Staffordshire University Innovation Enterprise Zone

Professor Tony Dodd

Deputy Dean, School of Digital, Technologies and Arts
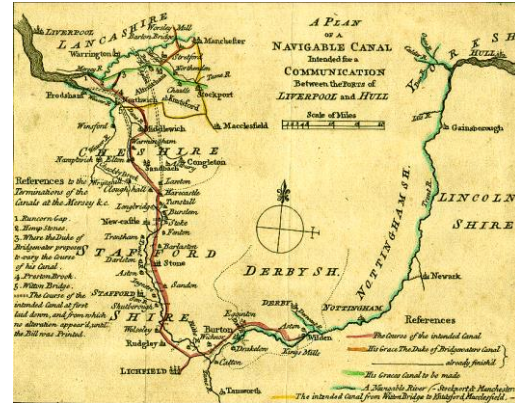
SOME HISTORY

Stoke-on-Trent

Stoke-on-Trent

History of The Potteries

Trent and Mersey Canal, 1777

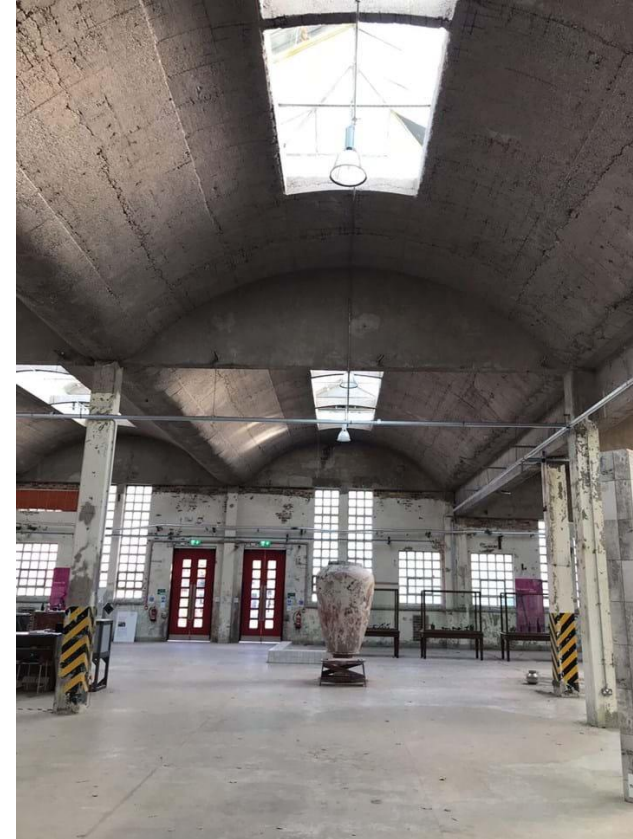Middleport Pottery

Wedgwood Etruria Works, 1926

Spode Works, 1927

Restoration of The Potteries

Middleport Pottery

Spode Works
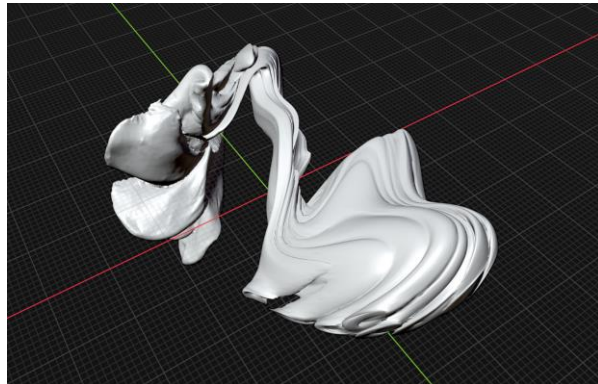
Etruria Works

Ceramics

Clarice Cliff 'Ravel' pattern, 1930

Wedgwood Jasperware vase, 1790

Contemporary understanding of the past: Neil Brownsword

Alchemy and Metamorphosis
18 Sep 2021–30 Jan 2022
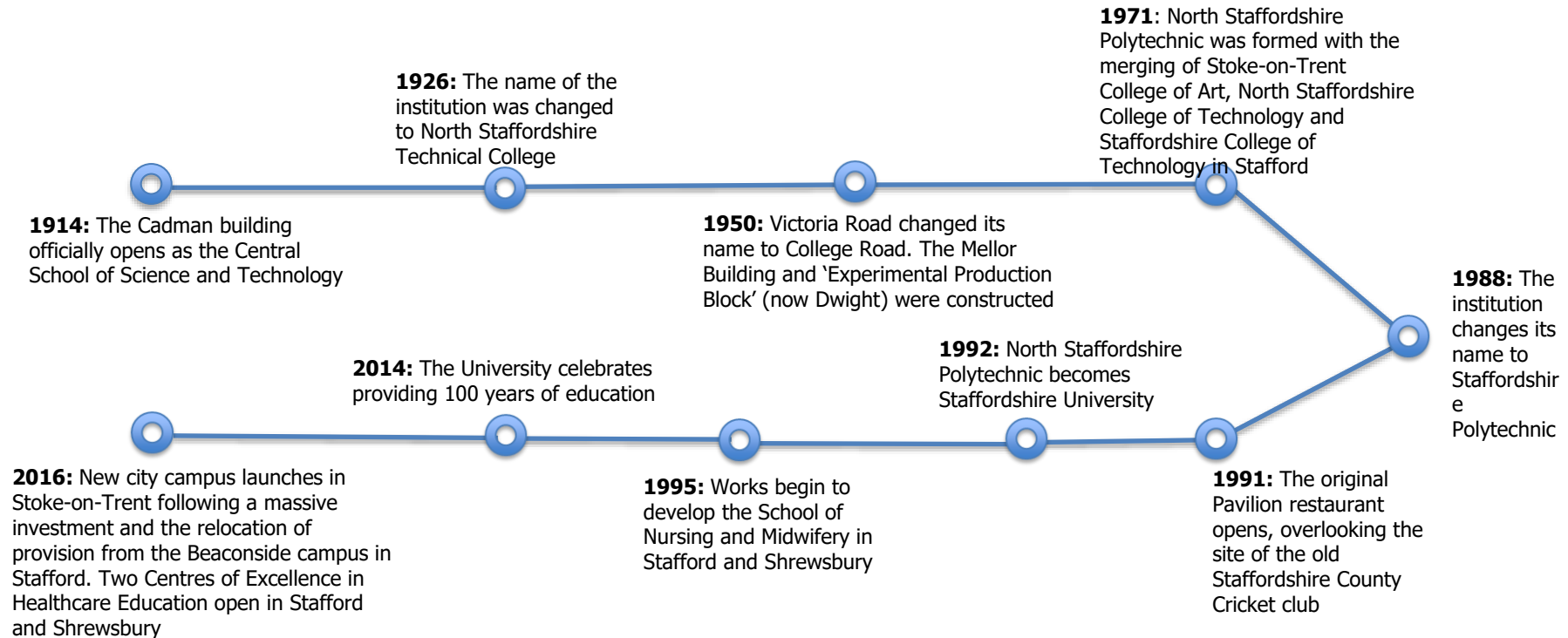The Potteries Museum & Art Gallery

