

European Health Property Network

Operating Theatre Block Planning and Design



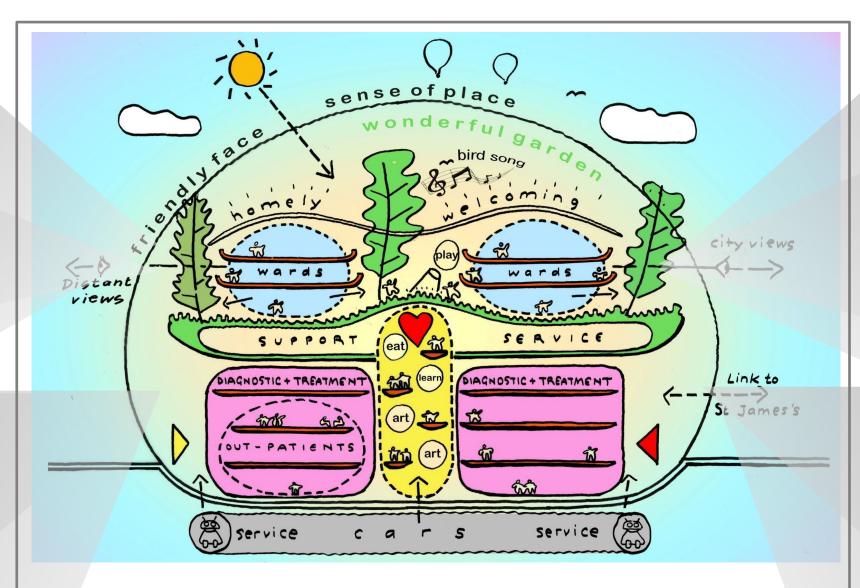
National Children's Hospital- Dublin





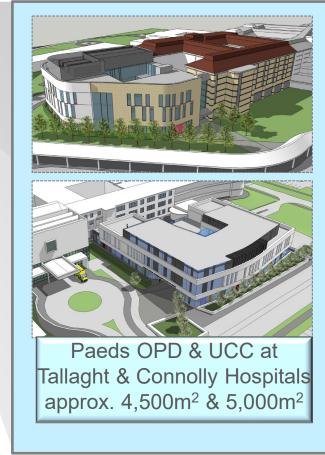
Daylight, social interaction, safe, age appropriate, homely yet exciting

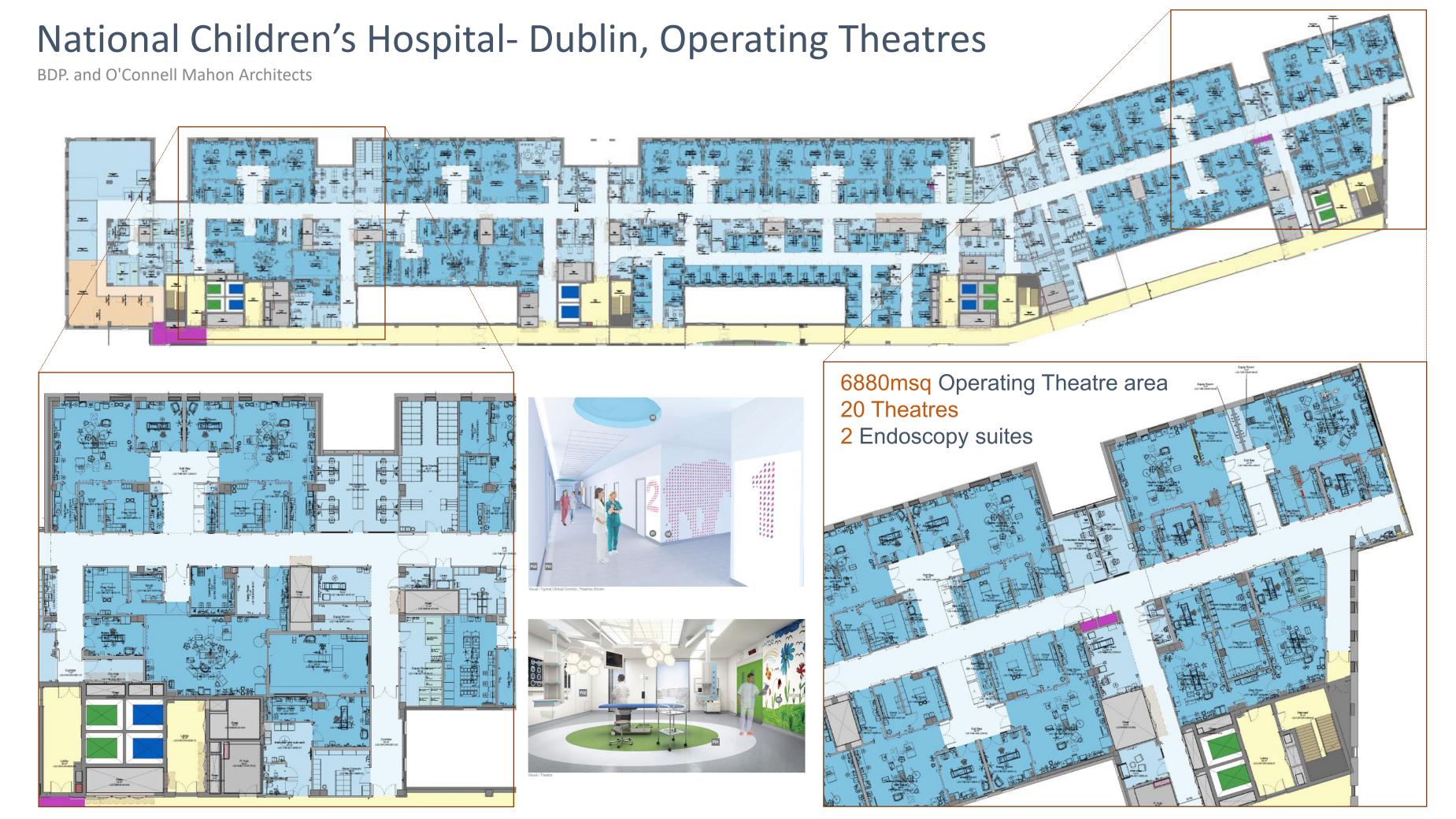




- 160,000m² total floor area, approx., including basement.
- **473 beds** (380 In-patient & 93 day care)
- 22 theatres
- 110 OPD rooms, 12 SSOU beds & 36 assessment bays
- Advanced diagnostics, intervention and theatre facilities
- Play areas, external gardens and courtyards
- Therapy area with hydro pool & gym
- Hospital School
- Children's Research & Innovation Centre
- Adjacent parent / family accommodation (RMcDHC)









