An overview of the UK's MedTech sector opportunity

Devices, Diagnostics and Digital Technologies

Dr Neil Ebenezer MedTech Specialist

10 March 2021

Department for International Trade

INNOVATION IS GREAT

BRITAIN & NORTHERN IRELAND

Contents

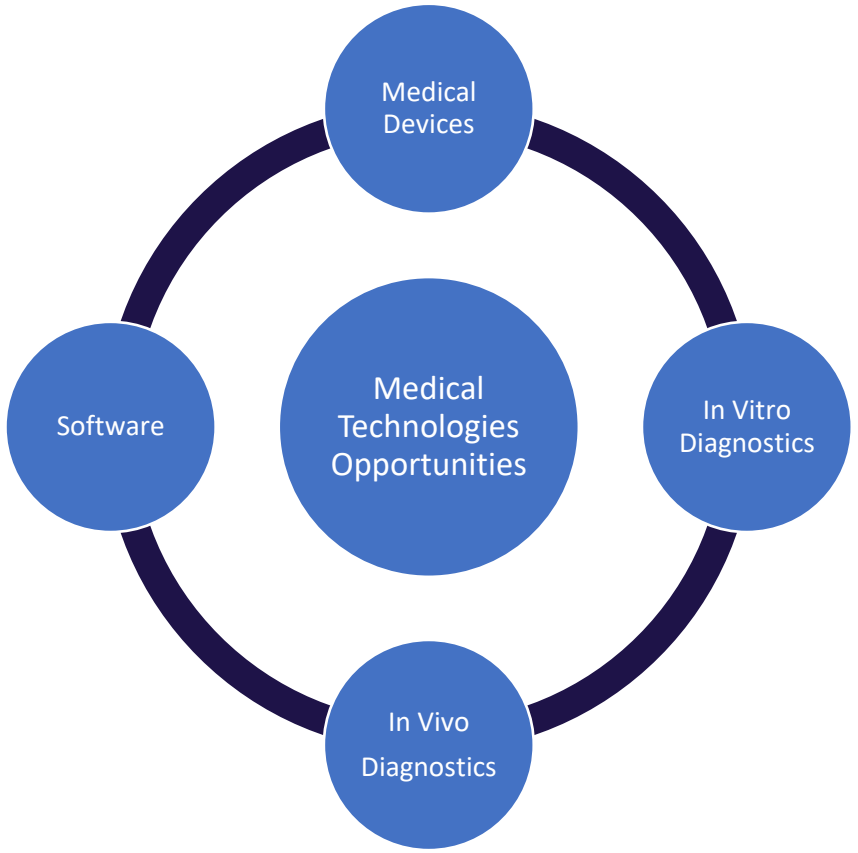
UK Medical Technologies Sector

A **medical device** is any device designed, manufactured and used to diagnose, monitor and treat diseases and conditions to save lives or improve the health of individuals, and which does not achieve its primary intended action in or on the human body by pharmacological, immunological or metabolic means,

In vivo diagnostics – 'in vivo' ('in living thing') involves observing and testing tissue and function in a living organism using imaging and scanning techniques. This includes x-rays, magnetic resonance, computed tomography, electrocardiography, etc.

In vitro diagnostics (IVDs) – 'in vitro' ('in glass') involves the removal samples of tissue such as blood, saliva, biopsy samples from a living organism for examination in the laboratory setting or at the point-of-care setting

Medical Software – Software intended for one or more medical purposes that can be used on its own or in conjunction with medical devices



Sources: UK Gov, "Life Sciences Sector Deal 2', 2018; Office for Life Sciences, 'Bioscience and Health Technology Sector 2018'; IPPR, 'The Science Based Economy' 2020; MedTech Europe, 'The European Medical Technology Industry.'

Why choose the UK?

Forward-thinking with a track record of scientific breakthroughs

A partnership working approach between the sector and government is applying billions of pounds of funding to deliver the next generation of life-changing treatments and technologies

National Health Service (NHS), serving a population of 66+ million people, seeks the best innovations and solutions from around the world

A low-cost competitive market

The UK is the most attractive place in Europe for regional Headquarters, R&D, and Manufacturing and offers the lowest operating costs.
With connected clusters across the country, the UK offers a range of affordable locations alongside the lowest corporation tax rate in the G20 (19%).

