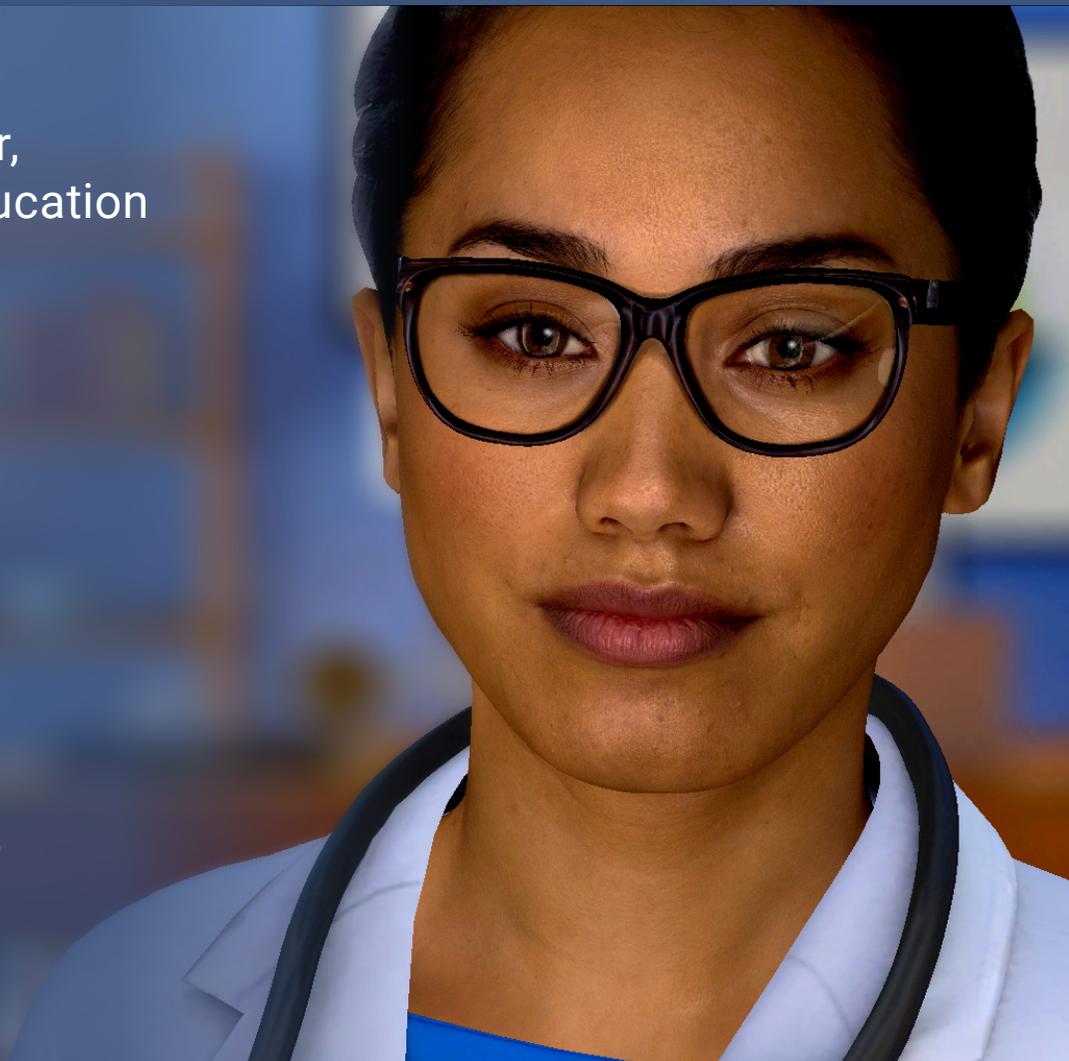


WHITEPAPER

The Next Frontier for Healthcare: Solving Healthcare Needs with Empathetic Digital People

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COVID-19 has dramatically impacted the world of healthcare. The pandemic has exposed systemic vulnerabilities in resource shortages, care management, accessibility, and an overall strain on the healthcare system. Stemming from the 'zero-touch delivery' models, we have seen the rapid adoption of telemedicine and the global proliferation of care apps. Staff and patients are looking for alternatives to assist them with meeting these needs.