Present day

Exemplar post-industrial city

Below average R&D investment
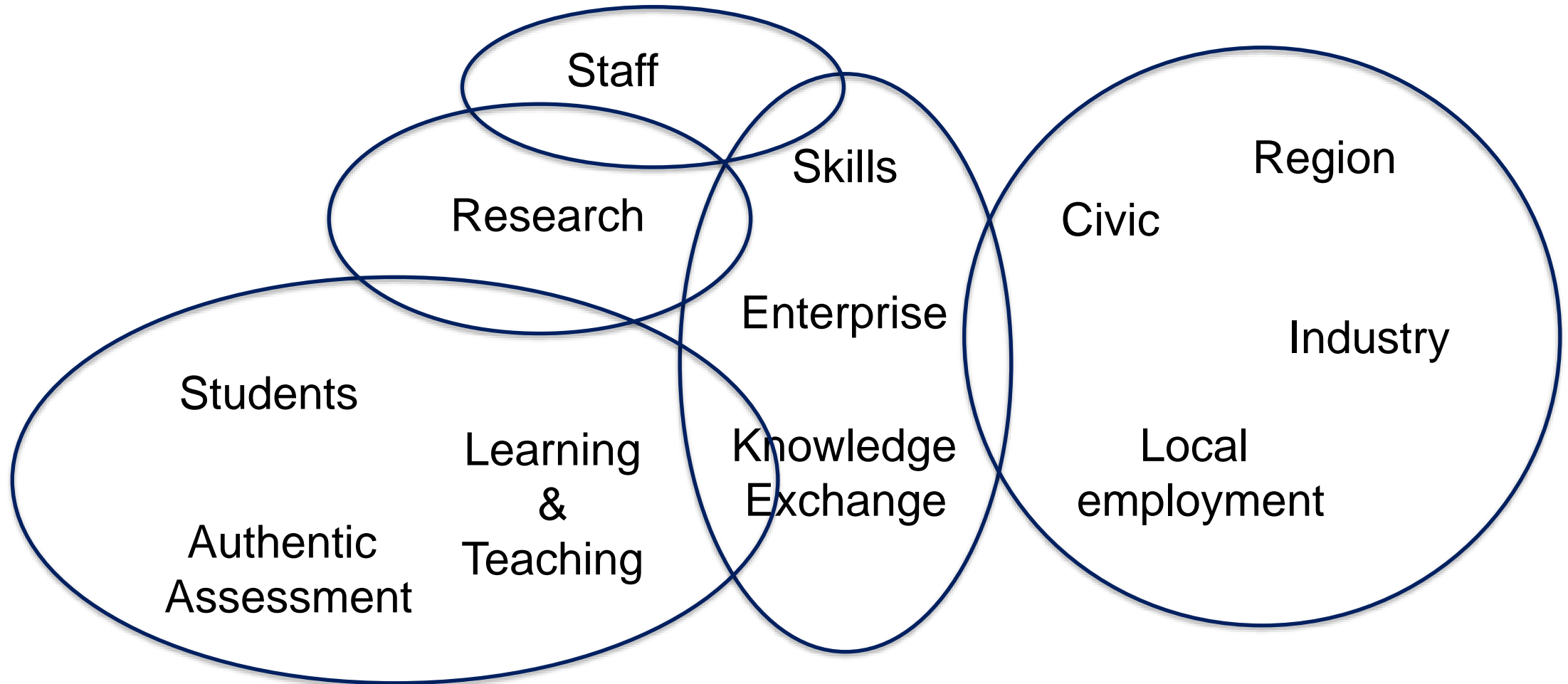
37th/38 on productivity

Below average higher skills

Staffordshire University

1971: North Staffordshire Polytechnic was formed with the merging of Stoke-on-Trent College of Art, North Staffordshire College of Technology and Staffordshire College of Technology in Stafford

1926: The name of the institution was changed to North Staffordshire Technical College

1914: The Cadman building officially opens as the Central School of Science and Technology

1950: Victoria Road changed its name to College Road. The Mellor Building and 'Experimental Production Block' (now Dwight) were constructed

1992: North Staffordshire Polytechnic becomes Staffordshire University

1988: The institution changes its name to Staffordshire Polytechnic

2014: The University celebrates providing 100 years of education

2016: New city campus launches in Stoke-on-Trent following a massive investment and the relocation of provision from the Beaconside campus in Stafford. Two Centres of Excellence in Healthcare Education open in Stafford and Shrewsbury

1995: Works begin to develop the School of Nursing and Midwifery in Stafford and Shrewsbury

1991: The original Pavilion restaurant opens, overlooking the site of the old Staffordshire County Cricket club

UNIVERSITY STRATEGY

Enterprise and Knowledge Exchange in Context

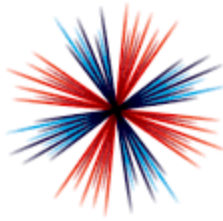# INNOVATION ENTERPRISE ZONE

STAFFORDSHIRE UNIVERSITY

INNOVATION ENTERPRISE ZONE

UKRI Research England

- **29th out of 38 LEPs for overall business R&D expenditure**, and **23rd out of 38 for business R&D expenditure** per full time employee (FTE) (2013).

