

PROGRAMMING, PLANNING, AND DESIGN

HOW NEW YORK-PRESBYTERIAN EMPLOYED 3D PRINTING

To Revamp the Planning Process

HCD
HEALTHCARE DESIGN
EXPO + CONFERENCE

#HCDCON

Monday, November 14, 2016
9:45am - 10:45am

BALLINGER

NewYork-Presbyterian

PROGRAMMING, PLANNING, AND DESIGN

HOW NEW YORK-PRESBYTERIAN EMPLOYED 3D PRINTING

To Revamp the Planning Process

PRESENTERS:



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SENIOR PROJECT MANAGER

🐦 [@cgdgreen](https://twitter.com/cgdgreen) [@ballingerae](https://twitter.com/ballingerae)



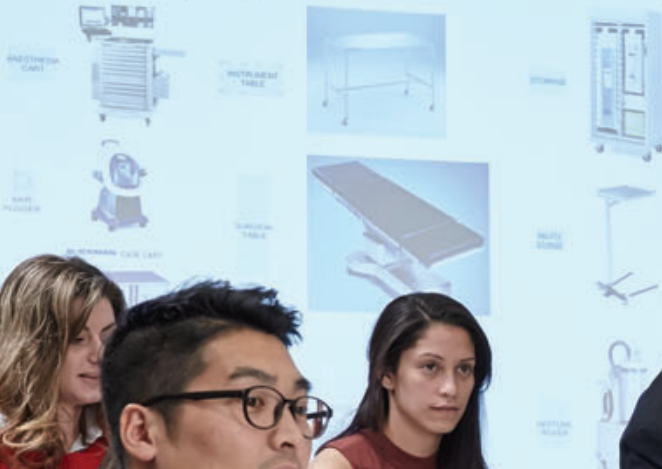
Louis Meilink, Jr., AIA, ACHA, ACHE

Principal, Ballinger
CLINICAL AND MANAGING PRINCIPAL

🐦 [@LmeilinkA](https://twitter.com/LmeilinkA) [@ballingerae](https://twitter.com/ballingerae)

Monday, November 14, 2016
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3.4 Key Room Equipment



LEARNING OBJECTIVES:

1. UNDERSTAND HOW TO UTILIZE 3D PRINTING AS A DESIGN TOOL IN THE PLANNING PROCESS
2. DESCRIBE NEW APPROACHES TO USER GROUP WORKSHOPS WITH MULTIDISCIPLINARY TEAMS
3. IDENTIFY METHODS TO TEST TEMPLATE DESIGNS EARLY IN THE DESIGN PROCESS
4. EXPLORE HOW DECENTRALIZED CARE MODELS CAN IMPROVE THE PATIENT EXPERIENCE IN AN AMBULATORY CARE CENTER

**GOAL:
ENGAGE WITH STAKEHOLDERS IN A MORE
COLLABORATIVE WAY**



WORKSHOP – 01/23/2013

PROCESS



BALLINGER

1 Modeled the Pieces

2 Printed

3 Dried

4 Labeled

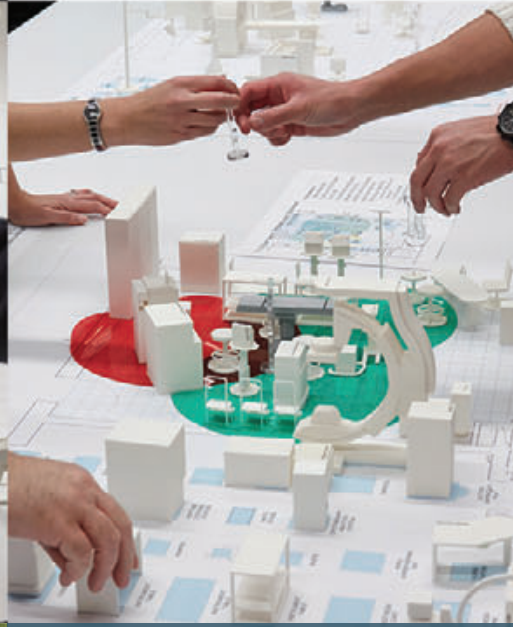
5 Practiced



6 Shipped/Carried



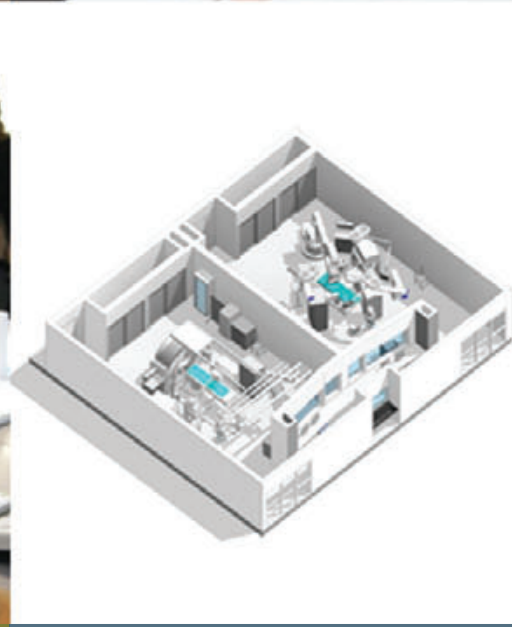
7 Set Up



8 Interactive Workshop



9 Photograph + Annotate



10 Validate in Revit Model

1. MODELING THE PIECES

- EARLY EQUIPMENT LISTS FOR KEY ROOMS
- BLEND OF ACCURACY AND EFFICIENCY
- 4 KEY TEAM MEMBERS
- REVIEW WITH BLU EDGE PRIOR TO PRINTING

NewYork-Presbyterian Healthcare System

Room By Room Detail Report

Department: Ambulatory Surgery

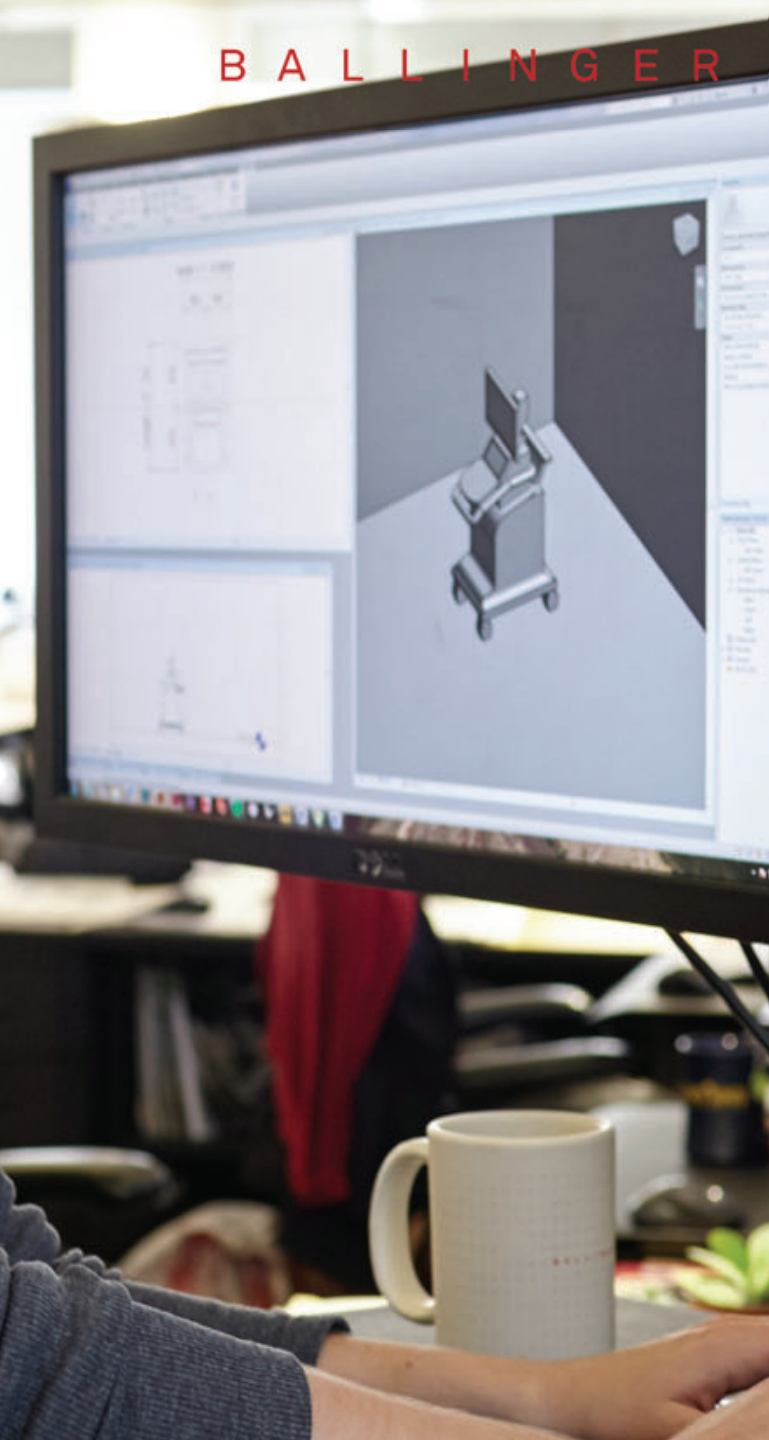
Building: Unassigned

Room: **Operating Room, ENT** Room#: Room Sign: Area/Phase: Unassigned

Comments:

