



Indiana
CHAPTER

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Hybrid Suites: Accommodating an Integrated Approach

A vendors perspective



15th Annual Meeting of the Indiana-ACC

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Integrated Hybrid Suites

Clinical Integration

Mechanical Integration






Information Integration

Industry Integration



Multiple Specialists With Interest

Key Specialists Seeking Access to Hybrid OR

Specialists	Vascular Surgeon	Cardiothoracic Surgeon	Interventional Cardiologist (Adult)	Interventional Cardiologist (Peds)	Neurosurgeon
					
Common Procedures	<ul style="list-style-type: none"> • AAA¹ repair • TAA² repair • CAS³ • Peripheral angioplasty, stenting, • Peripheral bypass 	<ul style="list-style-type: none"> • CABG⁴ • Aortic valve replacement • Mitral valve repair • VAD⁵ implantation • Transplants 	<ul style="list-style-type: none"> • Diagnostic caths • PTCA, PCI • Peripheral angioplasty, stenting • Atherectomy 	<ul style="list-style-type: none"> • Hypoplastic left heart syndrome • Heart biopsy • Diagnostic cath • ASD⁹, VSD¹⁰ • PFO¹¹ • PDA¹² 	<ul style="list-style-type: none"> • Aneurysm coiling • Intracranial stenting • CAS • Intra-arterial tPA
Procedures Well Suited For Hybrid Room	<ul style="list-style-type: none"> • AAA endograft • TAA endograft • Complex peripheral cases 	<ul style="list-style-type: none"> • MIDCAB⁶/PCI⁷ • MI Valve/PCI • TAVI⁸ 	<ul style="list-style-type: none"> • MIDCAB/PCI • MI Valve/PCI • TAVI • Peripheral stenting 	<ul style="list-style-type: none"> • Structural heart interventions • Hybrid Stage 1 	<ul style="list-style-type: none"> • Aneurysm coiling

1 Abdominal aortic aneurysm

2 Thoracic aortic aneurysm

3 Carotid artery stenting

4 Coronary artery bypass grafting

5 Ventricular assist device

6 Minimally invasive coronary artery bypass

7 Percutaneous coronary intervention

8 Transcatheter aortic valve implantation

9 Atrial septal defect

10 Ventricular septal defect

11 Patent foramen ovale

12 Patent ductus arteriosus

Key Clinical Stakeholders



Mechanical Integration



Facilitating Surgeon Comfort with Advanced Tables

Examples of Table Innovations

Home-Grown Angiography Model

- Angiography-vendor designed table modified for hybrid procedures
- Include free-floating table top made from radio-translucent carbon fiber, top may be interchanged
- Some may tilt, cradle to support surgical procedures
- Angiography vendors developing home-grown solutions include Siemens, Philips, Toshiba, GE

Joint Angiography-OR Vendor Design

- Angiography, OR vendors partnering to built advanced hybrid table solutions
- Carbon fiber tables more sophisticated than home-grown models, may include additional OR functions
- Advancements include additional braces for neuro procedures
- OR equipment vendors developing solutions include Maquet, Mayfield, etc.

Two Interchangeable Tables

- For rooms with specific physician preference and ample space, two-table approach an option
- Carbon-fiber angiography table used for interventional procedures, standard OR stable wheeled in for OR procedures
- Requires larger facility



Table Motion in Brief

- **Trendelenburg (Tilt):** Allows the head/feet to incline in the vertical plane
- **Pivot:** Allows the head/feet to rotate laterally about a single point
- **Cradle:** Allows a vertical rotation from left to right
- **Breaking:** Allows table to bend and fold, useful for neuro procedures