- **Below average productivity** - £19,114 produced per person, compared to £22,301 for WM and £27,660 in England. In 2017, GVA per hour worked was £25.90 in SSLEP area. This puts the area in position **37 out of 38 LEPs.**

- **Below average higher skills (Level 4+)** levels
- 38 new business start-ups per 10,000 people in SSLEP area**, a lower proportion than the regional and national averages**

- **Business density** of 410 businesses per 10,000 population, lower than the regional and national averages.

- Growth in job numbers in manufacturing in SSLEP area has been over half of total national net jobs growth between 2009-2017
- Post Covid-19 recovery
- High value & higher skills economy

- New jobs

- Productivity

- Competitiveness

- Higher margins

- Investment in R&D, IP assets generation

- Product to new market (e.g. intelligent mobility)

- New innovative products

- Access new markets

99.6%
of SSLEP companies are
SMEs

Local Industrial Strategy

March 2020

The UK's most highly connected, inclusive economy. A centre for new businesses and entrepreneurs, using digital, transport and energy networks to drive growth and ambition through innovation, scale up businesses, inward investment and raising enterprise.

Ideas
Increased business capacity to absorb and adopt. Growing existing centres of excellence – as leaders in logistics, energy use and manufacturing

People
Raising wages, skills and ambition - a place where providers and industry collaborate & people and firms get the retraining and technical / digital skills needed

Infrastructure
Maximising the impact of local energy networks, digital connectivity, and future logistics innovation

Business environment
A business start up and growth hot spot – with increasing productivity and enterprise levels, and sustainable energy and resource use

Place
Repurposing / revitalising our town centres and city – commercial offer and excellent quality of life

| Advanced Man Auto, Aero, Rail | Advanced materials | Med Tech | Business services | Energy | Agri / Food | Business & leisure tourism | Logistics Future mobility | Creative, Games, Designer-Makers |

Addressing national Grand Challenges using local expertise: Clean Growth and Future Mobility – a centre of energy and logistics innovation based on AI/Digital skills and technology

Ideas: we have managed to influence in the areas of **digital, materials and mobility** to fit our university ambitions and projects that are approved including the NEW addition of **Staffordshire Connected and Intelligent Mobility Innovation Accelerator (SCIMIA).**

As a university, we will take a lead and position us in **3MD i.e. Manufacturing, Materials and Mobility and Digital and 5G** through SAMPID, SAMIAC, SCIMIA as well as existing SDIP to lead the 'Ideas' strand in 3MD.

We will deliver against the **'People'** strand through our apprenticeships provision and **Higher Skills project encompassing CPD- micro credentials learning.**
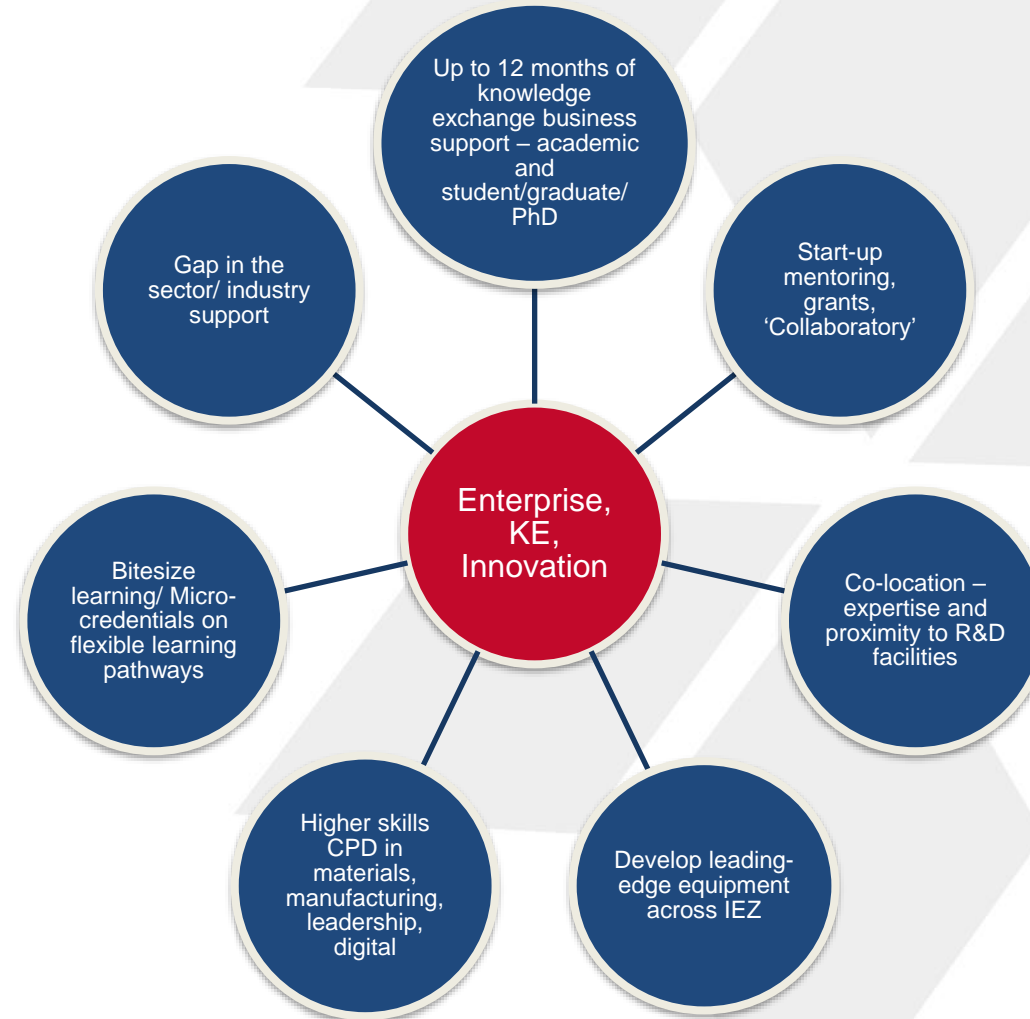
Internal Drivers