Labour costs in the UK are also highly competitive, and for unit cost beat out most major European destinations as well as the leading US clusters. For example, it is half as expensive to hire your R&D talent in Oxford versus Boston or San Francisco.

Tax Relief

To stay competitive, the UK offers different tax relief packages:

- The Patent Box tax relief allows companies to apply a lower rate of 10% of corporate tax to profits earned from patented invention in the UK.
- The Research and Development tax relief supports companies that work on innovative projects in science and technology.
- The Research and Development expenditure credit to get tax relief on R&D costs.

UK Medical Technologies Sector

Key Facts & Figures

4,060
businesses

131,800
employees

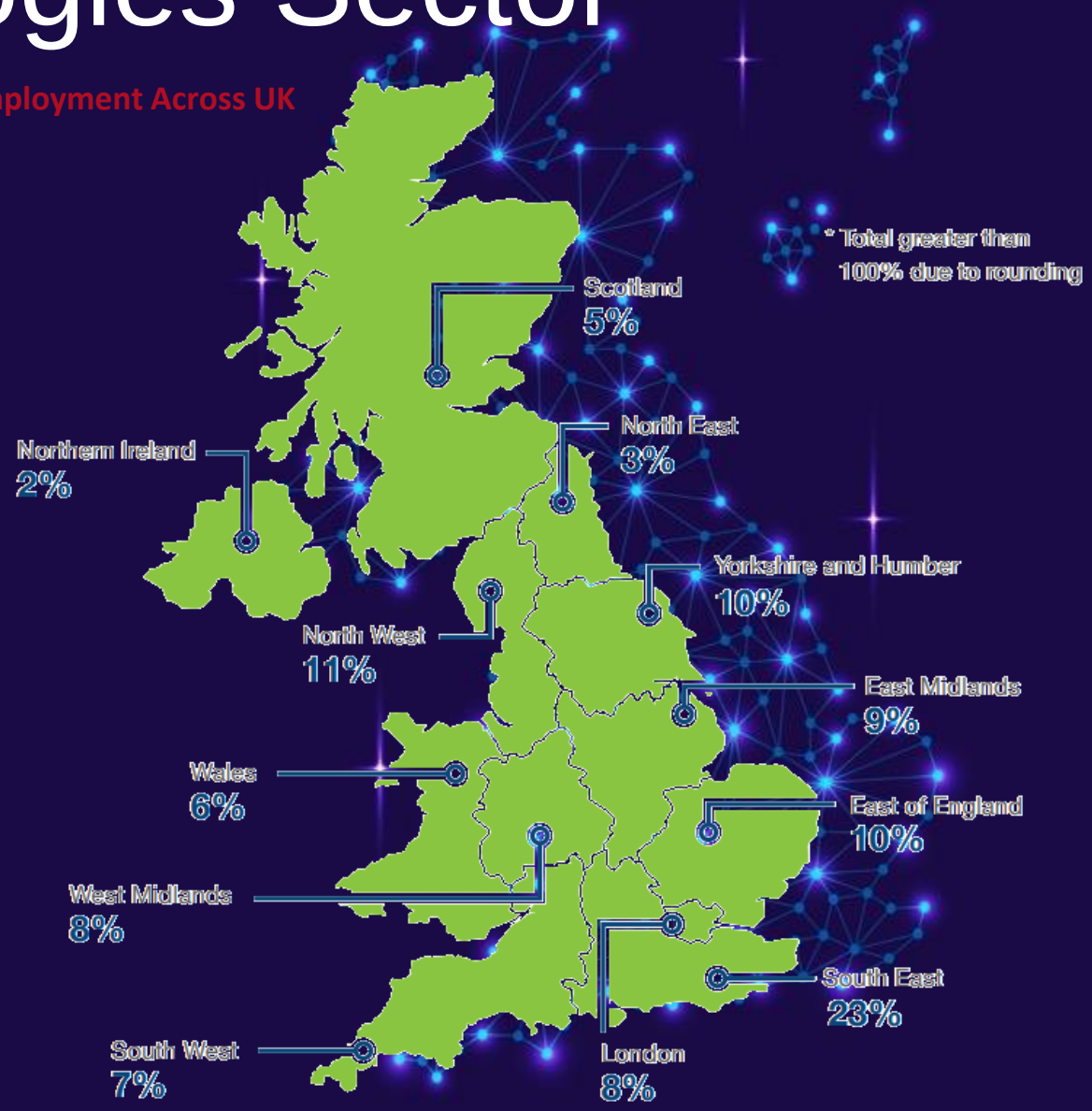
£26.5bn
annual turnover

11% Employment growth since 2010.