Two families of integrated tables



Artis OR table

▶ For image guided interventions



Trumpf TruSystem 7500

▶ For image guided
and open procedures

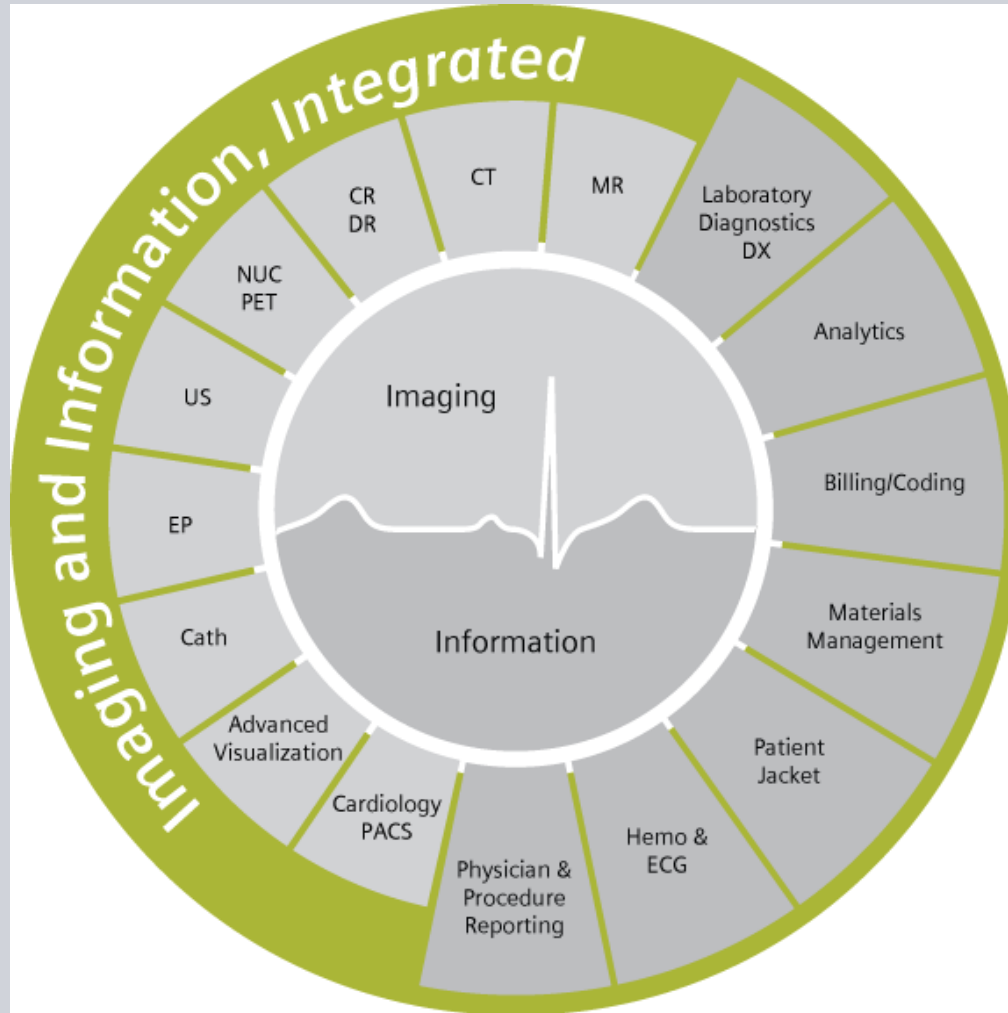
On the near horizon.....

Maquet Magnus

- Three table tops to be integrated –
Two segmented and one one-piece carbon table top (overhang 1.85m)



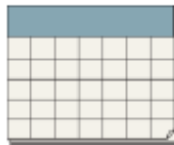
Information integration



Using IT to Keep Up with Complex Business

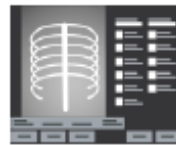
Information Technology in the Hybrid OR

Scheduling Software



- Institutions either use same software as OR or cath suites depending on room location
- Software assists in scheduling ancillary support such as anesthesia and echo
- Should be used to maintain appropriate hybrid staffing depending on case

Image Integration



- Equipment for image archival and transfer must be DICOM¹-compatible; format enables transfer to other medical devices
- Using PACS² in cath lab allows multi-modality images to be retrieved, viewed at any time
- Must have access to system to route images (i.e. echo, CT, or MR) into and out of the room

Inventory Management



- Broad range of products, devices contribute to large, expensive, inventory
- Specialized products usually limits consignment option; key to implement an inventory management system
- Programs beginning to implement Radiofrequency identification (RFID)

