recruitment of academic staff in alignment with the increased student numbers.

Academic staff: We will make strategic investment posts to consolidate areas of growth, particularly with respect to PGT programmes. This will be supplemented by replacement for retirement posts and teaching backfill for resignations and for staff who secure fellowships while replacement recruitment occurs. An increasing proportion of our academic staff will be "shared" with industry and therefore on fractional contracts which we see as a key strategic strength for the School as it brings the benefits of closer links with industry and in many cases means that we retain a fraction of staff that we would otherwise lose entirely and are able to attract new talent with current industry experience. Specific areas for new appointments would include Machine Learning, Data Science (specifically Data Graphs and Linked Data), Trustworthy AI, Human Robotic Interaction and Applied Robotics, Biomedical AI and Algorithmic Fairness, whereas further posts in the area of Quantum Computing and Natural Language Processing will bolster plans for new MSc programmes.

The School has been investing in University Teacher posts. We will carry out a review of these University Teacher roles in 2020 to ensure both that they are being deployed most effectively and that there is a clear career path and development plan for them. Assuming this review is positive we would anticipate recruiting six further FTEs in the period, two specifically to support distance learning courses and three to provide teaching backfill while recruitment occurs for resignations and fellowships.

Professional services staff: Our Teaching Organisation continues to be strained by the increased student numbers and retention is becoming an issue. Further growth in this area is needed to ensure smooth operation of the Teaching Organisation which has a major impact on the student experience. We would anticipate recruitment of at least one post per year for the ITO. Likewise our Graduate School is strained by the increased student numbers and we would anticipate recruitment to better support both the students themselves and the academic community in which they are based.

We would also recruit an additional learning technologist to provide support as more staff move to distance and online teaching, particularly as we develop new distance programmes and automated marking and feedback. We would also seek to recruit an Outreach Officer to support DDI outreach objectives alongside increasing demand from SIMD20 and Scottish students.

The School's Business Development team continue to deliver well across a broad range of activities for the School. However, we have identified that there could be greater support for student entrepreneurship and would seek to appoint a part-time innovation trainer to work across our student cohorts to foster entrepreneurship and innovation. We have also identified the need for coordinated and focussed relationship management with Huawei, a major funder to the School, and would seek to appoint a fixed term role to oversee Huawei business development, relationship and portfolio management, funded from the recent 3 year funding commitment from Huawei.

Management of our Estate is becoming complex given our spread across multiple buildings and the need to manage an increased number of staff and students within a constrained footprint. We would anticipate recruitment of additional resource to support space management, estate projects, and health and safety.

Recent reorganisation of our professional services teams created a management role to oversee Finance, HR and Institute Administration. Management of our finances is becoming complex given the diversity of School income and activity and the new financial model, and it is now clear that additional resource is required to provide timely and accurate forecasting and reporting and we would anticipate recruitment of a Finance Manager.

Taught students: Our undergraduate cohort has grown substantially since 2016/17 and our academic staff have not grown at the same pace. We would aim to stabilise the numbers at 1000 undergraduates. Likewise, our postgraduate cohort has grown substantially in the last few years (noting a drop in 2019/20 due to miscalculation in conversion rates); we aim to stabilise the numbers at the 2017/18 level while we develop new programmes and increase our academic staff numbers by at least the same rate of growth as students. Further growth in both undergraduate and postgraduate taught is dependent on additional space being allocated to the School and associated growth in staff and research students. We already host a very diverse international community of students but there are some programmes where the students are predominantly from one region, which is a potential vulnerability. We will seek to improve the international diversity of all programmes, particularly through increased intake from North America.

Research students: We seek to maintain a population of PhD students that is proportionate to the size of the academic staff and our interdisciplinary ambitions. "Shared" PhD students, with supervisors from other Schools, is an important part of our strategy to maintain an interdisciplinary profile. This is boosted by our recent successes in attracting funding for CDTs and DTCs. Space to accommodate an increase in PhD students is a serious issue and now limits our ability to expand PhD students in order to maintain a population that reflects the size of the academic staff and interdisciplinary

ambitions, and presents a risk not only to our future research profile but to recruitment of sufficient tutors and demonstrators to support our taught student population.

2a. People

School vision for its staff and ways of working:

We will continue to invest in additional academic staff and postgraduate research studentships, and will continue to invest in professional services staff to ensure that research and teaching staff are relieved of administrative functions which are more appropriately undertaken by staff employed to undertake those duties. Only by recruiting, supporting, developing and retaining the best academics, research staff and professional service staff can the School maintain and build upon its UK leading position and international reputation.

