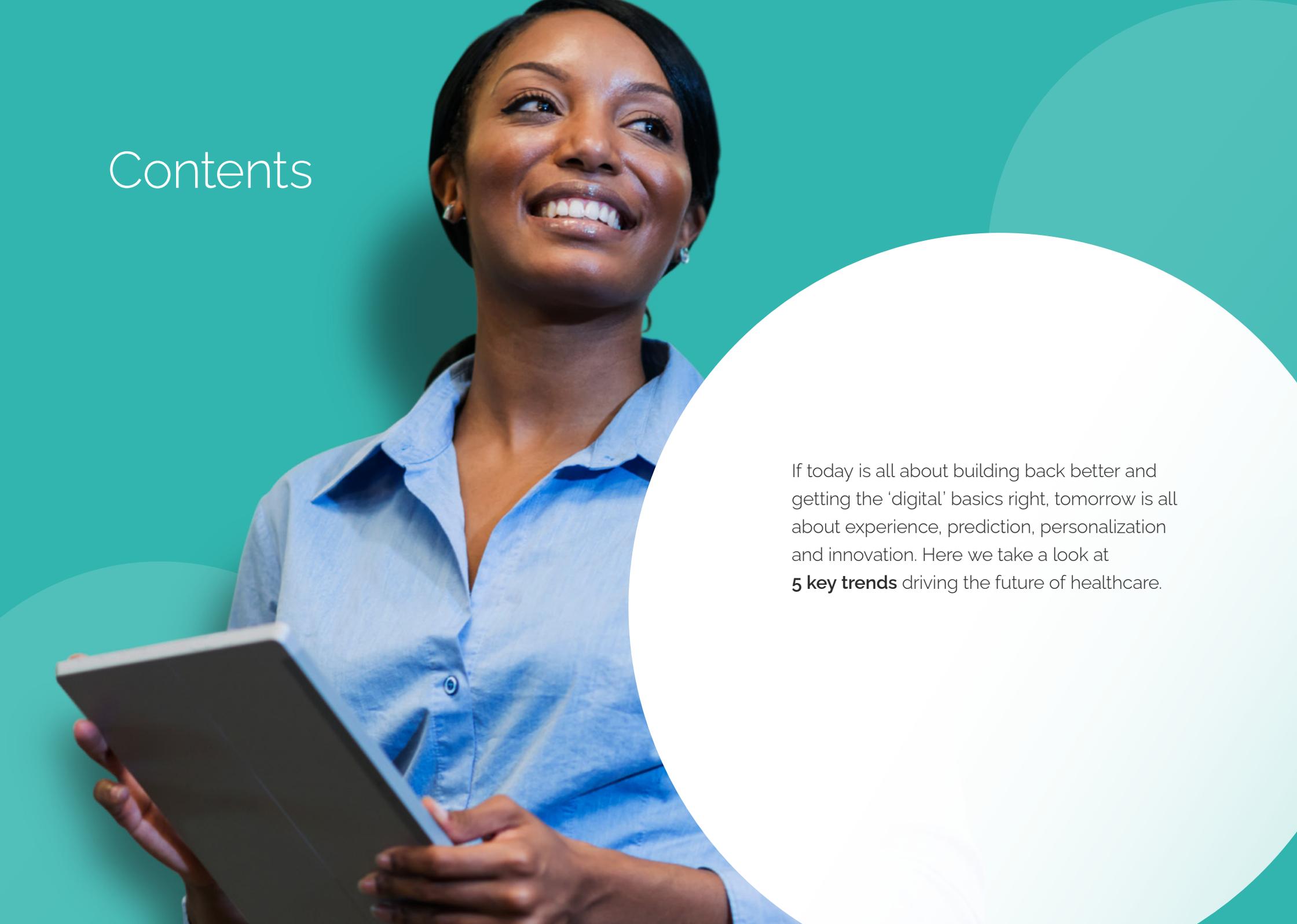




Key Trends Driving the
Future of Healthcare

Atos

Contents



If today is all about building back better and getting the 'digital' basics right, tomorrow is all about experience, prediction, personalization and innovation. Here we take a look at **5 key trends** driving the future of healthcare.

Enhancing the patient experience

The link between patient experience, clinical effectiveness and improved outcomes is well established. Positive, personalized care experiences (and expectations) have a range of benefits from reducing in-patient stays to encouraging people to seek treatment earlier. Both of which have positive impacts on the wider healthcare system.