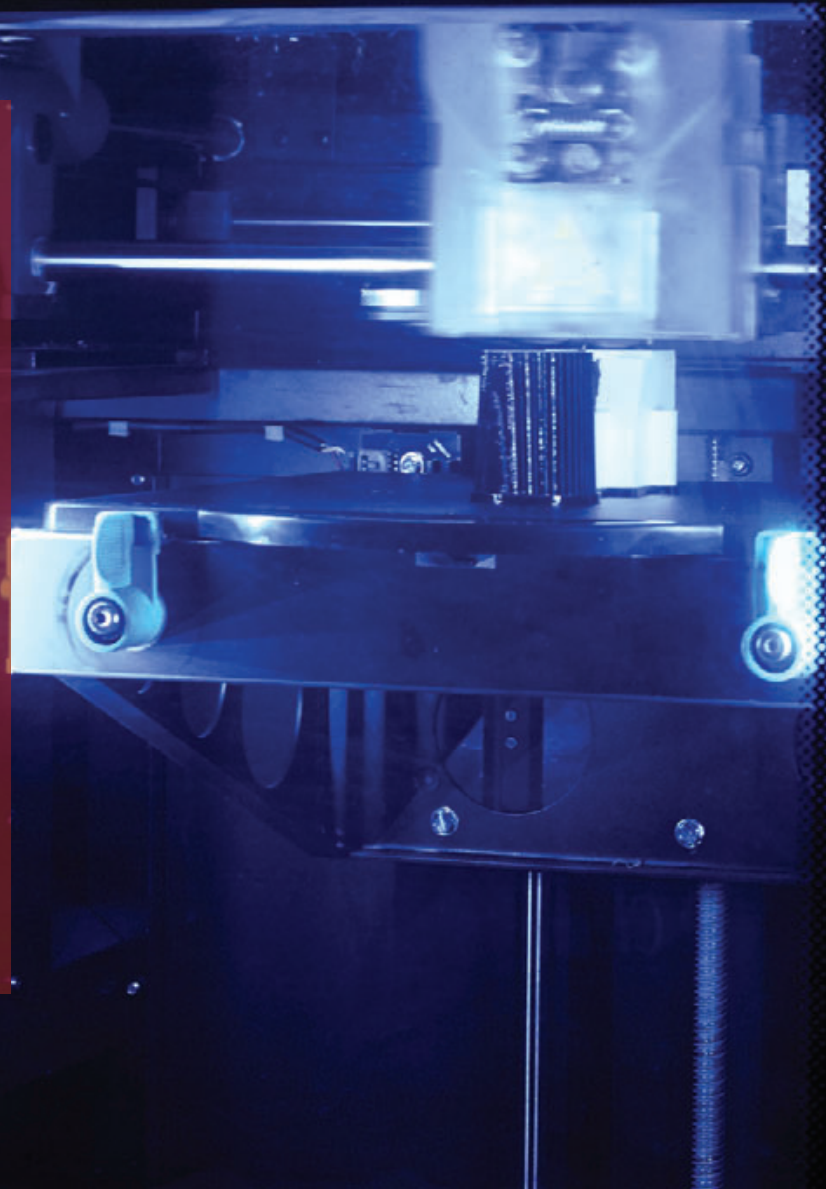
Currency: Dollar (US)

Qty	Description FI Model AC Item Notes	Manufacturer Vendor	Funding Source Cost Center Budget Name	Item Status Custom 1 Custom 2	Unit Cost Opt Subtotal	Item Tax Opt Tax	Price Type Total Config
2	Cart, Case, Medium (40-49in wide)	Unspecified ()	Project	Draft (New)	4,399.00	0.00	List
00		Unspecified ()	Unassigned	Unassigned			
3			Unassigned	Unassigned			8,798.00
1	Clock, Digital, Synchronized		Project	Draft (New)	950.00	0.00	Estimate
00			Unassigned	Unassigned			
8			Unassigned	Unassigned			950.00
1	Compression Unit, Extremity Pump, Intermittent	DJO Global, Inc. (30A)	Project	Draft (New)	1,750.00	0.00	Estimate
00			Unassigned	Unassigned			
2	Venaflo 30A		Unassigned	Unassigned			1,750.00
3	Dispenser, Glove, Triple Box	Unspecified ()	Project	Draft (New)	70.00	0.00	Estimate
00		Unspecified ()	Unassigned	Unassigned			
0			Unassigned	Unassigned			210.00
1	Dispenser, Medication, Host (Main)	Omniceil, Inc (ANT-FRM	Project	Draft (New)	25,000.00	0.00	Estimate
00	Anesthesia TT 04 (w/ Flexbins, Ext.	002:502222:503131:0ERB1)	Unassigned	Unassigned			
2	Return Bin)		Unassigned	Unassigned			25,000.00
2	Electrosurgical Unit, Bipolar		Project	Draft (New)	27,000.00	0.00	Estimate
00			Unassigned	Unassigned			
2			Unassigned	Unassigned			54,000.00
3	Flowmeter, Air		Project	Draft (New)	36.00	0.00	Estimate
00			Unassigned	Unassigned			
3			Unassigned	Unassigned			108.00



2. PRINTING & DRYING THE PIECES

- MAXIMIZED ARRANGEMENTS IN TRAYS
- 5 PRINTERS: BALLINGER AND BLU EDGE IN PHILADELPHIA WITH OVERFLOW IN NEW YORK
- PRINTED AT STANDARD RESOLUTION



BALLINGER

Building
11074_01-SCALE_C-14P
Time Remaining
5:22 45% complete

Pause

Lights off

Show Materials

Auto Ejector

3. DRYING

- INITIAL DRY
- 1-2 DAYS FOR ADDITIONAL DRYING
- PIECES ARE WET AND CONTINUE TO “WEEP”



4. SORTING + LABELING

- STORED IN PLASTIC BINS
- ALL EQUIPMENT IS LABELED
- LISTS FOR EACH ROOM/CASE TYPE



5. DRY RUNS

- REHEARSED AND ROLE PLAYED IN THE OFFICE
- IDENTIFIED IN-ROOM RESOURCES
- KEY DECISION: BRING 2 PROJECTORS WITH 1 SCREEN FOR FLOOR PLANS AND 1 SCREEN FOR REFERENCE PHOTOS



6. SHIPPED / CARRIED

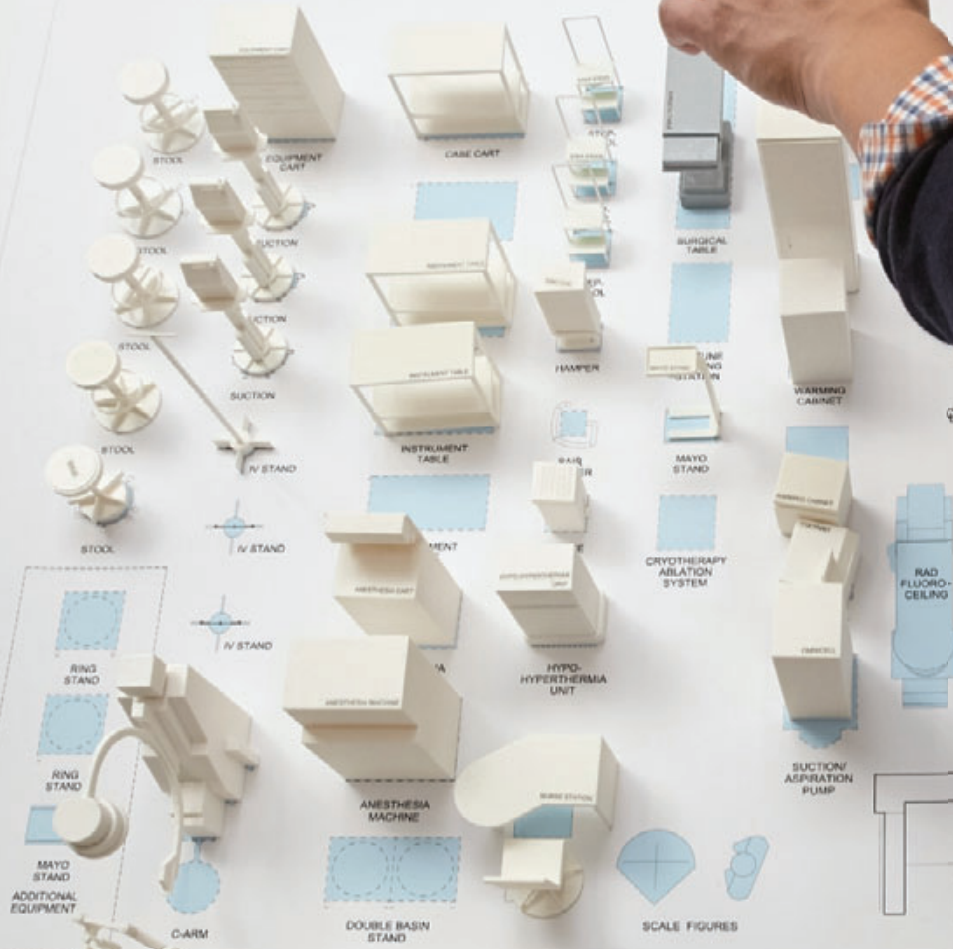
- PACKED IN BUBBLE WRAP
- SORTED BY ROOM, TYPE, AND SCALE
- 3 SUITCASES PER WORKSHOP



7. SETUP

- PRINTED FLOOR PLAN
- MOVABLE FRONT WALL
- EQUIPMENT LIST PIECES IN THE MARGIN

AMB SURG - GENERAL OR



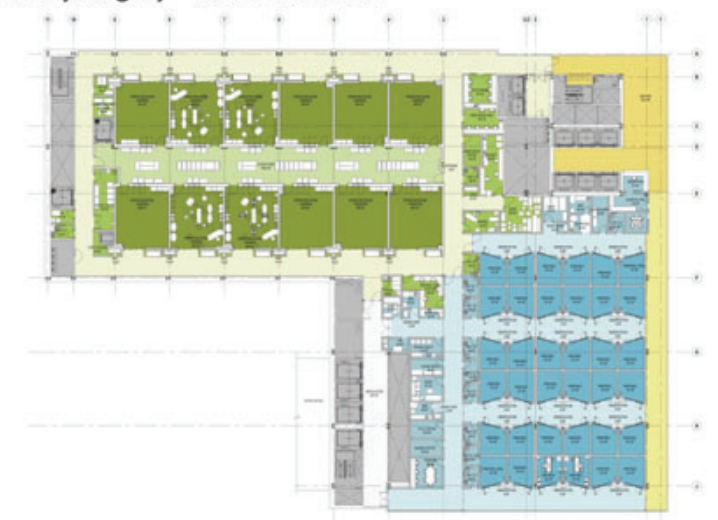
7. SETUP

3.4 Key Room Equipment



11.2 Sixth Floor Plan – Ambulatory Surgery – Room Allocation

- Allocation Based on 2019 Projected Volumes*:
 - 2.9 ENT Rooms
 - 2.0 Urology
 - 1.9 GYN Rooms
 - 1.5 Ophthalmology
 - 1.4 General
 - .9 Pain
 - .6 Orthopedic
 - .6 Plastic
 - .2 Oral
 - 12.0 Total Rooms



