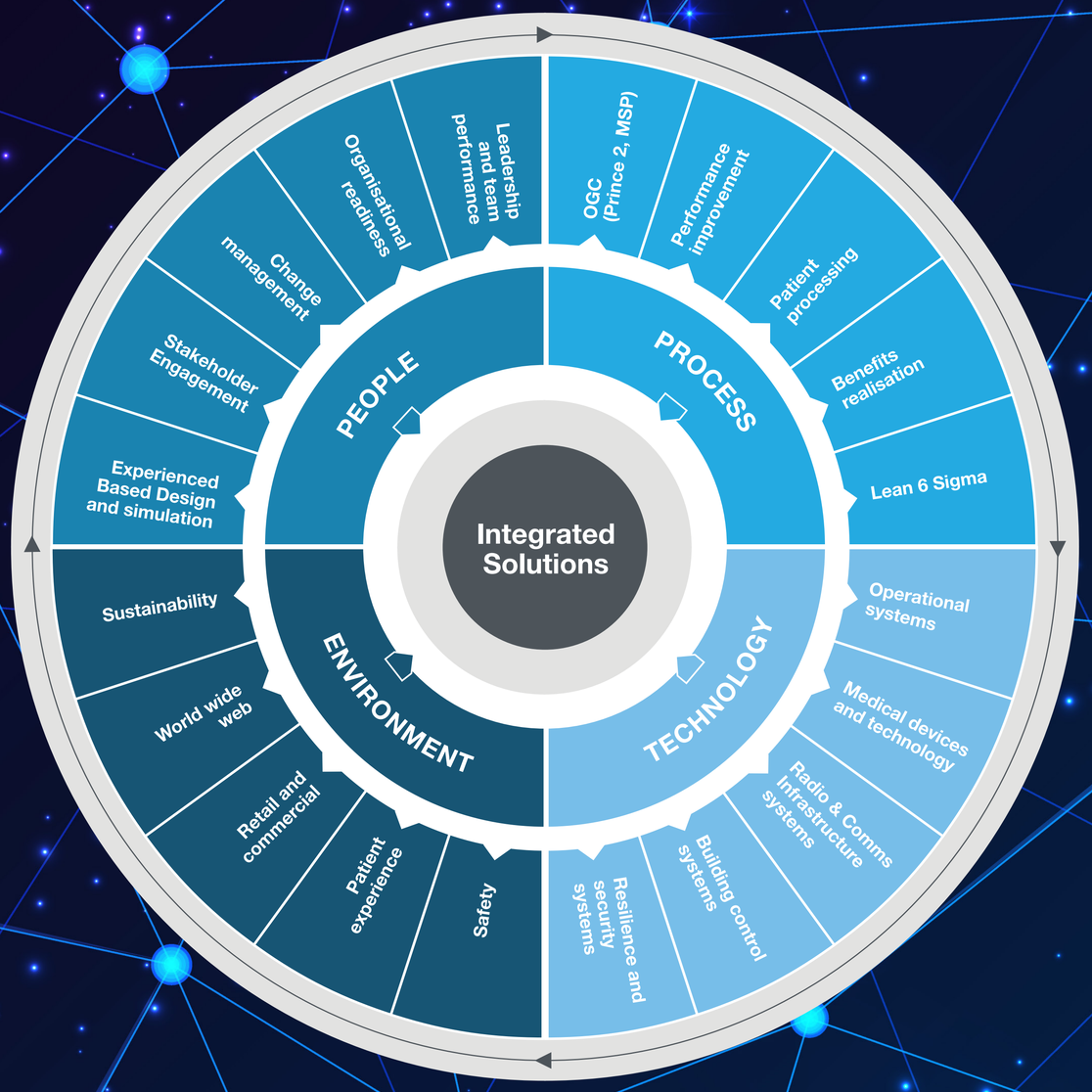
Best Practices for Integrated Technologies in Healthcare Facilities



Systems model: used to adopt a holistic approach and understand and address all elements of the total system to inform successful design and operations.

