

The background of the entire page is a light gray with a network of white lines and squares, resembling a circuit board or a data network. In the top left, the Siemens logo is displayed in teal. The central illustration features a large, stylized ambulance with a white cross on its side. Inside the ambulance, a paramedic in teal scrubs stands on a platform. To the right of the ambulance, a woman in a light blue uniform and dark skirt stands, holding a smartphone. To the left, a patient is lying in a hospital bed, and a medical monitor is visible. On the far right, a hand holds a smartphone displaying a medical app interface with a doctor's profile and various icons. The overall theme is healthcare technology and digital connectivity.

SIEMENS

Ingenuity for life

Priority Investment

Part 1 – New generation (digitalised and/or mobile) diagnostics

A Siemens Financial Services (SFS) Insight Series, November 2019

Part 1 – New generation (digitalised and/or mobile) diagnostics

Top investment areas for digital transformation in healthcare, the size of the investment challenge, and how to manage that challenge



Increasing Healthcare Burden

Ageing populations, changing lifestyles and diets, rising levels of chronic complaints such as diabetes, cancer and heart disease, are rapidly increasing the pressure on healthcare systems around the world. The economic impact is similarly immense – just five non-communicable diseases could cost the global economy \$47 trillion by 2030, according to the World Economic Forum.¹

The Contribution of Digital Transformation

Digital transformation (amongst other factors) holds the key to managing this situation. Earlier, more accurate diagnosis and intervention, followed by precision therapies, reduces the proportion of morbidities that become acute and/or chronic. More accurate surgeries prevent re-admissions or later-life complications. Patient monitoring provides early alerts that save lives and halt the progression of a condition. Remote, online connections to clinicians, technicians and equipment improves access to health care. In short, digital transformation helps healthcare systems to transform healthcare delivery and optimising the value from every unit of spend.

To fail to invest in these key areas of digital transformation is therefore to fail to deliver important benefits in a health care system, whether in terms of improved patient outcomes, operating efficiencies, or access to personalised precision medicine.

“So what are the conditions that make it more favourable for technology solutions to be successful in health and care? Doctors and nurses are looking for solutions that are easy to use, fit in well with existing clinical processes, do not interfere with the interaction with the patient, make the job easier by reducing workload, support decision making and reduce clinical and personal risk. To do all of these things there requires to be significant time and effort spent on co-design. This is often less about the generic product but how the service wrap around is developed to support an informed redesign rather than dictating the working practices of staff.”

Priority Investment – New Generation (mobile and digitalized) Diagnostics

Healthcare experts globally responding to this latest SFS Insight study identified three priority areas for investment in digital transformation – each of which they judged to hold the highest potential for rapid positive impact on pressurised healthcare infrastructures and operations.

One of the top three areas for investment chosen by respondents, was “New generation (digitalised and/or mobile) diagnostics”. These solutions link point of care diagnostics and static (sometimes remote) diagnostics centres to the patient and the doctor, wherever they are. Access to accurate, early diagnoses is broadened, helping to reduce the healthcare burden by ensuring that patients are treated quicker and their outcomes improved.

Equally, big data analytics of historical scan data allow algorithms to be built that automatically spot anomalous tissue and highlight these results to the radiographer and clinician. Such automation naturally captures and deploys best-practice standards of diagnostic interpretation that create consistency and reduce unwarranted variations. More consistent diagnostic standards are then linked to precision therapies based on the patient’s unique phenotypic and genetic characteristics.

Digitalised Diagnostics in the UK

In the UK, NHS staff numbers are failing to keep pace with healthcare demand. The number of GPs fell by 1.6% in 2018, moving further away from the government's pledge to find 5,000 extra GPs by 2020.² There is also a shortage of radiologists³. Digitalised diagnostics have the potential to enable earlier diagnoses, as well as faster diagnostic throughput using artificial intelligence, and reduce the burden on NHS staff.