The School holds an Athena SWAN Silver Award for its contribution to gender equality amongst academic staff, researchers and students and **we aim for a second Silver Award renewal** in 2020 which includes our professional services staff. We will build upon our success to date to **further embed all aspects of equality and diversity into our policies and practices**. We continue to place particular focus on **support for career development** for all staff. **We will celebrate diversity** amongst staff and students and **implement our Athena SWAN action plan** to further address issues of gender imbalance within the School and our discipline.

Ways of Working; Staff Experience and Wellbeing

The substantial growth experienced over recent years has presented challenges with the way we organise ourselves, staff morale and retention. While we have seen some growth in staff numbers over recent years the growth has not kept pace with the increase in student numbers, and our estate, systems and processes are not coping. We are conscious that Service Excellence Programme will bring further changes, particularly to professional services staff, and our growth ambitions need to be mindful of the pressure on staff to transition to further new ways of working.

Improving the staff experience will remain a focus over the planning period, including:

- We will continue embedding the recent restructuring of some professional services teams to support the increased volume of activity and **review our internal administrative systems and processes;** work that is essential to support the changes required as a result of the SEP.

- **We will continue implementation of recent changes to our academic management structure** to ensure there is adequate development support for all academic staff to fulfil our duty of care and allow a more planned approach to staff development.

- We will **develop and train our new academic and professional services line managers** and bed in changes to ways of working, systems and processes to reflect the changed management structures.

- Attracting and retaining academic staff is challenging given increased demands on their time from the growth in student numbers. Our academic staff are regularly in receipt of offers from industry and there are high risks that a number of our staff will begin to take up these offers, further exacerbating the problem. **We will continue with strategic recruitment** as outlined in our Vision section above, and will **undertake succession planning** to identify the areas and posts that are likely to present the greatest risks to the School achieving its Priorities and Vision. **We will improve our mechanisms for backfilling teaching gaps** resulting from resignations and fellowships while replacement recruitment occurs.

- The School is taking a lead in implementation of the Concordat to Support the Career Development of Researchers through a launch event in January 2020 and through this and our Athena SWAN Action Plan **we will develop an Early Career Researcher Support Action Plan.**

- There is a need to rebuild staff morale and wellbeing in the School and respond to the areas of improvement identified in the University Staff Survey, School staff engagement forums and our Athena SWAN staff survey. **We will implement actions from our Staff Engagement Action Plan and our Athena SWAN Action Plan.**

- **We are developing a Mental Health First Aider Network** aimed at providing an initial point of contact for staff, similar to the University's Dignity & Respect Advisors. **We would encourage the University to provide support for trained Mental Health First Aiders.**

• **We will reinforce our Zero Tolerance for harassment and bullying** through delivery of Draw the Line workshops, management training to deal with issues as they arise, ensuring appropriate training programmes are completed and regularly raising awareness in School meetings and communication.

2b. Research

School Research Strategy Priorities:

Informatics at Edinburgh has the leading research position in the UK and is recognised internationally for excellence of its research outputs, knowledge exchange and industry engagement.

We produce extraordinary science, scientists and knowledge that is the source of transformative change. Through our research, education, knowledge exchange and public engagement activities, the knowledge that we create impacts upon the international academic community, upon policy and society, industry and businesses, our local community and individuals.

Key strengths include all aspects of natural language processing, innovative work on computer architecture and compilation techniques to fully exploit novel architectures, foundational work on data science, algorithms and machine learning, innovative work on quantum computing, and foundational aspects of robotics and computer vision.

Over the planning period, we aim to further develop the breadth and depth of our research, and to consolidate the areas where we are already strong. In particular we will seek to:

• **Strengthen our links with other Schools across all three Colleges where specific opportunities for collaboration and funding arise.** In the immediate future this will include Biological Sciences and Medicine, Engineering, GeoSciences and EPCC, but in the longer term will encompass the Edinburgh Futures Institute and associated Schools;

• **Take advantage of funding opportunities arising in AI, Data Driven Innovation and the Industrial Strategy Challenge Fund** to attract world class researchers at all levels to the School, and **we will aim to increase our UKRI research funding**;

• **Continue to ensure a good stream of high quality PhD students** to underpin the research within the School.