However, experience is under pressure as patient expectations grow and apply their personal consumer experiences to their care. This combined with the entry of the likes of Amazon, Walmart and others, **serves only to increase expectations from patients** – who increasingly see themselves as consumers.



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Healthcare is responding: adopting a wide range of digital apps and tools, such as digital front doors, to simplify how patients engage with their care (and their care providers). **This includes embracing remote patient monitoring, e-consultation and remote care solutions that boost convenience, inform and empower patients to manage their own health** and remove unnecessary visits to hospitals or emergency departments.

Bringing connected devices and virtual consultations together offers opportunities that go beyond patient convenience or relieving pressure on the system. Artificial Intelligence offers new opportunities for clinicians and clinical researchers to better predict and prevent illness (without the patient being there).

At the same time, data-driven workflows within the hospital setting are removing many time intensive, manual administrative tasks – **reducing stress levels and giving clinicians back more time to deliver a great care experience.**

Moving forward, it is critical to continue to build the digital infrastructures, services and applications that align, support and enhance the clinician's 'human' engagement across the care continuum. Meaning they can meet and exceed the expectations of an increasingly demanding patient population. This requires organizations to consider different business models, enabling new models of care with technology.



See how Atos is helping enhance patient experience across healthcare **here**





A customer is the most important visitor on our premises, he is not dependent on us. We are dependent on him. He is not an interruption in our work. He is the purpose of it. He is not an outsider in our business. He is part of it. We are not doing him a favor by serving him. He is doing us a favor by giving us an opportunity to do so.

Mahatma Gandhi

The central role of data

What begins with the Electronic Health Record quickly extends to leveraging the wealth of health data which is now available to enable innovations in evidence-based medicine, population health, precision health and more.

Data is the raw material driving everything. **It is now not uncommon for hospitals to extend their data sets to include weather, transport, national genomic data as well as disease and socio-economic trends – and more.** All of which combines to provide a much richer understanding of population health. Leveraging data can also bring healthcare and life sciences closer together – to drive translational research to explore things like breath biopsy as a non-invasive way to diagnose rare diseases or expand the cohort of clinical trial study participants as well as available data through the use of digital biomarkers.





Making it happen means modernizing environments both in design and technology, embracing federated learning platforms and delivering the open and collaborative environments with supporting business models, capable of securely sharing data-driven insights and knowledge.

These are not inconsiderable challenges. The profusion of data sources, IT protocols and file formats create a high degree of fragmentation. **Data sets are often locked up in inaccessible silos – where finding a single version of the truth becomes almost impossible.** Added to which, as data volumes rise, so does the need to secure the environment from end to end. All of this on top of the need to fully revisit models of care associated with digital care delivery.

Federated learning enables you to pull together information from multiple decentralized datasets to build a model.

Despite integration efforts, issues and concerns over data ownership and interoperability and third-party systems remain stumbling blocks for many, and threaten this vision of a data-enabled future. **Putting the foundations and building blocks in place today is the critical first step to realizing the benefits of a secure, data-driven healthcare system tomorrow.**



See how Atos' digital infrastructure services can support a modern data strategy [here](#)





Ten countries are identified as having high readiness that enables them to develop world-class health information systems supporting health system quality, efficiency and performance and creates a firm foundation for scientific research and discovery.

Organisation for Economic Cooperation and Development (OECD)

Advanced technology

Building on data and advanced analytics capabilities, technology will continue to have a transformative impact across the healthcare sector. These include machine and deep learning, natural language processing, artificial intelligence and much more.

The opportunities really are everywhere: AI-enhanced chatbots and virtual assistants to improve the patient experience; the automation of administrative and clinical workflows to save time and proactively address declining patient conditions; predictive analytics to optimize resource and capacity planning as well as predict patient needs, and more. All of which are reducing cost, enabling more predictive cost management, supporting greater management of peaks and troughs in demand and, crucially, giving clinical teams back more time to care as well as enabling them to “operate at the top of their license”.



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The ability to handle and cross-pollenate massive amounts of patient (and patient population) data is leading to **faster and more accurate diagnosis and treatment** of rare and/or complex diseases, genome sequencing, or even simply providing primary care and preventive care in a more timely manner, preventing disease advancement and improving quality of life, and much more.