Turnover growth since 2010: **2.5%**

51% Life science industry employment.

Distribution of Employment Across UK



Key Trends Affecting the Sector

Subsector Size across Europe

UK Diagnostics sector's projected revenue for 2020 is **£9.8 billion.**

In Vitro Diagnostics is both the largest and one of the fastest growing segments within MedTech.

Cardiology is the **2nd largest segment.**

Diagnostic imaging (in vivo diagnostics) is the **3rd largest segment** of MedTech.

Major Trends Impacting the Industry

An Ageing Society

By 2050, one in six people in the world will be over age 65 (16%), up from one in 11 in 2019 (9%), and the number of persons aged 80 years or over is projected to triple, from 143 million in 2019 to 426 million.

Rise in Chronic Conditions

The World Health Organisation has warned against the rise in chronic conditions as sedentary lifestyles spread from the developed world to emerging economies. It expects that they will be **57% of the global burden of disease in 2020**, compared to 46% in 2001.

Growing Concern over Future Epidemics

Rising health concerns over recent pandemics, such as Ebola, H1N1 and particularly COVID-19, is driving greater demand for health services across the globe.

Technological Advancements

Advancements in medical technology boost people's health and wellbeing and the economy, leading to investment opportunities, job growth and greater demand.

Growing Demand in Emerging Markets

Emerging economies, especially those in the Asia Pacific, are increasingly adopting technological advancements as their middle class grows. The growing prevalence of chronic conditions in their populations is also driving demand.

The UK offer in MedTech

The UK is a prime location to identify MedTech innovation and to research, develop and evaluate products and services in the National Health Service (NHS), one of the world's best healthcare systems.

The UK serves as a test bed for global market development, with well-established, pragmatic regulatory and guidance agencies.

1. **Dedicated infrastructure** for MedTech across the entire product innovation pathway supports UK and global evidence development
2. **National agencies working together** to improve the national innovation pipeline and adoption process to streamline market entry
3. **Significant commercial sector within connected clusters** across the UK offering wide range of affordable location options to suit and easy access to local ecosystems
4. Government commitment to Medtech innovation underpinned by **sustained partnership working with industry**