In early 2019, the Government pledged to invest £250,000 million in artificial intelligence (AI) research, also announcing the creation of NHSX, a new unit bringing together experts in the technological, digital and data industry.⁴ As part of the AI digital revolution, the NHS is rolling out a new health-data programme, within the wider framework of the Accelerating Detection of Disease programme. The programme is aimed at improving the early detection, prevention and treatment of diseases such as cancer and dementia through research. Drawing upon the data collected from a sample of 5 million healthy people, scientists will work towards disease prevention and detection at early stage.⁵

Further evidence of the government’s investment in AI came in November 2018, with the announcement of a long-term plan incorporating the opening of five new medical centres for digital pathology and imaging set for 2019.⁶ Based in Leeds, Oxford, Coventry, Glasgow and London, in universities and NHS facilities, the clinics will be equipped with digitalised medical imaging.⁷ Introducing AI into the healthcare system will allow speeding up diagnosis, providing the patients with better services while easing the burden on NHS.

The Investment Challenge

Digital transformation, however, even simply for New Generation (mobile and digitalized) Diagnostics, requires considerable capital investment – typically beyond normal capital budgets available to healthcare providers. This research conservatively estimates the ‘investment challenge’ for new generation diagnostics in the UK is \$1.5 billion (£1.17 billion) over the next five years.⁸

Given that capital spending budgets in healthcare around the world are typically around 5% of total operating budgets, such a scale of investment is not within the capabilities of normal funding levels.

Moreover, if healthcare systems were to buy the technology required for digital transformation outright, this would tie up a high proportion of funds which are needed for urgent operating expenditure. Such levels of ‘frozen capital’ are simply not viable nor sustainable in today’s pressurized healthcare environment.

Healthcare organisations are therefore expected to increasingly rely on specialist private sector financing tools to help manage the digital transformation. Doing so leads to faster access to improved patient outcomes and increased efficiency. Deploying private sector capital to acquire the necessary technological and equipment base allows digital transformation to be achieved without ‘freezing’ unacceptable levels of funding.

Figure 1 – The investment challenge



The ‘investment challenge’ for new generation diagnostics in the UK is \$1.5 billion (£1.17 billion) over the next five years.

Investing Sustainably

Healthcare systems are therefore increasingly harnessing private sector capital, in particular using flexible ‘pay for usage’ financing arrangements from specialist providers that offer a sustainable means achieving digital transformation.

A select number of healthcare organisations are deploying arrangements that deliver enterprise solutions – technology, equipment, training, maintenance, facilities, people – all bundled up into a monthly fee. Most healthcare institutions, however, are increasing their deployment of pay-for-usage arrangements around a particular piece of equipment or individual facility – usually based on some form of leasing structure. These allow the monthly cost of access to essential digitalised technology – usually a combination of hardware and software – to be aligned with the rate of benefit being gained, such as reduced diagnostic error rates, improved time per procedure, more rapid triage, wider access to healthcare services, and so on.

A detailed description of the key specialist financing techniques for digital transformation may be found [here](#).

¹ Stanford University Public Policy Program, *Non-communicable disease could cost \$47 trillion by 2030*, 9 Mar 2017

² The Heath Foundation, *NHS staff shortages put long-term vision for primary and community care at risk*, Feb 2019

³ Source: Royal College of Radiologists, various

⁴ GOV.UK, *Health Secretary announces £250 million investment in artificial intelligence*, 8 Aug 2019

⁵ GOV.UK, *UK to innovate new life-saving treatment and diagnosis technology*, 23 Jul 2019

⁶ GOV.UK, *Artificial Intelligence to help save lives at five new technology centres*, 6 Nov 2018

⁷ *Ibid*

⁸ Methodology: Based on projected market value 2019-2023, minus current financing penetration, and just 50% market conversion to digital transformation. Sources: Reports Intellect, Netscribes, Market Research Futures, Markets & Markets, HIS Markit, Zion Research, Research & Markets, Morder, Technavio, GM Insights, Orbis, BCC, P&S Intelligence, Leaseurope, White & Clarke

All rights reserved. All trademarks used are owned by Siemens or their respective owners.

Published by
Siemens AG 2018

Siemens Financial Service
Sefton Park,
Bells Hill, Stoke Poges,
Slough SL2 4JS,
United Kingdom

For more information:
Phone: +44 (0)1753 434 409
E-mail: healthcarefinance.sfs@siemens.com

Updated (unless stated otherwise): November 2019

[siemens.co.uk/finance](https://www.siemens.co.uk/finance)

Follow us:



[Linkedin.com/company/siemens-financial-services](https://www.linkedin.com/company/siemens-financial-services)



twitter.com/siemens_sfs



fb.com/siemensfinancialservices