IN COLLABORATION WITH

LORIEN

THE CHALLENGES AND OPPORTUNITIES TRANSFORMING THE MEDTECH SECTOR

AN SRG AND LORIEN GUIDE

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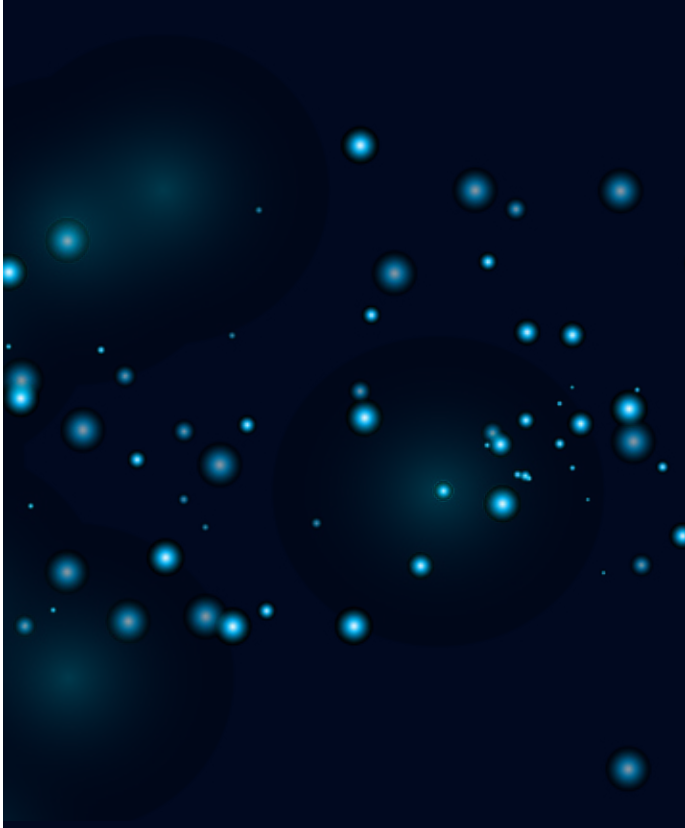
INTRODUCTION



The global information technology industry, like every other industry, was knocked off course in 2020, with postponements in tech strategy making a dent in projected revenue for the year. However, 2021 presented a brighter future. The industry is expected to achieve $5 trillion in revenue this year — representing a 4.2% growth and a monumental bounce back from the pandemic.

Focusing in on the UK's tech sector, recent data analysis by Tech Nation shows that tech business boomed in 2020 — with almost 20,000 new business births, the equivalent of one every half an hour, and a record-breaking year for VC investment. Looking to 2021, jobs have bounced back to pre-pandemic levels and there is a flurry of activity in the sector as more organisations put digital at the heart of their strategy.

Looking to 2021, jobs have bounced back to pre-pandemic levels and there is a flurry of activity in the sector as more organisations put digital at the heart of their strategy.

Despite the competition that this ultimately translates to for talent, it also highlights vast opportunities in the sector. Today, every business is a digital business, and the beauty of this rich, diverse technology ecosystem is that innovation is happening faster, with more far-reaching consequences.

In this whitepaper, we look at how the latest advancements in technology are finding ground in the healthcare industry — and the opportunities this presents for our future.

DATA, ANALYTICS & AI

COVID-19 showed us that when we work together, we can collect, analyse, and crunch data incredibly quickly to diagnose and treat conditions.

As the Internet of Things (IoT) grows in both sophistication and reach, with an ever-increasing amount of devices that can be connected (think wearables, smart sensors and smart devices), and as 5G accelerates connectivity speed and reduces latency time between these connections, the volume, variety and speed with which we process data is going to become exponential.

As we generate more data in real-time, we will rely on artificial intelligence and machine learning algorithms to join the dots. Machine learning can be used to detect patterns in both structured data (e.g. laboratory results, electronic recordings, demographics, IoT-generated data) and unstructured data, including using natural language processing (NLP) from medical journals and clinical notes to contextualise medical data.