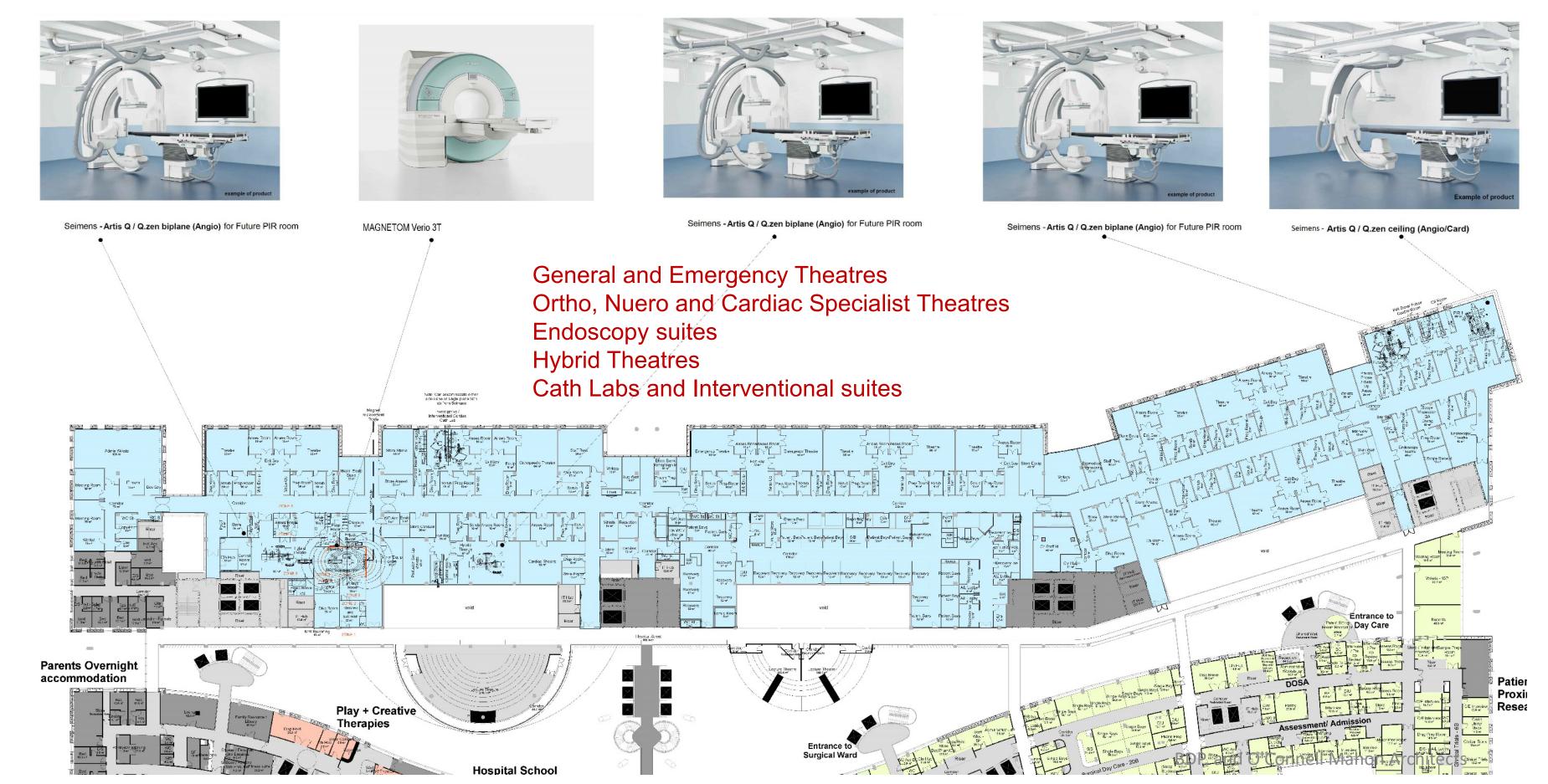
National Children's Hospital- Dublin



National Children's Hospital- Dublin

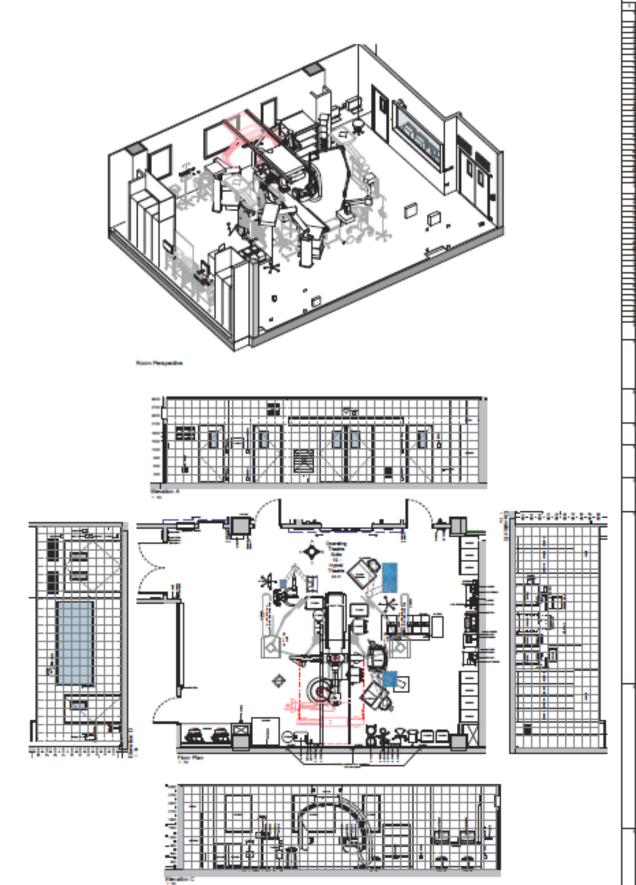


National Children's Hospital- Dublin, Operating Theatres



National Children's Hospital- Dublin, Clinical Engagement

- 300+ user group engagement meetings
- 4742 rooms loaded with equipment
- 172,324 components of equipment loaded into the Revit Model
- 500+ number 'C Sheets' produced



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European Health Property Network- Questions to consider

- 1. Why do differences in OT block design arise, even in the case of contemporaneously planned and constructed facilities?
- 2. What evidence is used by planners and designers?
- 3. Whose voices are heard during the planning and design phases, for new build or refurbishment?



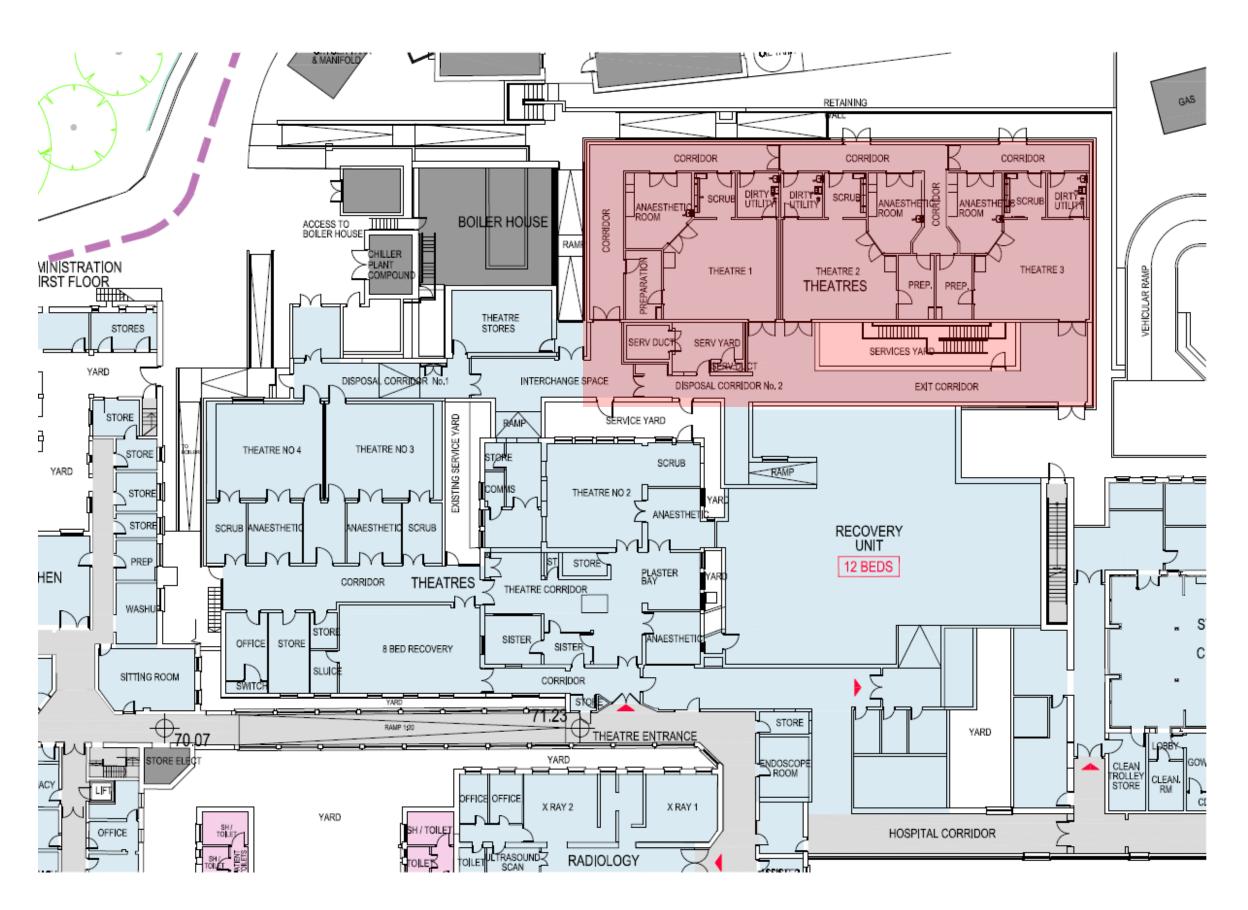
The Problem?