The Connected Communities strand of our **Connected University Strategy** emphasizes the university's mission and vision in **knowledge exchange** to:
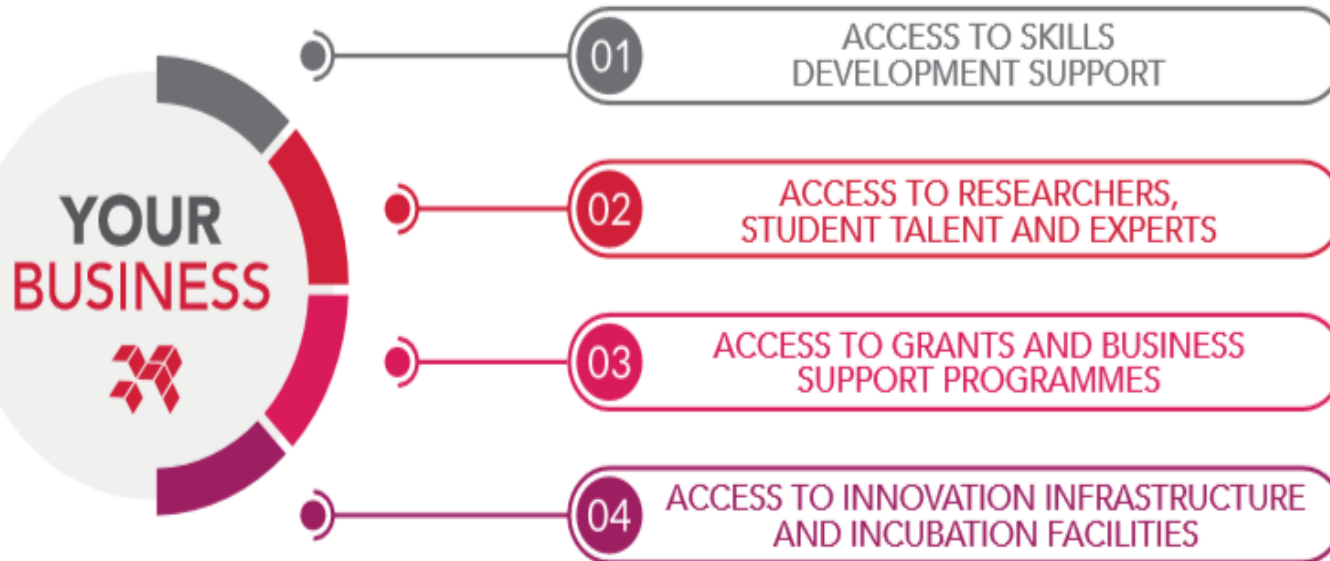
- be the **intellectual hub** of our city and region
- **support employers to innovate and grow through our research and knowledge transfer**
- play a leading role to deliver the city's and region's ambitions and **increase higher level skills** in the population and the workplace
- drive growth of the **digital economy** in the region.

Strategic Approach

• Innovation & KE • Delivering HEBCI • Drive employability • Income generation • Positioning	THEMATIC AREAS & STRATEGIC FIT - Employer-led Research, Development & Innovation (RD&I) - DEVELOPMENT FOCUS			
	Advanced Manufacturing	Advanced Materials	Intelligent Mobility	Digital
UK Industrial Strategy (IS)	☑	☑	☑	☑
West Midlands IS	☑	☑	☑	☑
Innovate UK Priorities	☑	☑	☑	☑
SSLEP/ LiS	☑	☑	☑	☑
Our Research and Expertise Resource	• Renewable energy systems • Engineering • Electronics • Materials • Product design and creativity • Robotics • Data…	• Applied and advanced materials with applications in a number of sectors e.g. energy, health • Small-scale manufacturing	• Engineering, Electronics; Robotics • Data; Artificial Intelligence; IoT • Economy; Markets • SW development • Cloud computing • Smart cities and & 5G • Gaming, augmented and mixed reality, and artificial intelligence • Cognitive Psychology and Behaviour Change • Environmental studies and Geography	• SW development • Cloud computing • Data mining • Smart cities and economic development • Gaming, augmented and mixed reality, and artificial intelligence • IoT • 5G

How do we approach the KE development

Enterprise, KE, Innovation

- Up to 12 months of knowledge exchange business support – academic and student/graduate/PhD
- Start-up mentoring, grants, 'Collaboratory'
- Co-location – expertise and proximity to R&D facilities
- Develop leading-edge equipment across IEZ
- Higher skills CPD in materials, manufacturing, leadership, digital
- Bitesize learning/ Micro-credentials on flexible learning pathways
- Gap in the sector/ industry support

INNOVATION ENTERPRISE ZONE

YOUR BUSINESS

01 ACCESS TO SKILLS DEVELOPMENT SUPPORT

02 ACCESS TO RESEARCHERS, STUDENT TALENT AND EXPERTS

03 ACCESS TO GRANTS AND BUSINESS SUPPORT PROGRAMMES

04 ACCESS TO INNOVATION INFRASTRUCTURE AND INCUBATION FACILITIES

Advanced Materials Incubator and Accelerator Centre
- SAMIAC

Advanced Manufacturing Prototyping and Innovation Demonstrator
- SAMPID

Digital Innovation Partnerships
- SDIPs

Intelligent Mobility Innovation Accelerator
- SCIMIA

Be Inspired
- BiSU

Higher Skills Pathways
- SHESP / SEGWAY - CPD

European Union
European Social Fund

European Union
European Regional Development Fund

MIDLANDS ENGINE HM Government

Stoke-on-Trent & Staffordshire
Enterprise Partnership

STAFFORDSHIRE UNIVERSITY

INNOVATION ENTERPRISE ZONE

UKRI Research England

Successes and building up critical mass

STAFFORDSHIRE ADVANCED MATERIALS INCUBATION AND ACCELERATOR CENTRE (SAMIAC)

STAFFORDSHIRE UNIVERSITY

INNOVATION ENTERPRISE ZONE

UKRI Research England

INCUBATION AND START UP HATCHERY

- 11 brand new incubator offices in Mellor building
- The Hatchery*
- Fully equipped meeting room with integrated video conferencing equipment
- Second breakout meeting room
- Virtual reception area
- Innovation laboratory/ equipment
- Access to researchers, experts, students
- Access to CPD Programme
- Collision spaces

The Hatchery facility houses five pods for office space and offers a stepping-stone for companies that are in the early stages of development.