To support this **we will continue to improve the provision of computing support for research**, and **we will ensure that all researchers develop to their full potential**. Where appropriate, we will support researchers in their route to research leadership and in the continuance of their leadership roles, once achieved, through induction, training and mentorship.

The School is fortunate to be supported by a dedicated Business Development team who enhance our ability to interact with industry and achieve impact. The Bayes Centre offers opportunities for strengthening these impacts, particularly through working with companies and local and national governments; and houses our entrepreneurial education programme which is both inward and outward facing. The Wayra Incubator programme attracts start-ups from across Europe to work in close proximity with the School, and **we are also seeking to strengthen the entrepreneurial opportunities offered to staff and students** to generate more start-ups and spin-outs (refer section 2d).

We will continue to capture our impact and reflect it back to Informatics people, funders and industry, to promote a stronger understanding of the substance and impact of our research (refer section 2d).

As Data Science and Artificial Intelligence become ever more pervasive in daily life, we recognise our responsibility to ensure that these techniques are used appropriately. We have started an initiative of **AI for Social Good,** and **will be seeking to increase our research activity around AI and data ethics.** This strategic development will be complementary to the appointment of Shannon Vallor to the Baillie Gifford Chair of Data Ethics, and the forthcoming appointment to the Design Informatics Chair. Thus detailed planning will start in AY 20/21. Nevertheless conversations are ongoing in the School supported by **a new seminar series in Ethical AI, Data Science and Algorithms**

REF 2021 readiness and contribution to strategy:

In REF readiness exercise in Summer 2019, there were 132 FTEs to be returned and we have at least a further 5 or 6 who should be in post in time for the census date. Thus we remain confident that we will remain the largest submission to UoA11. The estimated proportion of 4* outputs was 54%. Work is still on-going on improving the 100 words associated with 3* outputs that could potentially become 4*.

We have 15 impact case studies in preparation and will make final selection for inclusion early in 2020. An external writer is being employed to ensure that the presentation of the case studies is as strong as possible and accessible to all. In the REF readiness exercise it was noted that there is potential for some very strong case studies.

Work is ongoing on the REF Environment statement, and whilst there was substantial improvement in the revised version submitted at the end of November 2019, this is a top priority for spring 2020. It was agreed that we have a strong but diverse case to make, so providing a coherent narrative has been a challenge but one that we are now coming to grips with. Overall we are confident that we will be able to make a strong submission in 2020.

2c.   Teaching and learning

School ambitions for education and future learning

The programmes offered by the School are highly attractive to students from around the world. A key strength is our academic breath, which allows us to offer a variety of multi-disciplinary programmes of study.

Recent sharp rises in student numbers combined with the large number of courses offered has led to a substantial increase in teaching load which is inequitably distributed. In order to sustain high quality teaching we have re-examined how our programmes are structured and how our teaching is delivered as a result of which **we are undertaking a systematic review of our curriculum to better match student demand to teaching** and **developing online approaches to address large scale on campus learning.**

To achieve our ambitions for education and future learning:

- **We will work in partnership with students to bring about enhancements to learning and teaching** by continuing to build effective partnerships with our students through mechanisms such as weekly reps meetings, support of InfPals group, programming club, and a range of discipline-related societies and extra-curricula activities (CompSoc, Hoppers, EdIntelligence, Formula Student etc). We will also **expand opportunities for undergraduate students to spend a year abroad** through development of international partnerships with European and international universities.

- **We will continue to develop and enhance our curriculum** through our curriculum review that seeks simplification and rationalisation of the School's curriculum offering to provide clearer and more coherent pathways for students, whilst maintaining the breadth and variety to offer a rich learning experience across the range of Informatics subjects and beyond.

- **We will continue adoption of 'Learn' as our primary online learning platform**, along with a limited number of ancillary tools, where required, so that students have a consistent experience and so that students and staff are better supported in the use of these tools. This is part of an increased emphasis on blended learning and will also support the use of online environments for the development of learning at a distance.

- **We will offer our postgraduate taught students the opportunity to develop cutting edge and advanced skills and knowledge in their chosen field.** Our five-year MSc in Informatics and our one-year postgraduate taught MSc programmes in Data Science, Artificial Intelligence, Computer Science, Cyber Security and Trust, Advanced Technology for Finance Computing and Design Informatics offer a broad range of interdisciplinary and research-driven experiences for our MSc students. We have been developing experience of distance education through our participation in the DSTI programme and **will make strategic investments in academic and professional services posts to support further developments in blended learning and distance education.**

- We will recruit and nurture excellent teaching staff through **strategic recruitment of academic staff and by investment in dedicated University Teachers** working alongside lecturing staff, particularly on large courses, to relieve pressure on academic staff and improve the staff and student experience. **We will undertake a review of the effectiveness of these University Teacher roles** and ensure they have clear career paths and ensure that the roles are effective, and **we will consider expanding our team of University Teachers to ensure we can easily fill teaching gaps as a result of staff resignations and fellowships** while we recruit replacement academic staff.