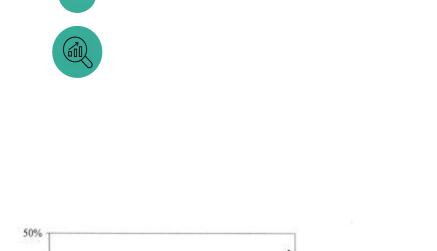
Ad-hoc operating theatre development

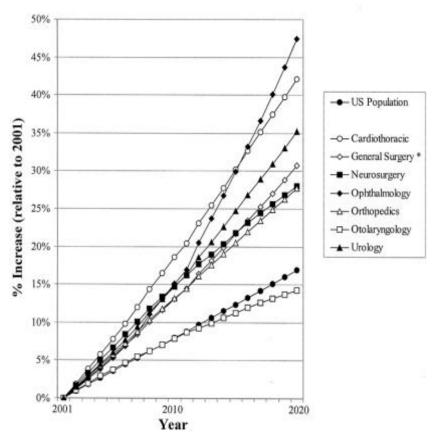




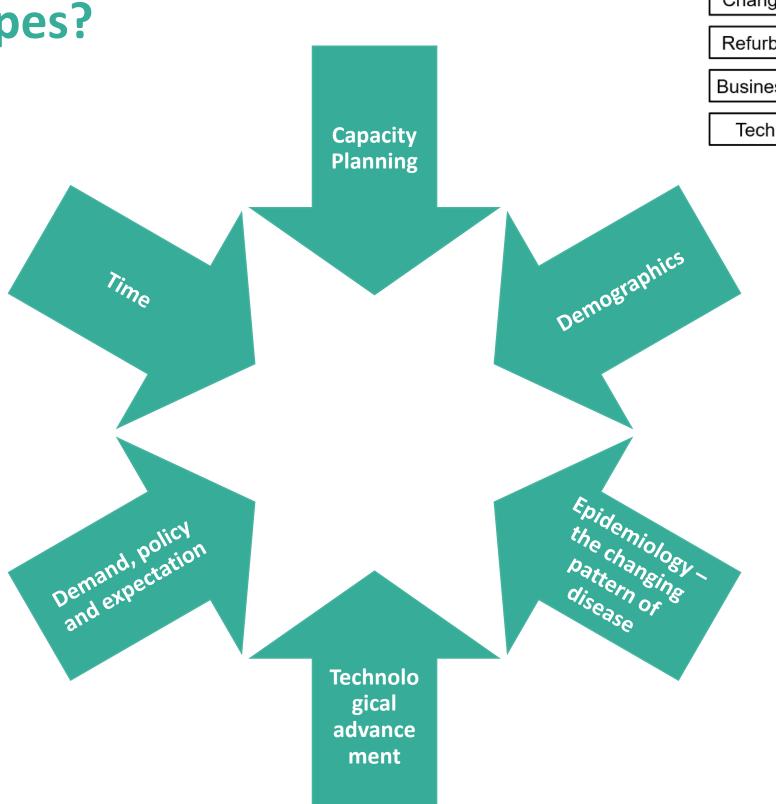


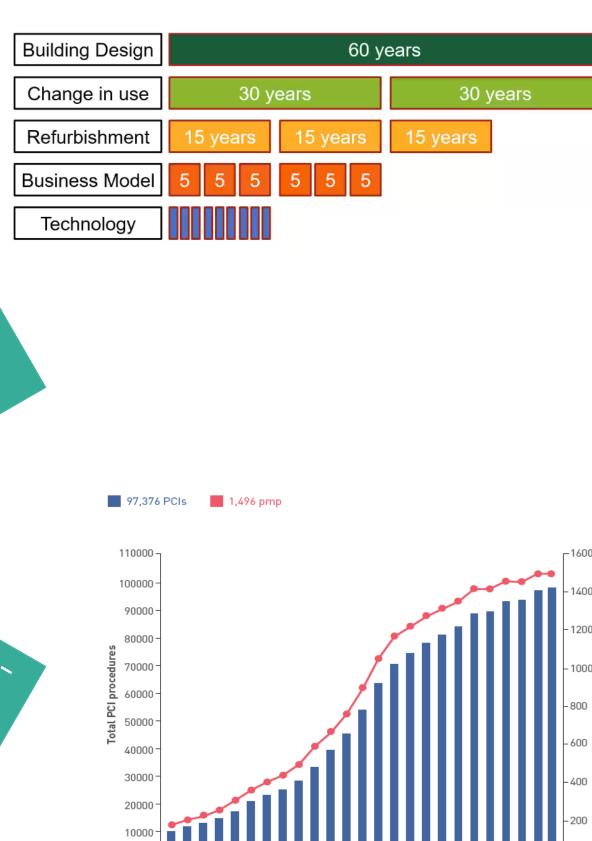
The Challenges of Predicting Theatre Numbers And Types?





Forecast increase in US surgical work by specialty (Etzioni et al, 2003)





Percutaneous Coronary Interventions trends (NICOR, 2017)

The Challenges To Predicting Theatre Numbers And Types?

Capacity Planning

- a. Decision making
- b. Clinical opinion
- c. Building design and physical infrastructure
- d. Data
- e. Political influence
- f. Separated funding streams
- g. Misunderstanding of terminology







