



THE UNIVERSITY *of* EDINBURGH

# Delivering impact for society



**Strategic Plan**

2016

# Principal's introduction



The University of Edinburgh is making a positive and significant contribution to the world. We are proud to be a truly global university firmly rooted in Scotland's capital city. Our mission to discover, develop and share knowledge is at the heart of what we do.

Since I took up the post of Principal and Vice-Chancellor in 2002 we have undergone a significant period of internationalisation. We have also greatly expanded our breadth and depth of expertise. The integration of the Edinburgh College of Art, the Roslin Institute and the Human Genetics Unit into the University has brought important new opportunities. We have fostered the development of a culture of strong interdisciplinary collaboration across the University.

We have also made great strides in attracting the most talented students and staff from around the world. Our commitment to digital education, through distance and e-learning programmes and innovative developments such as Massive Open Online Courses, has made us much more accessible. It has enabled a vibrant global audience numbered in millions to participate in our intellectual community. Improving access has also had a significant local impact – the single institution that we now accept the most students from is Edinburgh College.

There has been much to celebrate, including the Nobel Prize-winning achievements of Peter Higgs, the recent launch of Li-Fi technology and our outstanding record on company formation. We are very ambitious and will always strive for more.

The outcome of the EU referendum is a great challenge for us. We are developing a new framework for continued stability by focussing even more strongly on online education and international partnerships. Our latest Strategic Plan aims to capture this. We recognise the scale and scope of current opportunities and remain positive and optimistic. High-quality growth of teaching and research combined with enhancement of the student experience are my top two personal priorities as I commence my last 12 months of service at the University of Edinburgh.

I hope that this limpid document will convey to all my colleagues our current aims and objectives. It also presents an exciting strategy for continuing to make a difference locally, nationally and globally.

**Professor Sir Timothy O'Shea** BSc, PhD, FRSE

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# Vision and mission

## Vision

We deliver impact for society.

As a truly global university, rooted in Scotland's capital city, we make a significant, sustainable and socially responsible contribution to the world.

## Mission

We discover, develop and share knowledge.

As a centre of academic excellence we aim to:

- provide the highest-quality research-led teaching and learning;
- challenge the boundaries of knowledge, research and disciplines;
- enable our graduates and staff to be exceptional individuals equipped to address global challenges;
- promote good health, economic growth, cultural understanding and social well-being.





# What makes us Edinburgh

## Scale

The University of Edinburgh is a large university in a small country, with an enviable reputation for making a positive impact on the world.

We are a broad-based, historic, ambitious institution that values its diversity and the opportunities that this brings to improve our learning and our research. We offer a wide range of subjects to our students, and our four-year degree structure means our undergraduates can determine their own pathway through their degree programme, with broad options in the first years deepening into more specialist study in later years. This specialisation gives every student the opportunity to be part of our research community and encourages the outward-looking approach embedded in all that we do.

We are consistently ranked as one of the top 50 universities in the world, and for the past seven years we have been in the top 25 in the QS World University Rankings. We have a rich history of innovation and the impact that our research has upon the world gives us our unique identity: our research has led to the discovery of chloroform anaesthesia, the identification of the Higgs Boson and the birth of Dolly the sheep. Our reputation for supporting researchers to think outside conventional disciplines has helped us develop into one of the UK's research powerhouses.

We are at the forefront of harnessing technology in our teaching of massive open online courses, in our distance learning and in our on-campus classrooms.

## People

Our students and staff are the heart of the University. They are independent, critical, creative thinkers who develop the character of the University and its influence on the world.

Our reputation is a magnet for talent from across the globe. We have a long tradition of attracting students with the potential to succeed at university whatever their circumstances. Fairness, inclusivity and equality of opportunity are rooted in all that we do.

The international profile of our staff and students allows exposure to new ways of thinking, different cultures and different values, making the University and the city an exciting and richer place to study and live. The international partnerships nurtured in Edinburgh provide the perfect platform from which to showcase our global research. Our students come from more than 140 countries, from Germany to Peru. High numbers of our Scottish undergraduates come from backgrounds that are traditionally under-represented, and we have increasing numbers of students and learners engaging with us online. Our commitment to widening participation continues, and we remain committed to our step change in attracting students from deprived backgrounds – whether from Scotland, the rest of the UK or further afield.

We create opportunities for all our students to make a difference, both while they are here and after they graduate. We work with our wider community and our local and global alumni to ensure they continue to benefit from the University and take our ideas out into the world.

## Growth

To ensure we remain best placed to make a strong impact for society we will continue to invest in our learning experiences and our research.

Continuing to be among the best in the world will take investment. This will drive growth across the University and will produce a virtuous cycle for success: growth and sustained excellence will increase our resource, and give us further opportunities to invest in improving our research and student experience.

We will continue to invest in our students, our staff and our physical estate to produce student-centred, research-intensive, industry-engaged campuses that influence the world, enhance Edinburgh and produce greater impact of the work we do.

## City

The University is embedded in the city of Edinburgh, and the city is as important to us as we are to it.

Our history, culture and civic responsibilities are interwoven, from our foundation in 1583, through our flourishing of talent and sceptical enquiry during the 18th-century Enlightenment, to the present day. Edinburgh is a living lab for our research and is an open classroom for our students to develop and apply their skills. Our research expertise and our graduates' skills are at the heart of the most dynamic growth sectors of the local economy. We partner with industry across Edinburgh and beyond.