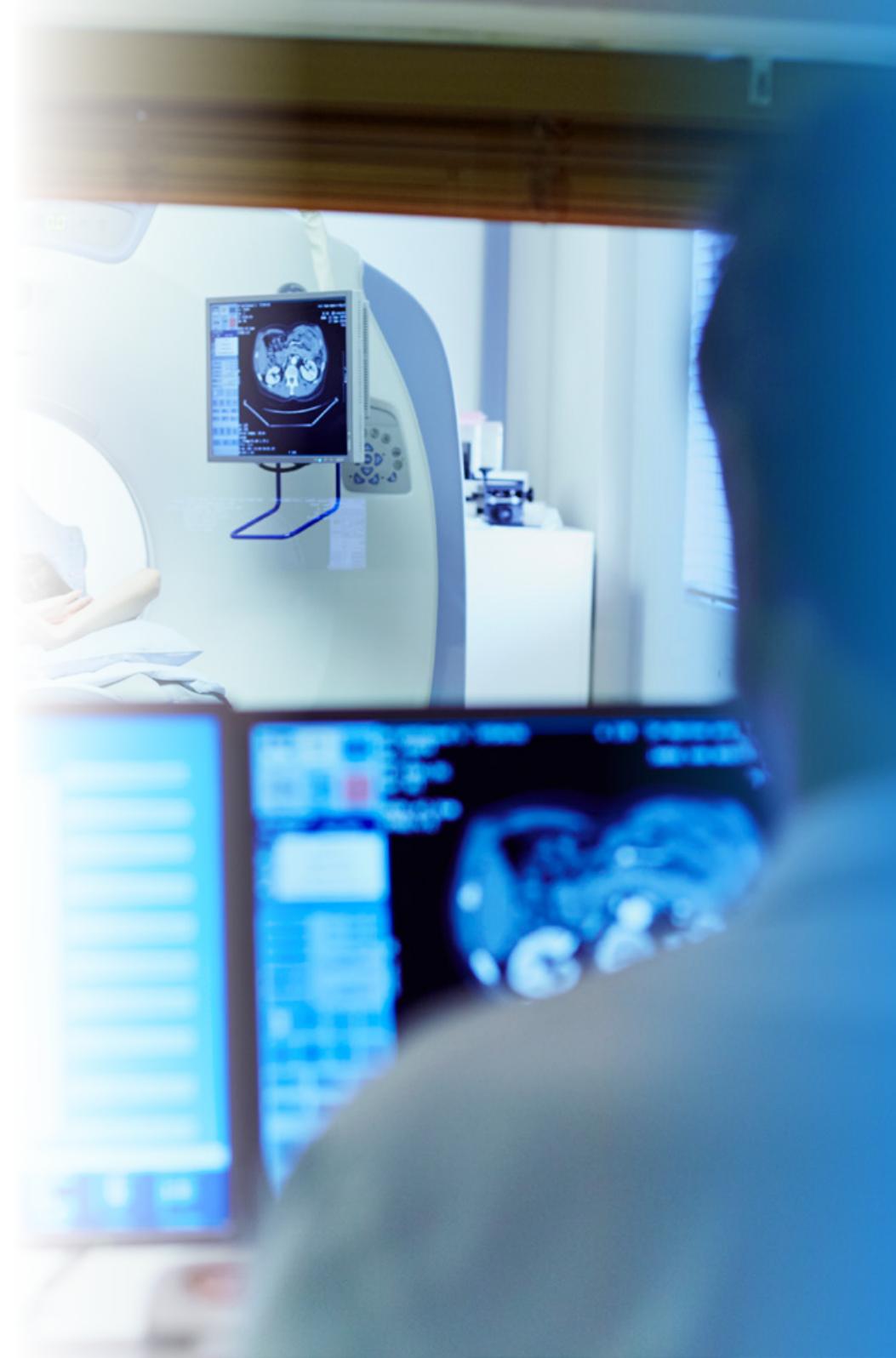
As a result, there is now unprecedented demand for advanced solutions that build upon trusted connectivity, cybersecurity, cloud infrastructures, as well as high performance and quantum computing power.

There are considerable challenges to adoption. While the ever-present budget questions remain, the key issues facing organizations are typically around the design, planning and management of these complex apps and systems in new business/care models. So too, the lack of appropriately skills resources – both in IT teams and across departments – creates considerable barriers to success. Training then is paramount, as is the support from a vendor-neutral partner with the experience to bring it all together. Lastly, the digital competency of the patient and their personal support structure is an important and often forgotten consideration.

After all healthcare is about human connections not technical management.



See how Atos is helping to re-imagine health in today's everything connected world **here**





We're certainly handling big data, but what we're really after is big information: the ability to identify the valuable insight from the sequences in front of us. To do this well, we need good data, good analytics and good tools.