PROJECTOR 1: REFERENCE IMAGES

PROJECTOR 2: REFERENCE PLANS

8. INTERACTIVE WORKSHOP

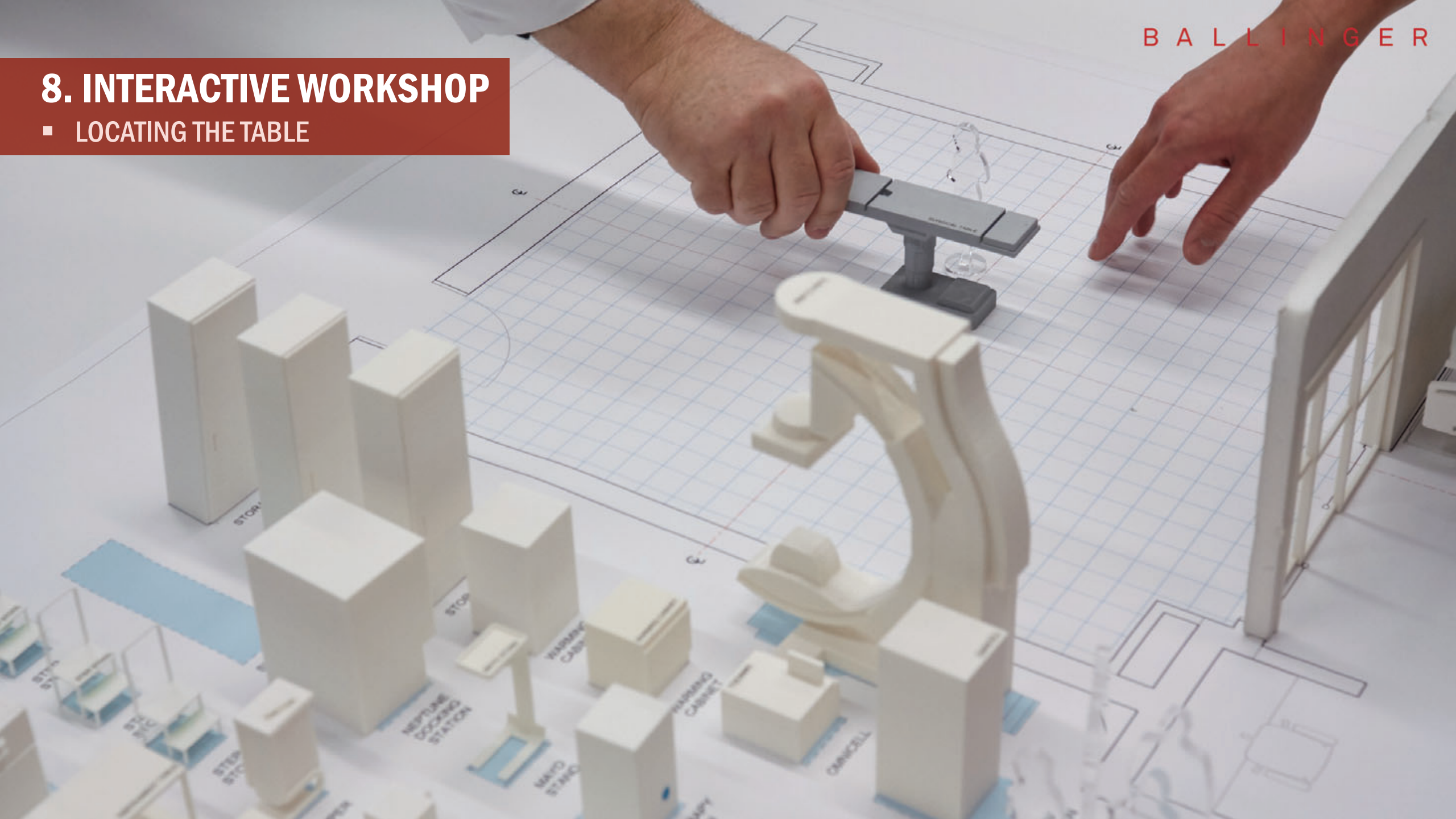
- PHYSICIANS
- REGISTRATION/IT
- MATERIALS MANAGEMENT
- CENTRAL STERILE PROCESSING
- EVS
- BIOMED
- PHARMACY/LAB
- NURSING/CLINICAL
- PATIENT FOCUS GROUPS