Our heritage buildings and modern campuses dovetail with the setting of the wider city. Our physical presence in the city frames our interactions with the rest of Edinburgh's citizens.

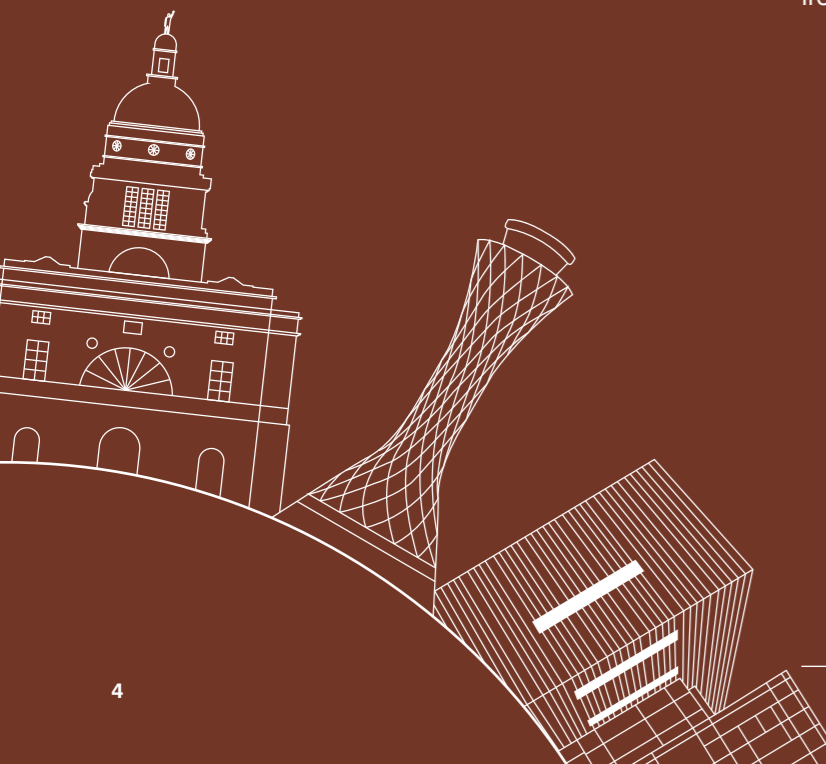
**Investing in the city and our physical presence, we will:**

- invest £1.5 billion in our estate over the next decade;
- strengthen relationships between the University and the city, opening our buildings to the community;
- ensure that we have a well-equipped, accessible estate, large enough to meet the needs of staff and students;

- create a sense of place for our staff, students and the citizens of Edinburgh, and a sense of community across our five campuses;
- make improvements across all our campuses, refurbishing iconic buildings such as Old College and the McEwan Hall and creating spaces to house new initiatives such as the Data Technology Institute;
- deliver teaching and learning spaces that support more flexible styles of learning;
- meet the needs of researchers, with sustainable labs and room for collaboration and innovation;
- deliver residential accommodation that supports students to play a full part in the community;
- build sustainability into our planning processes, ensuring that our new and refurbished buildings are equipped to meet and address the threats of climate change by being energy efficient and meeting waste and carbon standards throughout their lifetimes;
- protect our heritage, ensuring a future for buildings that are key to the University's and the city's history.

**Supporting our people, we will:**

- maintain a fair, inclusive and diverse community of students and staff, enriching the learning, working and social experience of all and demonstrating our commitment to social justice;
- ensure all staff and students achieve their potential by providing a supportive environment and learning culture;
- widen educational and employment opportunities for those from traditionally under-represented groups;
- enhance our scholarship support for all students, especially those from under-represented backgrounds;
- develop our culture of high performance and create the right environment for our staff to grow and develop;
- promote health and well-being for staff and students through a range of initiatives, facilities and support services including counselling and disability services and Sport & Exercise;
- foster a culture of lifelong learning, providing staff and students with opportunities to enhance existing skills and develop the new skills needed to thrive in a constantly changing world.



# Strategic objectives

## Leadership in learning

We prize learning. All of our students have the opportunity to experience different ways of learning by drawing on one of the widest subject mixes available in any leading university.

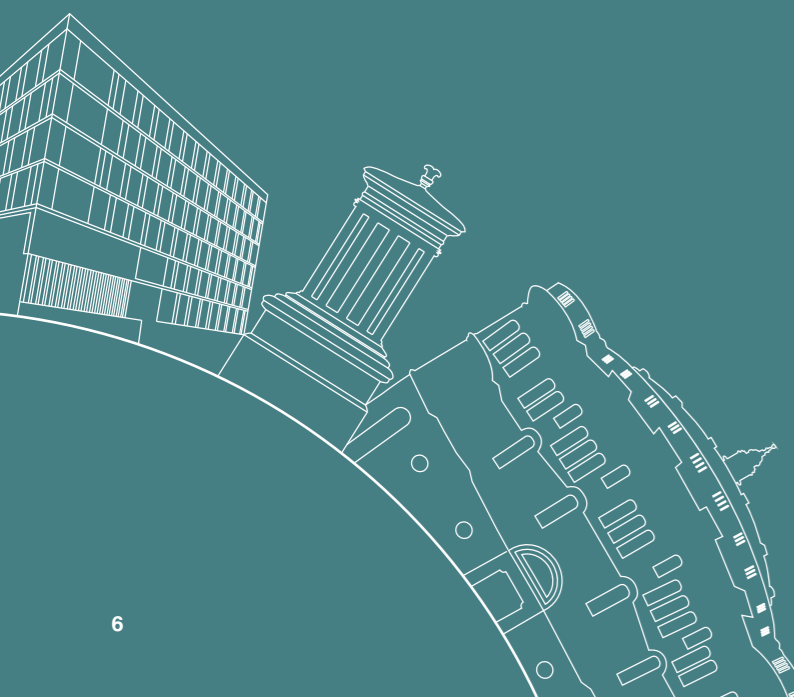
We equip students with the knowledge, skills and experiences to flourish in a complex world and become successful graduates who contribute to society.