STAFFORDSHIRE ADVANCED MANUFACTURING PROTOTYPING AND INNOVATION DEMONSTRATOR (SAMPID)

- Supporting 50 eligible Stoke and Staffordshire SMEs, the project's primary focus is to support manufacturing businesses and their supply chains with designing and developing new products and/or new product component(s) and processes

- Key sectors : Aero-auto, Energy, Agri-tech, Medical Technology, Applied materials, Transport and Food and drink

- The SAMPID programme's tailored prototype support provides an excellent route for businesses that currently do not have the resources or knowledge to embed advanced manufacturing solutions to transform their business

- The project is delivered through a 12-week business support programme comprising of a part time student and academic expertise

- All to be undertaken at the University Enterprise Zone facility with access to university's facilities and state-of-the-art advanced manufacturing equipment including 3D Metal Printers and Robotic Arms

TYPES OF SUPPORTED PROJECTS

- Industrial Design

- 3d Printing in metal and plastic

- Analysis of different materials, shapes, sizes

- Developing bespoke components

- Testing, developing and valuating an assembly process

The research element is crucial for each product and each collaboration will be bespoke and led by the business
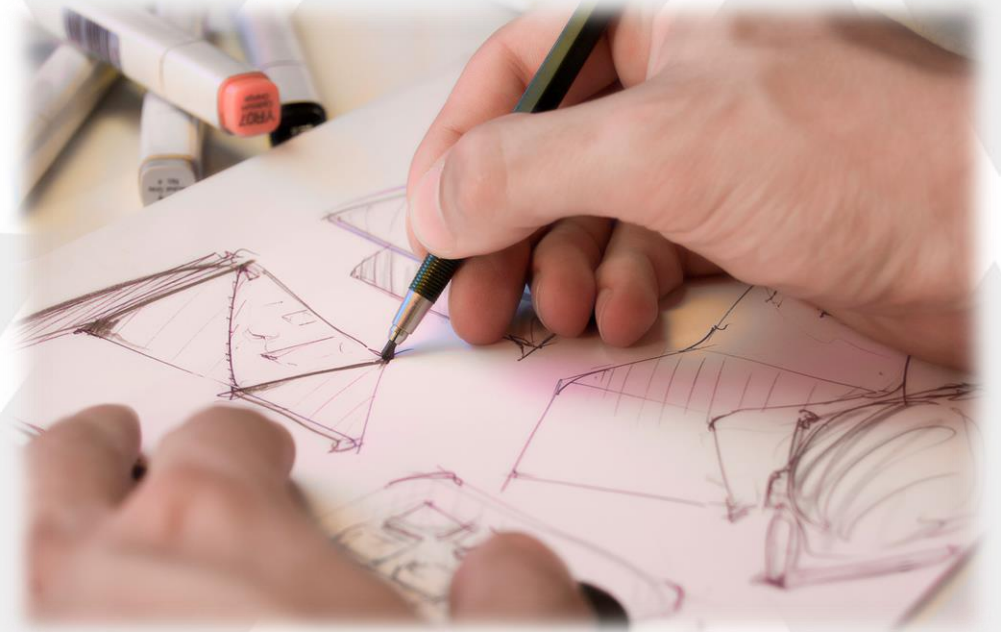
ADVANCED MANUFACTURING EQUIPMENT

STAFFORDSHIRE DIGITAL INNOVATION PARTNERSHIPS (SDIPS)

STAFFORDSHIRE DIGITAL INNOVATION PARTNERSHIPS (SDIPS)

- SDIPs is a collaborative project between Staffordshire University and Staffordshire County Council to drive digital innovation in the region

- The project offers local SME businesses the support to research and develop new digitally innovative products, services or processes which have the potential to transform their business

- 36 innovation partnerships with one full time student or graduate placement for 6 months plus ½ day per-week academic expertise and guidance

SDIP PROGRAMME STRANDS

Businesses are invited to submit projects which will lead to the development of a new digital product, service or process under any of the following strands:

1) Digital Innovation
2) Business Intelligence
3) Social Challenge

1) Raising the aspirations of Staffordshire children and young people
2) Reducing isolation for the elderly
3) Improving the digital capabilities of Staffordshire citizens
4) Enabling and growing social action and community support
5) Children's emotional and mental wellbeing
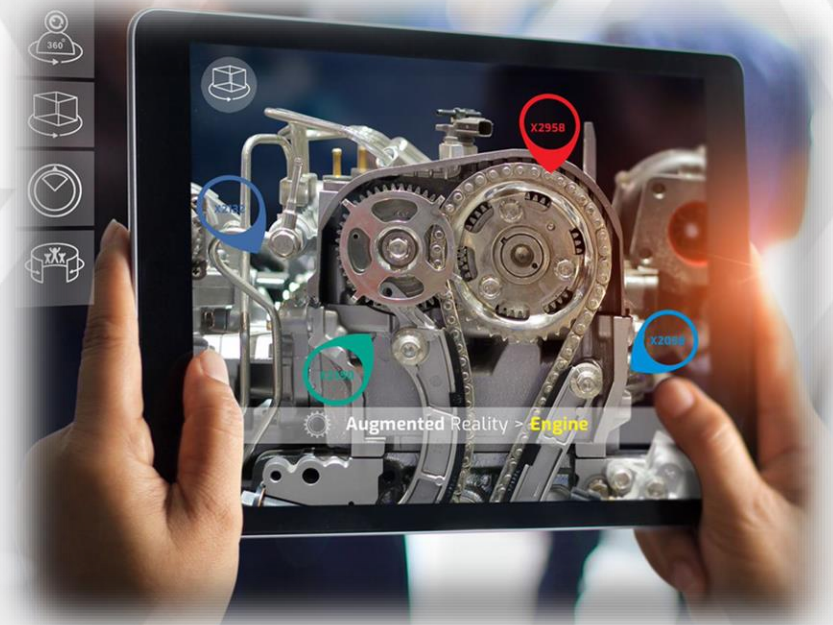
STAFFORDSHIRE CONNECTED & INTELLIGENT MOBILITY INNOVATION ACCELERATOR (SCIMIA)