MedTech and In-vitro diagnostics Co-operatives

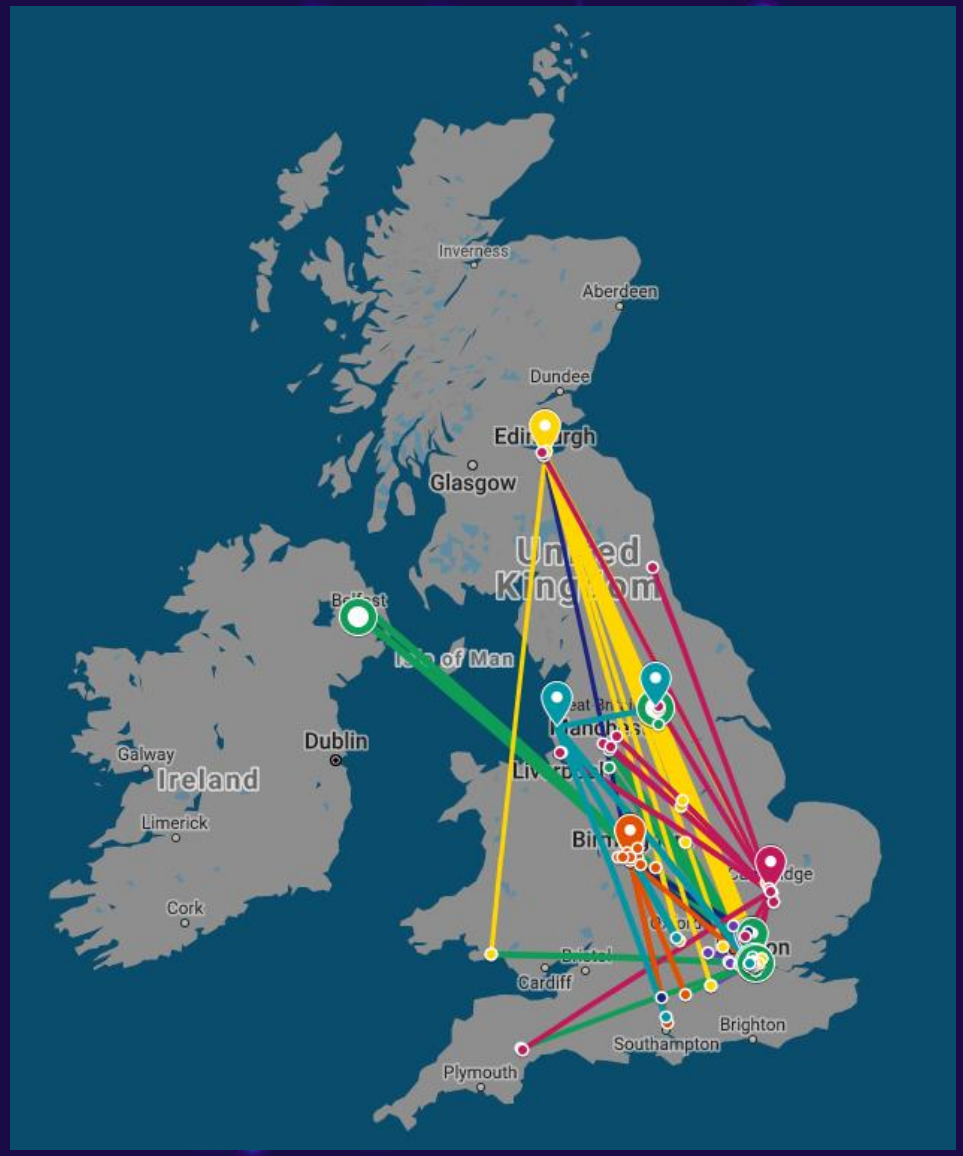
The NIHR funds eleven MICs based in leading NHS organisations across the UK. They act as centres of expertise, bringing together patients, clinicians, researchers, commissioners and industry, to catalyse the development, evaluation, and adoption of medical technology into the NHS.

Over £14 million has been awarded to the NIHR's **11 leading MedTech and In Vitro Diagnostics Co-operatives.**

Centres of Excellence

Academic Health Sciences Networks (AHSNs)
AHSNs facilitate access into the NHS by bringing together health services, academic and industry partners in order to identify and spread health innovation at pace and scale for patient benefit. There are 15 AHSNs spread across England, and each works across a distinct geography serving a different population in each region.

HDR UK Health Data Research Hubs
The seven Health Data Research Hubs are centres of excellence that focus on curated, disease-focused datasets, clinical trials and real world evidence. They involve patients and the public in shaping the research activities and improve secure and responsible access to data. They are located across the UK, creating a network of expertise, tools, knowledge and ways of working to further facilitate innovation.



Accelerators & Incubators

35+

Over 35 accelerators and incubators in the UK help high-growth potential companies achieve success through mentorship, office space, funding and connections to expertise. To discover more, click here.

Major Accelerators & Incubators

- MedTech SuperConnector (MTSC), funded by Research England, is an Imperial College-led initiative from a consortium of eight dynamic London universities with interest in nurturing talent, ideas, and entrepreneurship. Imperial is also home to the Imperial College White City Incubator.
- NHS Innovation Accelerator (NIA) is an award-winning national accelerator supporting dedicated individuals to scale their high impact, evidence-based innovations across the NHS and wider healthcare system. It was launched in July 2015 to support delivery of the Five Year Forward View and was more recently highlighted in the NHS Long Term Plan.
- Manchester Science Partnerships (MSP) are home to a unique community of scientists, innovators, investors and entrepreneurs. By putting collaboration first and providing access to specialist finance, talent, markets, networks and investors, MSP is able to support the acceleration of business growth through innovation. Incubators in the Manchester region include Alderley Park, Citylabs and Manchester Science Park.
- Milton Park is a dynamic and vibrant science and technology park in Oxfordshire featuring cutting-edge science, technology and innovation businesses. Around 250 companies and 9,000 people belong to the community, working across the Life Sciences, Technology, Pharmaceuticals and Bio-tech sectors, amongst others.