Our students have the opportunity within their degree programmes and in extra-curricular activities to apply their knowledge and skills internationally and locally, in businesses and other organisations. They build from the foundations of a subject to the latest research discoveries and analysis, inspired by teaching from lecturers who rank among the world's best researchers.

Students' learning and progress are supported by the latest learning technologies, innovative teaching methods and committed personal tutors. We are at the forefront of digital education. Our professional services support our academics and students in their learning experience.

We prize teaching. The University aims to be known as much for the excellence of its teaching as it is for its research. We support our academic staff to ensure the mix of skills required to underpin a research-rich learning experience. We foster a culture of high achievement that recognises and rewards teachers.

Our staff are empowered to pursue personal and professional development opportunities, and our lifelong-learning culture results in a supportive and motivated staff and student community.



## How we will lead in learning

We will provide leadership in learning through the following means.

### Making a clear offer to all our students, we will:

- be a place for independent, creative and critical thinkers to develop as innovators, researchers and explorers;
- support varied opportunities for independent and student-led learning within and beyond students' main programme of study;
- develop flexible study pathways. These will vary across disciplines but will include online and blended learning opportunities and other innovative approaches to teaching and assessment;
- ensure access to learning experiences that will equip students for whatever path they follow once they graduate, including quantitative methods, digital skills and languages.

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*The Edinburgh degree is special.  
Our undergraduate degrees are  
based on research-led teaching.  
We will involve students  
in enquiry-based learning  
that engages in research  
and innovation and equip  
students with research skills  
for multidisciplinary and  
collaborative working.*

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### Fostering diversity and inclusion, we will:

- create opportunities for students from diverse backgrounds and under-represented groups to study with us, supporting them through the transition into university and beyond;
- embed social responsibility and sustainability in our student experience, through courses and through our culture, practices and provision of student-facing services.

### Recognising the importance of excellent teaching, we will:

- recruit and nurture excellent staff. We will provide the knowledge, skills and support they need to teach well;
- celebrate and reward the best teaching practice;
- recognise student education as a key element in academic staff promotion.

### Supporting excellent facilities, in partnership with Edinburgh University Students' Association, we will:

- support the resources and facilities needed for students' mental and physical well-being;
- have a full understanding of our students' needs and opportunities, enabling them to explore their interests within and beyond their degree programmes;
- invest in our estate, so that all students and staff learn in a welcoming and supportive environment with high-quality facilities and a sense of community.

### Celebrating lifelong learning, we will:

- make available personal and professional development opportunities for staff and students;
- promote the widely available learning opportunities that we offer our local and global communities, including opportunities for those not able to attend the University in person, such as lifelong learning and digital education platforms, festivals and other channels;
- partner with commercial, public sector and professional bodies to create readily accessible continuing professional development for their staff.



## Leadership in research

As a major, comprehensive university we conduct research of the highest standard across a broad spectrum of disciplines. In the Research Excellence Framework assessment in 2014, we were fourth in the UK by research power and in the top five in most individual subjects.

Our discipline-specific research is impressive but we also focus on challenging our researchers to explore the space between traditional disciplines, creating transformational discoveries that enrich society. This interdisciplinary focus has enabled Edinburgh to initiate new subjects such as epigenetics. We will continue to challenge our researchers to explore beyond the confines of traditional subjects, facilitated by our highly interactive, creative and collaborative ethos.

We are committed to helping our research discoveries to be used, realising the social, cultural, health and wealth benefits of our research, beyond its direct value to global knowledge and other academic researchers.

## Nurturing environment

Our researchers shape and enhance our reputation, creating innovative solutions to the significant challenges of our times.

We will nurture the individuals who will become the Nobel and equivalent prize winners of the future. We will build and support interdisciplinary teams.

We have a clear focus on early career researchers, for whom we will provide the best support and research environment in which to develop extraordinary careers. To develop the next generation of researchers and innovators we have invested in cohort doctoral programmes: multidisciplinary groupings to provide PhD training with exposure to new ideas, technologies and skills.

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*We will increasingly offer undergraduate students a real-world research project so that they can experience the excitement and challenges of research. We will ensure our students learn from our researchers and have opportunities to contribute.*

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## Research without boundaries

Close collaboration between our research teams and colleagues in other institutions and industry is core to creating solutions to major unanswered problems.

Our ethos is that research should be conducted without boundaries, whether within or between disciplines. By connecting disciplines within the University and linking with our partners we will effectively transform knowledge and innovation.

We will create ever better conditions for national, European and global partnerships so that together our findings can continue to deliver real-world change.