The result is a system that not only analyses and interprets vast volumes of data quickly, but also a self-corrective system that by synthesizing millions of different data points can constantly update findings.

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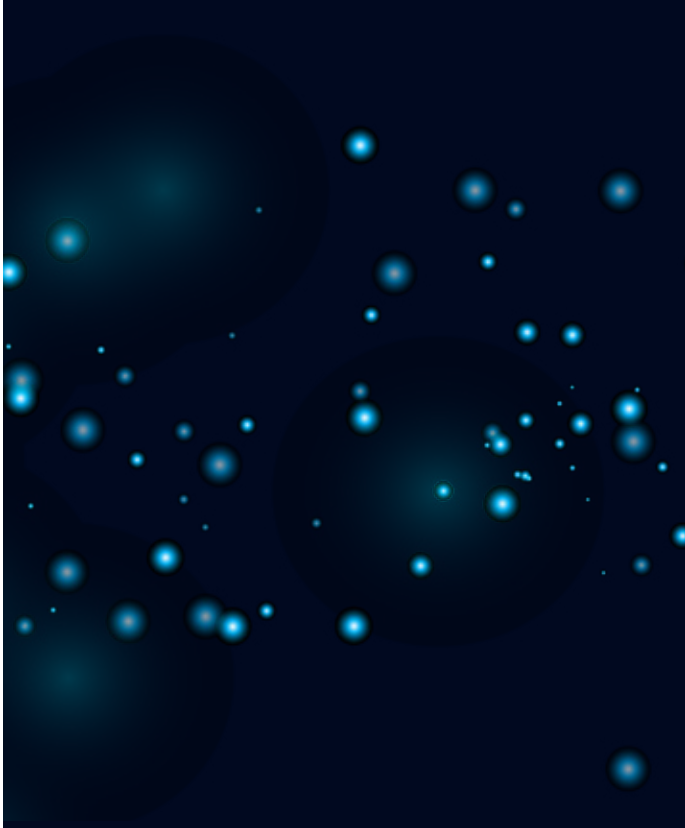

Learning how to leverage these huge datasets will transform the sector in many ways, including:

- Creating more customer-centred designs and giving people more power over their own healthcare — from diagnosis to prevention
- Speeding up preventative healthcare and focusing research and development
- Supporting clinical decision making to improve patient care and operational efficiency

The explosion of IoT-enabled medical devices and the drive towards integrated care systems (ICSs) will see users empowered to make their own decisions around healthcare. Accurate, real-time data and trusted advice will be pivotal to help customers take the leap from passive recipients of care to active participants, with options on everything from data sharing to treatment and preventative healthcare.

For example, individuals at risk of developing a condition due to data, family history and symptoms, may choose to opt into additional screening tests. This will result in a more personalised, more accountable approach to healthcare — and one that will pave the way to more customer-centric designs, particularly when it comes to Medtech.

But the potential for data extends beyond individual healthcare.

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DATA, ANALYTICS & AI

With huge and various data sets, as well as increasingly sophisticated artificial intelligence and machine learning systems, we can identify and analyse much broader trends across healthcare. We can use Big Data to identify causation, distribution, determinants, and patterns across a high volume of different and complementary data points to tell us more about current illnesses. In the world of epidemiology and preventative healthcare, this has the potential to change lives.

Lastly, data and analytics will become key for supporting operational decision making and ensuring a consistent approach to care. For example, data could be used to pinpoint bottlenecks in processes, identify stretches in resources, and differences in patient experience. AI also has huge potential in automation, which could reduce administrative workloads and improve the day-to-day running of facilities. In terms of time, money and quality of care, the impact of data could be revolutionary.