Ivo Gut, Director
National Center of Genomic Analysis (CNAG)

Access the full story [here](#)

Sustainability and resilience

According to a report from Health Care Without Harm (HCWH), the healthcare sector accounts for **4.4% of global greenhouse gases** (GHG) emissions each year¹. Sustainability is therefore high on the agenda to showcase good corporate citizenship and support global emissions targets.

¹ <https://noharm-uscanada.org/ClimateFootprintReport>





While this may not be new – the National Health Service (NHS) in England has been working since 2008 to quantify and reduce its carbon footprint² – attitudes have shifted in recent years. **New digital hospital programs offer an opportunity to bake sustainability and carbon reduction into the fabric of buildings.**

The drive to a more sustainable and lower carbon global healthcare system is not simply a question of reputation, social responsibility or indeed energy efficiency and cost reduction. The environmental risk factors on population health are well known.

² [https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(20\)30271-0/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30271-0/fulltext)

The most recent analysis from the United Nations³ shows **24% of global deaths (and 28% of deaths among children under five)** are due to modifiable environmental factors. These include respiratory infections from air pollution and diarrhoeal diseases from dirty water. Similarly, a wide range of mental, behavioural and neurological disorders resulting from climate related extreme weather events and disasters all have very real health impacts.

Reducing healthcare's own impact on the changing climate through carbon reduction and net-zero initiatives will benefit wider society.



Click **here** to see how Atos is helping healthcare organizations decarbonize business processes and reduce their digital footprints with green technologies.

3 <https://www.who.int/publications/i/item/9789241565196>



Climate change represents an inevitable, massive threat to global health that will likely eclipse the major known pandemics as the leading cause of death and disease in the 21st century... The health of the world population must be elevated in this discussion from an afterthought to a central theme around which decision-makers construct rational, well informed action-orientated climate change strategies.

Dr. Dana Hanson
President, World Medical Association

Security and information governance

While the rapid digitalization of the sector is driving major advancements in patient care, it is also opening up new attack vectors. Telemedicine, remote monitoring, virtual care and remote work are introducing new vulnerabilities into the healthcare ecosystem. Healthcare providers increasingly rely on cloud, mobile healthcare apps, point-of-care platforms, and connected medical devices. Often not inherently secure, these technologies process patient valuable and sensitive data. It makes them potential entry points sophisticated cybercriminal gangs and well-funded state-sponsored attackers are looking to exploit.





Sometimes the intention is to ransom or steal, other times to disrupt. Whatever the reason, attacks are coming thick and fast. **Over a six-day period in August 2021, for example, cyber attackers stole personal data from over half a million patients from a Texas healthcare provider⁴.** In the same month an Atlanta-based allergy clinic notified nearly 10,000 patients of a ransomware attack⁵ that saw protected information stolen and uploaded to the dark web.

This pattern of attacks and breaches is reflected globally, with impacts ranging from regulatory action and corresponding reputational damage to very real health effects on patients. In 2020, the Hospital of Düsseldorf in Germany was the first institution to record a cyberattack may have contributed to a patient death.⁶

4 <https://portswigger.net/daily-swig/healthcare-provider-texas-ent-alerts-535-000-patients-to-data-breach>

5 <https://portswigger.net/daily-swig/breach-at-deep-south-allergy-clinic-group-exposed-the-health-info-of-estimated-9-800-patients>

6 <https://thehackernews.com/2020/09/a-patient-dies-after-ransomware-attack.html>

It is clear therefore that cybersecurity solutions must keep pace with the healthcare providers and payers' innovation so they can operate with complete trust. Healthcare sensitive data must be protected more than ever, but still be easily accessible for the right teams, allowing them to better focus on patient care.

A holistic 'zero trust' model must be adopted for access and security management – based on the principle of "never trust, always verify". Any user and device, such as connected vital sensors or IoT, that tries to connect to the organization directly or indirectly will be verified before being granted access.

This will ensure organizations have complete visibility over their systems and that only trusted devices and users will be able to access the hospital's resources and patient data.

This way, professional carers and patients can fully trust that their data is safe and in the right hands.



Find out more about how Atos can protect operational efficiency, data and patients [here](#)





Simply put, a connected medical device that is not secure can be a risk, not only to data privacy, but also for patient's lives. Hackers will increasingly discover and exploit the vulnerabilities of medical devices. Adopting Zero Trust concepts and ideas to the design and manufacturing of these devices will help mitigate those risks and limit their impact. The same should apply, obviously, to their integration within healthcare facilities, in terms of security policies at both architectural and technical levels, including verification of the identity of every asset.

