mace

Re—defining **healthcare**

Creating world-class facilities
for patients and staff

DELIVERING HOSPITAL 2050

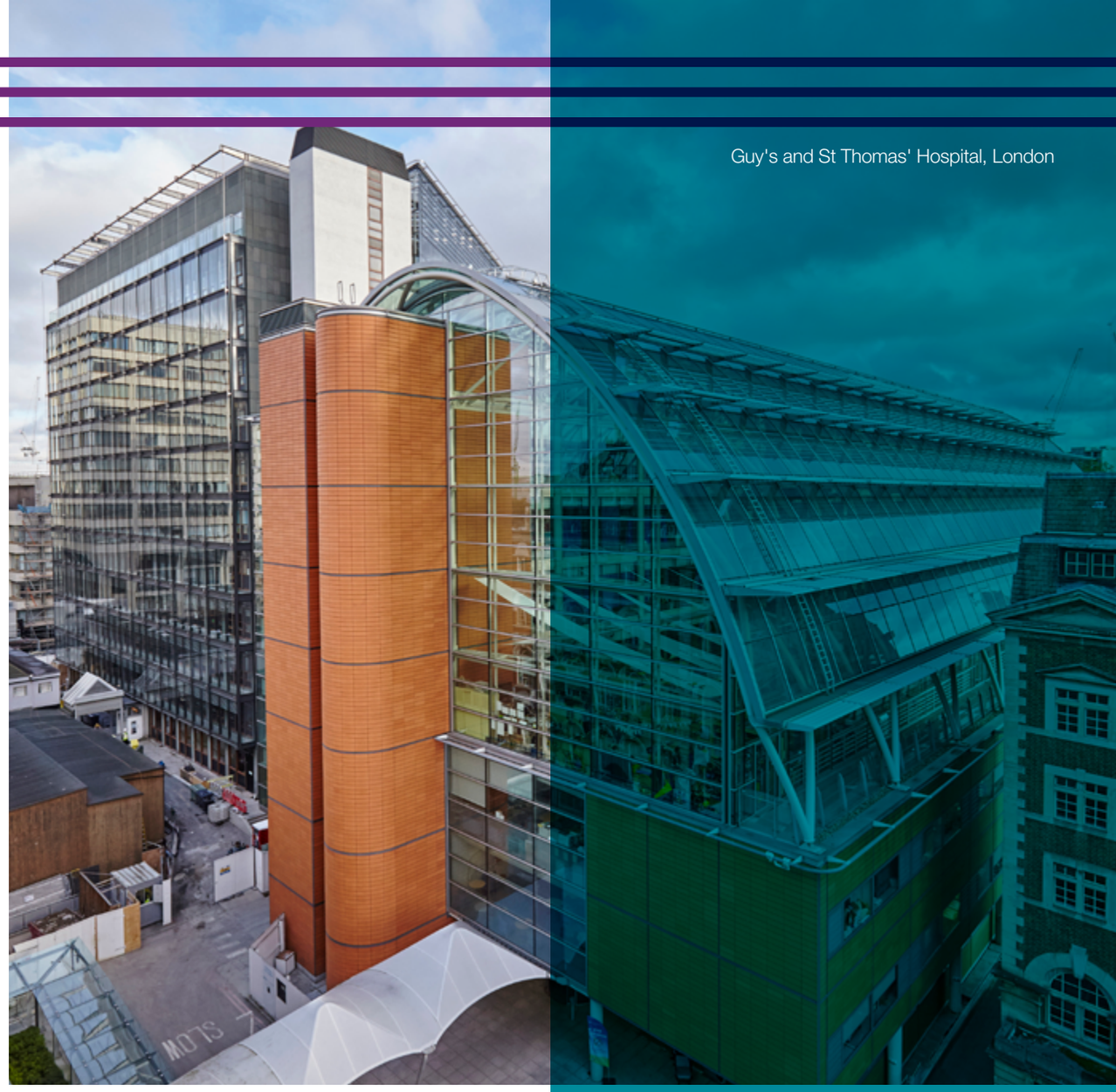
INTRODUCTION

With the United Nations anticipating the world population will increase by two billion people within the next 30 years[i], peaking at nearly 10.4 billion by the mid-2080s, there is an increasing pressure on healthcare providers to meet this higher demand for care.

This requires the construction of new hospitals, specialist facilities and care centres. And, while these need to be built to meet the demands of today, they must also anticipate future needs, including impending technological advancements, the need to decarbonise hospital buildings, a skilled worker shortage and an increasingly aging global population.[ii]

We know that patient expectations on the kind of care received in modern hospitals are high. Patients want hospital staff to know all about them before they walk in, have access to their data whenever they need it, be offered more advanced forms of care if they choose to take them, and experience timely communication about the next phases of their care without feeling like they keep repeating their interactions unnecessarily.