- **We will continue to provide more opportunity for exploration of pedagogical issues and developing new ideas** through regular Teaching Lunch meetings and bi-annual teaching days.

- **We will continue to encourage teaching staff to engage in professional development and achievement of appropriate HEA qualification**s, either through the Edinburgh Teaching Award or through applying for fellowship directly.

- **We will optimise academic and professional support staff time devoted to core learning and teaching activities** through investment in support staff roles to optimise teaching staff time for core learning and teaching activities

Student experience and wellbeing:

- **Induction and Transition:** The School has been placing greater emphasis on induction and transitions and will continue to do so, with **particular effort towards ensuring that we have a welcoming and inclusive environment** with the aim of improving retention.

- **Managing Student Numbers:** The student experience (and staff experience which, in turn, impacts student experience) is highly dependent on the School's ability to manage its student intake numbers.

- **Student Wellbeing: We will strengthen our links with student societies** to support the connection with our various student cohorts and raise awareness of support available within the School and University, particular in the area of mental health.

- **Physical Environment:** We have recently undertaken an accessibility audit of our buildings with a wheel-chair user and will **continue seeking to improve the situation for those with disabilities** as far as it is within our control; engaging with Estates on other issues.

- **Dignity & Respect:** Following some disappointing results in the 2019 PRES **we are strengthening our dignity and respect induction in the PGR cohorts**, and re-affirming the expectations with respect to supervision.

- **Employability:** We will be working closely with the Careers Service and other organisations to **develop a wide range of options for students to gain distinctive experiences that contribute to their employability** and help during recruitment by providing students with experiences they can relate to recruiters. **We will work with our final year undergraduate and postgraduate taught cohorts on career preparation** and will be exploring opportunities to extend this programme of activities to third year undergraduate students to build momentum for life after University.

- **Enrichment:** The School believes that in addition to the teaching and learning students can expect to receive, we should support our students in a range of activities, aimed to augment their experience. Working alongside other areas of the University, including EUSA, allows all our students opportunities to be distinctive. In the last year we have developed initiatives including running sample technical interviews partnered with external companies to give experience of real world scenarios, invested in our student groups with focused areas of interest, and have made funds available to support students' travel to attend activities related to their programme of study around the world. **We will continue to develop and implement initiatives that enrich their experience while studying with us.**

- **Working with Companies:** Through our Industry Advisory Board and wider connections with companies **we are offering students opportunities to undertake industry-related projects and participate in internships and placements** that allow students to experience real-life working environment in the ICT industry

Student recruitment, retention and diversity:

- **Managing Intakes:** The School continues to experience strong demand for its programmes, however we do not have capacity (staff or space) to meet demand. This presents challenges in managing intakes and we are working with College Admissions on approaches that will help us to better manage applications and offers to achieve target intakes. Our intake targets for this planning period are reduced from previous submissions to ensure we maintain an overall undergraduate student population of 1000 given the large intake in 2019/20, and slightly reduced PGT intake given recent staff turnover and Estate constraints.

- **Widening Participation:** The School is committed to widening access and will be prioritising efforts to attract and retain students from SIMD20 over other Outreach activities, however will seek to combine efforts where possible particularly given City Deal Outreach priorities (refer section 2d regarding proposed Outreach activity and investment post through DDI). We already participate in Sutton Trust Summer School and will explore opportunities to enhance that participation to achieve our widening participation and City Deal objectives.

- **Diversification:** While the School has strong demand for its programmes there is a need to diversify the international student population and to increase demand from Scottish, RUK and WP students. **We will diversify the School's taught student intake**, especially in relation to increasing the intake of students from North America; increasing demand from Scottish (and WP) students; and increasing demand from RUK students.

2d. Social and Civic Responsibility

SCHOOL OF INFORMATICS outline plan 2020-23

Build and strengthen relationships between the University, the city and our communities:

The School is a key player in the Edinburgh and Scotland technology cluster, with the School's research and talent being a major driver of economic activity.