O'Connell Mahon Architects

The Research Subjects





Ulster Hospital Inpatient ward Block (IWB), Dundonald, Opened April 2017



South West Acute Hospital, Enniskillen, Opened June 2012



Tullamore General Hospital, County Offaly, Ireland. Opened 2008



Mater Misericordiae University Hospital, Dublin, Opened April 2012



St Vincent's Private Hospital, Dublin, Opened November 2010



Royal Stoke Hospital, Stoke on Trent. Opened December 2012



Royal Victoria Hospital, Belfast Phase 2b 2015



Victoria Hospital Kirkcaldy, Fife Opened in 2012



Queen Elizabeth Hospital, Birmingham Opened in 2010



Tunbridge Wells Hospital, Pembury. Opened January 2011



The Royal London Hospital, Opened in February 2012



St Bartholomew's Hospital, London, Opened in June 2016

Southmead Hospital, Brunel Building

Bristol, Opened May 2014



The Results



62%

CHANGE

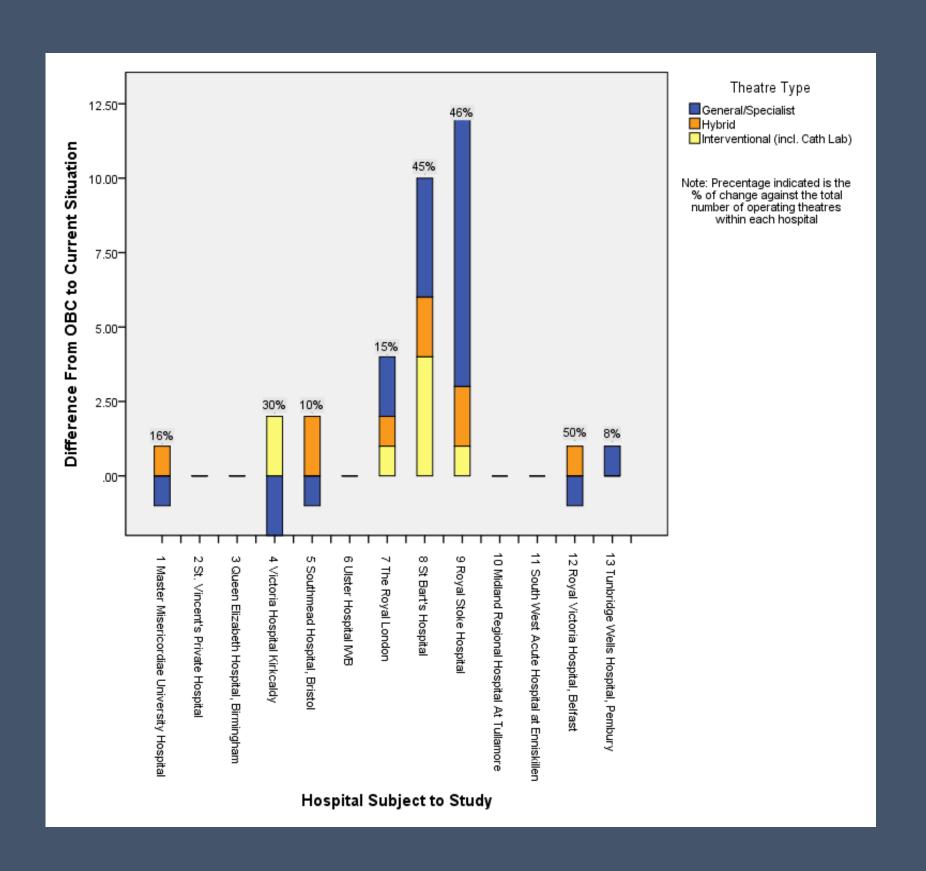
YEARS

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STATISTICALLY

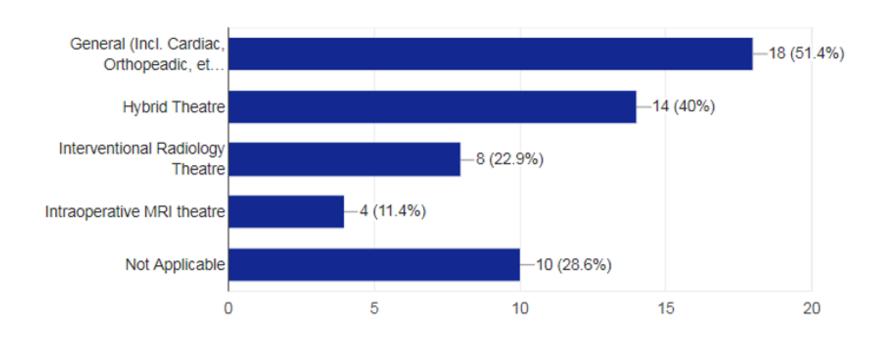


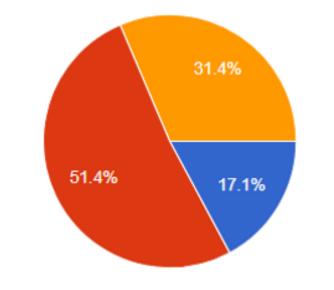
GENERAL THEATRES

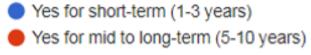


The Qualitative Study









No

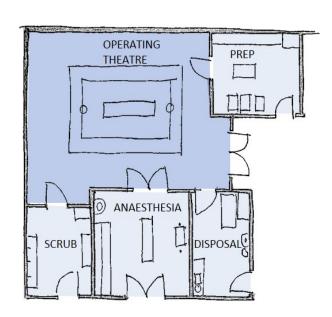
More???

Do you have the skills to forecast strategic or tactical needs of your operating theatre?

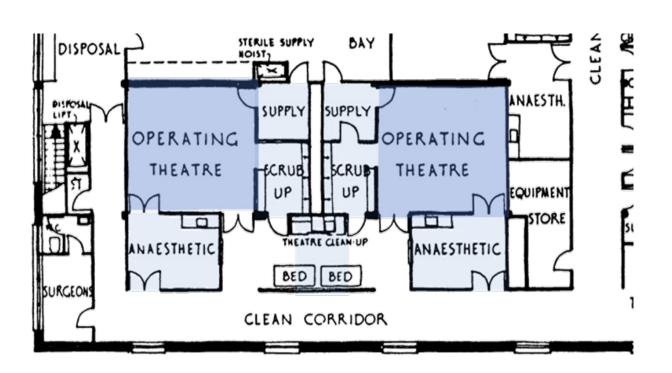
Current Guidance- Health Building Note (HBN) and alternatives

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2019



Current HBN 26 (2004) Operating Theatre layout



Operating Theatre suite accommodation requirements by type												
General Operating Theatre (DOH, 2004)		Specialist Theatres; orthopaedic, neurological, cardiovascular		Catheter laboratory (DOH, 2013)		Hybrid Operating Theatre		Intra-operative MRI suite				
Room	Area m²	Room	Area m²	Room	Area m²	Room	Area m²	Room	Area m²			
Operating theatre	55	Theatre	55¹	Catheter lab.	50	Theatre	70-904	Theatre	55¹			
			70-75²						70-75²			
Anaesthetic room	19	Anaesthetic room	19	Anaesthetic room	19	Anaesthetic room	19	Anaesthetic room	19			
Preparation room	12	Preparation room	12	Preparation room	9	Preparation room	9	Preparation room	12			
Dirty utility room	12	Dirty utility room	12	Dirty utility room	12	Dirty utility room	12	Dirty utility room	12			
Scrub-up: 3 places	11	Scrub-up: 3 places	11	Scrub-up: 2 places	7	Scrub-up: 2 places	7	Scrub-up: 3 places	11			
Storage	1	Storage	1	Storage	4	Storage	4	Storage	1			
				Computer room	10	Computer room	10	Computer room	10			
				Control room	12	Control room	12	Control room	12			
								Intra-operative MRI	42³			
Totals (maximum figures taken)	110		130		113		163		184			

- 1 HBN 26 and HBN 01-01 suggest that Orthopaedic (Ultra-clean) and Cardiac theatres should be sized at 55msg, similar to general theatres (DOH, 2004), however recent operating department briefs have included specialist theatres up to 85msg in area.
- Area as recommended area by the American Society of Anesthesiologists, (Block and Helfman, 2012)
- 3 Area as recommended HBN 6, Facilities for Diagnostic Imaging and Interventional Radiology (DoH, 2001)
- 4 Area as recommended by Siemens AG, (Siemans, 2015), Nollert et al (2012), Block and Helfman, (2012), Kpodonu (2010)