BALLINGER

OUR MEDICAL VILLAGE

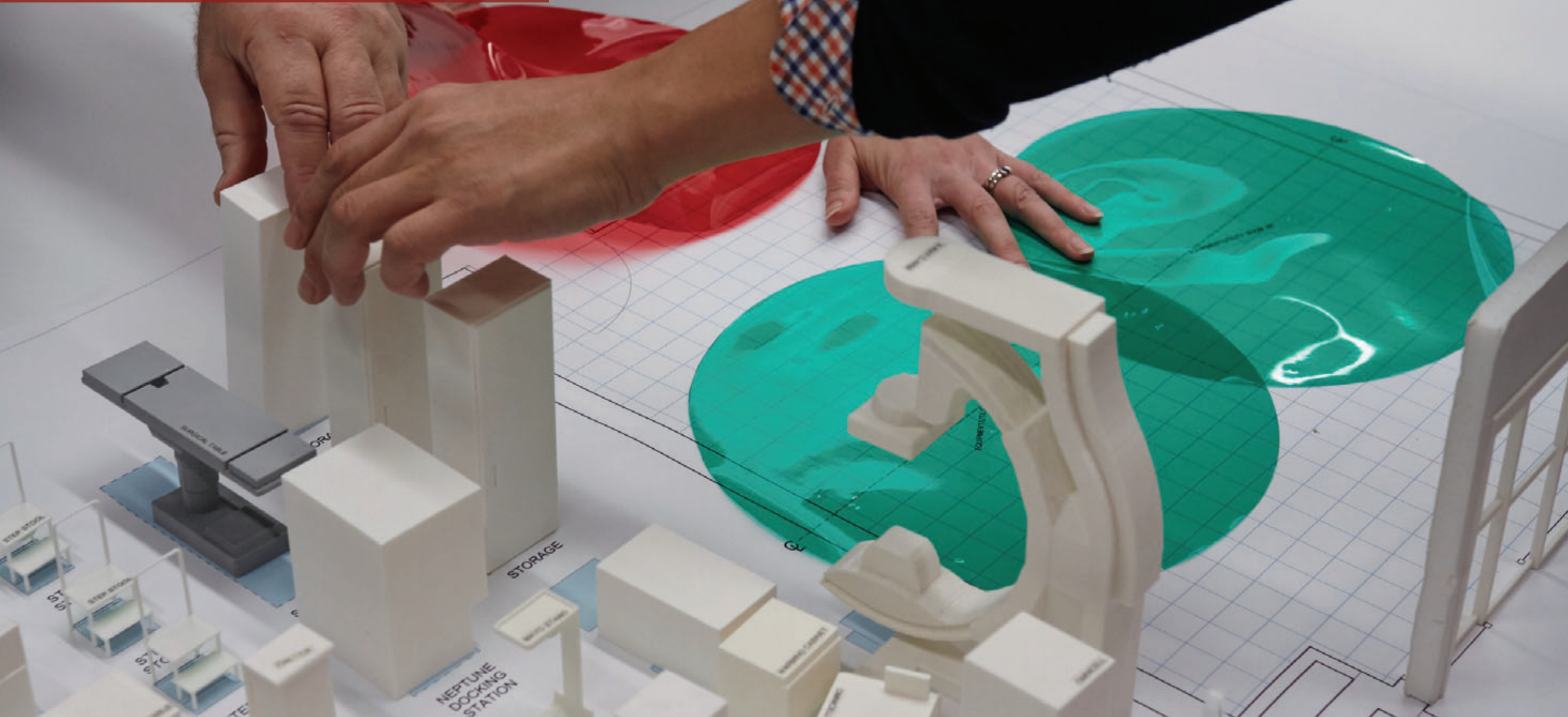
8. INTERACTIVE WORKSHOP

- LOCATING THE TABLE



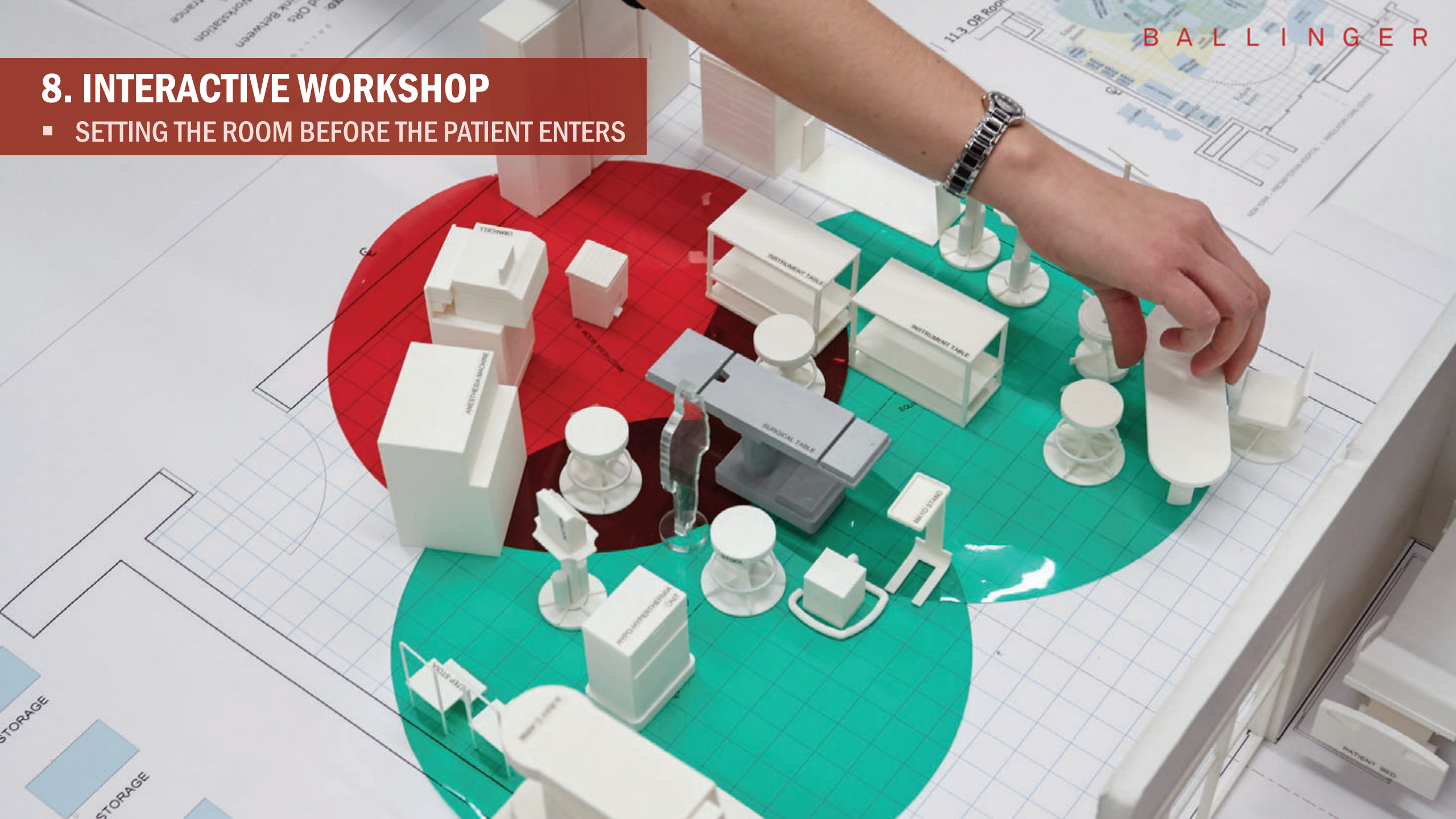
8. INTERACTIVE WORKSHOP

- SETTING BOOM LOCATIONS



8. INTERACTIVE WORKSHOP

- SETTING THE ROOM BEFORE THE PATIENT ENTERS



8. INTERACTIVE WORKSHOP

- SETTING THE ROOM DURING ANESTHESIA



8. INTERACTIVE WORKSHOP

- SETTING THE ROOM DURING THE PROCEDURE



8. INTERACTIVE WORKSHOP

- END OF PROCEDURE FLOWS



8. INTERACTIVE WORKSHOP

- OBTAIN CONSENSUS



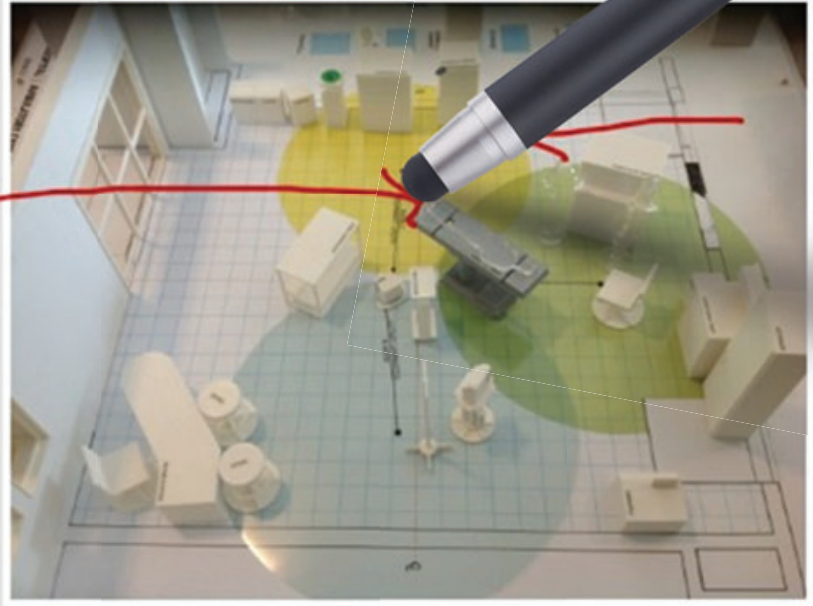
NICU WORKSHOP 2014

9. PHOTOGRAPH AND ANNOTATE

- QUICK PHOTOS WITH MOBILE PHONE CAMERAS
- LIVE ANNOTATION WITH IPADS
- SEND KEY DECISIONS BACK TO THE OFFICE SAME DAY

SD WORKSHOP 02 - 2013

Equit booms in way on other side
Minimize IV poles?
Can pumps be c/g/boom mounted?
FLIP BACK!!! booms run
Consider
Special
Cases



9. PHOTOGRAPH AND ANNOTATE

MAYO
STAND
ADDITIONAL
EQUIPMENT

10. VALIDATE IN REVIT



- Determine Which Elements are Common to All Sub-Specialties
- Identify Variations
- Determine if Sub-Specialty Requires Unique Room Features.
 - Ortho/Pain OR – Fixed Imaging
 - GYN – Intra-Operative Radiation Therapy
 - GYN/General OR – DaVinci Robot
 - Ophthalmology – Femto Second Laser
 - Plastics – Leica Microscope
- Review Location of Specialty ORs Within Platform
- OR Cohorting

