

HEALTH TECH

WE ARE **PIONEERS.**

LIVERPOOL CITY REGION – MAKING INCREDIBLE HAPPEN

Liverpool City Region's global leadership in health & life sciences is driving innovation in specialist areas of MedTech, Immersive Technologies, Children's Health; Precision Medicine; Big Data, Sensors, Internet of Things; Infection and Veterinary Science.

At the very heart of our City Region ethos is collaboration. As a City Region we connect the greatest minds in health technology innovation, from our digital experts in the Baltic Triangle to our research power-house in the Knowledge Quarter and our HealthTech cluster at Sci-Tech Daresbury working to help tackle local, national and global healthcare challenges.

We have one of the largest Freeports in the UK built to welcome the world, more hungry start-ups than almost anywhere else (second highest business birth rate in UK), and the brightest minds solving some of the planet's most urgent social, healthcare and environmental challenges.

From experts in health economics, regulatory, IP issues and contract manufacturing, to those who can help accelerate speed to market and shape investment pitches, we nurture our businesses to help them connect and grow within our robust ecosystem, which includes a cluster of nine NHS trusts.

Liverpool City Region has one of the highest proportion of specialist hospitals and digital exemplars of any city region outside of London, these are:

- Liverpool Hospitals University Foundation Trust
- Alder Hey Children's NHS Foundation Trust
- The Walton Centre NHS Foundation Trust
- Liverpool Heart and Chest Hospital NHS Foundation Trust
- Clatterbridge Cancer Centre NHS Foundation Trust
- Rutherford Cancer Centre
- Mersey Care NHS Foundation Trust
- Liverpool Women's NHS Foundation Trust
- Wirral University Teaching Hospital NHS Foundation Trust
- Southport & Ormskirk Hospital NHS Trust
- St Helens & Knowsley Teaching Hospitals NHS Trust

By utilising expertise from the local Academic Health Science Network (AHSN) – The Innovation Agency, Liverpool Health Partners and clinical research networks, innovators can start their path to accessing the NHS market and unlock routes to undertaking clinical trials.



CASE STUDY – E-HEALTH CLUSTER & 5G TEST BED PROJECT

The Liverpool 5G Create: Connecting Health and Social Care project is developing a private, independent 5G network to support health, social care, and education services in and around Kensington, Liverpool.

The Liverpool team won a further £4.3m to continue the project, from the Department for Digital, Culture, Media & Sport 5G Create competition (5G Testbed and Trials Programme).

The funding enables Liverpool 5G to increase and improve the 5G ‘network of networks’ they’ve built in the community, upgrading existing mmWave nodes, integrating small cell technology.

A new range of 5G-supported use cases are being trialled including a medical grade device to monitor health conditions remotely, an app that teaches anxiety reduction techniques to children, a remote GP triaging service, wound care and management and sensor technology.

The project will run until March 2022 and will develop a blueprint for the use of private 5G networks in delivering public services.

Ann Williams, Liverpool City Council said: “The recent response to COVID-19 has demonstrated the need for increased use of remote health and social care services. Through this project we will ensure that services are available to those in need, removing the barriers caused by lack of affordable connectivity.”

The consortium is led by the University of Liverpool with partners Liverpool City Council, Blu Wireless Technology Ltd, Broadway Partners Ltd, Liverpool John Moores University, CGA Simulation Ltd, Docobo Ltd, NHS Liverpool Clinical Commissioning Group, MerseyCare NHS Foundation Trust, and Telet Research. The project will be managed and supported by the eHealth Cluster Ltd with further services supplied by Telet Research (NI) Ltd, AIMES Management Services Ltd and Real Wireless Ltd.



CASE STUDY – NEEDLESMART

NeedleSmart is market leading, patented needle destruction technology engineered in the UK. The NeedleSmart PRO device takes a hypodermic needle at the point of use, heats it to over 1,300 degrees Celsius and compresses it into a ball. It takes just a fraction of a second to convert a sharp needle into a sterile sphere of metal. The process can contribute to the reduction of needlestick injuries and their consequential costs as well as having the potential to reduce the cost and increase efficiency of used needle disposal.