- Accelerate Cambridge
- The BioHub Birmingham
- Cardiff Medicentre
- London BioScience Innovation Centre (LBIC)
- Institute of Life Science Incubator (Swansea, Wales
- Newcastle Bio-Incubator
- Centre for Nanohealth Incubator (Swansea,
- MediCity Nottingham
- Stevenage BioCatalyst
- Oxford BioEscalator
- Discovery Park (Sandwich, Kent)

Opportunities

Opportunities exist for investors and innovators to find solutions to health problems.

Medical Devices

Types of Devices:

Medical devices cover a vast range of products and equipment; with over 10,000 types of devices, any small devices in hospital to large medical equipment counts. They include orthopaedics and prosthetics, implantable devices, wound management devices, assistive technology, cardiovascular devices, endoscopic devices, artificial joints, ventilators, stents, etc.

Portable Heart Scanners

With 1.3 million patients admitted to UK emergency departments from chest pain, a sizable burden is placed on hospitals. An effort to alleviate that burden and to help patients is led by researchers at the University of Leeds. Corsens portable heart scanner would allow doctors to quickly assess the seriousness of chest pain by measuring the heart's electromagnetic signals. The spin-out company Creavo Medical Technologies has already raised £20 million on its path to commercialisation.

3D Imaging Fuelling Innovation

Synopsys has released Synopsys Simpleware ScanIP Medical used for medical imaging analysis. Certified as a medical device, it uses 3D imaging based on medical scan data from MRIs and CT scans to create medical devices for pre-clinical workflows, such as implant design and patient-specific planning.

UK turnover for cardiovascular and vascular devices in 2017- £626.3m

IVDs for Diagnostics and Prevention

The UK IVD sector was worth **£820 million** in 2017.

~70% of clinical decisions are based on IVD tests.

900 million tests are carried out each year in the UK.

In Vitro Diagnostics

One key method of diagnostic testing involves the removal of tissue samples such as blood, saliva, biopsy samples from a living organism for examination in the laboratory setting. This diagnostic process is called in vitro diagnostics (IVDs). Effectively used, IVDs help to reduce hospital stays, support patients to look after their own health and release resources for use elsewhere in the NHS, resulting in a healthier population and stronger economic growth.

More recently, in vitro diagnostics are able to be carried out at home (for example through self-monitoring of blood glucose levels for diabetes) or at Point-of-Care (POC), offering rapid results and a potentially immediate impact on patient care.

Diagnostic Imaging

7.9% average profit margin for the Electromedical & Imaging Equipment Manufacturing industry in the UK.

The UK Medical Imaging/Ultrasound Equipment and Materials turnover was **£681.4 million** in 2017.

42.3 million imaging tests were reported in England between May 2019 and April 2020.

Diagnostic Imaging

Diagnostic Imaging, also known as in vivo diagnostics, involves observing and testing tissue and function in a living organism by forming images to observe the inside of a body. While there are many types of imaging and scanning, the best-known techniques include radiography (x-rays), ultrasound, computed tomography (CT), and magnet resonance imaging (MRI). Today, these techniques are critical to practically every medical diagnosis, providing myriad opportunities for new innovations.