EMR Integration

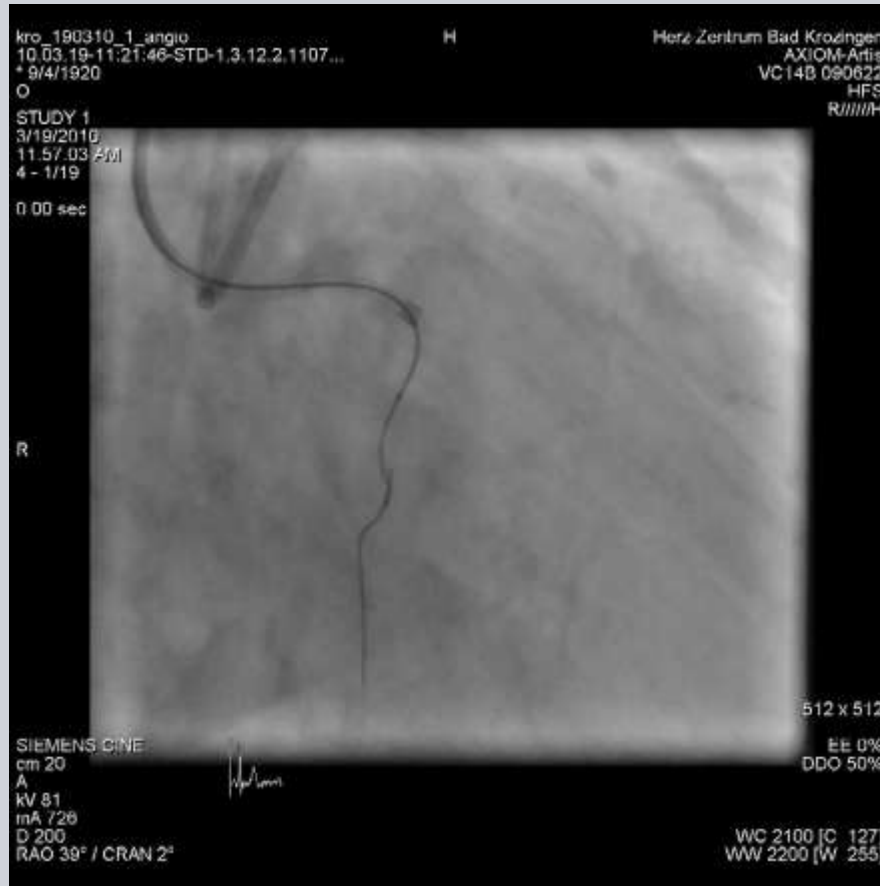


- Procedure details should be integrated into hospital's electronic medical record system
- Image archival should link to system for future procedure follow up
- Synchronization throughout procedure room will facilitate success of space

¹ Digital Imaging and Communications in Medicine.