These hospitals of the future, or 'Hospital 2050', need to meet and exceed these expectations, alongside boosting staff efficiency and productivity across all operations. There are massive opportunities if the promise of future hospitals can be fulfilled and, for this, we need alignment every step of the way.



Guy's and St Thomas' Hospital, London

i United Nations world population

ii Worlds aging population

LET'S START AT THE BEGINNING

The design and delivery of future hospitals is fundamental to their success. Our industry has spent a great deal of energy examining what the hospital of future will look like.

Chulucanas Hospital, Peru

But to ensure success, an equal amount of effort needs to be spent on how complex healthcare facilities should be delivered.

Hospitals are immensely complicated buildings, requiring significant attention to detail during design to ensure that patient treatment and staff activities are maximised and the length of patient stays are reduced. Clinicians and care givers therefore need to involved as early as possible in this process.

Delivering on such designs is critical to realising the possibilities of new hospitals. Being such complex structures, they commonly take a decade or longer to build before becoming operational. This cannot be sustainable if we are to meet future healthcare demands. We know that these long build times needn't be the case, such as with Chulucanas Hospital in Peru.

A strong delivery programme built on industry leading principles offers the chance to both reduce this timeline while constructing new hospitals with minimal snags and defects.

Ultimately, if we fail to focus on delivery and secure buy-in from every interested party, the promises of Hospital 2050 simply cannot be realised. Healthcare professionals will not be able to work as effectively, and patient experiences will fall short of the mark.

So, how do we ensure this doesn't happen?

OPPORTUNITIES FOR TRANSFORMATION

Hospital 2050 needs to be set up to take advantage of numerous, multi-faceted technological advancements.

For instance, the implementation and benefits of AI is seemingly limitless. From enabling faster diagnostics and decision making to improving the communications between healthcare provider and patient, it has the capacity to truly transform how healthcare organisations operate.

In addition, the impact of robots and automated processes could be transformative for hospitals. They can support pastoral care across wards with elderly or infirm patients, while also increasing pharmacy speed in assigning drugs to patients, all while reducing errors.

Finally wearable technologies offer several unique benefits across both the hospital estate and broader healthcare environment. Smart watches or similar clothing can track vitals or other body functions to aid with fast diagnostics, while smart ingestible technology offer additional diagnostic information without requiring the patient to remain within a healthcare facility.

The above technologies can be revolutionary for future-facing hospitals. However, they place heavy demands upon a hospital's structure which need to be accommodated early in the process with future capacity in mind.

For instance, the use of more digital technologies requires more higher power usage, meaning facilities need robust electrical systems with scope for future upgrades, alongside close engagement with energy suppliers to ensure the grid can accommodate their needs. In addition, the use of AI and wearable technology means that the underlying digital infrastructure of hospitals needs to be up to the task. Even something as simple as a WiFi blackspot can be potentially devastating.

DELIVERING ON THE PROMISE OF HOSPITAL 2050

Capitalising on these benefits and avoiding potential pitfalls rests upon the successful design and delivery of future hospitals.

Programme directors should not confine themselves to learning lessons from past hospital delivery alone. Whether from major infrastructure projects, commercial developments or similar initiatives, there are significant opportunities for innovation.

The pillars underpinning successful delivery are summarised below. Comprising an approach focused on establishing responsibility and ownership across healthcare leaders and their partner organisations, they ensure a cohesive team utilising cutting edge approaches, communicating clearly with essential stakeholders to deliver new hospitals at pace and in line with the requirements of hospitals of the future.

Establish the mission to unite your teams

Hospital construction is complex by nature. It must be, given the wealth of functions they need to perform while working in synchronisation with a healthcare operator's wider healthcare estate.

Complex projects therefore mean multi-faceted teams, with numerous leaders completing different projects. This brings the risk of teams working in silos, or otherwise failing to cooperate effectively, which seriously hampers the success of future hospital delivery.

It is therefore essential that project leadership clarify to all teams what it is they're there to achieve – the mission. In the case of hospital delivery, this is clarifying how the work completed during the construction phase plays a direct role in the future healthcare of our parents, neighbours, and other members of our communities.

This may seem simple but can be challenging to implement in practice. It must be clearly communicated right from the start and reiterated throughout to ensure your teams of experts deliver along the same path. However, if successful you can underpin your entire team's culture, driving the right behaviours that deliver outstanding outcomes.

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A people-focused approach

A huge variety of different internal and external stakeholders interact and have an interest in new hospital delivery. Doctors and medical staff want to ensure any new site is set up for them to do their job well; patients are concerned about receiving the best care close to home; local businesses want to understand procurement and supply opportunities; meanwhile local and national politicians want to be kept abreast of developments to celebrate successes publicly.