STAFFORDSHIRE CONNECTED & INTELLIGENT MOBILITY INNOVATION ACCELERATOR (SCIMIA)

- Support 45 eligible Stoke and Staffordshire SMEs

- Focus on intelligent mobility: people and goods, logistics, smart infrastructure, intelligent transport networks, vehicle design and manufacture, driverless technologies

- Support from academic, student, innovation fellow and dedicated technician

- Up to 12 months of support to develop new product or service
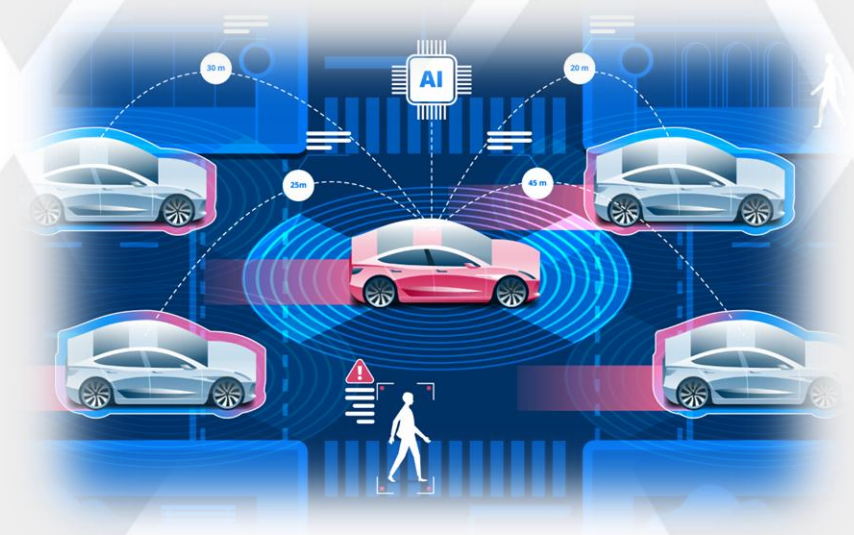
CREATIVE LAB

CREATIVE LAB

- Space to stimulate innovation
- Creativity
- Design
- Entrepreneurship
- Training and skills
- Equipment

ENTERPRISE ACADEMY

TRAINING

- BeInspired
- SEGWAY
- SHESP
- Microcredentials
- Bitesized training

BENEFITS

Benefits
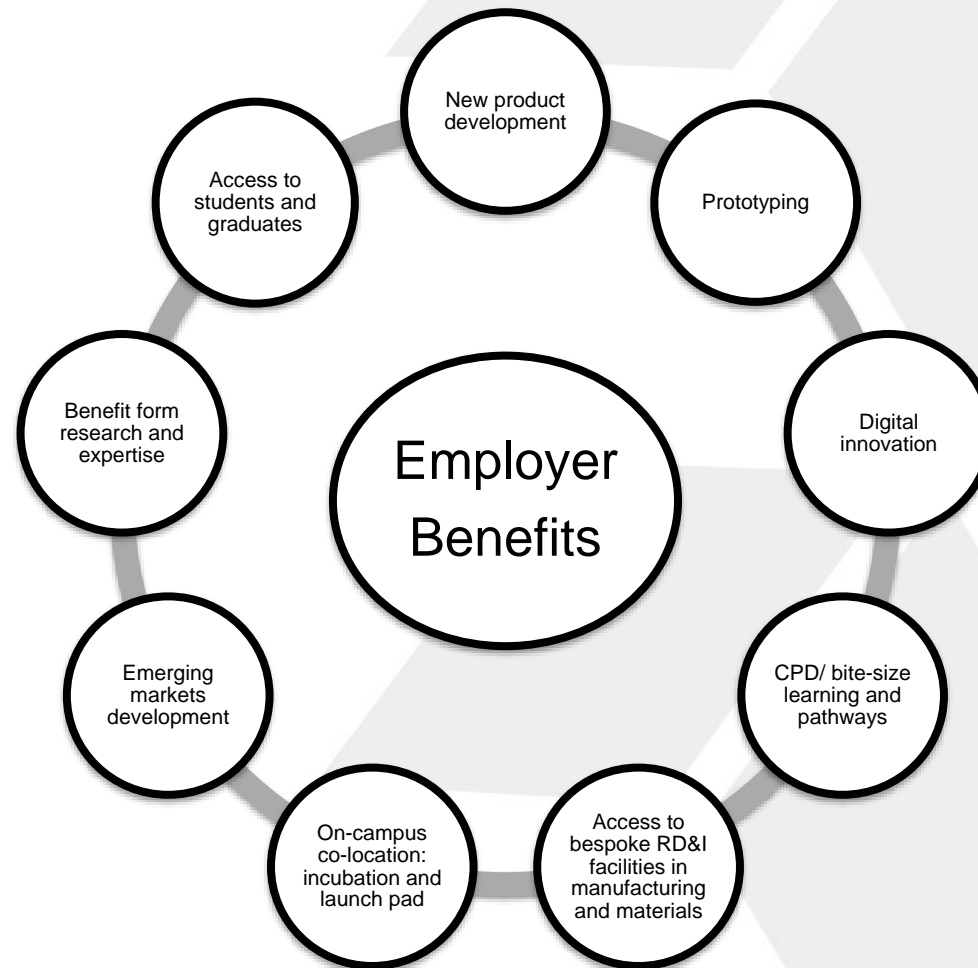
Employer Benefits

- New product development
- Prototyping
- Digital innovation
- CPD/ bite-size learning and pathways
- Access to bespoke RD&I facilities in manufacturing and materials
- On-campus co-location: incubation and launch pad
- Emerging markets development
- Benefit form research and expertise
- Access to students and graduates