Leading the way on precision medicine

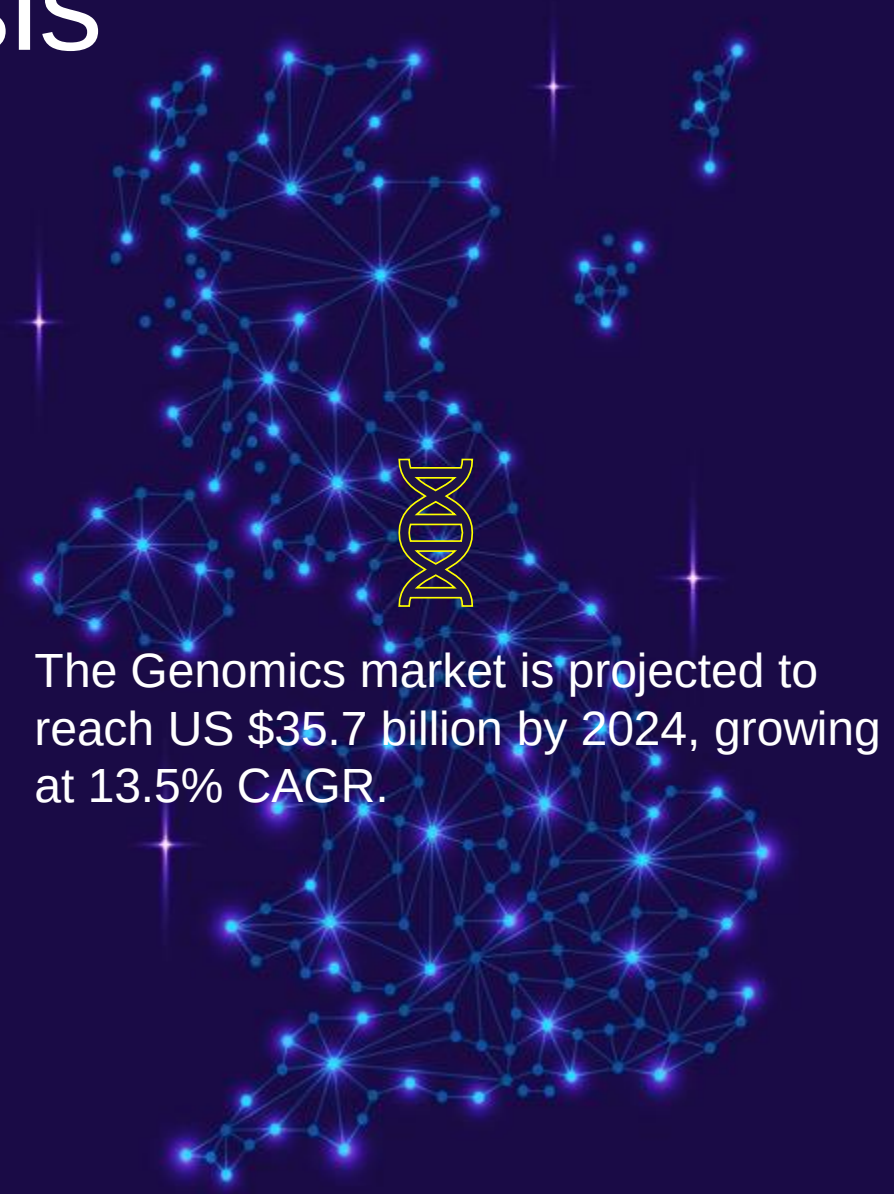
Recent medical advancements are moving the sector towards greater usage of diagnostic imaging for screening, therapy and intervention as well as precision medicine. Imaging equipment is then used in conjunction with other medical diagnostics, such as genomics, informatics, data analytics and artificial intelligence, to form a more personalised treatment.

Genomics to aid Diagnosis

Genomics is a rapidly accelerating and dynamic sector that offers tremendous opportunity for companies looking to invest in a variety of rapidly growing start-ups.

The UK has a history of cutting-edge research in the genomics field with its key involvement in the international Human Genome Project. Today, the UK continues its leadership role with the trailblazing Genomics England project, which was announced in 2014 alongside a more than £300 million investment package.

The UK is consequently set to become the world leader in ground-breaking genetic research into cancer and rare diseases, transforming how diseases are diagnosed and treated. An opportunity in the genomics field is personalised medicine, or precision medicine. Understanding individuals' genomes can be revolutionary in informing medical decisions, especially when combined with data and informatics and wearable technology.



The Genomics market is projected to reach US $35.7 billion by 2024, growing at 13.5% CAGR.

Software to in MedTech Solutions

- **Medical Software in…**
- Medical devices have incorporated software to supplement diagnostics and treatment for many years, but the tech boom of the last two decades has meant a proliferation of technology platforms like computers and smartphones as well as increasing access to the internet and the cloud.
- Referred to as medical device software, or just medical software, it can be incorporated into a medical device (i.e. embedded software), drive a device or influence the use of a device, or work in combination with one or more devices as an accessory. It can also be a stand-alone product with a medical purpose, often called Software as a Medical Device (SaMD). It is generally intended to influence the actual treatment, facilitate a diagnosis or prognosis, or provide active implantable functionality.

In Vitro Diagnostics

IVD software comes in many forms: in hand-held personal IVDs, point-of-care or lab-based analysers, software upgrades, etc. A glucose meter is a widely used IVD software device that is able to test blood glucose levels and display it on a screen; this technology is a vital component in successfully managing diabetes.