Having contemporary infrastructure is crucial to enable great research. We will provide inspiring, interactive environments for research, using imaginatively created spaces and the latest technologies.

## How we will lead in research

We will provide leadership in research through the following means.

### Supporting early career researchers, we will:

- mentor our recently recruited early career Chancellor's Fellows;
- create further cohort doctoral programmes, including centres jointly hosted with other research-intensive universities and experts from industry and public sectors.

## Collaborating with other global leaders, and strong interdisciplinary teams, we will:

- form deep and lasting relationships in research and innovation with other globally leading universities, industry, and public and third sector bodies;
- encourage research staff and students to gain experiences and share knowledge and skills with global partners;
- host staff and students from our partners and co-create knowledge;
- progressively increase collaborative academic research and innovation outputs of the highest quality and value;
- create new interdisciplinary institutes and centres to find solutions to today's great challenges, including tackling climate change and public health threats through low carbon technologies, data technology and population health informatics.

### Providing ideal infrastructure, we will:

- invest in digital services that are key to discovery, development and sharing;
- provide optimal-for-purpose and sustainable physical spaces, facilities and services for research and innovation.



# Development themes

Our four development themes give an overview of key areas for development over the period of our Strategic Plan. These do not include everything we will focus on; rather they are the key areas for change. They demonstrate how we will succeed in achieving our goals.

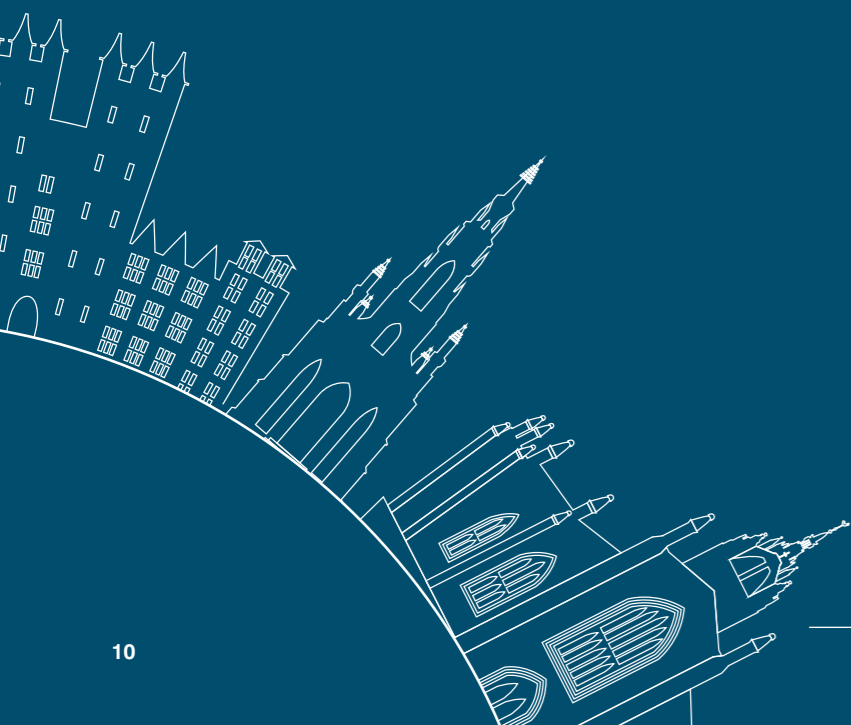
The development themes are:

Influencing globally

Contributing locally

Partnerships with industry

Digital transformation and data





## Influencing globally

### We have a long history of generating knowledge for the public good and nurturing some of the world's best students to make a difference to the world.

Working in partnership with other universities, we will deliver solutions to problems that affect the whole world. Amid rapid globalisation, we will contribute to a collective understanding of the changing world, solve global problems and educate the next generation of leaders and influencers.

We will forge new transformational partnerships with business, industry, governments and academia. We will tackle the greatest challenges through this collective strength and deliver benefits to those most in need. We will maintain and strengthen our partnerships with European institutions and we will deepen our engagement in key regions of the world where new opportunities are emerging in research and teaching.

Generating the greatest global impact commits us to developing more strategic, collaborative and reflexive ways of communicating and working within the University as well as via external partnerships. We will work to get maximum impact from an international strategy that harnesses our global offices and all internationally engaged communities within the University. This collaboration will drive and shape our ambition.

### Global transformation

Our global community of staff, students, alumni and supporters is key to our future success.

We will develop greater engagement with the community in and beyond Edinburgh, building on our tradition of attracting and working with the world's best talent.

Our reputation as a world leader in research and our excellent graduate employment record act as a catalyst to encourage the best students and most highly regarded staff to come to the University from across the globe.