School of Digital, Technology and Arts
Harvesting benefits of IEZ – Students Perspective

STAFFORDSHIRE UNIVERSITY
INNOVATION ENTERPRISE ZONE

Final year project case studies/collaborations
Members for industrial advisory board
Case studies/examples for lectures
Student recruitment and marketing
Curriculum development
Apprenticeships
Guest lectures
Accreditation
CPD
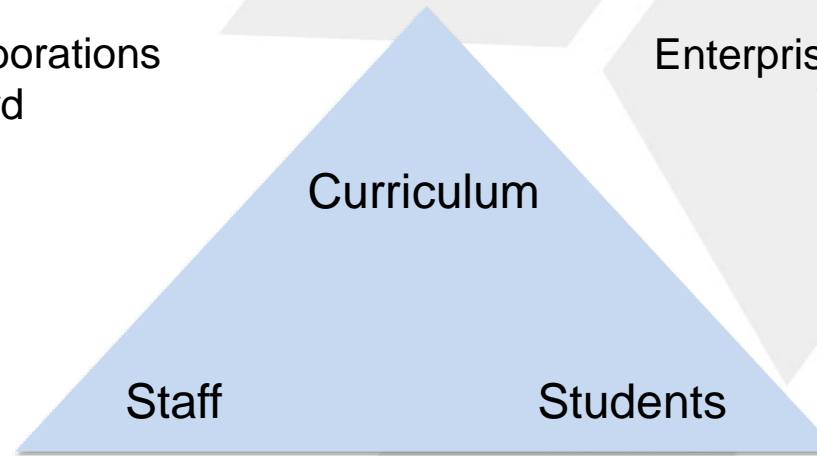
Enterprise support for business development ideas
Work on equipment in real world problems
Real world skills development
Relevant paid part-time work
Work experience for CV
Improved employability
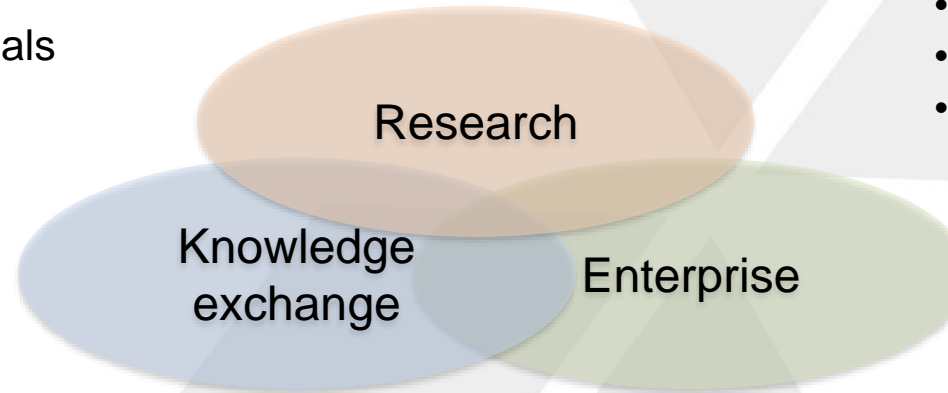Enterprise thinking
Innovation thinking

Curriculum

Staff   Students
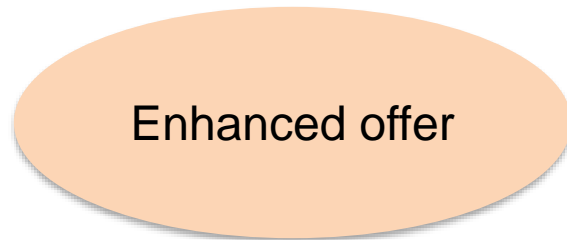
Enhanced student experience

Enhanced employability

Enhanced offer

Enhanced students
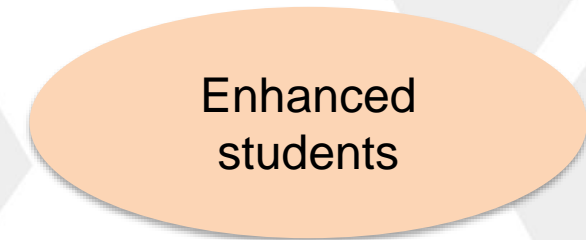
- Case studies – papers, PhD students
- New ideas for research – problem driven
- New collaborative opportunities
- Letters of support for grant proposals
- Research impact
- Equipment

- Innovation grants
- Consultancy
- Impact case studies
- IP and spin-outs
- Civic engagement

Research

Knowledge exchange

Enterprise

- REF – impact case studies and environment
- KEF – metrics and narrative

CASE STUDIES

SAMPID

- 12 week projects
- 15 hours per week
- Student innovation consultant
- Academic supervision
- Company interaction
- Typical broken into 3 phases – preliminary research, concept design and prototyping, testing and evaluation

DIVERSITY OF PROJECTS

- Redesign of laser cutting machines
- Disinfecting buses using chemical mist
- Novel ozone machine for cleaning laundry
- Novel endoscopy device
- Glasses cover for sports people
- Automatic testing for legionella in water pipes
- UV disinfection of medical equipment
- Novel clip for fixing roof tiles
- Robotic weighing of powders