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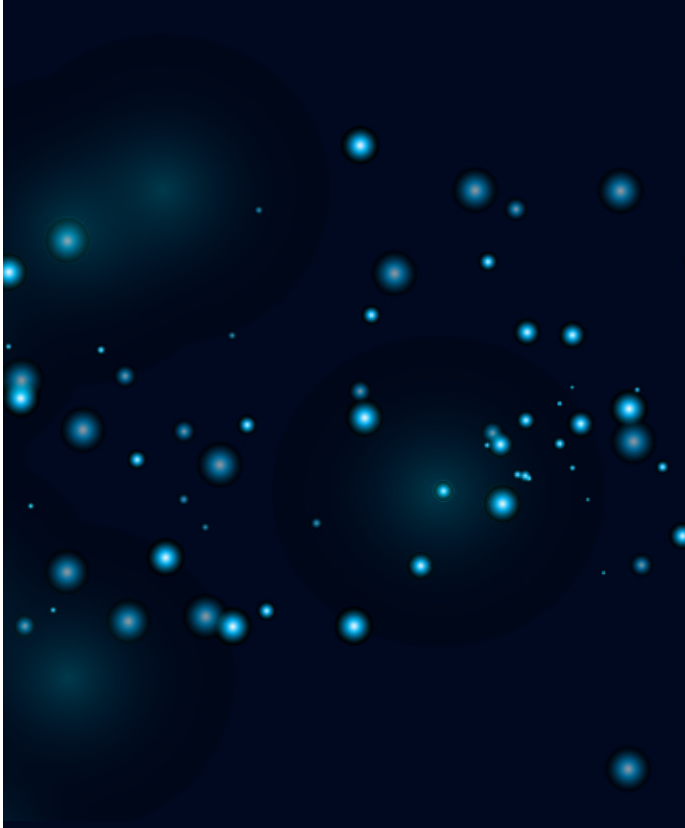
CLOUD & THE INTERNET OF MEDICAL THINGS (IoMT)



As our data gathering capabilities become more sophisticated, and the volume of data we collect becomes more intense, modern business is becoming information rich. But beyond our organisational and national boundaries, our ability to extract, share, analyse, and store that data is largely limited.

Many healthcare systems today are propped up on outdated, inflexible, and disparate software. For now, these legacy systems restrict data flow to the four walls of our organisations, making collaboration extremely difficult.

To unleash the full potential of Big Data, and improve global collaboration, we must move towards interoperability and integrated care systems (ICSs). Interoperability can be defined as the way in which multiple devices or applications exchange information. With open systems and open standards, we can move away from our existing siloed approach to healthcare and towards a more efficient, holistic service.

Achieving interoperability will include setting common governance standards, updating architecture, and creating APIs or integrations to help the different tools communicate, as well as investing in watertight cybersecurity. While this is a complex process, cloud adoption may offer the scalability, efficiency and unification required to take an initial leap in this direction.

With its vast scalability for infinite data storage, hybrid cloud models for added security, and connectivity across medical devices, software apps, and healthcare systems and services, cloud offers a flexible solution for modern interoperability challenges.

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CLOUD & THE INTERNET OF MEDICAL THINGS (IoMT)

While cloud alone is not enough to achieve complete interoperability (cloud still uses APIs and integrations, it just creates a common computing environment), it does provide a safe and scalable environment to begin embedding interoperability processes. Even better, cloud is a cost-effective solution that can be easily scaled to accommodate new parties – key for futureproofing the growing digital health ecosystem.

By bringing different healthcare providers into one integrated healthcare system hosted on the cloud, it will become much easier, and safer, for the entire ecosystem to work together. For example, a shared, universal electronic healthcare record (EHR), would make it easier to personalise healthcare — by bringing insight from different sources into one place.

Cloud adoption would also pave the way for the Internet of Medical Things. The Internet of Medical Things refers to medical devices, applications, systems, and wearables that are connected to each other over the internet. According to research by Deloitte, the IoMT industry is expected to reach $158.1 bn in 2022, while connected technologies will make up 42% of R&D budget by 2023.