All too often digital healthcare systems are fragmented, difficult to inter-operate, and not linked beyond the four walls of the facility, preventing the potential benefits being realised.

A whole systems approach is required, integrating people, process, environment and technology. Arup has developed a systems model for a holistic approach addressing all elements of the total system to inform successful design and operations of the digital healthcare facility process.

Background

Most healthcare now depends on IT and communications (ICT) technology in some form, and new requirements and technology are continually being introduced.

These include: sharing of data across multiple locations, cloud storage of data, mobile technology, support to clinical decision making, use of data for predictive and personalised healthcare, remote monitoring, growing patient expectations, and the potential for real-time analysis and modification of healthcare environments.

In addition, healthcare facilities incorporate an increasingly wide range of technology systems to support effective operations and improve patient experience, for example: wireless staff communications, automated dispensing, building management systems, wayfinding, security systems, mechanized logistics systems, and real time materials tracking.

Systems Model

A fully integrated healthcare solution needs to balance each of: people, process, environment and technology as shown in the systems model diagram above. Each of these need to take into consideration the others and the model works in a cyclical manner; constantly reassessing and improving.

The model starts, and ends, with the people; specifically, the organisation delivering care. Whether that's through assessing the setup and readiness of the organisation through to integrating previous experience into the model, what really matters is understanding stakeholders' needs.

It is critical to define the business process, concepts of operations and flows first, before selecting technology solutions. Processes will be unique in each facility and setting and need to be carefully mapped, then assessed against the overall objectives and needs. Future state processes can then be developed and then the most appropriate technology solutions identified to optimize performance.

Technology is an obvious element of the model; consisting of systems, devices and how they interface with each other. However, as before integrated solutions are best served by validating through the whole of the systems model.

The term environment is used to indicate that technology goes beyond the four walls of any facility and this has impacts across the systems model; everything from the technology used to the processes developed to maximise the value while maintaining patient confidentiality and privacy.

Tools

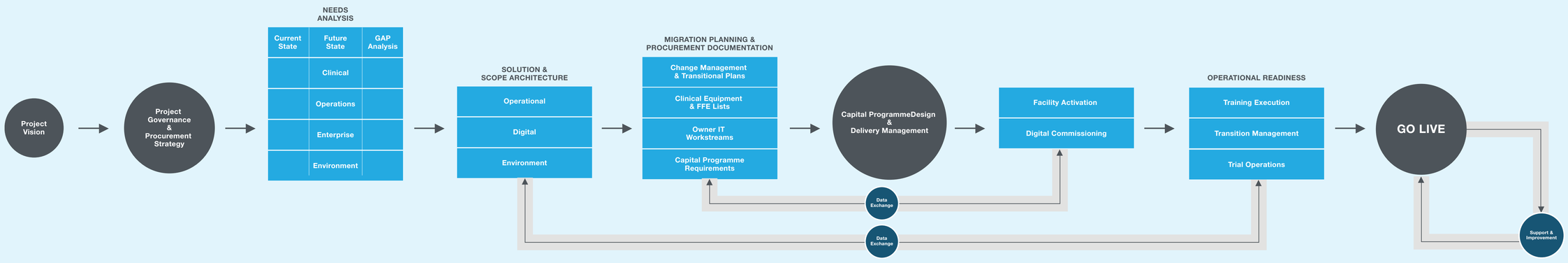
A series of tools are used in conjunction with the systems model, including:

Stakeholder identification and engagement
Responsibility matrix
Business process mapping
System integration definition
Integration matrix
Integration specification

Digital Healthcare Facility Process

The digital healthcare facility process is necessary for the planning, specification, procurement and implementation of digital operations and workflows.

The approach starts from the earliest stages with a digital vision and is characterized by a focus on the transition to integrated operations from a very early stage. New roles are required across a project to define and deliver systems integration. This differs in some respects from the more familiar process for building projects, and identifying and planning the dependencies and information flow between the two is critical for success.



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