Chapter 1
The Enabling Role of 5G in the Digital Transformation of Healthcare

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ABSTRACT

Digital transformations have taken place in various industry sectors such as banking and finance or in the automotive and manufacturing arenas. In all instances, these digital transformations have enabled the organisations in the respective industry to streamline processes, reduce inefficiencies, improve quality and provide high value products and services. Healthcare to date, has been a noted laggard in embracing the digital transformation and it is only more recently with the advent of EMRs and the COVID 19 pandemic that this sector is now turning to emerging technologies to explore the possibilities of a digital transformation. Given that healthcare is such a data rich and information intensive industry in which pertinent information and germane knowledge need to be available at the point of care to effect superior clinical decisions that in turn lead to optimal clinical outcomes, high value and a positive patient experience; it is unlikely that the full potential of the digital transformation can be realised in healthcare without simultaneously embracing 5G.

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INTRODUCTION

The landscape of healthcare delivery is undergoing a profound transformation, driven by an interplay of challenges and opportunities. On one hand, the healthcare sector grapples with issues such as rising inequality, an aging population, and a surge in chronic conditions (McPake et al., 2023). On the other hand, it stands at the precipice of a digital revolution, fuelled by the promise of emerging technologies. This digital transformation has already revolutionized industries like banking, finance, automotive, and manufacturing, leading to streamlined processes, reduced inefficiencies, and the delivery of high-value products and services. However, healthcare, historically considered a laggard in embracing digitalization, has only recently started to leverage emerging technologies. The COVID-19 pandemic has widely been regarded as a key catalyst for accelerating digitalization (Dahl et al., 2023).

In the realm of healthcare, where data-rich environments and access to pertinent information at the point of care are pivotal, the full potential of digital transformation remains elusive without the simultaneous integration of 5G technology. 5G, with its unparalleled low latency and massive connectivity, emerges as a crucial enabler (Rahman et al., 2022). It empowers healthcare professionals with real-time access to critical data, leading to superior clinical decisions, optimal outcomes, enhanced value, and an enriched patient experience (Abir et al., 2023).

This whitepaper explores the pivotal role of 5G in unlocking the full potential of the digital transformation in healthcare. By examining its applications and capabilities, we navigate the path towards bridging the divide between healthcare's challenges and the transformative potential of technology-driven solutions, ensuring a future where healthcare is more efficient, effective, and patient-centric.

Digital Transformation

Digital transformation is a comprehensive and ongoing process impacting various sectors, including healthcare, through the integration of digital technologies that fundamentally change operations and value delivery (Vial, 2019). Key technologies involved in digital transformation include cloud computing, artificial intelligence, data analytics, and the Internet of Things (IoT), which collectively revolutionize how organizations operate and deliver value to their customers and stakeholders (Vial, 2019).

Recent research highlights that the COVID-19 pandemic has dramatically accelerated the adoption of these technologies across multiple sectors, with healthcare being a notable beneficiary. Organizations were compelled to innovate rapidly and embrace digital tools at an unprecedented pace (Dahl et al., 2023). This acceleration is not only a response to the immediate crisis but is expected to have long-lasting