As staffing and financial cost of the pandemic begin to be tallied, we are seeing additional casualties; explicitly the mass exodus of physicians, clinicians, caregivers, and administrative employees from the profession. The consequences of the labor shortage are acute and not yet fully realized. In a recent research study, it is estimated that by 2030 there will be a global shortfall of 18 million health workers, with similar workforce gaps in social and education service systems. In October 2021, the US Department of Health and Human Services (HHS) announced a commitment of \$100 million through the American Rescue Plan to help solve this problem. Only by integrating Artificial Intelligence (AI) and digital technology into these systems can we bridge these disparities to meet the Sustainable Development Goals (SDGs), and ensure universal health coverage for all.

So as people leave the healthcare sector, many are looking to technology via digital platforms and connected data to meet this need. Let's unpack this idea a little. Digital experiences should empower users and health workers alike, giving them voice and choice. Although the transition from traditional, physical office visits to online consultation is rapid, the patient experience has significant room for improvement. A recent survey from Digital Authority Partners about the healthcare industry found "73.1% of respondents have deployed digital solutions to help patients access their medical data and records, but only 6.9% are focusing on providing personalized content that meets the individual users' needs."¹ Subsequently, there is room for improvement. Patients and healthcare providers are suffering. Suffering from unaddressed resource needs, burnout, and the strain of a system struggling to adjust to a new way of providing care utilizing digital platforms and remote delivery models.

Dealing with data analytics deficiencies

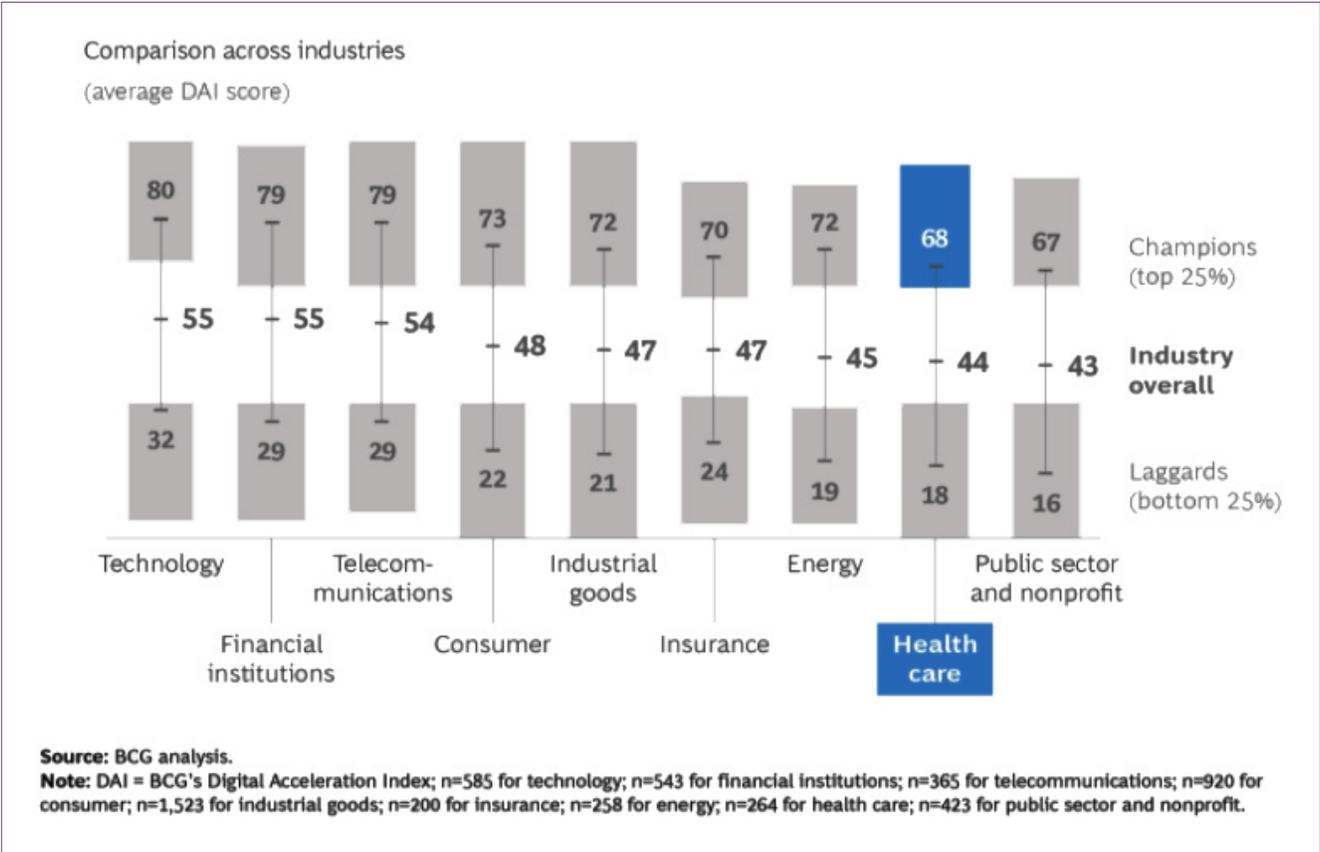
Amid this turmoil, the healthcare sector globally generates around 5 percent of the world's data, and yet it remains one of the least digitally advanced. Data offers a fast track to enhancing the user experience, accelerating diagnostics, adding predictability, and feeding Machine Learning algorithms derived to solve health challenges and to better connect patients and providers. Yet, this critical opportunity in data usage is not being capitalized on.