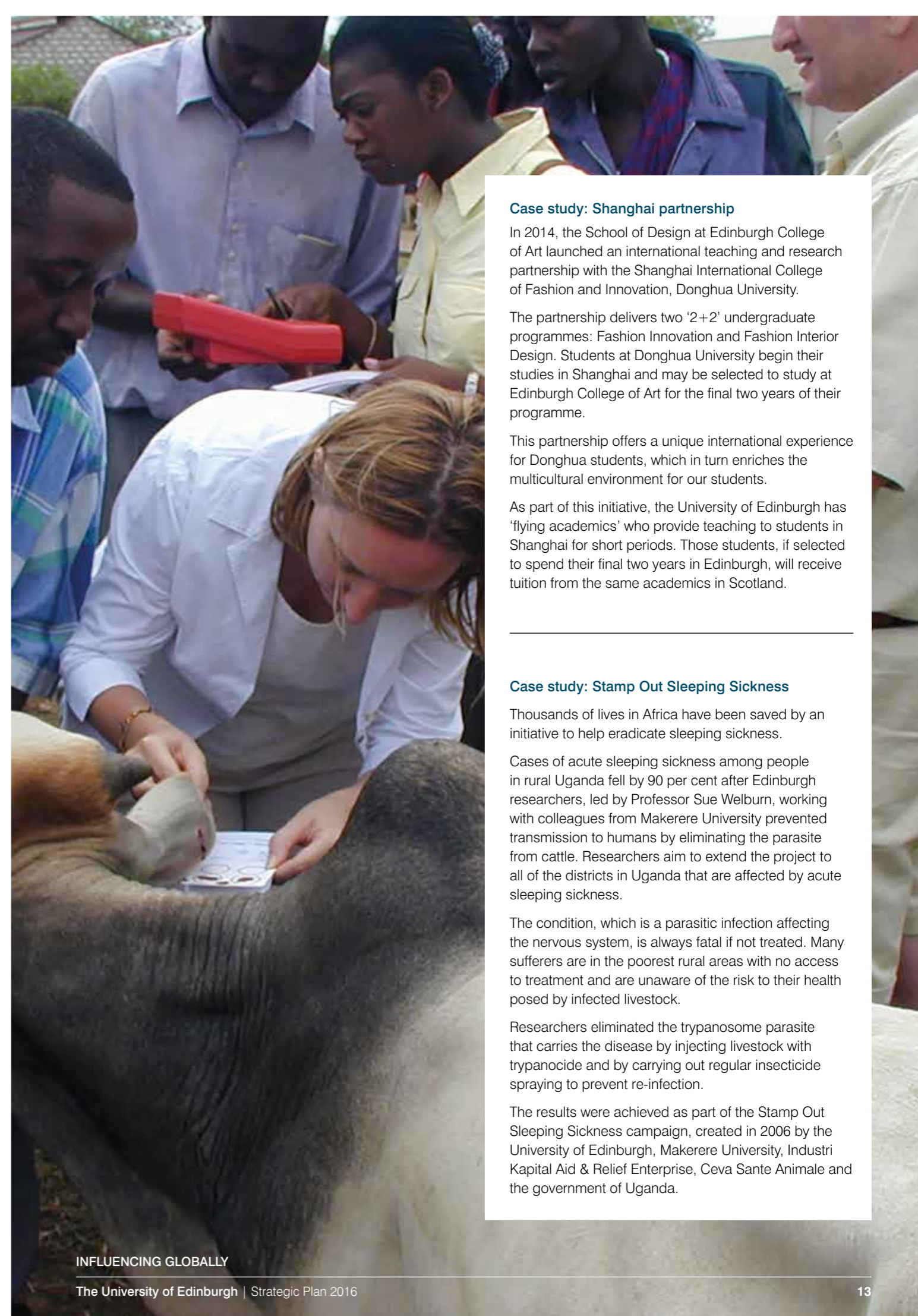
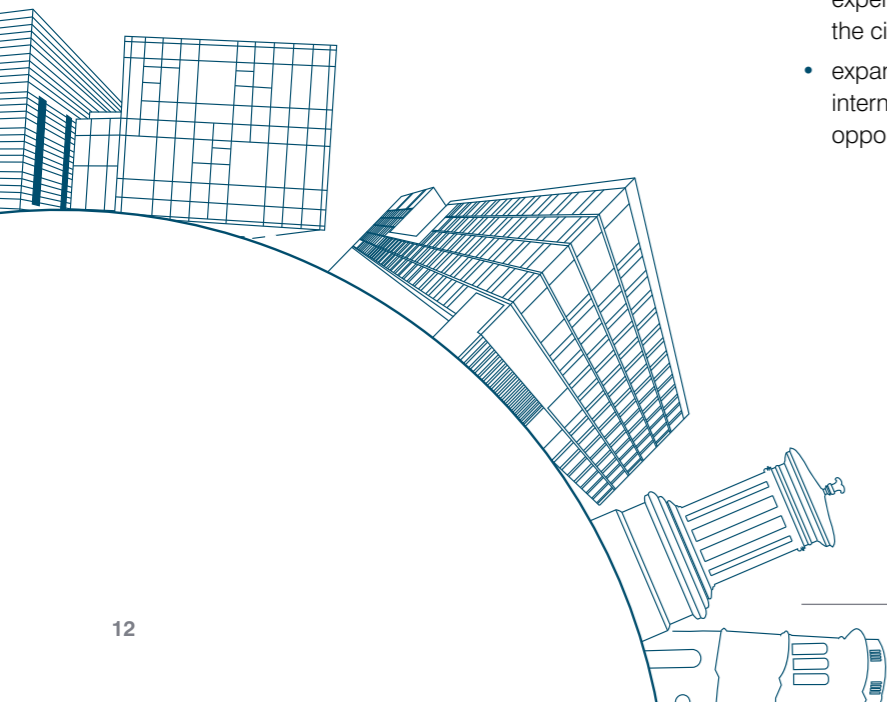
We will enable our students to fulfil their full potential, regardless of where they come from, with increased financial and pastoral support. We will create opportunities for our students to exchange ideas, share their values and shape the world in which they live.