The School's Business Development team fosters and supports research collaborations, develops partnerships and consultancy with local industry and government agencies; and leads in stimulating entrepreneurial activities within the school. The team, aided by Informatics Ventures and a proposed new innovation trainer role, will place particular emphasis on postgraduate students and early stage career academics. **We will work with the Bayes Centre, the University's DDI office and Edinburgh Innovations to create an early stage accelerator to establish new "deep tech" businesses which will create jobs and attract private equity funding to the City**; and **we will use our industry partnerships to identify a pipeline of MSc projects and external supervisors** as a means of supporting our growth in student numbers.

The School has an Industrial Advisory Board – the membership consists of entrepreneurs (alumni), investors, industrial partners, UK and Scottish funding bodies together with local government and **we will continue to strengthen collaboration with the Board and its members.**

The Bayes Centre Business Development Executives, supported by the Bayes Chief Data Technologist, support industrial research collaborations through cross college opportunities – maximising the offering to local and Scottish industry; and manage strategic industrial and public sector partnerships with bodies co-located within the Bayes Centre. The team will continue their work of attracting industrial research teams to co-locate within the Bayes Centre – for example Orbital Microsystems (Colorado, USA) located into the Bayes Centre to harness the IP knowledge and researchers from the School of Informatics, GeoSciences, Mathematics and EPCC. This creates significant economic impact for the local economy in terms of jobs and private equity funding.

Informatics Ventures deliver entrepreneur development and investor readiness programmes, supported by the University, the School and Scottish Enterprise, which includes EIE (Engage Invest Exploit) – the largest investor readiness programme outside London. To date over £700M private equity investment has been raised by companies participating in the programme – significantly boosting the Scottish and City's economy. **We will seek funding to enable continuation of this activity and Informatics Ventures and the EIE event will broaden its remit to showcase entrepreneurship across CSE and the City Region DDI (Data Driven Innovation) programme.**

Informatics Ventures also manage and deliver an early business scale-up accelerator in "AI and Blockchain" in partnership with Telefonica (Wayra) and Cisco. The first cohort secured £3.3M in private equity funding during the programme. We will continue this work providing significant gains for the local economy.

The School is working directly with Edinburgh City Council, the Scottish Environment Protection Agency and others on the use of data to improve effectiveness and efficiency in the delivery of public services. Many research projects within the School align with the UN sustainable development goals.

Staff within the School are active in outreach and public engagement activities, including working with schools and participating in Science Festivals and similar events, and Edinburgh Festival use the Informatics Forum for various events. Recent high profile public engagement activities include the Robots Exhibition in the Museum and Ursula Martin's Ada Lovelace book tour; and a range of grassroot activities such as Pint of Science and the Bright Club. The School maintains a register of public engagement activities at:
http://web.inf.ed.ac.uk/infweb/admin/communications/directories/directory-of-outreach-p-e-activities-2019

Data science:
Data science and Artificial Intelligence are core School business and the School contributes directly through its own research, education and knowledge transfer activities, but also through partnering with other Schools and Colleges in joint initiatives. Research staff trained within the School move on to positions elsewhere within the University, taking with them their knowledge and skills and disseminating good practice in data gathering, management, transformation, communication and application.

City Deal:

Talent: The School is a major contributor of talent in Data Science, Artificial Intelligence and related disciplines. The School has some existing distance learning provision and delivers a graduate apprenticeship programme. Further developments in these areas, including 'micro-masters' and similar bite-size provision, have the potential to open access to those not in a position or wishing to enter full-time higher education. The Centres for Doctoral Training hosted by the School are major contributors of doctoral level talent development. At the other end of the education spectrum the School is also involved in the Data Education for Schools City Deal project through Judy Robertson and **we will be seeking to expand our Outreach activity to reach more school aged children** and will seek funding from DDI for resource to support this new role.

Research: The School has outstanding credentials in AI research, having been one of the first AI departments in the world back in the 1960s. This strand of work has continued and expanded to the point we are now the largest grouping of AI researchers in the UK. Much of the School's research is directly relevant to Data-Driven Innovation and, as well as

continuing its focus on foundational research, the School is increasingly engaged in translational activity, including in collaboration with industry partners and with industry funding.