Soul Machines, a global leader in humanizing AI through the creation of Digital People, recognizes this as an opportunity for our technology to meet these needs and improve the healthcare delivery system by employing the use of a scalable, empathetic digital workforce. We can help healthcare organizations re-imagine the staff and customer experience significantly with this innovative technology.

According to NTT's 2020 Customer Experience Benchmarking Report, "81.6% of organizations agree that CX offers a competitive edge and 58.0% say it's their primary differentiator, yet it forms a crucial part of organizational strategy for just 14.4%." It's evident that in healthcare, empathetic relationships with patients are invaluable." According to NTT's 2020 Customer Experience Benchmarking Report, "81.6% of organizations agree that CX offers a competitive edge and 58.0% say it's their primary differentiator, yet it forms a crucial part of organizational strategy for just 14.4%." It's evident that in healthcare, empathetic relationships with patients are invaluable."

Digital People can deliver care 24/7/365 and are uniquely designed to show emotional intelligence and empathy that engage with users. Their Digital Brain provides them with perception, access to a natural language engine, skill sets, and autonomous animation. The result is that they can read, hear, see, understand, and respond with appropriate emotions and gestures to create a meaningful and empathetic user experience.

An ecosystem built around an enhanced customer experience and driven by data insights will transform healthcare



In a recent study, the Boston Consulting Group surveyed more than 2,300 companies around the world in 9 industries to measure their digital maturity or Digital Acceleration Index (DAI). The findings showed that health care is one of the least digitally mature industries overall, scoring an average of 44 out of 100.³

When empathy is added to these three critical and interconnected areas, we see that the user experience can rapidly be enhanced

Healthcare can take advantage of the benefits offered by:

1. Enhancing patient outcomes with data generated from healthcare and telehealth
2. Employing adaptable, scalable, empathetic care with Digital People
3. Addressing labor crisis

Enhancing patient outcomes with data generated from healthcare and telehealth

A wealth of insights and data is generated by the healthcare ecosystem and can greatly enhance patient outcomes. Yet, we have only begun to tap into this resource. Only an ecosystem built around an enhanced customer experience and driven by data insights will transform healthcare.

For example, a randomized pilot trial using Digital People for Delivering a Remote Loneliness and Stress Intervention to At-Risk Younger and Older Adults⁴ established that Digital People are a promising and novel technological solution for providing remote psychological support. The results of this trial titled “The Effects of Emotional Expressiveness of a Female Digital Human on Loneliness, Stress, Perceived Support, and Closeness Across Genders” are published in the Journal of Medical Internet Research. This report describes those interactions with digital mental health and behavioral assistant that was well received by an elderly audience residing in independent living and retirement homes.