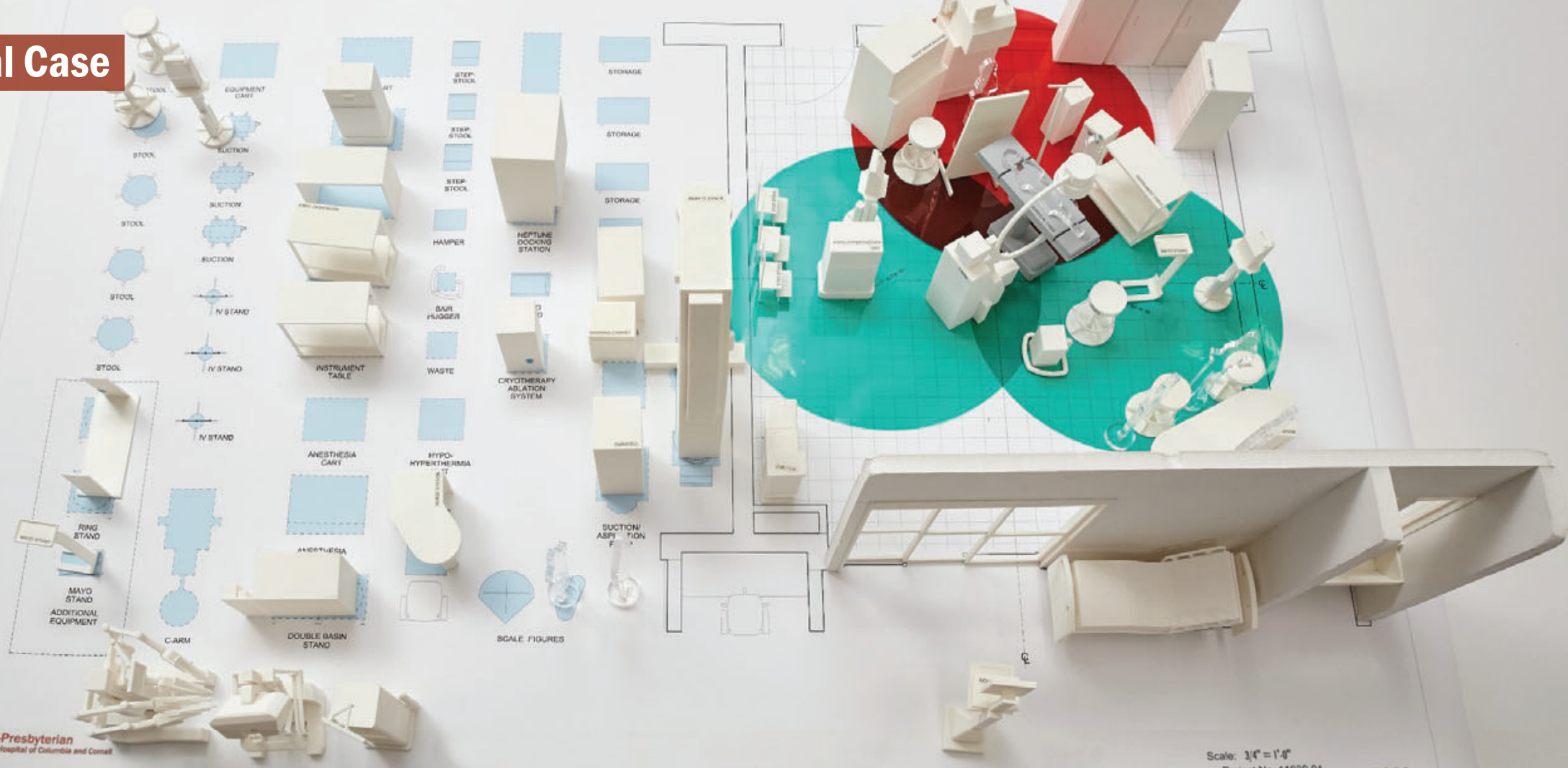
ENT Case

AMB SURG - GENERAL OR



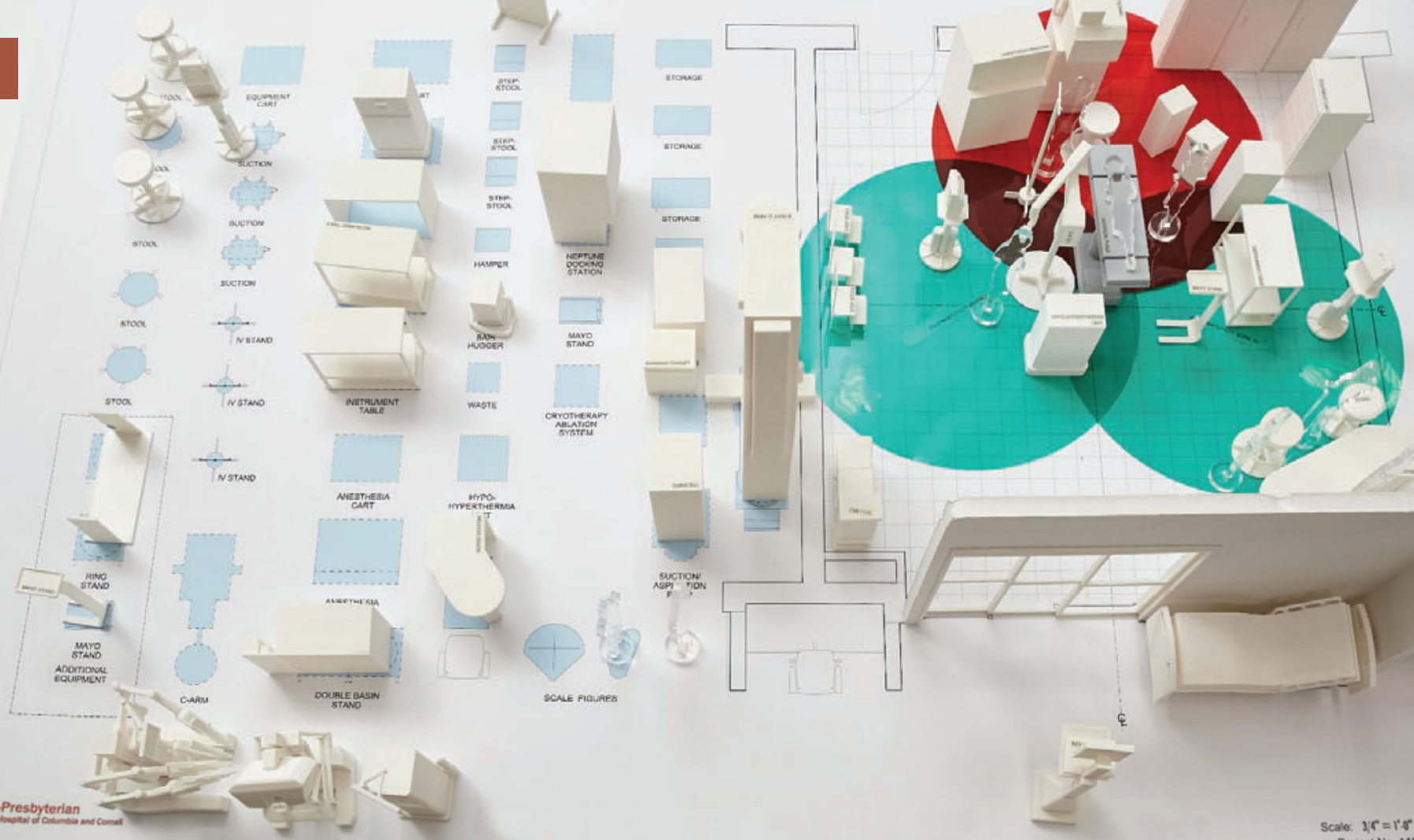
AMB SURG - GENERAL OR

Colo Rectal Case



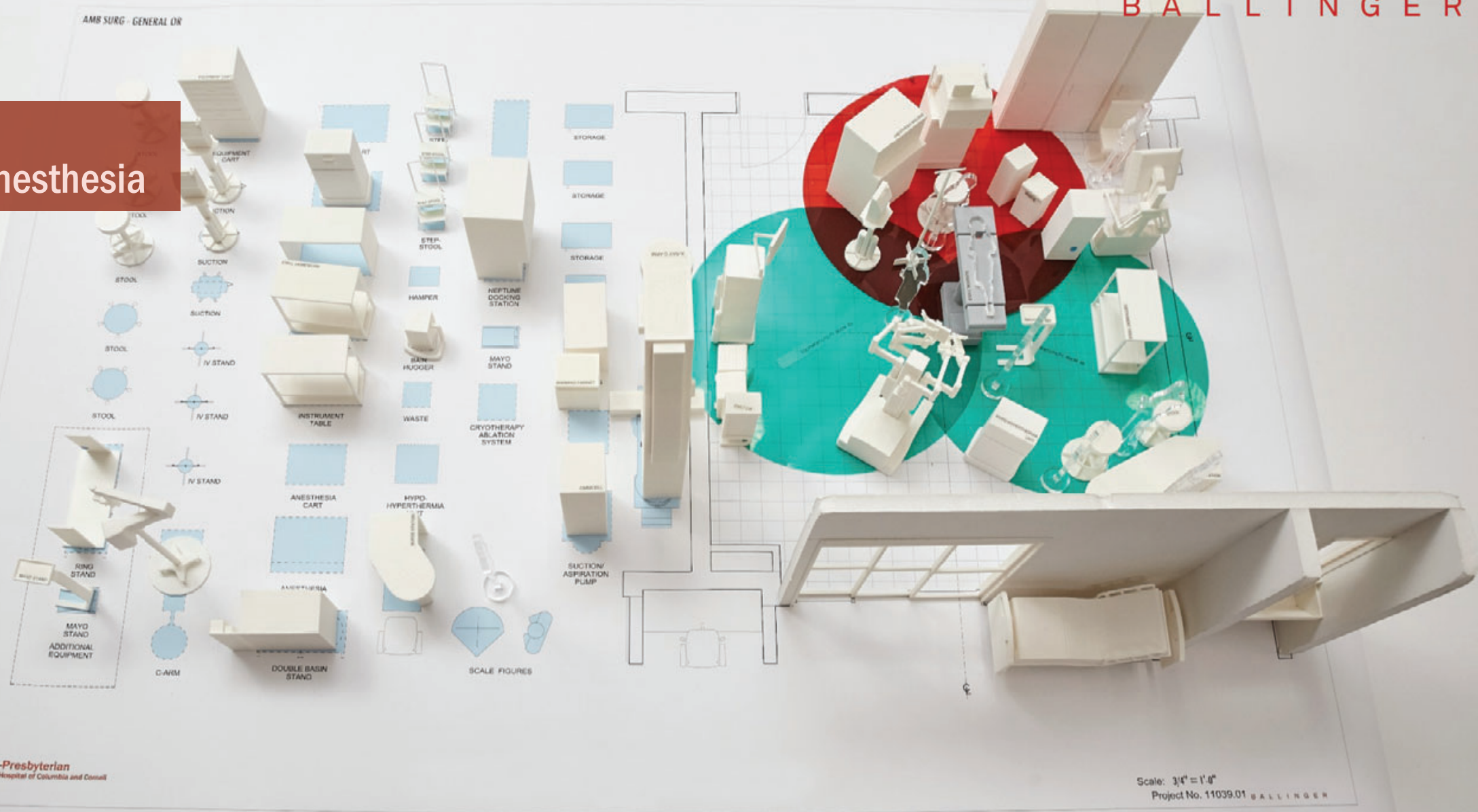
Eye Case

AMB SURG - GENERAL OR



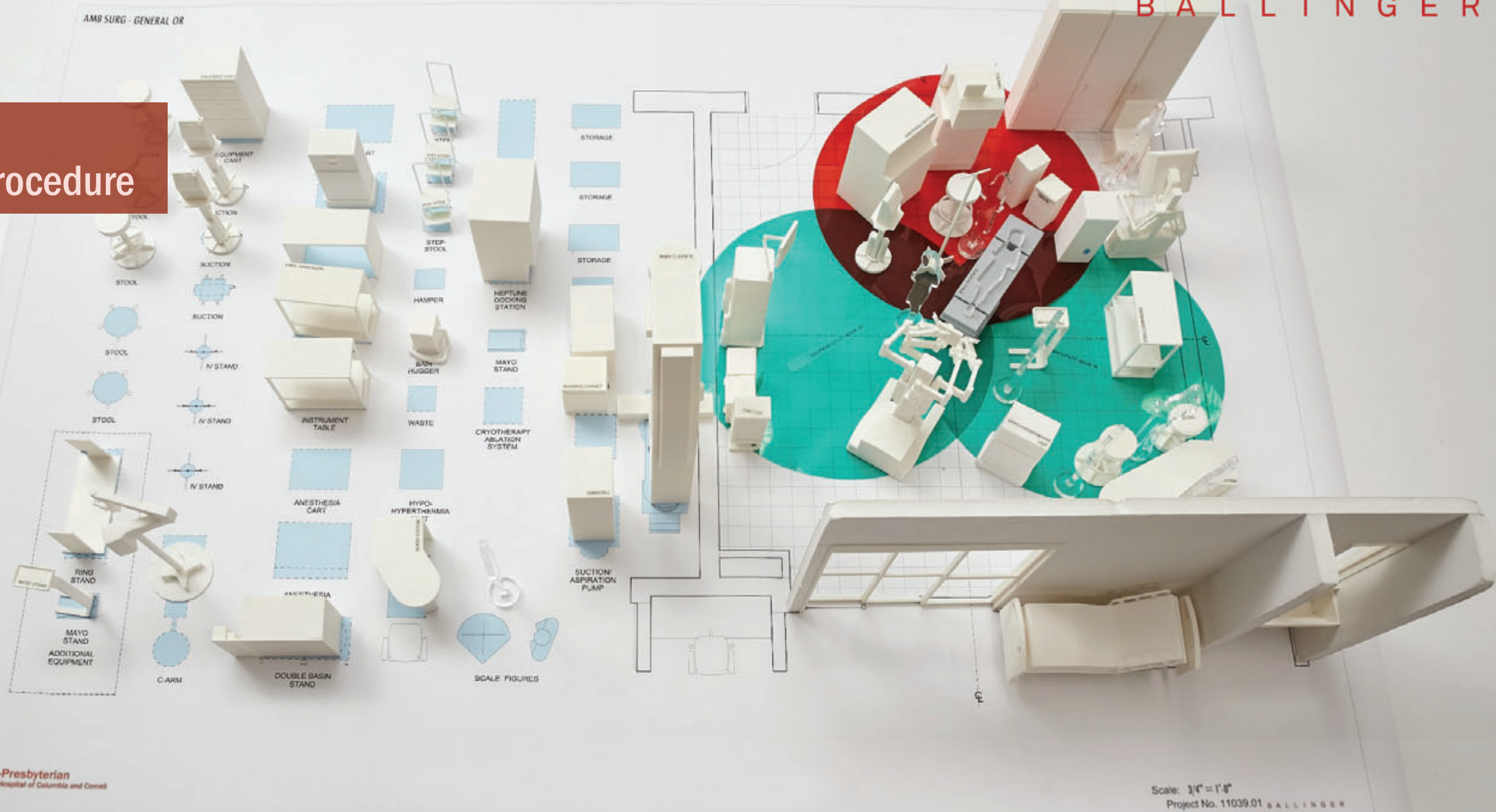
Gyn Case