Adoption: The School will continue to develop existing and new industry partnerships, including with industry partners within and linked to the Bayes Centre community, in order to promote adoption and commercialisation of the School's research. The School has a dedicated commercialisation and business development team with a strong track record of commercialisation of intellectual property. The School is also working with a number of public sector partners in the application of data science and artificial intelligence to enhance delivery of public services. We are fostering the development of MSc projects with local organisations. This provides opportunities for students to become engaged with real datasets, and provides local organisations with exposure to modern data science techniques.

Data: While this DDI TRADE theme is focussed on the collation of data sets, the School's strength in data is on use of data and we will continue to focus on that strength to support those who are collating data. We have created a Senior Data Scientist role to help promote the most current advanced techniques, tools and practice in the use of data, both within the School and more widely. The School will continue to work with public and third sector partners, in particular, in helping them to extract value from their datasets, including to improve efficiency and service delivery. **We aim to develop a Data Clinic to link local public and third sector organisations with students to provide pro bono advi**ce on the collection, analysis, presentation, interpretation and use of data, assisting small charitable, community and voluntary organisations with limited resources.

Entrepreneurship & Innovation: The School has a well-established Commercialisation and Industry Engagement function which has a strong track record in business start-ups and spin-outs. Through Informatics Ventures, the School stages the annual, high profile, Engage, Invest, Exploit technology investment showcase, which attracts venture capitalists from throughout the UK and internationally. The School Commercialisation and Industry Engagement team has responsibility also for the Scottish Enterprise supported Bayes Innovation Programme, including its business accelerator programme, the latter run in conjunction with WAYRA and supported by Telefonica and CISCO. Given the overlap, and shared constituencies, of the School and the Bayes Centre in the areas of Data Science and Artificial Intelligence, close integration of the commercialisation and business development functions of both entities is essential, in order to avoid inefficiencies and, even more importantly, confusion and duplication amongst industry partners and other stakeholders. **We will seek funding from DDI for our proposed part-time innovation trainer to work across our student cohorts to foster entrepreneurship and innovation.**

3. Challenges and Risks

Estate:

- Additional space is urgently required to accommodate staff currently being recruited to support our existing student population, and to accommodate our planned student intakes. We currently have insufficient space to accommodate our desired and affordable 2020/21 PhD intake. The School is doing what it can to reconfigure within its existing footprint, but this will not be sufficient to accommodate the student intake targets.

- Lack of space will impeded further growth particularly with respect to increasing demand for industry sponsored research labs, and housing specialist equipment needed to support research, including GPU clusters.

- We need access to an additional (400+) lecture theatre in the central area to accommodate the large class sizes, and we need larger labs – the maximum capacity for our current 3rd year lab is 200 and our cohorts are larger than 200. We will begin to mitigate this by development of online learning opportunities, however in the longer term a larger lecture theatre is required.

Attracting and Retaining Staff:

- There is a need to rebuild staff morale in the School following the period of unplanned growth that has occurred. This will be addressed through continuing recruitment to increase staff to align with the growth in students and ensuring staff feel supported to achieve their aspirations through the various priorities outlined in section 2 (People).

- Staff are operating at full capacity. New initiatives (City Deal, Data Driven Innovation, Distance Education, etc.) and further growth in student numbers will require additional resources and there cannot be an expectation that the deliverables will be achieved without such investment.

- Academic staff success with respect to fellowships and other major funding awards can lead to gaps in teaching provision as back-filling positions can results in a substantial lag while recruitment occurs and reduced teaching load entitlements for new staff are provided. **We aim to mitigate the gaps in teaching that arise from successful fellowship applications by exploring mechanisms to allow successful fellowship applicants to defer being excused from teaching duties to the year following the end of their fellowship** to enable a better planning period to arrange cover for the duration of the fellowship; rationalisation of the curriculum to include fewer taught courses will

also increase opportunities to find appropriate cover; continued recruitment of University Teachers will also ensure we have improved cover for non-honours courses.

- Attractive salaries offered by industry present challenges in attracting and retaining staff.

- Many of our postdoctoral researchers come from Europe and the impact of Brexit is likely to make it harder to recruit staff, which could have an impact on our ability to deliver on research grants awarded.

- Brexit will jeopardise our relationships with EU research partners as well as potentially reducing our access to funding. It could also result in a decline in PGR student applications from the EU.