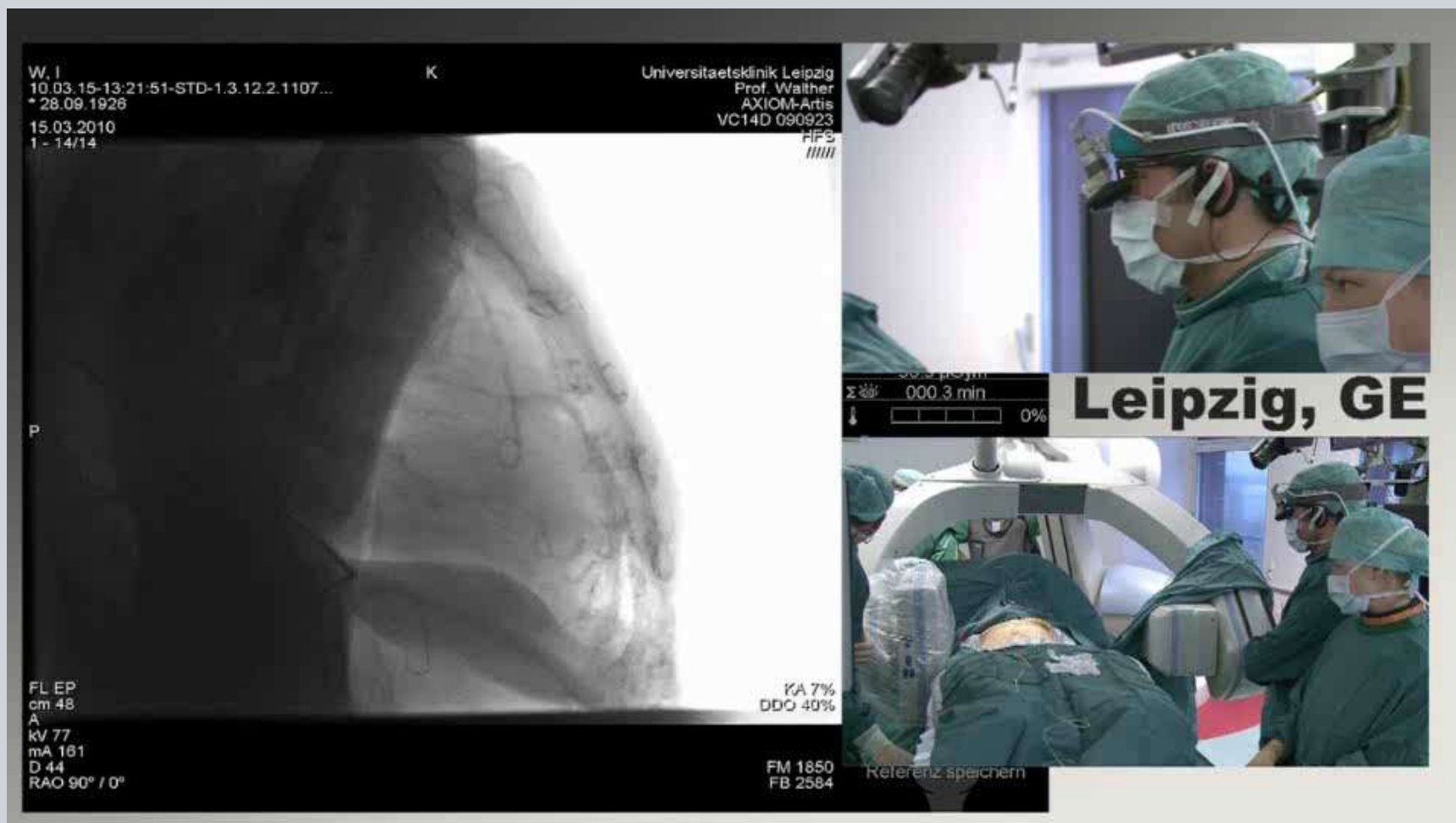
² Picture archiving and communication system.