- During Anesthesia



Gyn Case

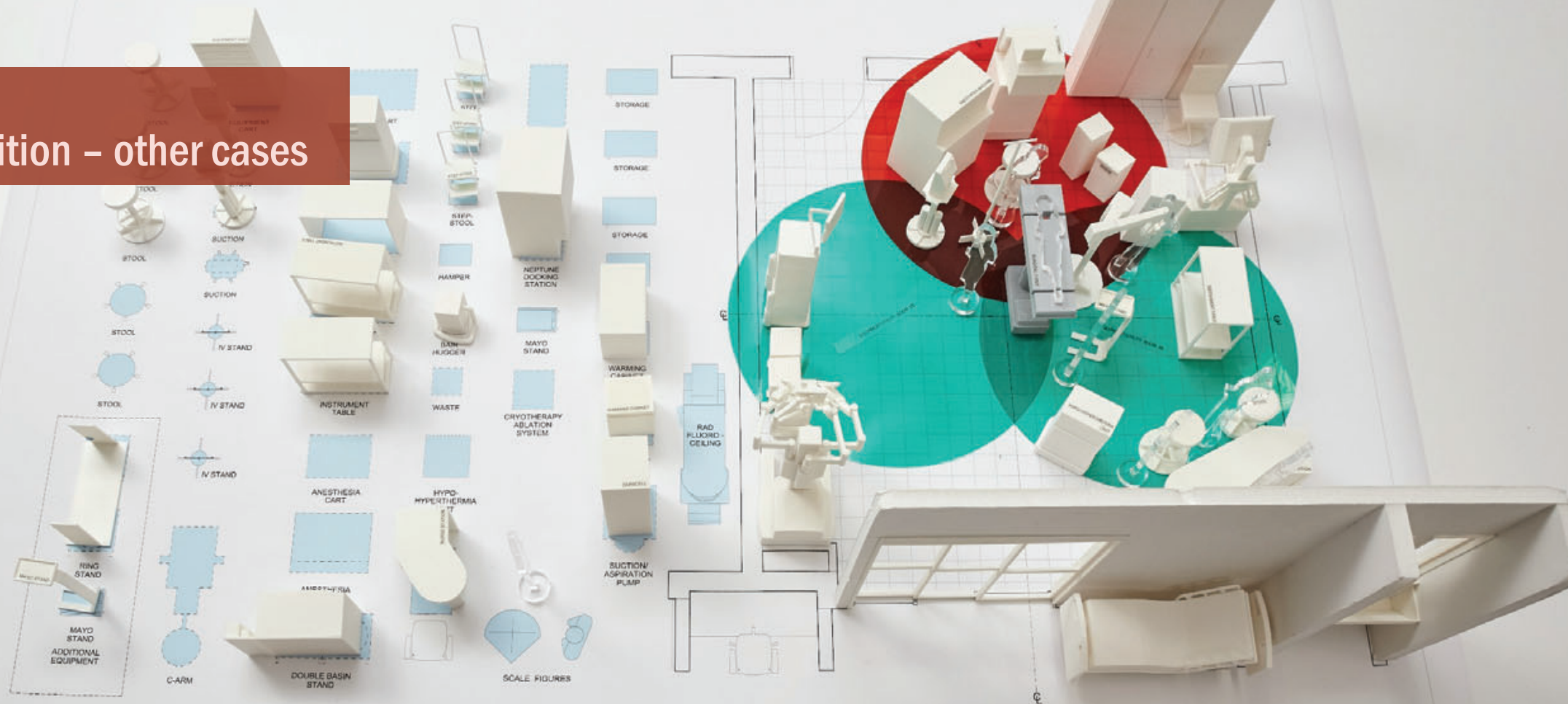
During Procedure



Gyn Case

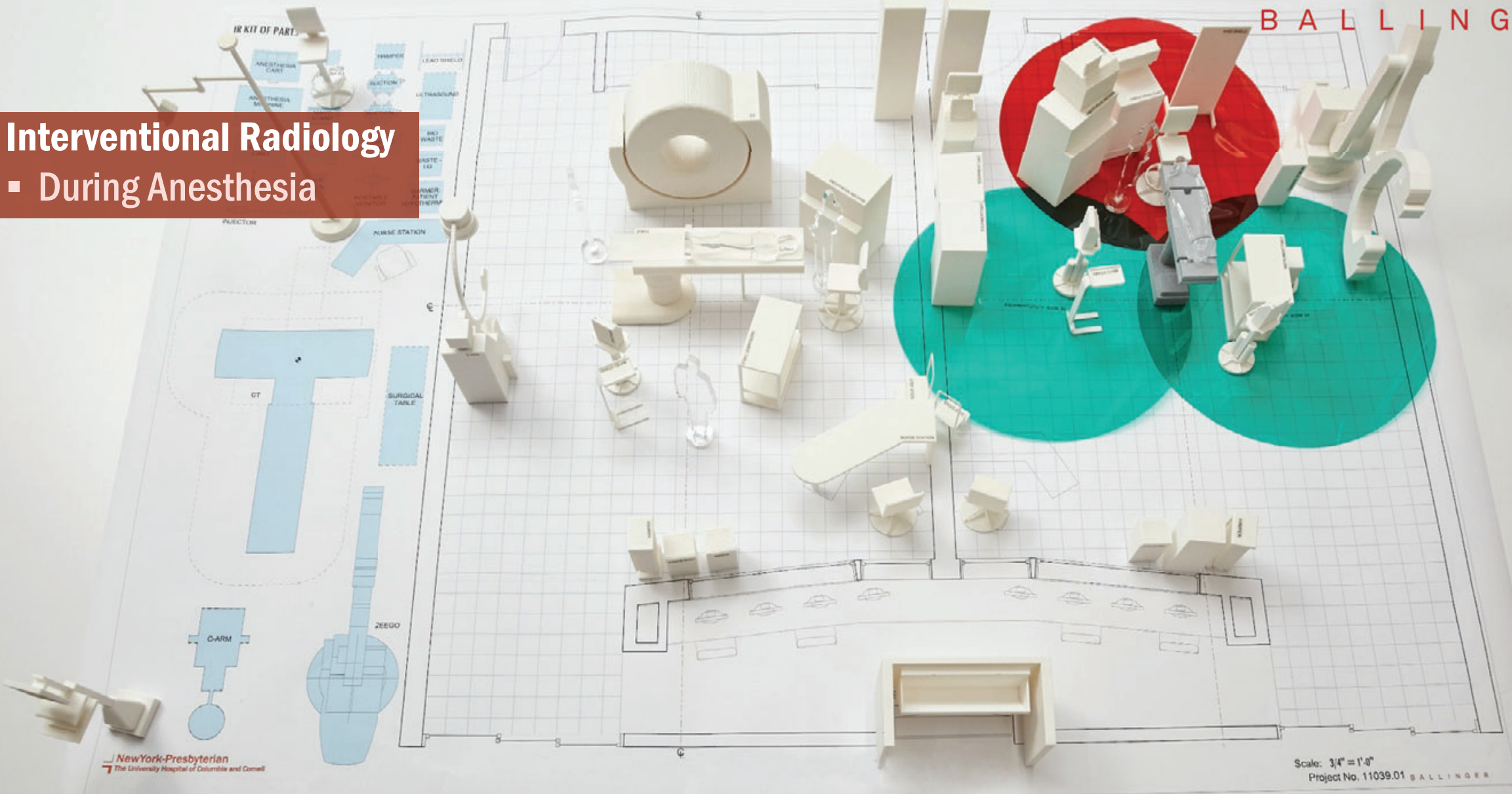
- Park Position – other cases

AMB SURG - GENERAL OR



Interventional Radiology

- During Anesthesia



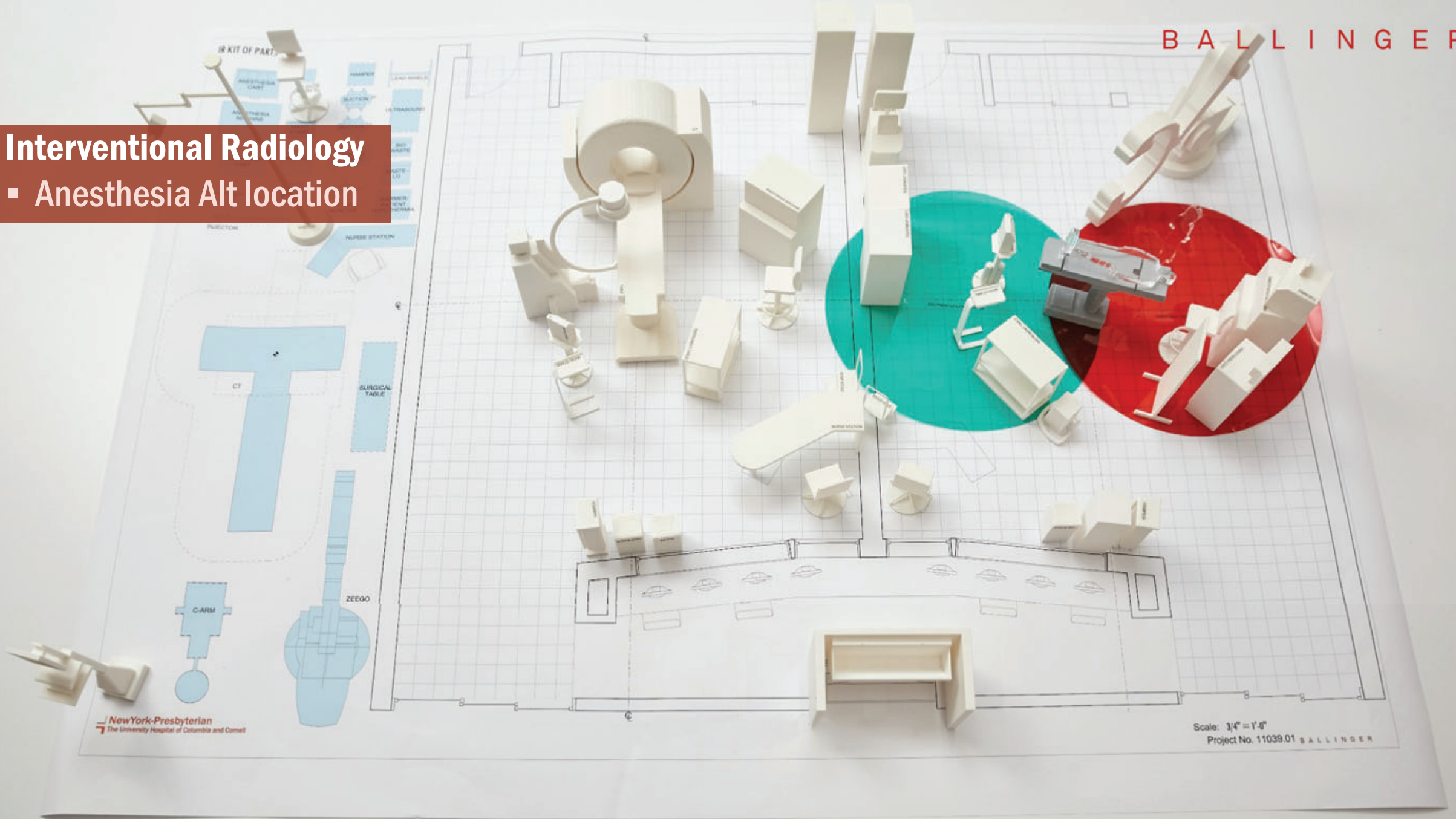