Our global exchange, understanding and dialogue with the world are fundamental to how we operate. We will ensure that the ways in which we engage with the world are life-changing, ethical and impactful. This applies to all our activity, from procurement to investment. We will create new opportunities and support for more of our students to work, study and volunteer in Europe and further afield. We will offer all of our students an international learning experience, even while physically in Edinburgh.

Our staff and students will experience and learn from different global values, cultures and ways of living. We will diversify our portfolio of academic studies that expand our understanding of international perspectives, across cultural and language studies.

#### To advance our global engagement we will:

- deliver transformational global partnerships across business, industry and academia;
- increase the range of opportunities and support for our students to work, study and volunteer abroad through Erasmus+ and other schemes;
- improve access to an Edinburgh degree for the world's brightest and best, irrespective of their background;
- extend our profile and reputation across key regions of the world by promoting our excellent research, student experience and facilities and the opportunities offered by the city of Edinburgh;
- expand our online learning portfolio, building our international community of learners and creating opportunities to engage with an Edinburgh experience.



#### Case study: Shanghai partnership

In 2014, the School of Design at Edinburgh College of Art launched an international teaching and research partnership with the Shanghai International College of Fashion and Innovation, Donghua University.

The partnership delivers two '2+2' undergraduate programmes: Fashion Innovation and Fashion Interior Design. Students at Donghua University begin their studies in Shanghai and may be selected to study at Edinburgh College of Art for the final two years of their programme.

This partnership offers a unique international experience for Donghua students, which in turn enriches the multicultural environment for our students.

As part of this initiative, the University of Edinburgh has 'flying academics' who provide teaching to students in Shanghai for short periods. Those students, if selected to spend their final two years in Edinburgh, will receive tuition from the same academics in Scotland.

#### Case study: Stamp Out Sleeping Sickness

Thousands of lives in Africa have been saved by an initiative to help eradicate sleeping sickness.

Cases of acute sleeping sickness among people in rural Uganda fell by 90 per cent after Edinburgh researchers, led by Professor Sue Welburn, working with colleagues from Makerere University prevented transmission to humans by eliminating the parasite from cattle. Researchers aim to extend the project to all of the districts in Uganda that are affected by acute sleeping sickness.

The condition, which is a parasitic infection affecting the nervous system, is always fatal if not treated. Many sufferers are in the poorest rural areas with no access to treatment and are unaware of the risk to their health posed by infected livestock.

Researchers eliminated the trypanosome parasite that carries the disease by injecting livestock with trypanocide and by carrying out regular insecticide spraying to prevent re-infection.

The results were achieved as part of the Stamp Out Sleeping Sickness campaign, created in 2006 by the University of Edinburgh, Makerere University, Industri Kapital Aid & Relief Enterprise, Ceva Sante Animale and the government of Uganda.



## Contributing locally

**For more than four centuries we have been Edinburgh's civic university, training teachers, lawyers, doctors and a wide range of other experts and innovators that practise their professions in our host city.**

The University is a vitally important part of the Edinburgh region. As well as our undergraduate and postgraduate degree programmes, we offer comprehensive lifelong learning opportunities.

We are partners in the social and cultural life of the city: we host and participate in the city's festivals, we stage regular public events, and we work closely with the national museums, galleries and libraries based in the city.

### Enhancing relationships

We are a key employer and contribute to the city's economic prosperity, as a buyer of goods and services from local suppliers and a generator of start-up and spin-out businesses.

The quality of life in Edinburgh is enhanced through volunteering and fundraising for local causes, and through outreach activities such as free vet care for pets of homeless people and our free legal advice service. We also work with local schools and colleges to broaden horizons, opportunities and access for learners of all ages.

How we engage with our local communities should empower them. The city's local needs will influence our core activities, and we remain aware of the ways that our students and staff living in and around Edinburgh interact as good neighbours and responsible citizens.

We will be open to the city, and its residents will be able to access our buildings and our facilities. We will communicate what we do and how we work with the city so that its residents are able to interact with us in an informed way.

We will build and strengthen relationships and information exchange between the University, the city and our communities. We will put our research and teaching at the service of our local communities, with the aim to enhance support for the University's objectives.

### To achieve this, we will:

- raise aspirations, targeting outreach work and on-campus events to make higher education an achievable goal for more people, especially under-represented groups;
- improve the local environment, ensuring sustainability and accessibility are built in to our estates, energy and transport policies and practices;
- expand student and staff opportunities: embed community engagement within our degree programmes, creating opportunities for students to work, volunteer or study within a community setting;
- recognise the value of engagement and social responsibility through the Edinburgh Award for students, credits for experiential learning in degree programmes, and the Principal's Medal for staff;
- engage the public in research: encourage the widest possible range of audiences to understand our research through public engagement programmes and our digital resources;
- support community use of our facilities: increase the health and well-being of Edinburgh citizens through services offered by Sport & Exercise; enrich the cultural and intellectual life of our communities through our museums, galleries, public lectures, exhibitions, concerts and workshops; and provide facilities and content to support festivals;
- work strategically with civic and community partners to enhance health and well-being, education, culture and quality of life.

### CONTRIBUTING LOCALLY



### Case study: Educated Pass

Educated Pass is a University of Edinburgh sporting initiative that targets school-age boys – particularly those from under-represented groups – through football coaches and clubs. It builds on boys' commitment to sport to generate similar commitment to education.