IoMT will improve the speed, accuracy and insight behind diagnosis and treatment. With vast volumes of data collected from multiple difference sources, often at the place of activity and in real-time, we can build up a much bigger picture of both individual health statuses and the operational performance of the overall system.

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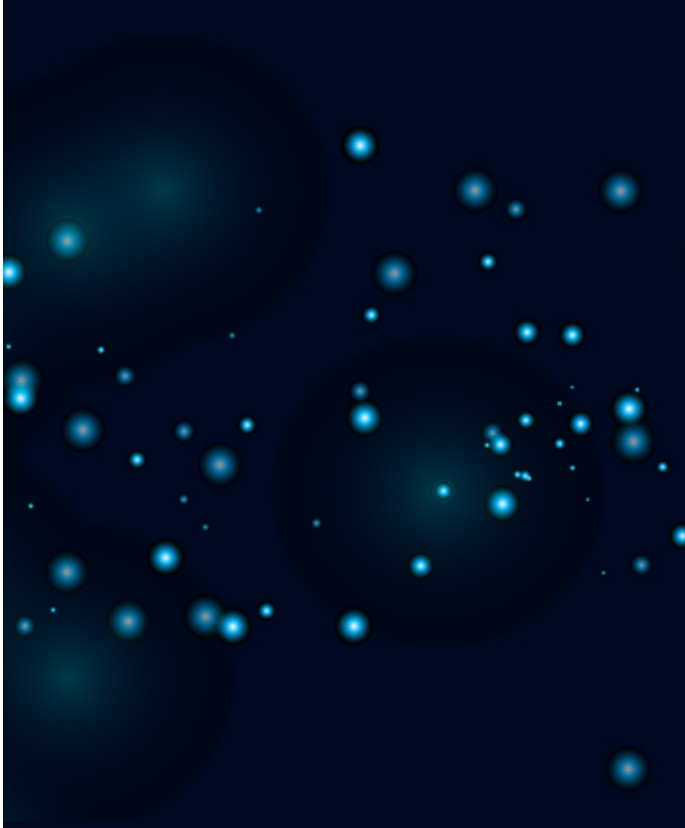

Connectivity between sensors, medical devices and applications will also improve communication across different platforms — which is why interoperability is so key for tapping into the IoMT.

In addition, as we move towards even more sophisticated technology models — such as edge computing and 5G — our ability to do more at the source will unlock remote healthcare in new ways. For example, the speed and low latency of 5G will improve rendering for augmented reality, which could be a game-changer for telemedicine. As we move our healthcare closer to the source of activity — and consequently to the user — we will move towards a more customer-centric, on-demand model.

But getting to this level of connectivity will require significant collaboration between healthcare providers and Medtech developers. Achieving interoperability and establishing new healthcare pathways is complicated and requires input across the ecosystem to find a mutually agreeable model, and crucially one that does not compromise security.

According to Deloitte's Medtech and the Internet of Medical Things report, 87% of those working in Medtech either agree or strongly agree that collaboration with healthcare providers is essential for realising the benefits of connected medical devices.

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ROBOTICS, AI & AUGMENTED REALITY

Cloud, IoMT and interoperability are transforming the way we embed technology into the healthcare pathway. Meanwhile, data and AI are helping us to make new connections and become faster, more efficient, and more collaborative. But what about how tech is changing healthcare day-to-day? When we analyse the role of digital in the COVID-19 pandemic, we see how technology is reshaping everyday healthcare settings.

Take telemedicine, for example. In 2019, less than 1% of GP appointments were conducted over video in the UK, with 80% taking place face-to-face. Now, over half of GPs are using video for consultation and examinations more often than pre-pandemic. In Germany, 90% of GPs adopted video consultations during COVID-19. And in the US, 95% of physicians reported increasing their use of virtual technology over 2020, with over half (58%) increasing their use by 50%.

