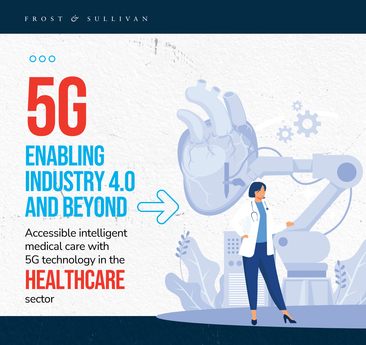
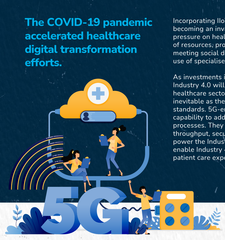
5G ENABLING INDUSTRY 4.0 AND BEYOND

Accessible intelligent medical care with 5G technology in the **HEALTHCARE** sector



The COVID-19 pandemic accelerated healthcare digital transformation efforts.



Incorporating IIoT technology powered by 5G is becoming an invaluable tool in alleviating the pressure on healthcare systems to mitigate the lack of resources, provide healthcare services while meeting social distancing protocols, and optimise the use of specialised skills regardless of geography.[1]

As investments in regional digitalisation intensify, Industry 4.0 will become an integral part of the healthcare sector strategy. Embracing 5G will be inevitable as the industry seeks to elevate healthcare standards. 5G-enabled operations have the capability to address access and efficiency in existing processes. They also ensure unparalleled safety, throughput, security, and reliable performance to power the Industrial Internet of Things (IIoT) and enable Industry 4.0 in healthcare, bringing better patient care experience to all.

THE IMPACT OF INDUSTRY 4.0 ON HEALTHCARE

Industry 4.0 involves the integration of information technology (IT) with operational technology (OT) with near-real-time connectivity. The concept is unlocking an unprecedented number of opportunities in the healthcare space driven by the adoption of IoT and cloud technology, among others.

When combined with 5G, the following key pillars of Industry 4.0 will provide healthcare players with more innovation in medical technology and better healthcare delivery.

- IoT
- Cloud
- Big Data Analytics
- Artificial Intelligence (AI)
- Machine Learning (ML)
- Cybersecurity
- Robotics
- Augmented and Virtual Reality (AR/VR)

Healthcare facilities will be able to deliver **better patient care experiences with enhanced remote monitoring, telehealth, and personalised care.** Medical practitioner training and enhanced patient therapy and rehabilitation can be carried out using VR technology. Developments in smart healthcare will contribute to better consumer health, which lowers mortality rates for elderly consumers, particularly in rural and remote areas.[2]

	Operational Activities	Training
Hospital Operations	1. Smart ambulance 2. Medical data management 3. Process and workflow automation	1. Healthcare training 2. Medical care training

	Inpatient Treatment	Outpatient Treatment
Patient Experience	1. Remote surgery 2. Remote surgeon consultation	1. Telehealth 2. Telemedicine 3. VR for therapy and rehabilitation 4. Remote patient monitoring in preventive care

Source: Frost & Sullivan

5G will enable real-time delivery of data sets supporting telemedicine growth, healthcare training, VR adoption for therapy and rehabilitation, and medical device evolution.

Large-scale 5G implementations are allaying fears about the technology and accelerating progress. With scale, solution costs will decrease to allow widespread 5G adoption.

Smart healthcare will improve medical services through innovation that can create new value, increase efficiency, and pave the way for higher standards in healthcare.

Developments in precision medicine will take preventive care to the next level.

5G IN HEALTHCARE

Digitalisation and digital transformation within the healthcare industry received a healthy boost as a result of the COVID-19 pandemic. The incorporation of 5G technology within areas like process automation, virtual consultation, telemedicine, and remote patient monitoring triggered the start of a new stage of growth in healthcare regionally.

Based on Frost & Sullivan analysis, the more promising use cases for 5G within healthcare by 2025 include:

Process automation	Remote patient monitoring	Virtual consultation
53.6%	26.2%	20.2%

5G ENABLING A MORE INTELLIGENT AND NET ZERO FUTURE

Intertwined with other pillars of Industry 4.0, 5G has the potential to significantly drive sustainability by enabling new operating models.

5G technology can help the healthcare sector reduce their total carbon emissions from the hospital's supply chain i.e., from purchase and disposal of manufactured goods and supplies, which account for roughly

70% of emissions.[3]

5G technology will be critical in:

- Driving efficiency of operations
- Reducing energy consumption
- Reducing wastes in production
- Improving predictive maintenance to reduce machine breakdown

IS 5G RIGHT FOR YOUR ORGANISATION?

5G brings the biggest opportunity for mission-critical services such as healthcare, where it is critically required and monetisable.

Healthcare providers that will benefit from 5G need to have:

- Scale
- Value proposition that addresses a specific market need and target segment
- Digital maturity

5G enterprise monetisation will work better with the right "enablers" and "attributes"

ENABLERS

Business Objective
1. Direction
2. Clarity on End Goal - Target Customer, Pricing and Cost
3. Value Proposition for Use Case supported by a viable business model for Partnership to leverage on solutions

5G Attributes
1. Low latency
2. High bandwidth

5G Capabilities
1. Network Slicing
2. Broadcasting
3. Location based

Coverage Requirement & Approach
1. Limited Private Networks
2. Nationwide
3. Seamless
4. Roaming and Redundancy

Computing Requirements & Approach
1. Compute
2. Analytics
3. Storage
4. Networking
5. Security

Optional Edge Capabilities
1. Compute
2. Storage

ATTRIBUTES

1. **Simple**
   - Less complexity
   - Easy to use
2. **Flexible**
   - Modular or template-based concepts
   - Customisable
3. **Real time**
   - Any time
   - Any where
   - Any one
4. **At the Right Cost**
   - Minimum customers
   - Scale

FOR MORE INFORMATION, DOWNLOAD THE FULL WHITEPAPER - 5G: ENABLING INDUSTRY 4.0 AND BEYOND

Sources:
1. Control Automation, Growing IIoT Capabilities in the Healthcare and Medical Industries, 2021. https://control.com/technical-articles/growing-iiot-capabilities-in-the-healthcare-and-medical-industries/
2. Front Public Health, How Does Smart Healthcare Service Affect Resident Health in the Digital Age? Empirical Evidence From 105 Cities of China, 2021. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8813850/
3. Yale Sustainability, Yale Experts Explain Net Zero Healthcare, 2021. https://sustainability.yale.edu/explainers/net-zero-healthcare-explained

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