Aspirations, expectations and the whole frame of reference for boys come from the wider community in which they grow up, and boys who struggle academically or come from backgrounds with low aspirations can easily feel excluded from an early age.

Educated Pass recognises that sport, in particular football, is a common passion among boys aged 11 to 16 and aims to address the academic underachievement of boys in this age group. The project aims to engage boys, their football clubs, their coaches and their families in education opportunities to raise aspirations.

By giving students advice on school, college and university pathways, using sport as the method to engage students, Educated Pass demonstrates that education and career opportunities exist outside the sporting sphere.

### Case study: Anne Rowling Regenerative Neurology Clinic

The Anne Rowling Regenerative Neurology Clinic is a patient-centred charitable research facility, focusing on research into a wide range of neurological conditions, especially neurodegenerative diseases. The Clinic was founded through a donation by the Edinburgh-based author and University alumna JK Rowling in 2010 in memory of her mother, Anne, who died from complications relating to multiple sclerosis.

The Clinic integrates research findings from the laboratory and from patients, with the aim of innovating and trialling new treatments for diseases including multiple sclerosis, motor neurone disease and Parkinson's disease. It also provides care to patients awaiting diagnosis and living with neurological conditions.

Based in the grounds of the Royal Infirmary of Edinburgh beside the University's Edinburgh Medical School, it is a hub for clinical trials into neurodegenerative diseases – its researchers work closely with colleagues in neighbouring University research centres. The Clinic benefits from Scotland's exceptional patient data resources.

### CONTRIBUTING LOCALLY





## Partnerships with industry

**We will be a global leader in industry engagement, with strong industrial and commercial funding complementing traditional public sector and third sector support.**

Research-led teaching, augmented by high-quality staff, estates, facilities and digital assets, will continue to deliver increased productivity and sustained economic impact. We see widespread benefits of engagement between companies, students, alumni and the University: enhanced student experience, exposure to new ideas, and wider opportunities for research and its impact.

The University is already a key aid for many businesses and public bodies: a commercial partner, a source of ideas and an educator of talented individuals. We will build and expand on such relationships across all areas of our activity. We will create the capacity, conditions and expertise for interaction between academics, students, business and industry. This will deliver, grow and maintain these relationships locally and globally.

We will sustain our bond with Scotland's strong public services, for example with the mutual support relationship with NHS Lothian, through which research, teaching and patient care are integrated for the benefit of both partners and patients.

Multidisciplinary collaboration, enabled by highly experienced business development teams, will be critical to developing long-lasting strategic industry partnerships. We will do this primarily through three pillars of activity that frame our industry engagement: Talent, Skills and Employability; Research and Development; and Innovation and Entrepreneurship.

### Talent, Skills and Employability

Through our Talent, Skills and Employability pillar, we will ensure that our degree programmes remain current and support student employability. To build engagement with employers we will:

- seek employers' input to course content and degree programme development and delivery;
- provide meaningful work-related learning for students, including placements with companies, industry co-sponsorship of doctoral degrees, and paid internships;
- ensure that graduates are equipped with the abilities and commercial skills that employers need, through digital and data-related learning opportunities;
- create opportunities for staff to move between the University and companies, encouraging innovative partnerships between companies and the University.

### Research and Development

Through our Research and Development pillar, and to ensure that our research can reach a broad range of beneficiaries, we will:

- partner with industry to allow a better mutual understanding of the practical applications of our research;
- make our academic expertise more available to industry through better online information about our research specialities;
- employ entrepreneurs-in-residence with proficiencies in specialist areas.

### Innovation and Entrepreneurship

Through our Innovation and Entrepreneurship pillar, and to broaden the range of financial support for the University, we will:

- create opportunities for business engagement executives to learn from industry, including learning about routes to market;
- support pathways to strategic relationships, from single transactional relationships through to integrated partnerships;
- focus on earning income from our high-value intellectual property;
- grow and develop our own venture fund.

### Case study: Making the Most of Masters

Making the Most of Masters is an initiative that enables our masters students to undertake work-based projects and improves collaboration between employers and the University. Making the Most of Masters aims to ease the transition from study to work and boost postgraduate students' employability by helping them stand out from the crowd.

It allows our students to better understand career opportunities and enables host companies to get to know their abilities. Businesses get the practical benefit of having our masters students work on specific projects, while our students gain highly sought-after hands-on experience.

Making the Most of Masters is supported by the Scottish Funding Council and is a collaboration between the universities of Edinburgh, Aberdeen and Stirling.

### Case study: Launch.ed

Launch.ed is the University's support service for our entrepreneurs. It offers advice and support to staff, students and recent alumni to help them launch start-up or spin-out companies. With one-to-one advice, workshops, bootcamps and competitions, Launch.ed helps turn ideas into commercial enterprises.

While studying for his PhD in robotics, Alexander Enoch was looking for a robot toy for his niece. He was frustrated to find that there was not an affordable robot on the market for an entry-level enthusiast or child, and he set out to create one.

With support from Launch.ed, and after many prototypes, Marty the 3D-printed walking robot was born and Alexander established Robotical Ltd. Alexander has won several awards, including the Innovation Cup at Launch.ed's 2015 Inspire Launch Grow Awards.