- Staff retention in face of increased teaching load and compliance requirements (eg UKVI Tier 4 monitoring). We have changed our approach to Tier 4 monitoring by introducing the use of TopHat for attendance monitoring which we hope will ease the burden of Tier 4 compliance monitoring. **We will review this at the end of AY 2019/20. We will explore reducing workload through further rationalisation of our curriculum and refinement of the workload model to take account of courses with more than 150 students.**

- Leadership and Management Development: Further investment is required in leadership and management development for both academic and professional services staff; the University face to face offerings are limited, are too time intensive and at times repetitive.

- Leadership Incentives: There is a lack of support and incentive for academic staff (in particular) to take on senior leadership and management roles, particularly given the current SEP focus on academic staff 'self-service' and mechanisms to restrict delegation to professional services colleagues. This is impacting succession planning within the School.

Teaching Support Staff:

- Recruiting enough tutors and demonstrators is extremely challenging given the size of our UG cohort. Estate constraints, which may limit our PGR intake, will exacerbate this issue as we will have a limited pool from which to recruit. **We aim to mitigate risks associated with recruitment by recruiting to new University Tutor roles**, extending our use of undergraduate tutors in non-honours courses through additional use of teaching studios. We will also investigate approaches to mitigating estates constraints on the recruitment of PGR students.

Ways of Working:

- We have begun to make changes to team and management structures within the School, but there is further work to be done to embed the changes and to review our internal administrative systems and processes to support the rise in student and staff numbers. We need to complete our internal process reviews urgently so we are prepared for the changes that will be required to our systems, processes and people as a result of the Service Excellence Programme.

- Service Excellence Programme may deliver medium to long term benefits to the University, but in the immediate term it continues to place additional demands upon staff, increases uncertainty and makes workforce planning and staff retention more challenging. There is also a perception amongst many staff that administrative work will move to academic staff 'self-service' which adds to antagonism towards SEP.

- **Unreliable Management Information:** There is a lack of reliable management information within the University. Recent College management information developments are appreciated, however there remain inconsistencies with information gathered from Schools (eg. Size and Shape –v- Planning; whether data includes part-time and online students, presentation of data in FTE or headcount). Delays in development of Finance dashboards which allow Schools to understand the wider College picture or shared KPIs is also presenting challenges in understanding the impacts of individual School financial position.

- **Student Recruitment and Experience:** Increasing student numbers across the College are threatening the flexibility, particularly with respect to outside courses, that has been one of the attractive features of our UG degree programmes. Schools are increasingly imposing quotas (and we are too) due to strained capacity for teaching and physical resources. This has the consequence that students are no longer able to have their first choice of courses. To mitigate this **we will explore additional internal offerings where we can control access –** eg. we are exploring a new C/C++ based systems course that could attract many second year students. **We will also explore the scalability of our level 8 courses**. In particular, how we can eliminate the issues arising from programming examinations that limit numbers on courses.

- Brexit and English HE review could impact on ability/desirability to recruit from relevant domiciles. We have identified the **need to focus recruitment effort on Scottish applicants and increase recruitment of women on our courses.**

    Restrictions to immigration and visas. We will consider how to address this when the situation is a little clearer.

4. Activities supporting the UN Sustainable Development Goals:

The School has several existing activities that support the UN Sustainable Development Goals, as outlined below.

We will use the UN Sustainable Development Goals to engage the School community in planning projects and activities to align with these Goals while also aligning with our other Key Priorities and Ambitions outlined in this Plan.

	Existing Activity	Planned Activity
Goal 1: No Poverty Donate what you don't use	o School's **chosen Charity** is Turing Trust which **supports education in sub-Saharan Africa** by reusing computers and improving teacher training using ICT. o **Recycling computers and furniture** o Regular use of internal email (InfGen) used for **exchange/sale of second-hand items**	o **Research** project for secure and reliable blockchain technology for facilitating inclusion in India (Goal 1, 2 and 3)
Goal 2: Zero Hunger Waste less food and support local farmers	o **Leftover food** from events held in Forum and Appleton Tower are **offered to building occupant**s.	o **Collect donations for leftover food**; to be directed to chosen Charity.
Goal 3: Good Health and Well-Being Vaccinate your family; Ensure healthy lives and promote the well-being for all at all ages	o **Yoga** classes offered to staff o **Art Space weekly evening activities** offered to staff and PGR students o Vegetarian options for catering o **Research project** to reduce morbidity and morality in low and middle income countries o **Research projects** focussed on medical machine translation and developing technology to improve translation quality to transfer knowledge among different languages o **Research project** focussed on studying psychological resilience in low and middle income countries	o **Mental Health First Aider Network** to be established o **Subsidise flu vaccinations** o **Research project** in urban Nepal aimed at reducing morality from non-communicable diseases and promoting mental health o **Research project** to develop resilient strategy for sustainable healthcare in Nigeria (Goal 1, 3, 11)
Goal 4: Quality Education Help educate the children in your community	o **Outreach activity** developing digital skills o Regular school visits to the School o School's **chosen Charity** is Turing Trust which **supports education in sub-Saharan Africa** by reusing computers and improving teacher training using ICT. o **Pre-Wired coding club** for school-age children in Edinburgh	o **Research** into the interpretability of models of students' activity in immersive simulations
Goal 5: Gender equality Empower women and girls and ensure their equal rights	o **Athena SWAN Silver Award** o **Zero Tolerance** for harassment and discrimination o **UG Scholarships for female students**	o **Athena SWAN Action Plan** implementation o **Draw the Line workshops**
Goal 6: Clean water and sanitation Avoid wasting water	o **Coffee machines and water filters** provided to reduce plastic/takeaway cups o **Development of an effective biotechnology system (BES)** for treating farm, distillery and domestic waste water	o **MSc projects with SEPA** on water usage and the environment. o **Developing BES biosensors** for remote monitoring of water quality and contamination