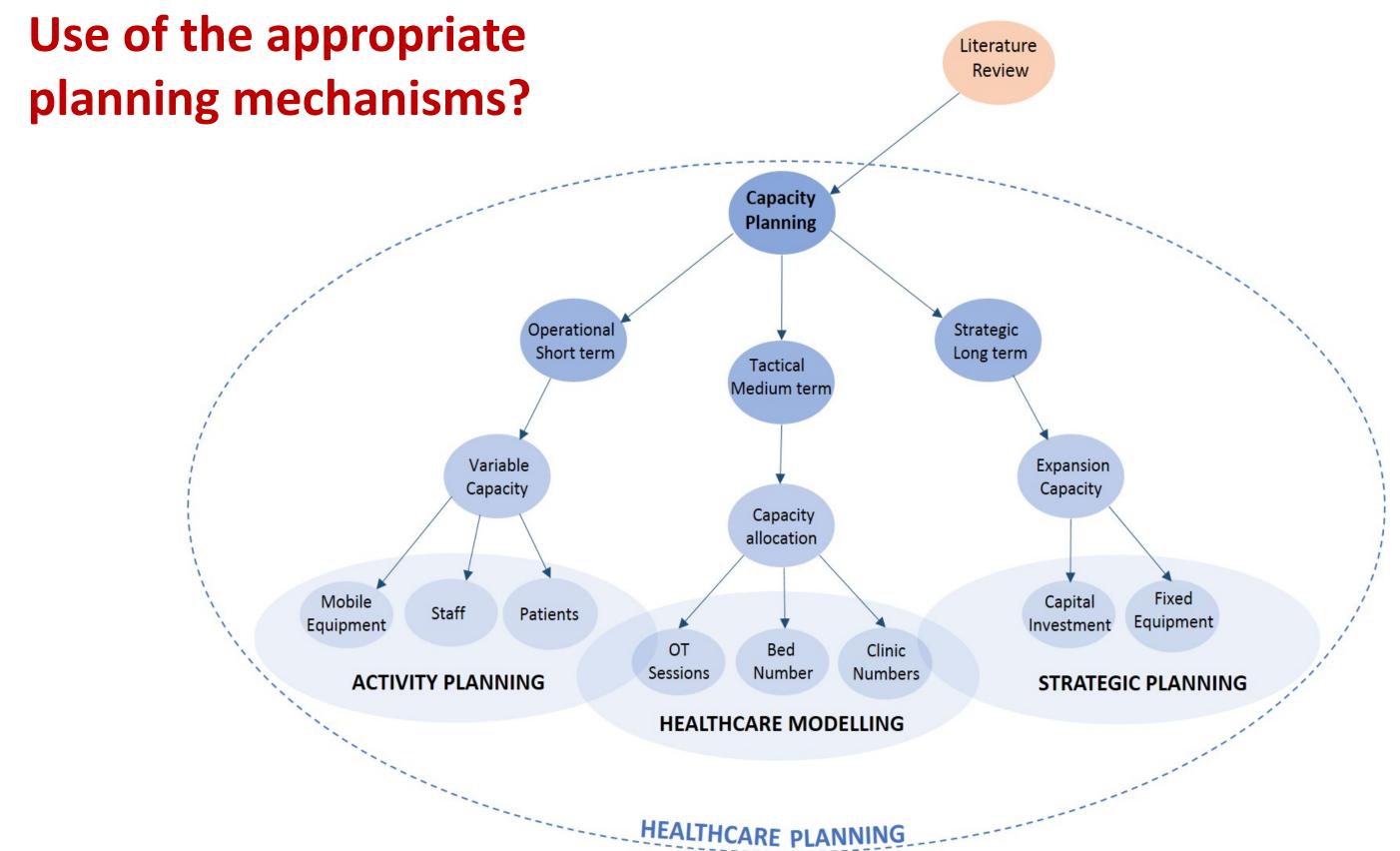




"there are simply too many parameters that are unknowable" (Rachel et al. 2009)