Marty's unique design means a robot that can walk, turn, dance, kick a ball and more can be produced at low cost. He is controllable by phone and his functionality is expandable. He is perfect for helping people learn about programming, electronics, mechanical design, 3D printing and robotics.



## Digital transformation and data

### Data science

The University is home to leading expertise in data science. We are the only Scottish member of the Alan Turing Institute, a five-university UK partnership enabling insights from large-scale data to be used for commercial purposes and to inform policy and practice in tackling environmental, health and other global challenges.

We manage the leading UK supercomputer, ARCHER, and its associated Research Data Facility. We host national institutes including the Farr Institute and the Administrative Data Research Network. Our interdisciplinary Data Technology Institute will be a hub for our data science activity and our academic, public sector and industry co-developers.

Meaningful, intelligent data use is core to our research and vital if we are to lead the world in the growing areas of study where data and computation are changing analysis and discovery, from psychology to architecture to physics. In a future where data-intensive methods are essential to understanding the world, insight based on vast amounts of data will make humanity safer, healthier and more productive. Our data science expertise will underpin the multiple ways that we will transform our engagement with industry.

#### To deliver this we will:

- change our students' way of viewing the world, developing their mindset and providing them with the tools to succeed in a digital future;
- support researchers in extracting value from data and making key data accessible for research by investing in infrastructure and data assets, developed collaboratively and for the common good;

- promote innovation and best practice in the use and analysis of data;
- share physical and virtual spaces with global and local industry partners to ensure our expertise in data science reaches beyond our walls.

### Digital transformation

We will ensure that we drive a culture of evidence and predictive decision-making within our own practices.

We will drive digital transformation in our way of working. Our students and staff need the skills to ensure that they can thrive in a data-rich environment, using quantitative methods to inform decisions. Our teaching will embrace the availability of data and the technologies that support and use it. Our information systems, our data assets and the support we provide our staff and students will keep us at the leading edge of this data-driven revolution.

We need to ensure that we thrive in the digital economy and ensure all areas of the University can operate seamlessly in the digital world. We must be ready to adapt quickly to disruptive competition and technologies.

#### To make this happen we will:

- offer a digital education experience including online programmes that widen access to an Edinburgh education beyond the city;
- invest in systems that make it easy for our staff to use and share all the information we create, driving efficiencies, enhancing the student experience, identifying new research opportunities, and operating our estate effectively;
- deepen our connections in the hyper-connected digital world;
- drive towards a digital culture that will culminate in a university where:
  - every core service is fully digital;
  - every educator is a digital educator;
  - every student is a digital student;
  - every decision is made from accessible, comprehensively based evidence and knowledge;
  - every student and staff member is constantly updating their digital skills;
  - we have moved from wondering what the future might hold to predicting the future.



### Case study: Li-Fi

Li-Fi, the brainchild of the University's Professor Harald Haas, has the potential to revolutionise the way we get online. Li-Fi is a communications technology that uses light to transmit information digitally, in contrast to Wi-Fi, which uses radio frequency signals.

In Li-Fi, a microchip controls a standard LED lightbulb, causing it to flicker millions of times a second. This creates a rapid stream of binary code, invisible to the human eye, which is read by a dongle attached to a laptop or other device, providing internet and other data services at speeds far exceeding conventional Wi-Fi connectivity.

Li-Fi can exploit the ubiquity of light sources in urban areas – including street lamps and car headlights. It is ideal for use in hospitals, because it does not emit radio interference that can affect medical instruments. For aviation applications Li-Fi has the advantage that no additional cabling is needed, and it can similarly be installed in underground transport, exploiting lighting that is already in place.

The first Li-Fi devices are beginning to appear commercially and are currently being trialled in a variety of applications.

### Case study: Alan Turing Institute

The Alan Turing Institute is the UK's national institute for data science. Founded in 2015, it aims to be a world leader in data science research and innovation.

The University of Edinburgh was one of the five universities that founded the Institute, in a joint venture with the universities of Cambridge, Oxford and Warwick, University College London and the UK Engineering and Physical Sciences Research Council.

The Institute aims to attract the best scientists and mathematicians to break boundaries in the use of big data.

Its mission is to create global impact through research, training and leadership. It will develop theory and methodology, will partner with businesses and other institutions to create economic and societal impact, will train the next generation of data science leaders and will inform public debate and policy.

It is being funded over five years with £42 million from the UK government, with additional funding from the founding universities and business. It is headquartered at the British Library in London.



# How will we measure success?

The delivery of the Strategic Plan 2016 will be a University-wide endeavour.

Our schools and support groups are key to delivering the Plan, and we will work together to achieve its goals.

We will measure our performance against the objectives of the Plan through a combination of quantitative metrics and narrative case studies that illustrate the changes taking place across the organisation.

The University Court, as our governing body, has overall responsibility for strategic development. Court will monitor a set of strategic measures that focus on the impacts from the Plan, particularly those that highlight areas of highest risk and change.

The University's Central Management Group oversees the University's performance. This group will regularly see indicators that illustrate how our aims are being achieved at operational levels and that indicate whether we will achieve our desired impacts.

Schools and support groups will also articulate the ways in which they contribute to the delivery of the Plan, reflecting the distinctive strengths of different parts of the University. The ways that these differently deliver on the Strategic Plan's objectives will be reflected in the overall performance framework.

Information on our performance will be available on our website.



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