APPROACHES

- Product design
- Industrial design
- Computer aided design
- Finite element modelling
- Computational fluid dynamics
- Electronics design
- 3D rapid prototyping – plastic and metal
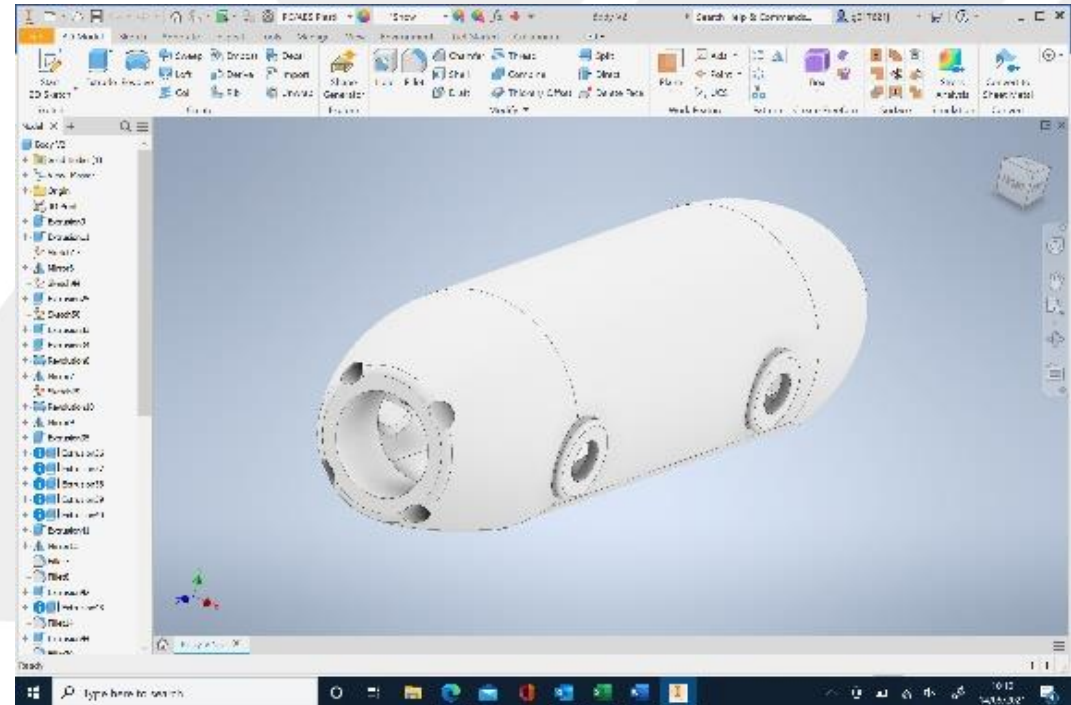- Robotics

ADAPTING A LASER CUTTING MACHINE

- Improve assembly
- Maintain performance
- Initial market research
- CAD designs of concepts
- Finite element analysis
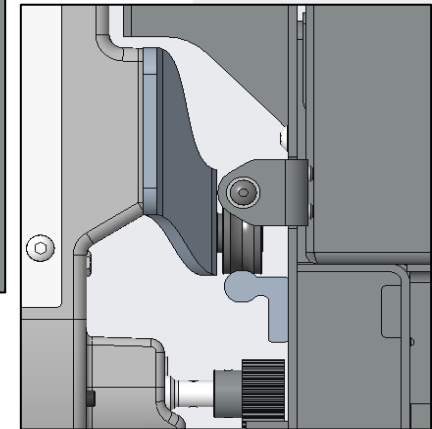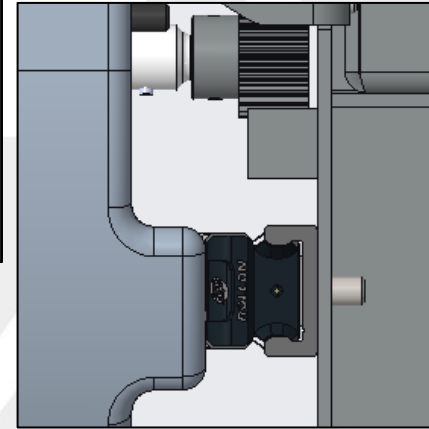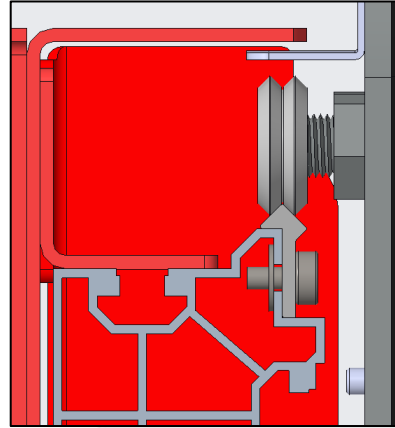
NOVEL ENDOSCOPY DEVICE

- Completely new approach
- CAD design
- Electronics design
- Materials selection
- 3D printing prototypes
- Design iterations

European Union — European Social Fund

European Union — European Regional Development Fund

MIDLANDS ENGINE

Stoke-on-Trent & Staffordshire Enterprise Partnership

STAFFORDSHIRE UNIVERSITY

INNOVATION ENTERPRISE ZONE

UKRI Research England

HOW DO WE RECRUIT STUDENTS?

- Franchise agreement
- Generates large income to university
- Very efficient
- Burden of recruitment away from academics
- Focus on recruiting students, graduates and local professionals

UNITEMPS

www.unitemps.com

STAFF INVOLVEMENT

- Associate Dean Employer Partnerships and Enterprise

- Associate Deans for Research and Enterprise

- Director of Business, Development and Enterprise

- Programme Managers

- Administration assistants

- Business development managers

- Academics

CONCLUDING REMARKS

KEY MESSAGES

- Funding for regional development
- Focus on small and medium enterprises
- But comes with conditions – requirements for
  - People trained
  - Businesses supported
  - New start-ups supported
  - New products developed
  - New employment

KEY MESSAGES

- Investment in people and facilities
- Supports students, staff, industry and region
- New relationships with industry
- New ongoing collaborations
- Students have performed to a very high level
- Real innovations
- Ecosystem

APPENDIX – USEFUL WEBSITES

- UKRI - https://www.ukri.org/ - this is the organisation overseeing all research and innovation in the UK

- Specific research councils - https://www.ukri.org/councils/ - includes the bodies funding academic research

- EPSRC - https://www.ukri.org/councils/epsrc/ - funds engineering and physical sciences research

- InnovateUK - https://www.ukri.org/councils/innovate-uk/ - focused on funding business innovation

- KTP - https://www.ktp-uk.org/ - knowledge transfer partnerships between academia and industry