Medical Devices

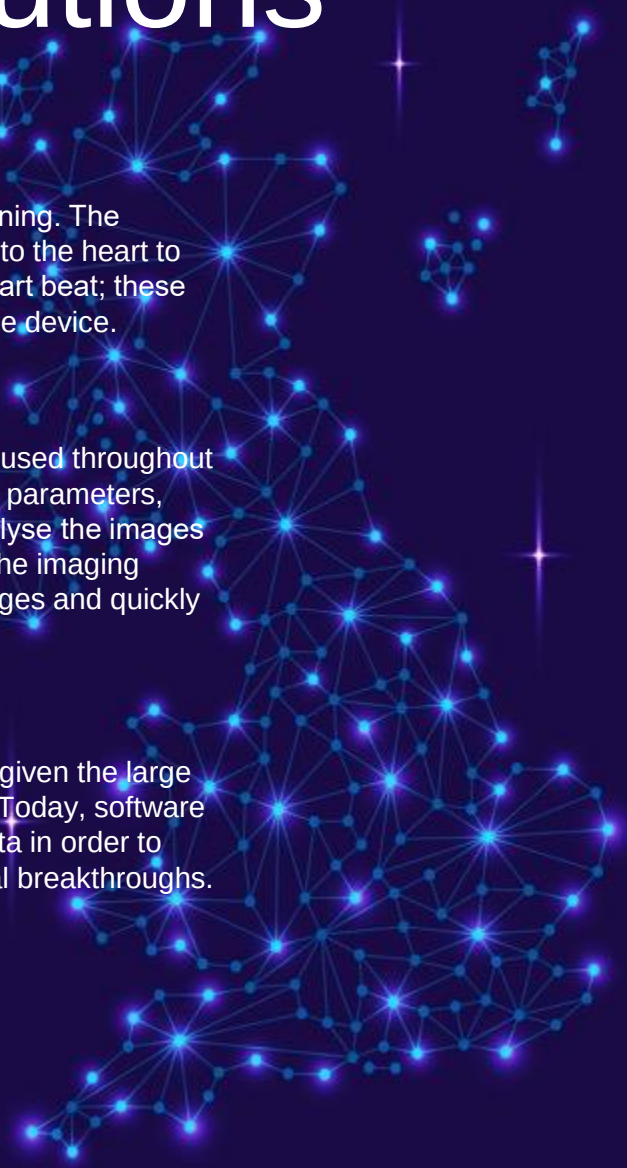
Software can be critical to a device's proper functioning. The pacemaker, for example, sends electrical impulses to the heart to imitate the sinus node and regulate the patient's heart beat; these impulses are managed by software embedded in the device.

Diagnostic Imaging

Software is also integral to diagnostic imaging. It is used throughout the MRI process: software helps select the imaging parameters, turn the machine's magnets, process and even analyse the images once taken. Digital radiography has also added to the imaging landscape, utilising digital sensors that capture images and quickly convert them to digital data for review.

Genomics

The study of genomics necessitates bioinformatics given the large data sets inherent in large-scale DNA sequencing. Today, software allows researchers and scientists to analyse the data in order to improve health outcomes and discover new medical breakthroughs.



How we can help

On your investment journey will we connect you into a community of support. We are committed to helping you make the most of the opportunities to use the UK as your gateway to the world. We can:

- Help you benchmark the UK against other international locations
- Help you choose the right UK location for your business, coordinate your UK site search, and arrange and host visits to the UK to meet potential partners or see locations
- Provide access to subject matter experts in areas such as access to finance, tax, talent, and immigration to explore your top issues
- Connect your business with the UK's innovation capability and networks matching your interests
- Explore the opportunities for your technology, product or service in the NHS
- Connect you to expert UK trade associations and member organisations
- Offer aftercare to new inward investors and offer ongoing support and relationship management for established inward investors
- Explore the potential to export from the UK

Range of support for businesses to invest in the UK


Site Selection


Innovation

Partnership


Business Modelling


Publicity


Aftercare


Benchmarking


Policy


Exporting


Talent


Regulation


Clinical Trial


Tax


Manufacturing


Networking


Finance


Supply Chain

Contacts

Neil Ebenezer | MedTech Specialist | email: Neil.Ebenezer@trade.gov.uk

Linda Magee | Health Innovation (incl Diagnostics) and NHS Specialist | email: linda.magee@trade.gov.uk

Hassan Chaudhury | Digital Health Specialist | email: Hassan.Chaudhury@trade.gov.uk

Department for International Trade