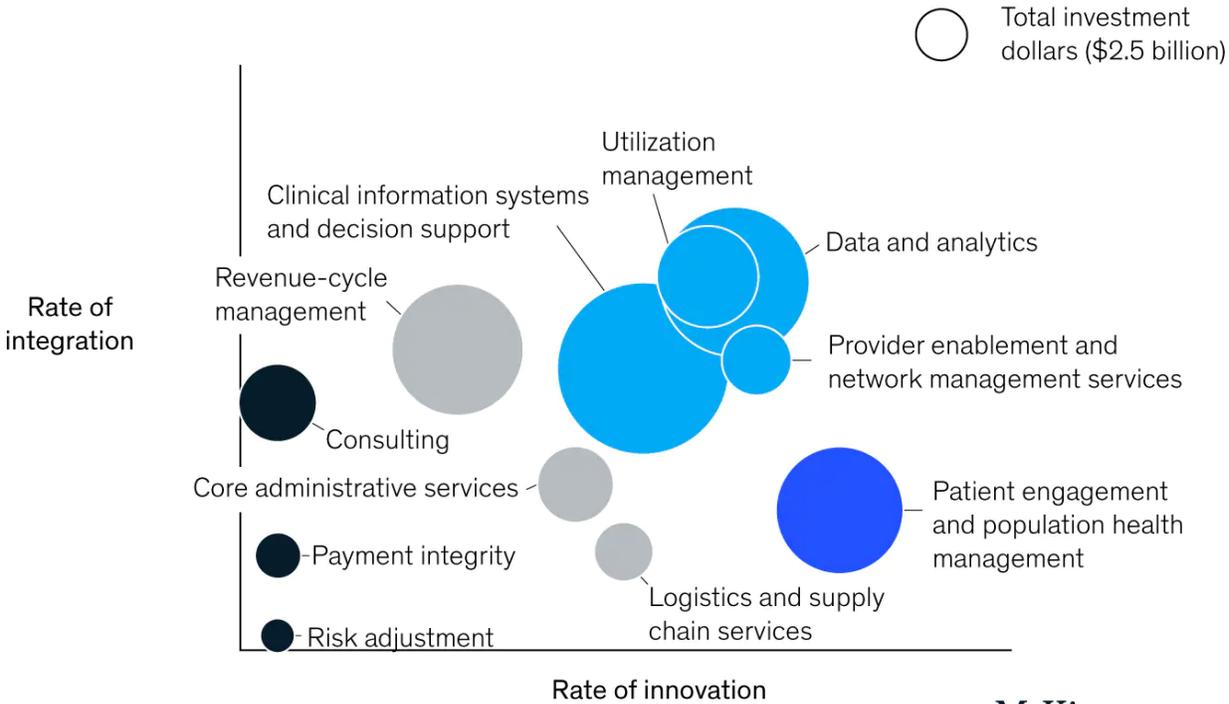
Another project on digital innovation led by Froedtert Hospital and Medical College of Wisconsin investigated the impact of video visits on patients and physicians during the pandemic. They reviewed ~137,000 video visits performed between March 2020 and December 2020. What they found was that most of the variability in successful or failed video visits were associated with patient characteristics vs clinician characteristics, particularly regarding

sociodemographic characteristics and age. Another interesting finding was that the providers' learning curve had an S shape but required a shorter time to achieve. An interpretation is that during COVID-19, providers had no choice but to adapt to virtual visits which "forced" the speed of adoption. While this might be "obvious", the data does provide some evidence that unless we intentionally build a supportive and coordinated digital ecosystem (not just video visit) and take into consideration payment models, support, broadband, healthcare systems will deliver a poor healthcare experience to patients.⁵

As the healthcare ecosystem continues to evolve, the number and complexity of engagement points also expand. "This expansion presents key opportunities for engagement organizations to leverage an increasing amount of data and actionable insights and create value through patient behavior and payer/provider behavior. These players will need to learn how they can best plug into broader healthcare ecosystems to drive adoption and engagement."⁶

Rate of integration and innovation vary by sub-segment.

Data and analytics and clinical information systems tend to have higher rates of innovation and integration.