Potential Value of MSCT in CTO Treatment

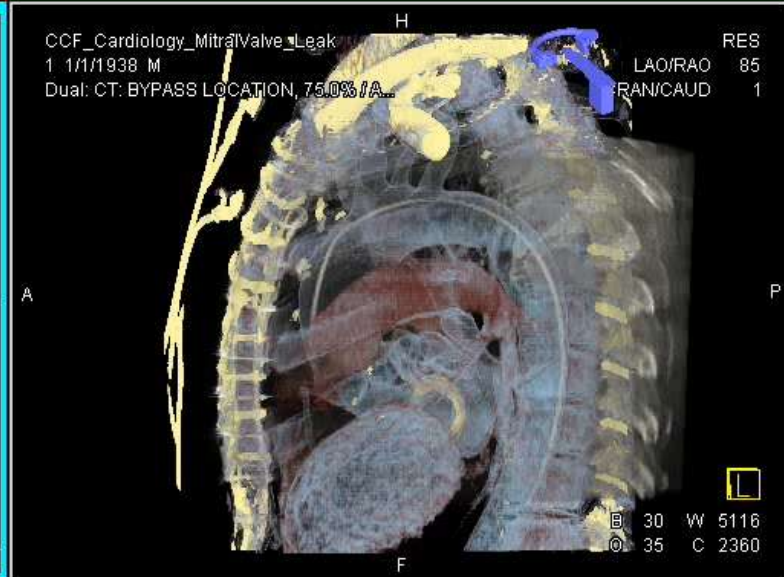
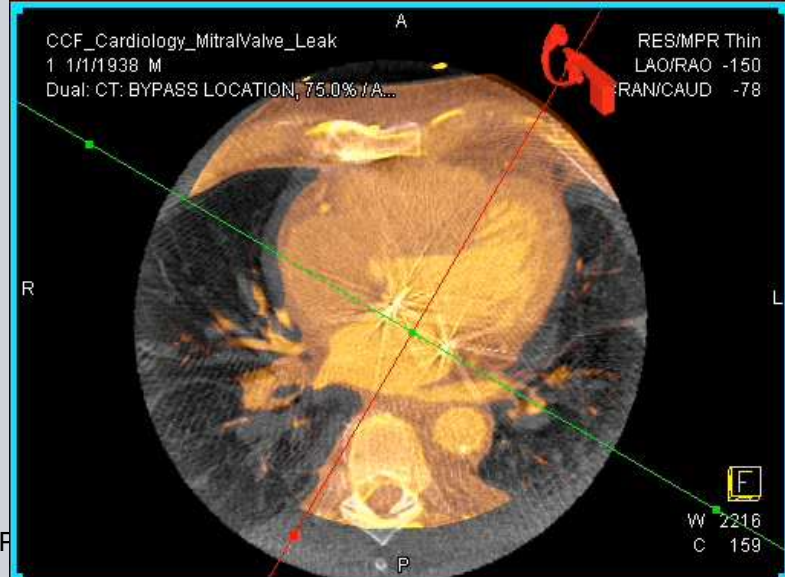
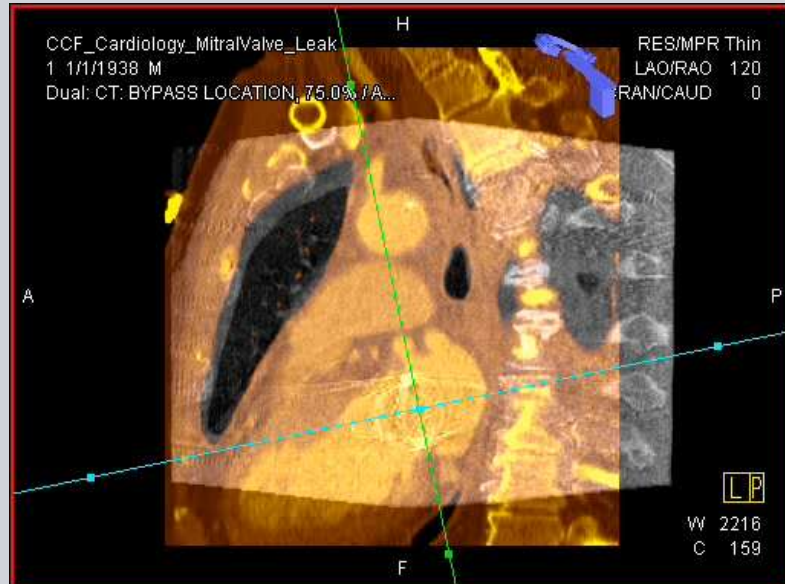


Integration of C arm CT to guide valve implantations

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Integrating pre-procedural imaging with fluoro



Information Integration – large Display



Cockpit – Integration in the control room

Artis zee Cockpit



1 Keyboard Mouse Monitor



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Industry Integration

Partners

in Hybrid Suites



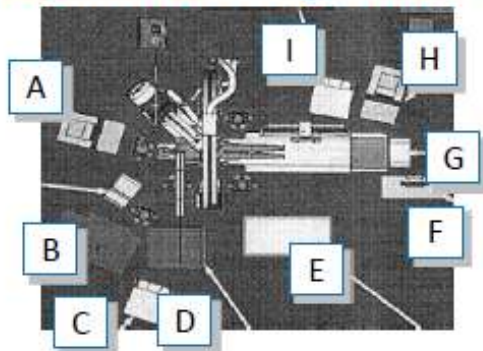
Equipment Real Estate Easily the Biggest Challenge