Hospitals are true anchor institutions. They inspire a wealth of emotion from the communities they support, and being so important for a variety of stakeholders any new hospital project faces significant scrutiny. Project leadership must build strong relations with the variety of stakeholders interested in the new facilities, maximising opportunities to create jobs and a place of importance for the local community.

It is important to consider which members of the project team are best placed to manage different stakeholder need. The complex nature of hospital construction means that without the right processes in place to define responsibility, healthcare owners might not be able to focus on building relations with key members of the community.

Again, by getting your teams and construction partners set up correctly you are much better prepared to engage productively with the people who care most about the development.

DELIVERING ON THE PROMISE OF HOSPITAL 2050

Making use of cutting-edge methodologies

Alongside the people-focused side to delivery, hospitals stand to benefit greatly from new approaches to design and construction at the earliest stages of development. These ensure that the finished hospital best aligns with key ambitions during design, as well as shaving years off delivery to get the site functional as fast as possible.

Building Information Modelling (BIM) is the recreation of a physical and functional building in a digital environment, functionally a lasting digital map of the hospital upon completion. During the design phase, the model can be stress tested to ensure that the requirements demanded by AI, robotics and other technologies can be realised upon construction, alongside other benefits including reducing operational carbon once built.

Critically, BIM enables clinicians and other stakeholders to better engage with the facility's design and influence the final layout. By bringing a broader selection of healthcare experts into the process at this stage, new hospitals can be better designed to put patient care front of mind, ensuring this digital twin 'build' is correct before works begin.

Meanwhile at construction, use of BIM enables teams to better collaborate through a shared 3D model, identifying correct construction sequencing and aligning disparate teams towards your shared mission. This also enables you to alter your supply chains and procurement processes to best meet this sequence, benefitting your overall programmes.

Finally, once operational the digital twin created using BIM enables more effective maintenance and repair if things go wrong.

These benefits come into their own once paired with another innovation in delivering built environment projects, Modern Methods of Construction (MMC). MMC emphasises off-site construction, building structures in discrete modules that are assembled on-site to create the completed hospital faster than traditional construction. Modules can be repeatable, replicated where appropriate, and combined in multiple ways to meet the needs of a particular wing of the hospital.

Construction of parts off-site also bring a series of benefits, predicated on a robust supply chain. By building in a separate location we reduce hospital movements to site, reducing local disruption and cutting carbon emissions. Off-site construction also improves consistency of construction due to controlled manufacturing conditions, driving up the final quality of the site. In addition, through reducing worker hours on site we improve health and safety across all operations, alongside minimising disruption for any existing patient care.

The combined use of BIM and MMC can drastically cut the length of hospital construction programmes, anywhere from 10-50%, and cannot be ignored if Hospital 2050 is to be successful.

DELIVERING ON THE PROMISE OF HOSPITAL 2050

Develop a robust data strategy

New hospitals face a unique challenge to be truly future facing. Alongside delivery of the hospital structure and facilities themselves, to realise the true benefits of digital care healthcare leaders need to develop robust data strategies to support them.

This is a significant undertaking. All patient records need to be digitised, with the right platforms in use to easily update said records as required. Hospital staff and suppliers need to access this information, and the data itself must be secure to avoid tampering or misuse. Meanwhile, with the advent of AI and wearable technology, all the inputs from these systems must be processed correctly to make best use of them. In addition, with patients increasingly expecting healthcare organisations to provide their treatment history or other data at the click of a button, organisations must be prepared to respond to this.

This must be considered and acted upon both during design and delivery of a new hospital. It is an intricate operation, demanding the implementation of the right systems and ownership of the challenge, along with expert advice to build a bedrock for future iteration.

Nevertheless, it is truly a lynchpin for Hospital 2050. A lack of a strong data strategy and coherent platform for accessing and disseminating key information mean an inability to capitalise on newer forms of care and, crucially, failing to offer world-leading services for patients.

Centre for Disease Control

CONFIDENT DELIVERY

All of the above is wrapped up in complexity, and on the face of it, is not easy to deliver. However, there is an approach proven to tie together all of these strands to drive consistency and collaboration – it's the delivery partner model. This route forward offers a partner organisation the mandate to drive delivery across multiple projects, liaising directly with varied stakeholder and contractors, to ensure a programmatic, whole-system approach. We truly believe it is how we will best build the hospitals of the future around the world.

From past projects like Birmingham New Street Station and the Lima 2019 Games, to live commissions such as Metrolinx in Canada, Chulucanas Hospital in Peru, Qiddiya in Saudi Arabia and Manchester Airport in the UK, we've seen the positive effects of this approach many times over.

For Hospital 2050 to become a reality, we as an industry need to focus as much on the delivery of the innovative facilities as we do on what those facilities could be. In doing so, healthcare leaders can create truly outstanding hospitals that enable transformative care for patients around the world.

Chulucanas Hospital, Peru

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