Interventional Radiology

■ During Procedure



Interventional Radiology

- Anesthesia Alt location



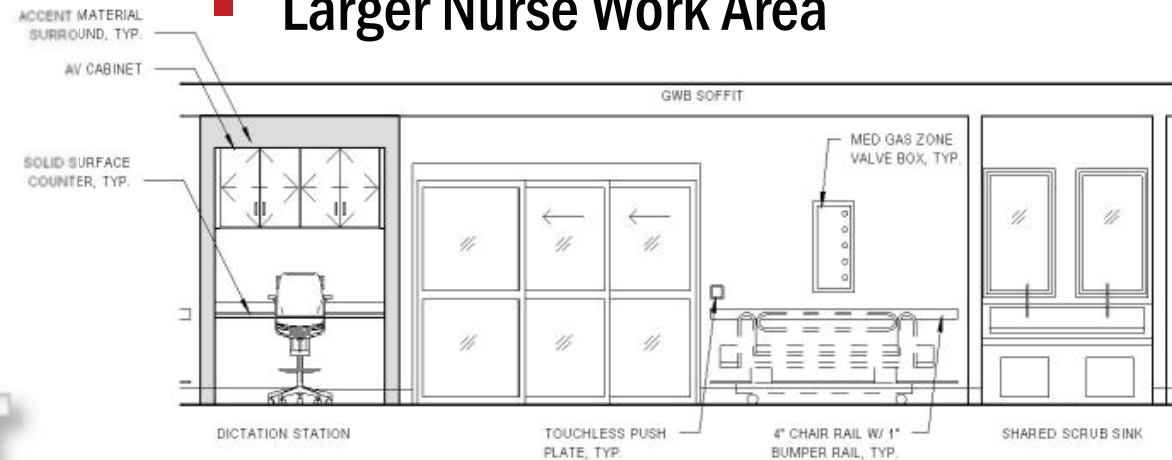
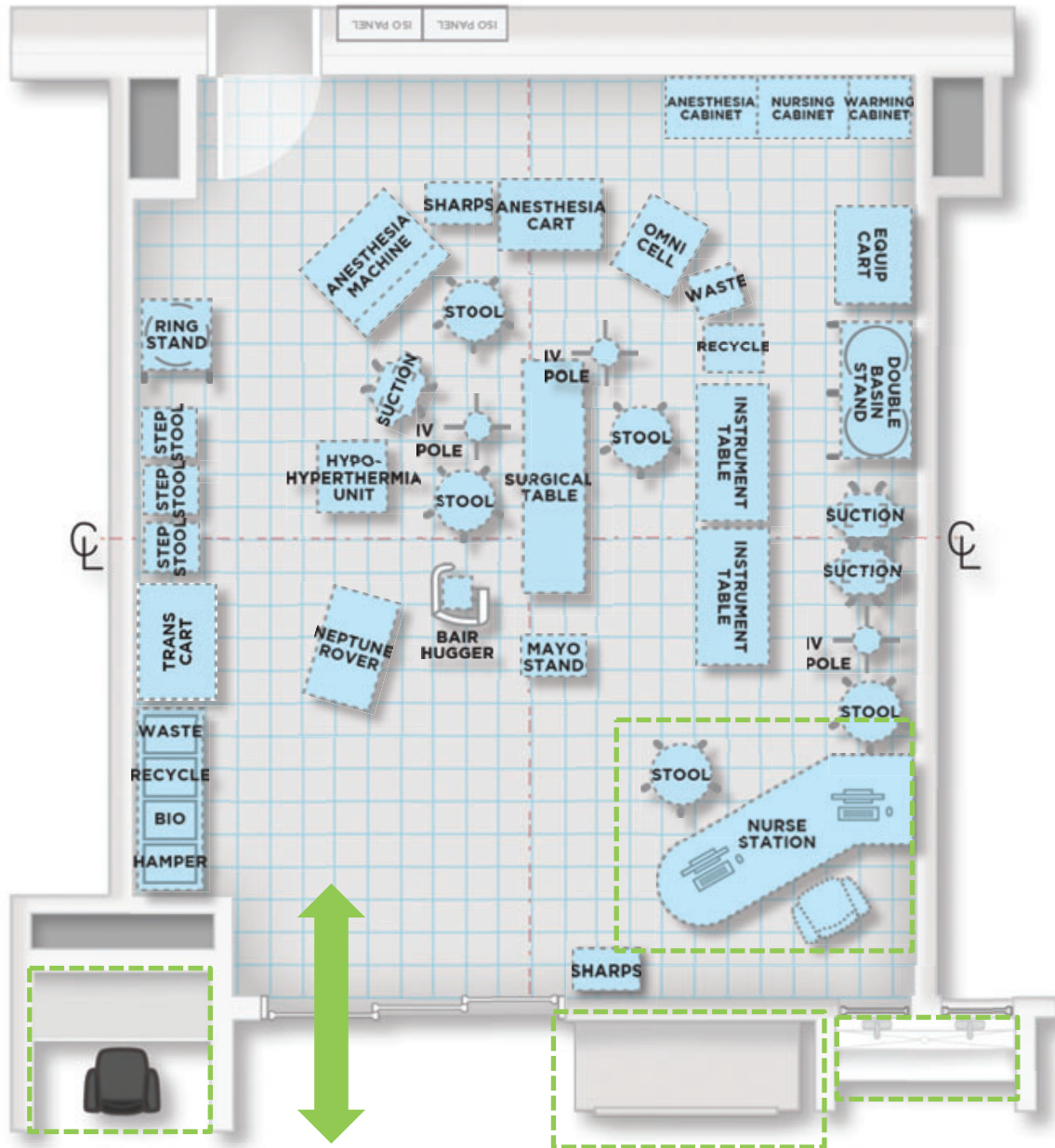
Interventional Radiology

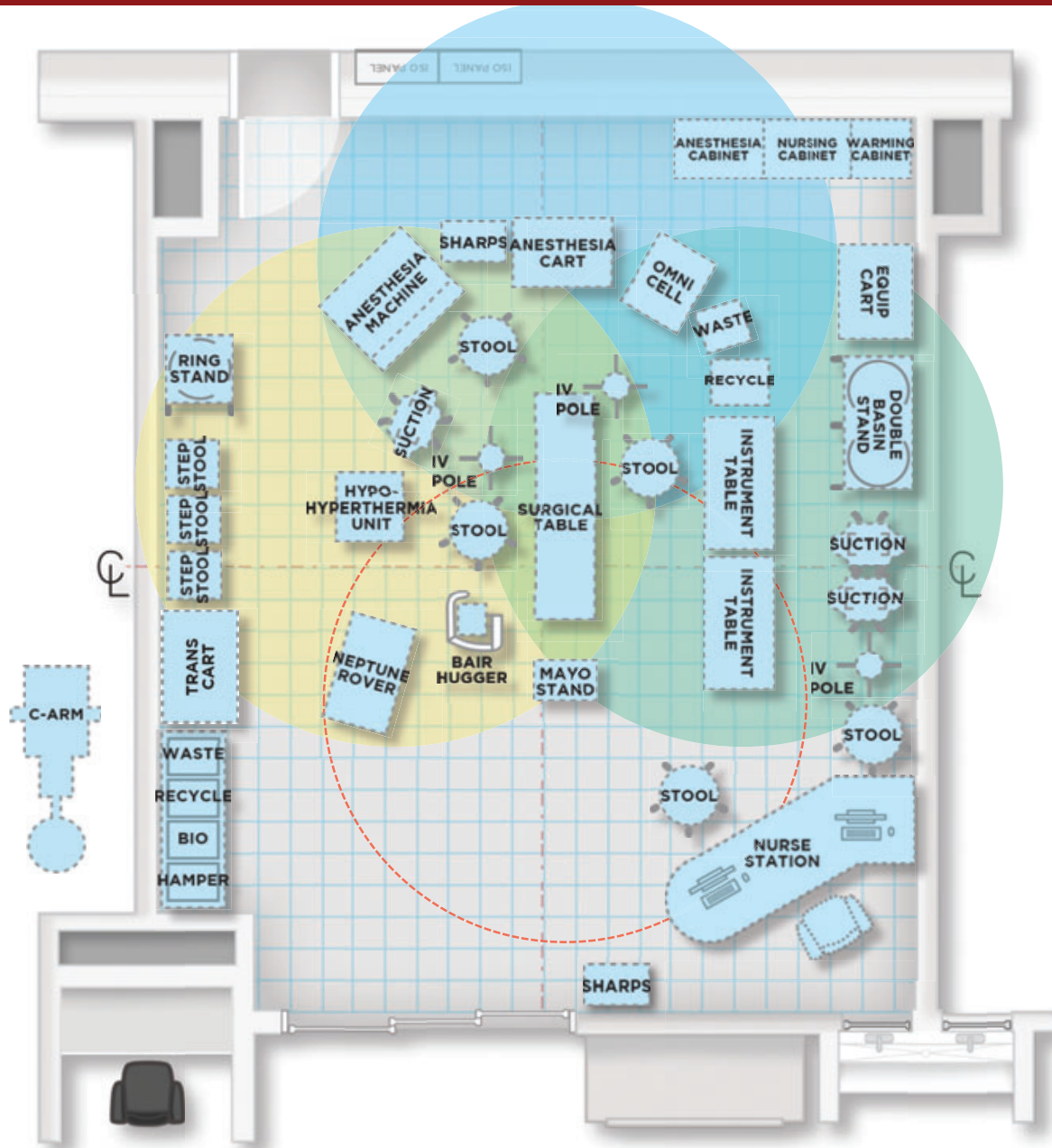
Procedure



TEMPLATE COMMITTEE ITEMS CONFIRMED:

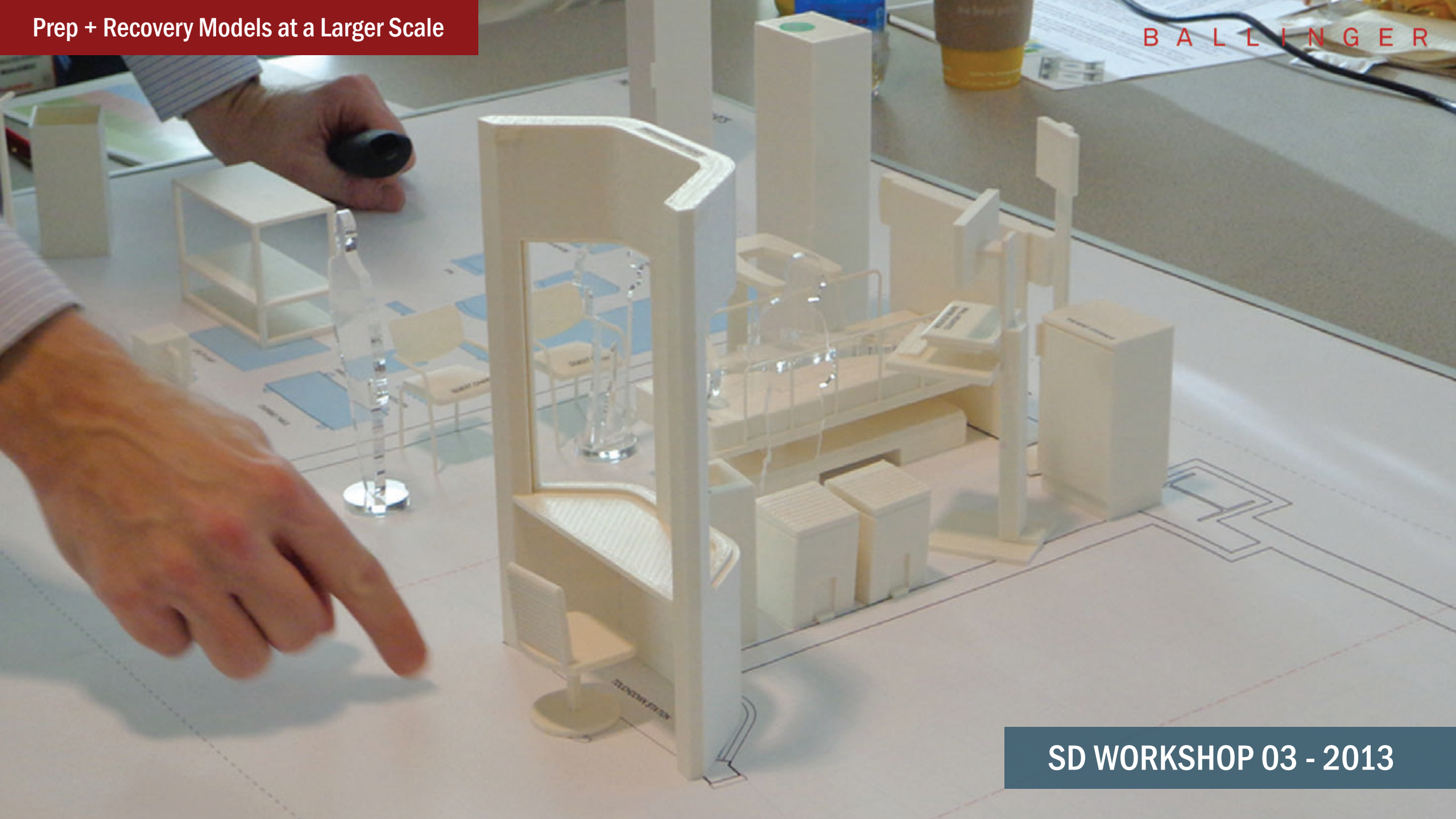
- Single Handed ORs
- Shared Scrub Sink Between Every 2 ORs
- Shared Physician Workstation Between Every 2 ORs
- Stretcher Alcove at Entrance
- Larger Nurse Work Area





ITEMS CONFIRMED:

- Single Handed ORs
- Shared Scrub Sink Between Every 2 ORs
- Shared Physician Workstation Between Every 2 ORs
- Stretcher Alcove at Entrance
- Larger Nurse Work Area
- Consensus on Room Flow
 - Entrances to OR & Clean Core Align at Left
 - Clean Set-up at Right
- Consensus on Boom Quantity & Location
 - 1 Anesthesia
 - 2 Equipment
 - 1 Future



TYPES OF LEARNERS



VISUAL



KINESTHETIC



AUDITORY



TACTILE

OUTCOMES:

1. COOL FACTOR.
2. MORE VOICES WERE HEARD.
3. PARTICIPANTS ASKED EACH OTHER QUESTIONS.
4. UNEARTHED “MISSES” BEFORE THEY HAPPEN.
5. RAPID DECISION MAKING (REJECTED TURNING THE STRETCHER IN THE PREP + RECOVERY ROOM).
6. ENGAGEMENT OF THE TEAM AT MORE LEVELS: DEVELOPMENT OPPORTUNITY FOR EMERGING LEADERS.

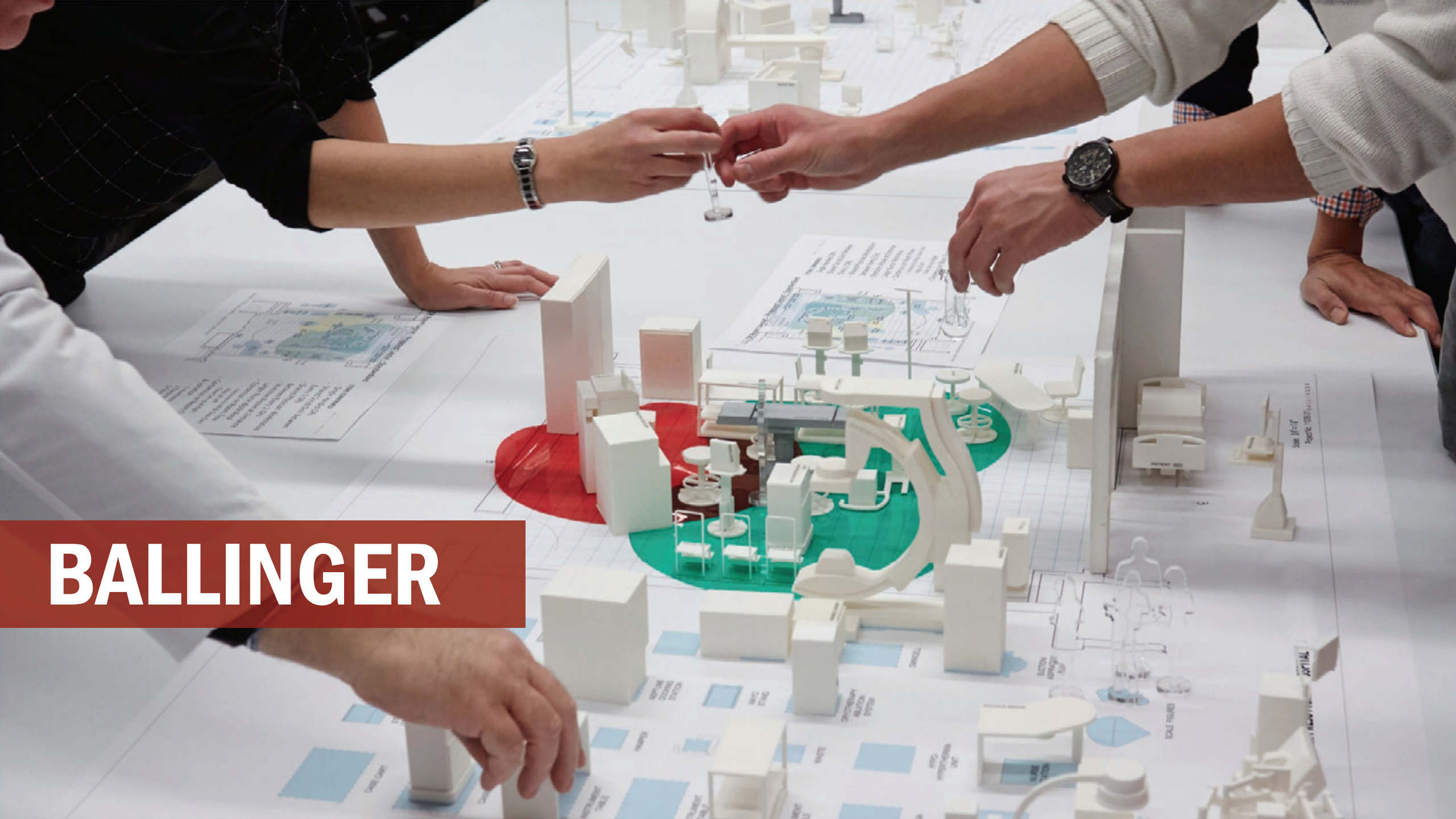
KEYS TO SUCCESS

- VISIONARY CLIENT
- COMMITTED TEAM
- TRUSTING RELATIONSHIP
- PLANNING AND SCHEDULING
- ALLOW TIME FOR PREPARATION AND DRY RUNS
- RESOURCES AVAILABLE ON SCREEN
- THE RIGHT PEOPLE IN THE ROOM
- FACILITATING LEADERSHIP STYLE

WHAT ARE WE DOING NOW?

- USING MODELS EARLIER IN THE PROCESS
- COLOR MODEL PIECES
- IMPROVED BOOM REPRESENTATION
- EXPANDED ROOM TYPES: LDR, NICU, PATIENT ROOMS, EXAM ROOMS, IMAGING
- VIRTUAL REALITY





BALLINGER