NeedleSmart's DVS (Digital Vaccination System) was created to support mass vaccination programmes, digitalising the vaccination process with every detail being automatically recorded in the cloud. Mass vaccination programmes demand a scale, speed and compliance level that challenges current vaccination protocols, therefore DVS is made up of 4 elements that combine to produce a seamless, secure system for digitalising vaccination data. These elements are the NeedleSmart App, NeedleSmart Unit, NeedleSmart Scanner and cloud-based database.

DVS delivers a single solution that can coordinate every individual vaccination initiative into a single, coherent vaccination programme. The system is designed to halve appointment time (allowing twice as many vaccinations per session), automatically record all relevant vaccination data in a secure database (delivering 100% accurate and accessible records) and significantly reduce risk of Needle Stick Injury during mass vaccination programmes (protecting Health Care Professionals under pressure).

NeedleSmart's innovative technology offers the opportunity to move hypodermic needles, syringes and consumables associated with the injection/vaccination process, away from conventional sharps bins to a solution that allows the possibility of recycling to become a possibility. Introduction of digital vaccination system data capture allows real time supply usage information, re-supply and direct cross-reference for needle usage and associated consumables. NeedleSmart are committed and focussed to become a key enabling technology in the continuous battle to reduce their carbon footprint.



CASE STUDY – SKY MEDICAL TECHNOLOGY LTD

Sky Medical Technology Ltd is a bio-medical device company based in Sci-Tech Daresbury. The company has developed a ground breaking bioelectronics medical platform, OnPulse™ embedded in their industry-leading technology – the geko™ device.

The geko™ has a deep understanding of neuromuscular electrostimulation (NMES) and gently stimulates the common peroneal nerve contracting the calf and foot muscle pumps, resulting in increased blood flow to treat and prevent a wide range of acute and chronic medical conditions.

The company are creating therapeutic interventions for a number of vascular conditions. By stimulating the peroneal nerve using neuromodulation, they believe they can create an effect within the body that will improve function and quality of life for patients.

Through local partnerships Sky Medical Technology Ltd work with clinicians to overcome the challenges that are recognised worldwide. They identify clinical needs and translate these in to cutting edge products and evidence-based therapies to simplify treatments for clinicians and approve patient outcomes.

The company develop bioelectronic device to prevent and treat a wide range of acute and chronic circulatory conditions (e.g. to reduce venous thromboembolism (VTE), prevention and reduction of edema after surgery, to heal venous and arterial leg ulcers as well as chronic wounds, and speed up recovery time for high performance athletes.





TALENT

Liverpool City Region's 114,000-strong Health & Life Science sector workforce and 70,000 students (5,000 of whom are on digital & creative courses) from our four City Region universities add to our growing base of engineering, design and digital talent - cementing the City Region as a leading location for Health and Life Sciences.

Maintaining world-leading standards and research requires a flow of highly talented and experienced people and the reputation of the institutions, businesses and organisations within Liverpool City Region, has allowed them to attract and retain an excellent talent pool and internationally respected researchers.

The University of Liverpool is a world-class ranked university and in the top 1% globally – it provides one of the largest concentrations of Health & Life Science expertise in the UK. At Liverpool John Moores University, the Faculty of Health and Community has 5,000 students with 97% finding employment within 6 months of graduating. Our globally renowned institution Liverpool School of Tropical Medicine attracts more than 600 students from PhD research and masters programmes, and Liverpool Life Sciences UTC is the first school in the UK specialising in Life Science for 14-19 year olds, working closely with local employers to create the next generation of scientists, healthcare practitioners, engineers and entrepreneurs.



WORLD-CLASS R&D FACILITIES

SCI-TECH DARESBUY

A national centre for data analytics and AI technologies, the Hartree Centre, is a partnership with IBM research and the Science and Technology Facilities Council (STFC). It provides competitive advantage to health and life science companies. The Centre, managed by STFC, is part of a growing cluster of international, national and local firms and forms part of a wider offering providing collaborations with universities, private sector companies and public bodies.

Ground-breaking technology is at the forefront of our region - we thrive on a challenge and the desire to transform ideas in to reality. Our strengths and support to deliver these future innovations include:

Advanced Materials: Innovators can benefit from key facilities to better understand and formulate new materials from SuperSTEM, one of the most resolving electron microscopes in the world, to the Materials Innovation Factory - a collaboration between Unilever and the University of Liverpool, which contains the highest-concentration of robotics focused on materials science in the world.