We need a different mindset and approach







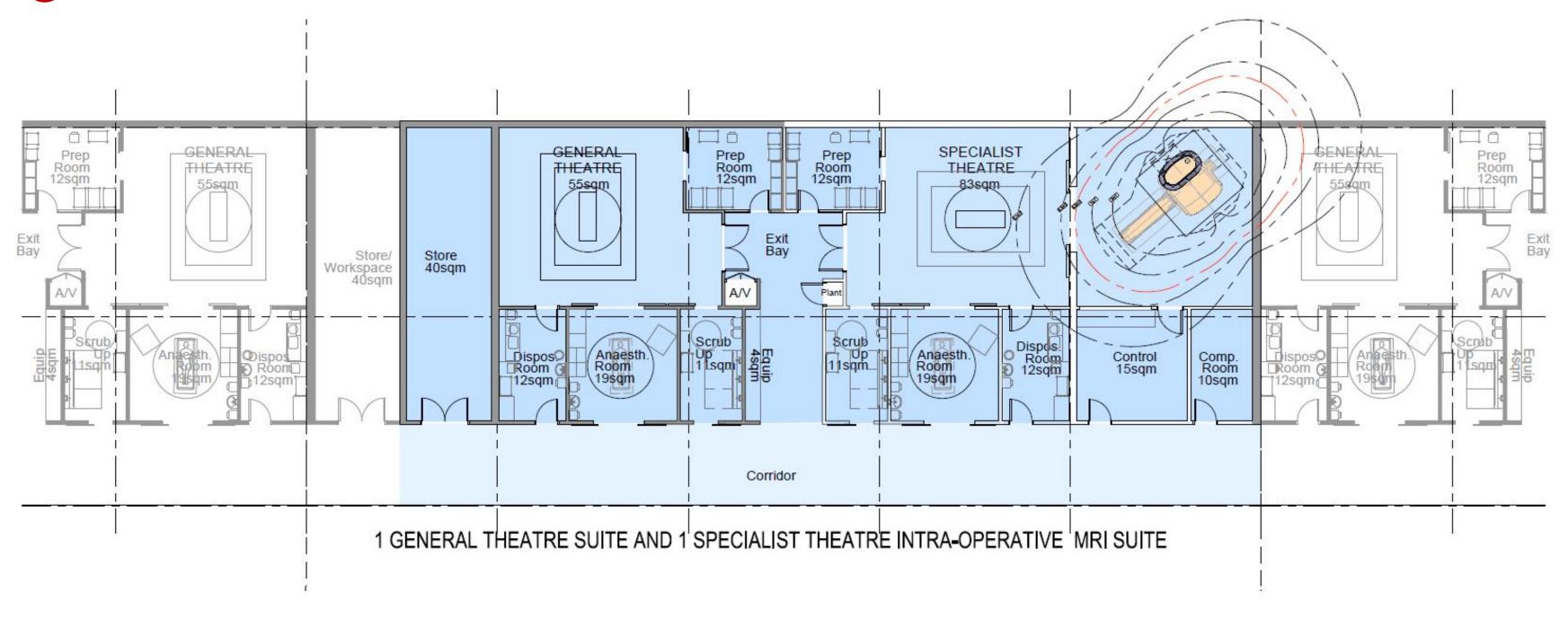
The case for the Adaptable Estate

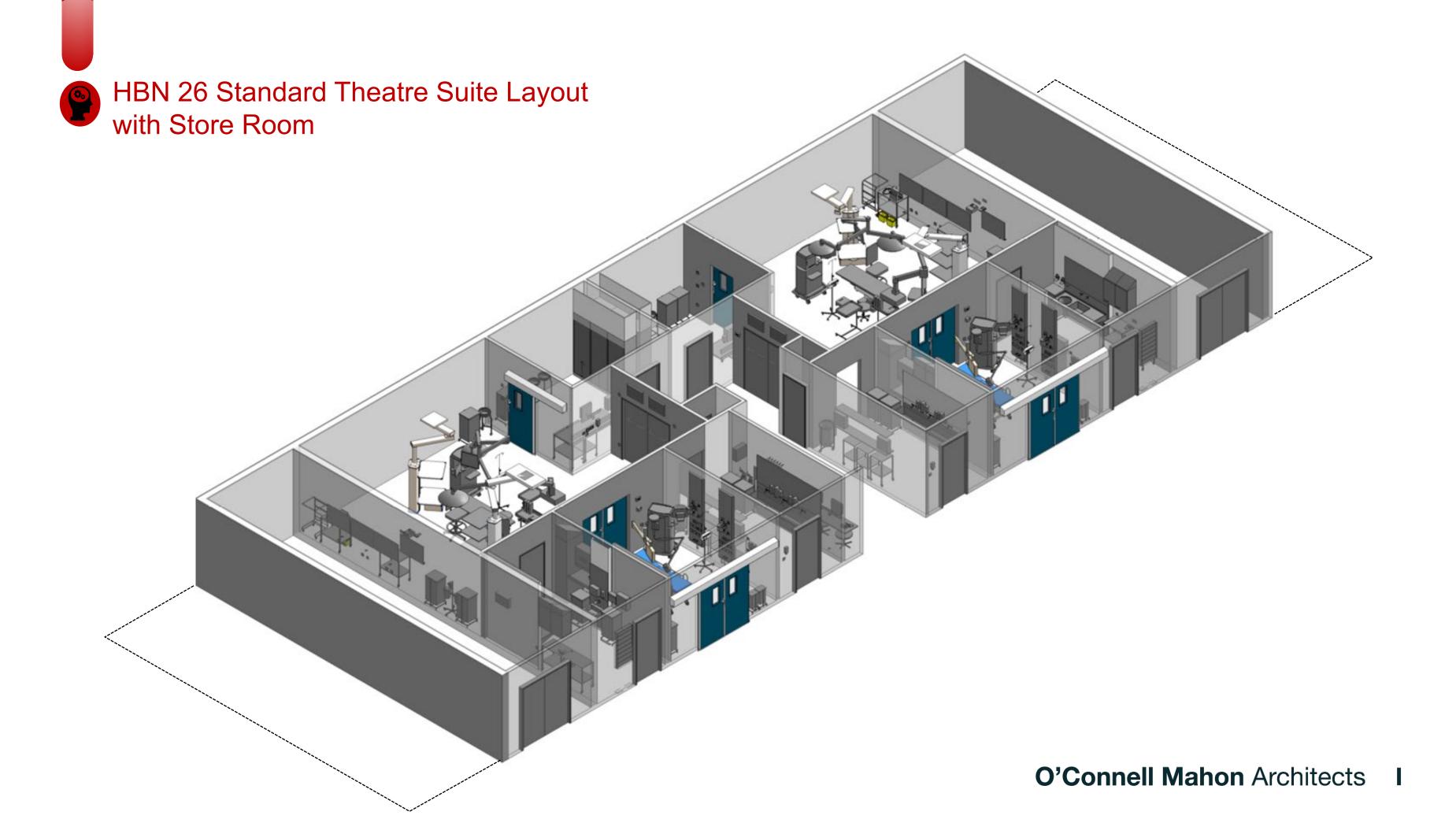
"The Adaptable Estate Specification seeks to develop a 'design guideline' for a generic Shell & Core approach to building developments that suits bespoke fit-out for different space typologies – healthcare, research, teaching and commercial - that can adapt over time."

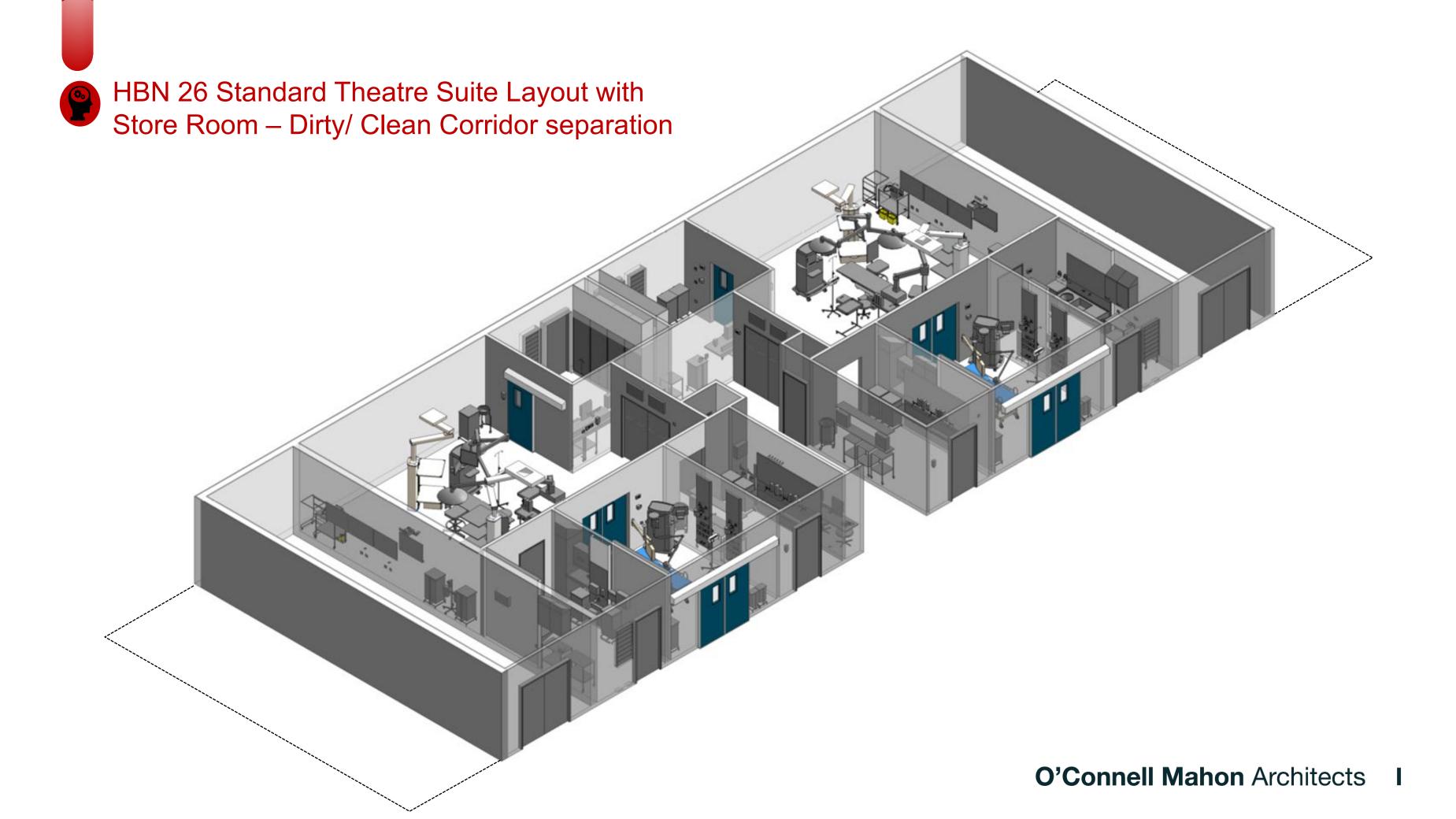
The Adaptable Estate Strategy and Specification, presentation given at the European Healthcare Design Conference, June 2019, by Guy's and St Thomas' NHS Foundation Trust