Vasco Gomes,
Global CTO for cybersecurity products, distinguished expert
and member of the Scientific Community, Atos

Further reading

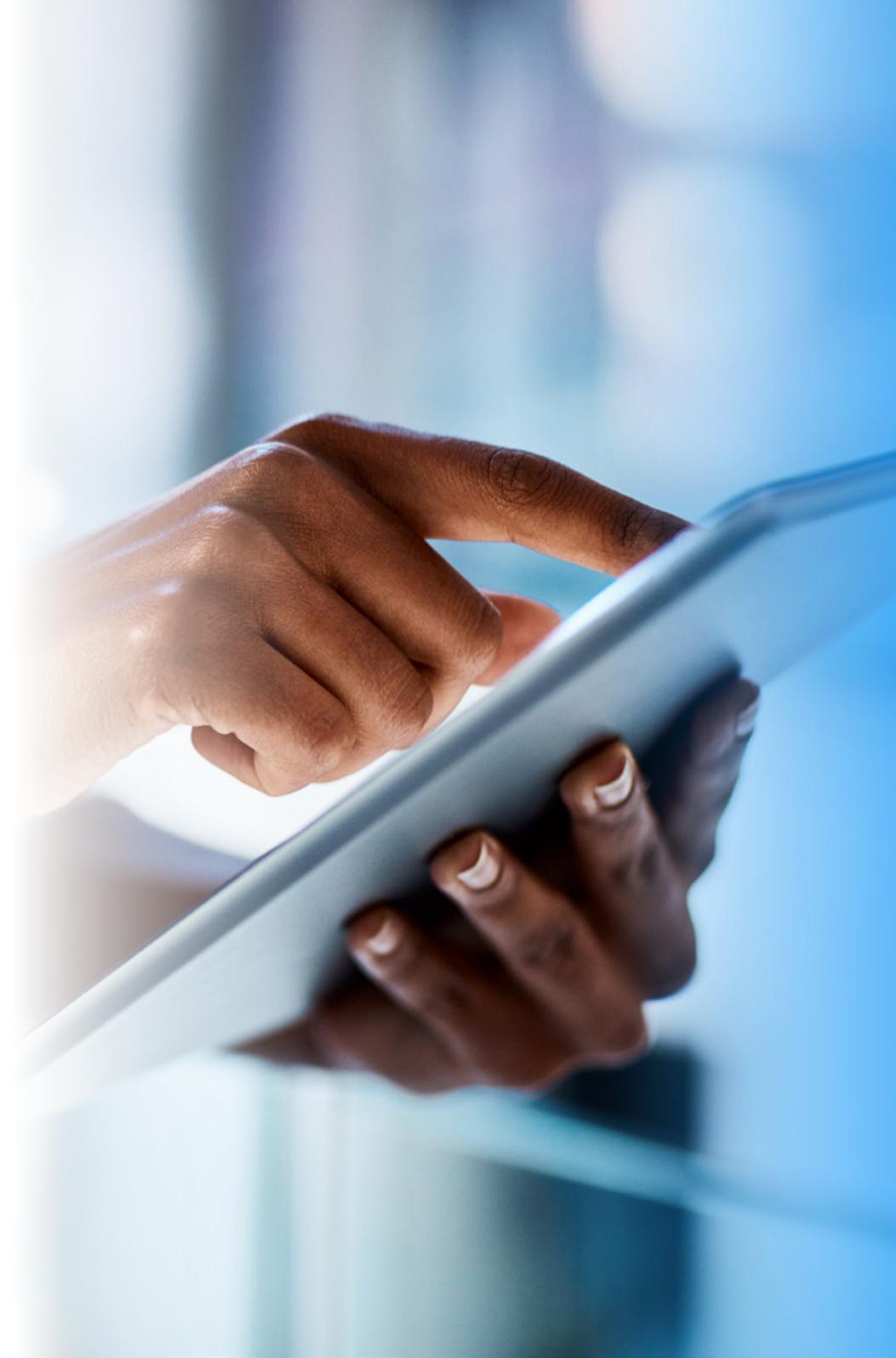
Evolution and Innovation: The Digital Future of Healthcare.

This document provides a snapshot of the truly exciting opportunities available to healthcare providers and payers as they transform to enhance service delivery in the digital world. To find out more, read our comprehensive report Evolution and Innovation: The Digital Future of Healthcare.

Bringing together the latest thinking from across global healthcare systems, the personal perspectives of healthcare executives and our own vision of the future, this report aims to inform digital strategies around the world.



Get the report for free at [here](#)



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