Sensors and diagnostics: Sensor City is a hub that brings the universities expertise together with innovators to co create and test sensor solutions.

Rapid prototyping: Immersive technology and 3D printing facilities based across the region, including the Campus Technology Hub at Sci-Tech Daresbury, the Virtual Engineering Centre and a growing cluster of companies enables innovators to rapidly design and create prototypes.

Artificial Intelligence and Data Analytics: From the national AI and High-performance computing hub at the Hartree Centre co-located with IBM Research, to core university capabilities, we work with innovators to develop and deploy solutions.

CASE STUDY – INOVUS MEDICAL

Inovus Medical, founded in 2012 and located in Liverpool City Region is a multi award-winning, designer and manufacturer of medical simulation products. The company strive to improve access to high quality, affordable and versatile healthcare training equipment across the globe.

The company recently announced the adoption of its LapAR™ and bozzini® training systems, developed and manufactured from its premises in St Helens by the world famous ICENI centre, a global pioneer of surgical training, research and development.

The ICENI Centre's first-class facilities provides training to some of the UK's aspiring NHS employees of the future, today's undergraduates and clinicians on a career pathway from FY1 through to senior consultants.

With the introduction of the very latest in high fidelity laparoscopic and hysteroscopy simulators manufactured and designed by Inovus the centre will now offer trainees the very latest in, hands on, laparoscopic and hysteroscopic training.

The LapAR™ system opens the ICENI centre up to a brand new world of high fidelity laparoscopic simulation, allowing them to connect with and tutor their trainees like never before. The trainees will also benefit from the industry leading AR technology, which will immerse them into real to life simulation and allow them to practise full surgical procedures all while being tracked and recorded by the LapAR™ technology.

The distance learning capabilities of the LapAR™ cloud-based software platform means the centre will now be equipped to offer trainees the capability of being able to train from home in a safe environment during the current COVID 19 pandemic.



CASE STUDY – ORCHA

From a single idea to a global organisation, **ORCHA** is on a mission to unlock the power of Digital Health. Founded in 2015 and head quartered at Sci-Tech Daresbury, ORCHA is now operating in 11 countries, with plans in the pipeline to operate in many more, and is operating with in-country partners, governments, and health and technology innovators across the world to drive the adoption of great health and care apps so that people everywhere can, through technology, look after their health and wellbeing. Led by CEO and co-founder Liz Ashall-Payne, ORCHA has been successfully scaling its business and innovation model to drive healthcare transformation across the UK and internationally.

As a key member of the HealthTec Cluster Community, they have been supporting events, sharing their founders story as part of key cluster activities like the 'Get Ahead in HealthTec' programme that offers a bespoke development programme for Health and Life Science businesses, as well as working with cluster stakeholders like UKRI-STFC.

They have worked with UKRI-STFC's national laboratory, the Hartree Centre, where they explored data-driven approaches to speed up the review process and enable more sustainable business growth through developing techniques and proof-of-concept tools "After initially accessing support from the Hartree Centre through LCR 4.0, we're now extending our partnership around AI and data analytics, which will continue to help us grow and futureproof our product and business"

Liz Ashall-Payne CEO and Co-founder of ORCHA said. "As one of the many health and digital companies based at Sci-Tech Daresbury, ORCHA forms part of an eclectic health innovation ecosystem. It is fantastic to be surrounded by so many great companies on site to work collaboratively with, not to mention the links across the country and internationally".



THRIVING ECO-SYSTEM OF SUPPORT & COLLABORATION



KNOWLEDGE QUARTER, LIVERPOOL

Expanding in Liverpool City Region will place you at the heart of a world-class ecosystem of expertise, ground-breaking R&D, clinical resources and public-private collaboration in Health & Life Sciences.

Sustained investment from global pharmaceutical brands, world-leading research institutions and domestic and international funders has created an environment rich with talent and infrastructure to fuel your growth.

At the heart of our life sciences cluster is the Knowledge Quarter Liverpool, which is home to the University of Liverpool, Liverpool John Moores University, Liverpool School of Tropical Medicine, the Liverpool University Hospitals NHS Trust, the new state of the art Clatterbridge Cancer Centre and the new Rutherford Cancer Centre.