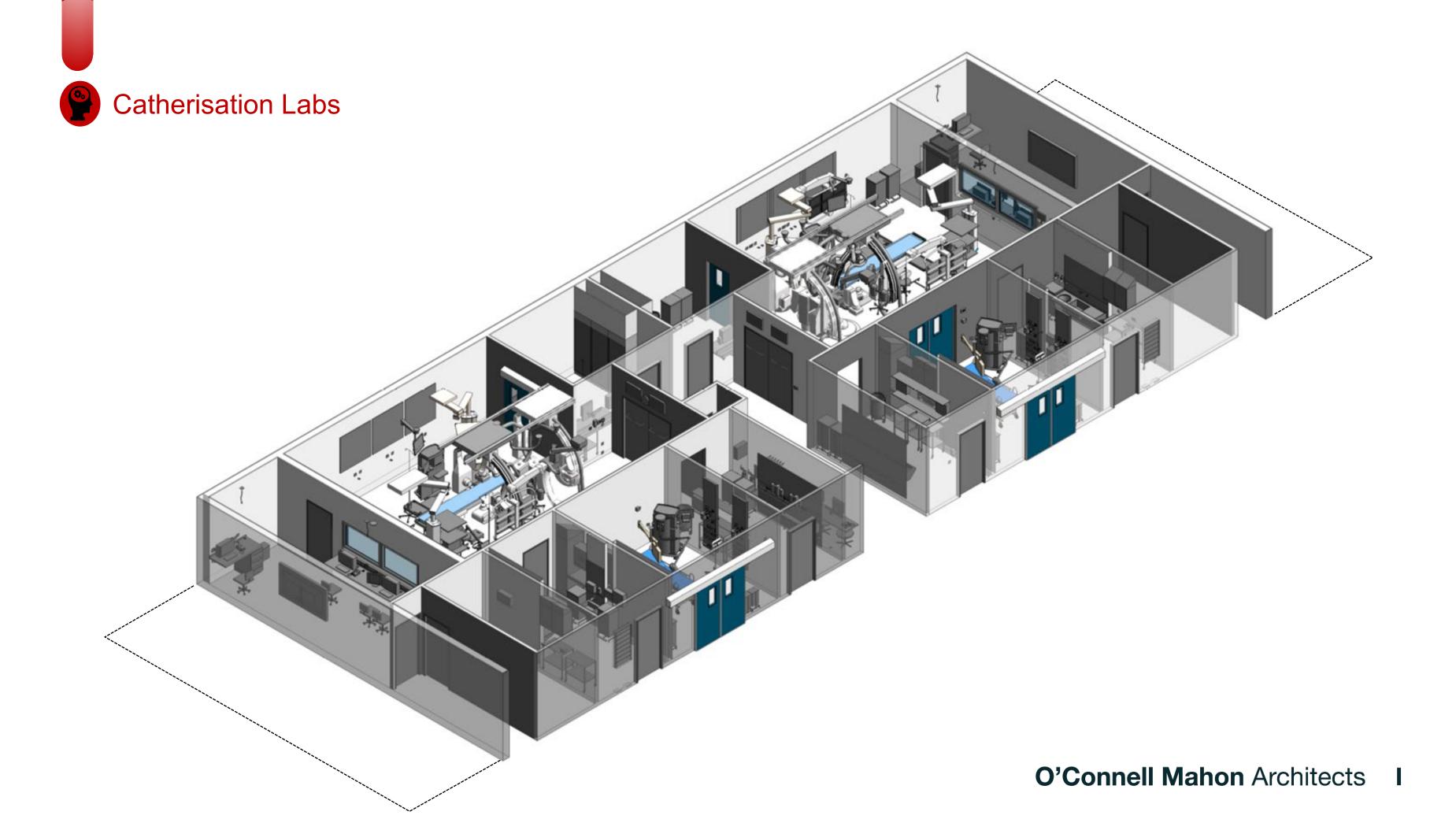
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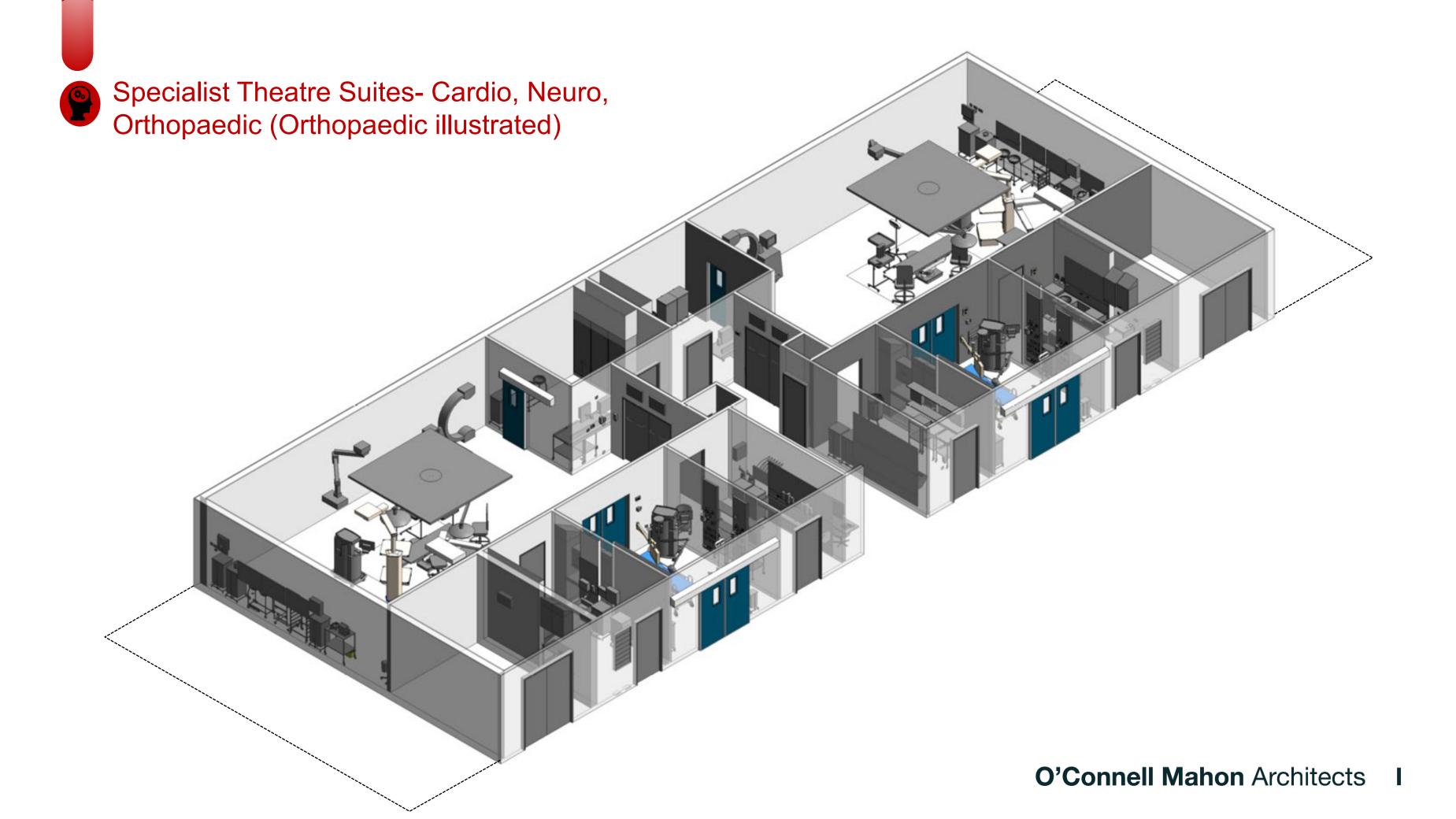
A new approach and mindset to Operating Theatre Design.