Source: PitchBook Data; McKinsey Healthcare Services and Technology Domain Profit Pools Model



Healthcare ecosystems incorporating the use of data sharing, analytics, interoperability, and integration continue to drive innovation and minimize deficiencies. This does not address patient care or staffing needs. Inside all the transactional utility, the patient's needs can get utterly lost. Empathetic CX delivered via an informative Digital Workforce can add exponential value and solve this need.

Employing adaptable, scalable, empathetic care with Digital People

A current trend for in-home care has transformed traditional on-site rehabilitation and recovery treatment. Confirming this trend, the Centers for Medicare & Medicaid Services (CMS)'s Acute Hospital Care at Home program announced in November 2020 a program to deliver patient care at home with support from technologies such as clinical-grade wearables, remote patient monitoring, and artificial intelligence (AI)-based predictive analytics and machine learning.⁷

Now is the opportunity to scale and supplement this transformed delivery system with a digital workforce that is available 24/7. One that can make the users comfortable with attentive listening, clear communication, and compassionate empathy.

Soul Machines' Digital People are already demonstrating their value with at-home care and with new medical device onboarding such as insulin pumps, home hemodialysis, and remote monitoring instruments. The Digital Person can show compassion, repeat endlessly without irritation on how to properly use devices, monitor and interpret a patient's data and remind them of their treatment plan's next steps.

Here's another use case. Mental health, is outraging all other health categories in attracting Venture Capital (VC) investment. The cost and productivity loss in mental health care are alarming.

From addiction to dementia to schizophrenia, almost 1 billion people worldwide suffer from a mental disorder. Lost productivity, as a result of anxiety and depression, costs the global economy US \$1 trillion each year. In total, poor mental health was estimated to cost the world economy approximately \$2.5 trillion per year in poor health and reduced productivity in 2010, a cost projected to rise to \$6 trillion by 2030.⁸

The hype around untested, non-clinically validated apps is intense and has led to the formation of a new market for app-based care. Without the validity of proven, scalable medical-grade solutions the benefits remain unclear. Marketing regulation could be addressed through a unique combination of personalized mental health and behavioral change digital specialists and clinical providers specializing in conditions such as depression, obesity, anxiety, dementia.

Addressing labor crisis through a scalable, digital workforce

A Digital workforce can be easily implemented to address the current labor disruption, staff burnout, and another resource challenge that healthcare faces. One that amplifies the impact of real people but is performed by Digital People. There are several use cases such as: handling specific administrative tasks, professional training, and providing alternatives to patient in-home care, information, and device instructions.

To evaluate the openness of patients to interact with a digital workforce in place of a human workforce, Soul Machines has conducted several research projects including one targeting a non-techy, elderly population on the delicate and private subject of psychological support. The results of this trial titled “The Effects of Emotional Expressiveness of a Female Digital Human on Loneliness, Stress, Perceived Support, and Closeness Across Genders.”⁹ are published in the Journal of Medical Internet Research and describes that interactions with digital mental health and a behavioral assistant were well received by an elderly audience residing in independent living and retirement homes. This is an encouraging indicator towards acceptance of a digital workforce for in-home care for a short-staffed industry.

In conclusion

The opportunity for leaders to provide additional value in the healthcare market remains untapped. By engaging data-driven decisioning, scalable empathetic digital workers to provide ancillary support and embracing new technologies, such as Soul Machines Digital People, we can meet these needs and improve the healthcare system.

This opportunity suggests exponential results can be realized in the context of a post-COVID-19 environment that balances on the edge of digitization. Adding to this, are the drivers of personalization, privacy, and customer empowerment in the healthcare landscape.

While there is a glut of macro trend analysis in terms of the post-pandemic environment, our thesis is focused simply on the opportunity for leaders to address the needs of rapidly evolving patient experience with real-time healthcare data, record access, and training that will support a currently strained healthcare workforce.

Technical evolution is inevitable. Why not embrace this as an opportunity to solve a healthcare need in several areas and participate in the future growth of the digital healthcare industry.

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About the Author



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Erica is dedicated to the worldwide adoption and deployment of Soul Machines' digital workforce in multiple-scale healthcare and education enterprises and public sector entities. She has a background in technology, innovation ecosystem, and research in the private and public sectors.