It is fast becoming one of the world's leading innovation districts and upon completion of its new hospitals, will be one of the largest academic and clinical campuses in the UK. The Royal College of Physicians have moved into a new purpose-built office based in Knowledge Quarter Liverpool – RCP at The Spine, in partnership with Liverpool City Council. The opportunities this new presence offers the RCP are unprecedented and will allow the RCP to be a beacon of academic excellence and medical leadership, to lead the improvement of patient care and public health, to be a world-class learning and assessment centre and to drive quality improvement and implementation science.

Sci-Tech Daresbury is a national science and innovation campus and home to the Healthtech and Digital clusters bringing together 150 life sciences, materials, engineering and digital companies with the national Government-backed Daresbury Laboratory and UK-wide university partners. The campus is widely recognised for its expertise in materials characterisation, detectors and data analytics and AI, but also for its programmes to deliver business growth, innovation and collaboration. The HealthTec Cluster, led by the Science and Technology Facilities Council (STFC) and the North West Coast Academic Health Science Network (AHSN) – The Innovation Agency and hosted at Sci-Tech Daresbury, aims to bring together these hubs of expertise from across industry, academia, public sector, investor networks and entrepreneurs to stimulate innovation and tackle global challenges.

Liverpool City Region is home to four NHS Global Digital Exemplars which are pioneering the use of digital technologies to improve patient care across acute and mental health services at: Alder Hey Children's Hospital NHS Trust; Liverpool University Hospitals NHS Foundation Trust; Wirral University Teaching Hospital NHS Foundation Trust; Mersey Care NHS Foundation Trust. Accelerating uptake of digital health solutions coupled with our platform strengths in software, engineering, data analytics and design innovators can draw on these to tackle problem driven innovation at scale.

CASE STUDY – ALDER HEY INNOVATION CENTRE

Alder Hey Children's Hospital enjoys an international reputation in many disciplines and has over the last few years become recognised as a leader in healthcare innovation. With the new hospital's state of the art digital infrastructure, clinical entrepreneurs, dedicated commercial innovation team and active engagement with industry, academia and the local community they have created a true exemplar of the power of public and private collaboration and partnerships for accelerating innovation into healthcare.

This unique combination and ecosystem of healthcare innovators, entrepreneurs, industry and academic experts and the highly skilled team of open innovation experts, represents a powerful engine for discovery and technological driven change. This combined with the children and young people that daily inspire us all, makes for a genuinely unique user centred and magical environment in which to innovate.

Alder Hey's wide array of partnerships and collaborations with world-leading academic departments and healthcare organisation's and the wider clinical innovation eco-system, locally, nationally and internationally, has already fostered some hugely exciting and ground breaking projects using both established and emerging technologies in Digital and Medtech Innovation including; Artificial Intelligence (AI), Advanced Sensors, Virtual/Augmented reality etc.