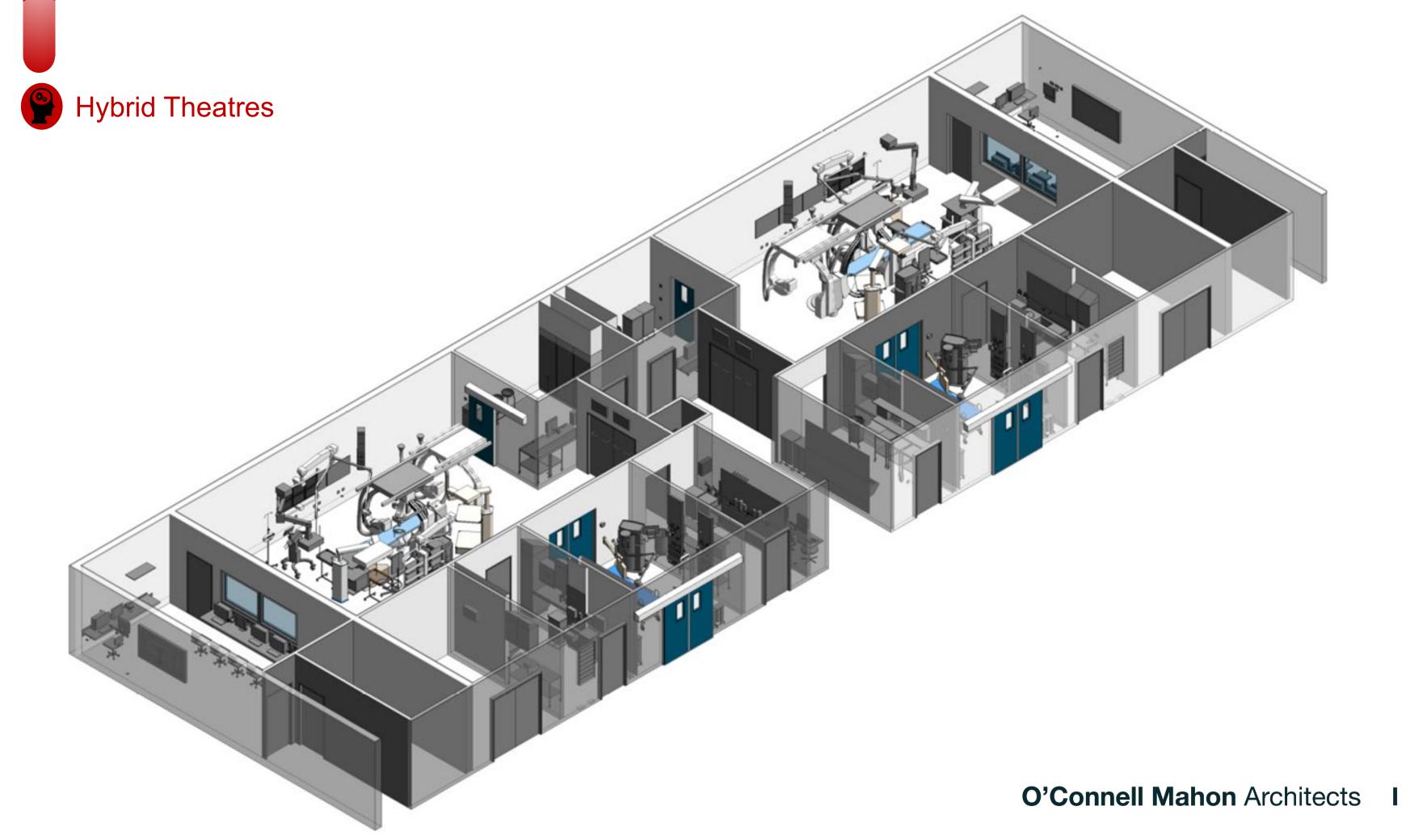


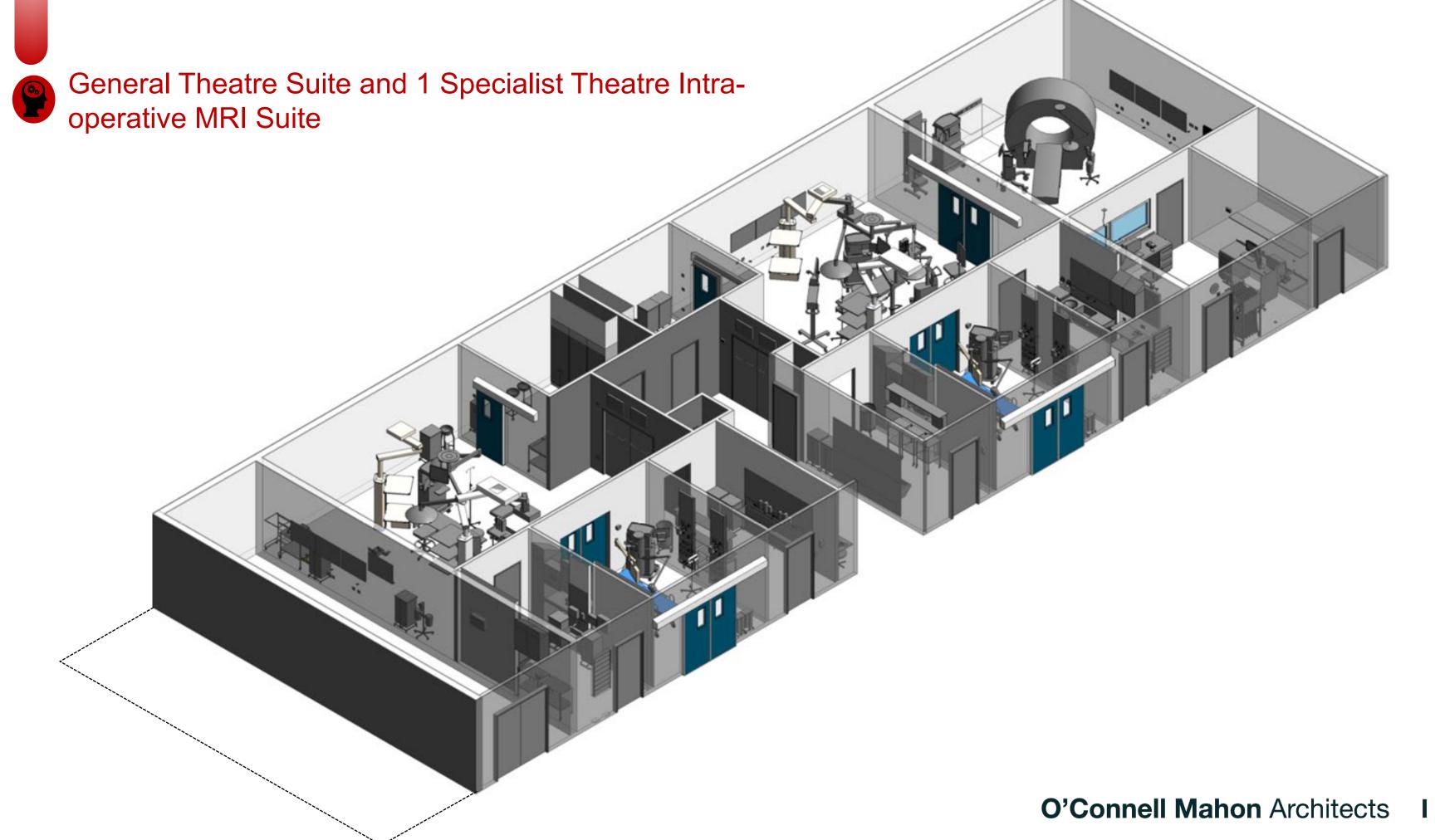












THANK-YOU

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