Telemedicine refers to healthcare services provided remotely via real-time audio, visual or electronic communication. During the pandemic we saw the full potential of telemedicine to save lives, but it also showed healthcare services how we could scale up delivery in an affordable, accessible and safe way, especially for routine care and healthcare that does not require face-to-face contact (e.g. mental health support).

This small discovery has significant implications for the healthcare pathway and has opened new opportunities for technological maturation.

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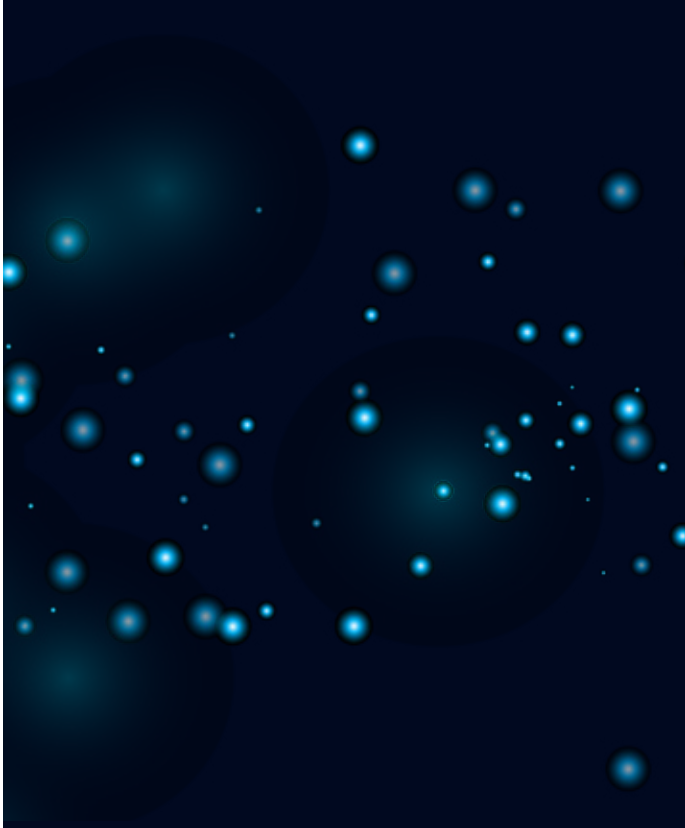

For example, an end-to-end telehealth service might include triage by AI using chatbot and NLP technology, a video consultation using augmented reality to bring new depth and dimensions to screening, on-demand support for ongoing treatment via an app, and autonomous vehicles to deliver pharmaceuticals.

In particular, the pandemic has illuminated the road for robotics and robotic process automation (RPA). Robotics use soared over COVID-19 as we sought to minimise infection rates in healthcare settings — from front desks to operating theatres to outpatient services. Faced with a wave of demand and a need to reduce contact, especially in the wake of PPE shortages, robotics proved a cost-effective, safe, and reliable way to boost NHS resources.

When we consider the potential of robotics, the opportunities seem endless. In a pre-operative care setting, robotics could be used to welcome and triage patients, to clean and sterilize hospitals or as distribution to reduce human-to-human contact.

In an intraoperative setting, minimally invasive robotics surgery (MIRS) improves the efficiency, precision and resources required to operate; with the global surgical robots market expected to reach more than $24 billion by 2025. Meanwhile, in a post-operative setting, robotics could be used to power autonomous vehicles, deliver drugs, and perform routine check-ins.

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ROBOTICS, AI & AUGMENTED REALITY

The potential for robotics becomes even greater when it is overlaid with new technology — such as 5G to speed up connection time, AI and IoMT to identify high volume traffic, or augmented reality (AR) to bring telehealth experiences to life.

AR itself is growing in importance in healthcare, with use cases including virtual reality training for surgeons to replicate real life scenarios — with a reported 230% performance boost compared to traditional training, bringing greater depth to flat images like CT scans to improve diagnosis and trend analysis, and simplifying processes such as finding veins using a handheld AR scanner — with a reported 45% reduction in escalations.