Modern Cath Lab (Already) Replete with Space-intensive Techs

Outfitting the Hybrid OR

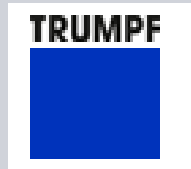


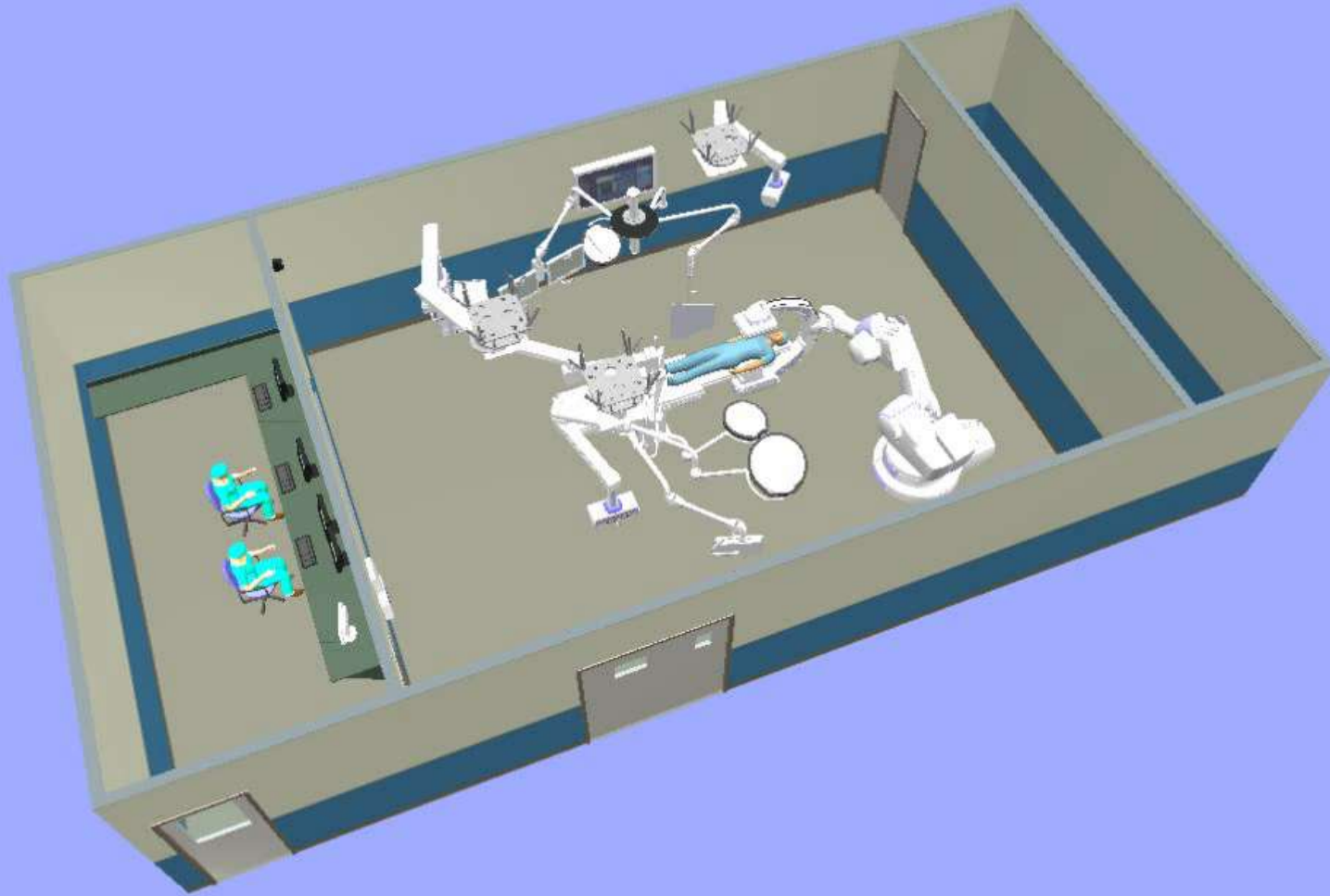
Accommodating Technologies



- A: Echo machine
- B: Anesthesia equipment
- C: Boom and terminal
- D: Anesthesia stock
- E: Cart
- F: KVM Extender
- G: Power and gas supply
- H: IVUS Machine
- I: Boom and terminal

Partners in OR







A photograph of an operating room. In the center, a patient is lying on a table, covered with blue and green drapes. Several surgeons in green scrubs and masks are gathered around the patient, performing a procedure. The room is filled with medical equipment, including monitors, IV stands, and large overhead lights. The scene is brightly lit, with a focus on the surgical team and their work.

**Thank You for
Your Attention**