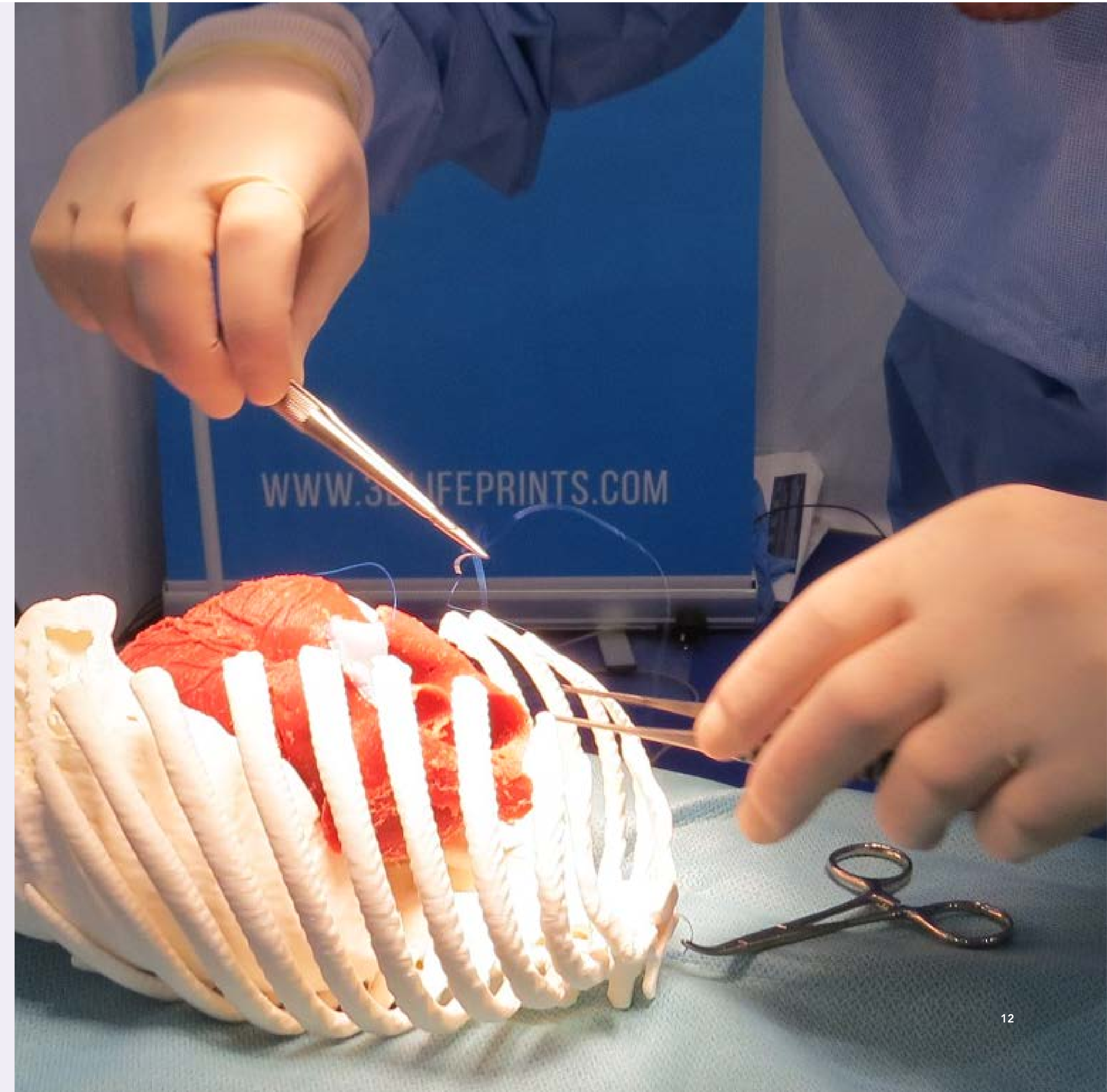


CASE STUDY – 3D LIFE PRINTS

3D Life Prints is a leading UK medical 3D printing company who setup up a first-of-its-kind embedded 3D printing hub within the Innovation department at Alder Hey Children's Hospital - one of the first children's hospitals in the UK to use a patient-specific 3D printed anatomical model as a surgical reference during an operation.

Alder Hey's innovative orthopaedic, cardiac, cranio-maxillofacial, and general surgery teams work closely with 3D LifePrints by employing their 3D printing technology to plan complex operations, improve communication between doctors and patients, and facilitate medical learning.

The company also provides its range of patient-specific medical devices, including surgical guides and CMF implant designs, to the wider medical sector including the NHS, private hospitals, universities, and medical training centres.





ROYAL ALBERT DOCK & LIVERPOOL WATERFRONT

QUALITY OF LIFE

Reap the economic and lifestyle benefits of an exceptional place to live and work, with a cost competitive edge over other UK Life Science clusters.

Outstanding cultural assets, world-class sport, a legendary food and drink scene and easy access to green space make the Liverpool City Region a place where people want to live and work. Ideal for attracting and retaining the brightest and best talent.

You will give your business a competitive edge with lower property and labour costs compared to other UK life sciences clusters, and access to soft landing programmes, support for innovation and thriving hubs of science and technology.

BE A PART OF OUR FUTURE

Our vision is to create one of the most globally competitive, environmentally responsible, socially inclusive economies in the UK and beyond. So, if you're powered by an unstoppable determination to do the right thing, you'll feel right at home. We have a world of talent here already, but the space and appetite for much more.

We're here for good, why not come and join us.

For further information and support email: investliverpool@liverpool.gov.uk.
We look forward to working on your plans with you.

investliverpool.com

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