Goal 7: Affordable and Clean Energy Use only energy efficient appliances and light bulbs	○ Informatics Forum building designed for energy efficiency	○ **Installation of energy efficient chilled beams** in Forum to resolve ventilation issues ○ **Develop Sustainability Action Plan** to include mechanisms for promotion of energy saving tips ○ **Research** assessing charcoal usage in Angola
Goal 8: Decent Work and Economic Growth Create job opportunities for youth	○ Core business of education	
Goal 9: Industry, Innovation and Infrastructure Fund projects that provide basic infrastructure	○ Much of the research in the School serves to upgrade the technological capabilities of industrial sectors, particularly the computing industry, which are then deployed throughout the world. ○ In particular the Tergola project has been working to deliver broadband to remote areas of the Scottish West Highlands.	
Goal 10: Reduced Inequalities Support the marginalized and disadvantaged	○ School **Equality & Diversity actions** ○ **Widening participation outreach and scholarships**, and Data Science Graduate Apprenticeships ○ Internationally, work on **machine translation for low resource languages** helps disseminate information to marginalised communities (eg health data in South Africa)	
Goal 11: Sustainable Cities and Communities Bike, walk or use public transportation	○ **City location** encourages use of public transport, cycling and walking as does proximity to Shuttle Bus. ○ **Research project** with Just Eat cycles is seeking to optimise the Edinburgh bike sharing scheme	○ **Develop Sustainability Action Plan** to include business travel guidelines ○ **Research project** in urban Nepal aimed at making cities and human settlements inclusive, safe, resilient
Goal 12: Responsible Consumption and Production Recycle paper, plastic, glass and aluminium	○ **Recycling bins** throughout buildings ○ **Recycling computers and furniture** ○ **Use of University preferred suppliers where possible** ○ **Paperless Board of Examiner meetings and committees**	○ **Develop Sustainability Action Plan**
Goal 13: Climate Action Act now to stop global warming	○ **Work with SEPA** on flood defences and prediction projects ○ **Research** on sustaining engagement in Citizen Science project through intelligent feedback	○ **Develop Sustainability Action Plan** to incorporate actions to reduce carbon footprint
Goal 14: Life Below Water Avoid plastic bags to keep the oceans safe and clean	○ **Participation in the One-Day Marine Science Policy discussions** on fish monitoring ○ **Use of cloth bags for recruitment and other events**	○ **Develop Sustainability Action Plan** to incorporate actions to reduce use of plastic

SCHOOL OF INFORMATICS outline plan 2020-23

Goal 15: Life on Land Plant a tree and help protection the environment	o **Research** project on early detection of potential tiger attacks to enhance the co-existence of wildlife conservation zones and subsistence farmer in rural India.	o **Research** project with GeoSciences observing forest canopies to assess tree/carbon density o **Research project** in urban Nepal aimed at promoting the protection of biodiverse areas
Goal 16: Peace, Justice and Strong Institutions Stand up for human rights	o **Work on blockchain technologies** will increase the transparency and accountability of institutions and their resources, including in the developing world. The School hosts a major research centre in blockchain technology. o **Research** into strong cryptography to counter surveillance capitalism and smart totalitarianism.	
Goal 17: Partnerships Lobby your Government to boost development financing		