AR technology is also showing value in recovery settings by providing a safe and flexible simulated environment for physical therapy — such as for stroke victims — and cognitive support, such as those suffering from dementia.

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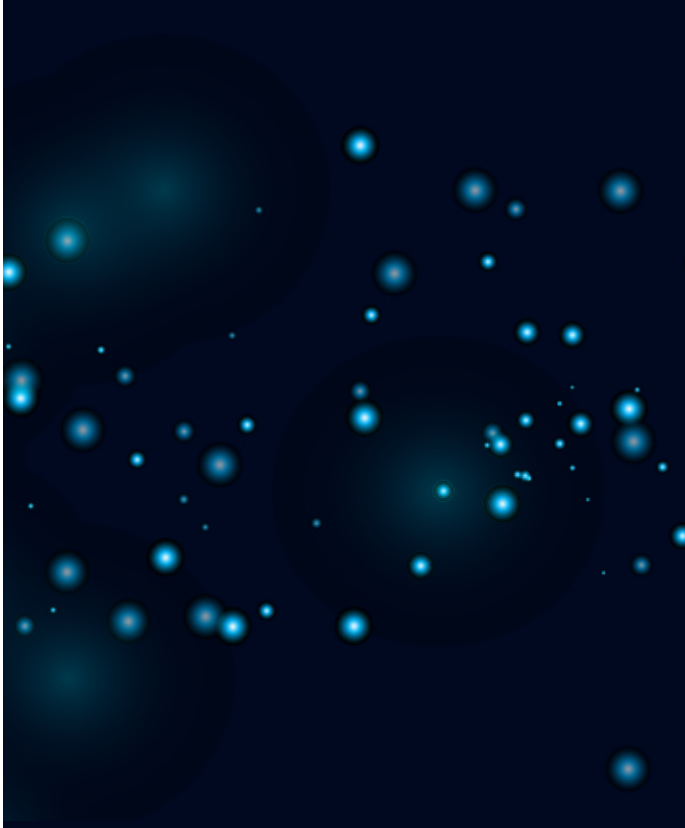
CONCLUSION



All these examples show how healthcare is being shaken up by digital development. While collaboration is required at a high level to overhaul the existing infrastructure and open the gateway for data sharing, collaboration is also needed at an everyday level to make small, but significant, changes to the way our healthcare services operate. Digital brings a wealth of opportunities to the healthcare sector — but only if we work together.

This whitepaper was produced by STEM brands SRG and Lorien, who are proud to be part of the Impellam Group, a leading Global Talent Acquisition and Managed Workforce Solutions provider. SRG are a *scientific recruitment specialist, while Lorien are technology recruitment specialists. With over 40 years experience they provide professional talent solutions for clients globally.*

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REFERENCES

CompTIA - Report: IT Industry Outlook 2021

TechRound - Article: New Tech Business Launched Every Half An Hour In The UK In 2020 Despite Covid

Deloitte - Article: Medtech and the Internet of Medical Things

Deloitte - Report: Medtech and the Internet of Medical Things

ITProPortal - Article: Will digital innovation in remote healthcare continue after the Covid-19 vaccine?

EY.com - Report: Pulse of the industry: Medical technology report 2020

Global Market Insights - Report: Surgical Robots Market Size By Component (Systems, Accessories & Instruments), By Application (Orthopedic Surgery, Neurosurgery, General Surgery, Gynecology Surgery, Urologic Surgery), By End-user (Hospitals, Ambulatory Surgical Centers), Industry Analysis Report, Regional Outlook, Growth Potential, Price Trends, Competitive Market Share & Forecast, 2021 – 2027

Harvard Business Review - Article: Research: How Virtual Reality Can Help Train Surgeons

AccuVein - Article: Independent AccuVein Study Shows 45 Percent Reduction In Escalations


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