

From Ancillary to Essential: Technology's Role in Healthcare Design and Operations

March 12, 2019

Liz Schmitz AIA, EDAC, LEED AP
Stantec





The American
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Academy of
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an AIA Knowledge Community

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The HC 101 series provides new members of healthcare centric practices with exposure to healthcare design fundamentals.

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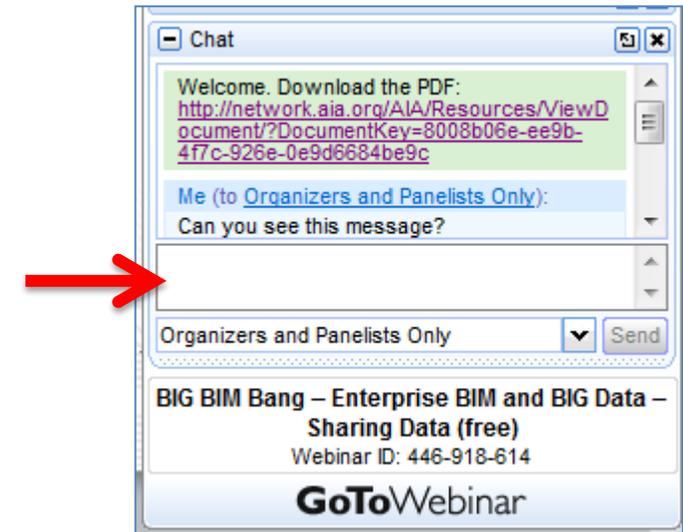
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Submit a question to the moderator via the chat box.

Content-related questions will be answered during the Q&A portion, at the end of the presentation, as time allows. Any questions not answered during Q&A, will be answered and posted online within two (2) weeks.

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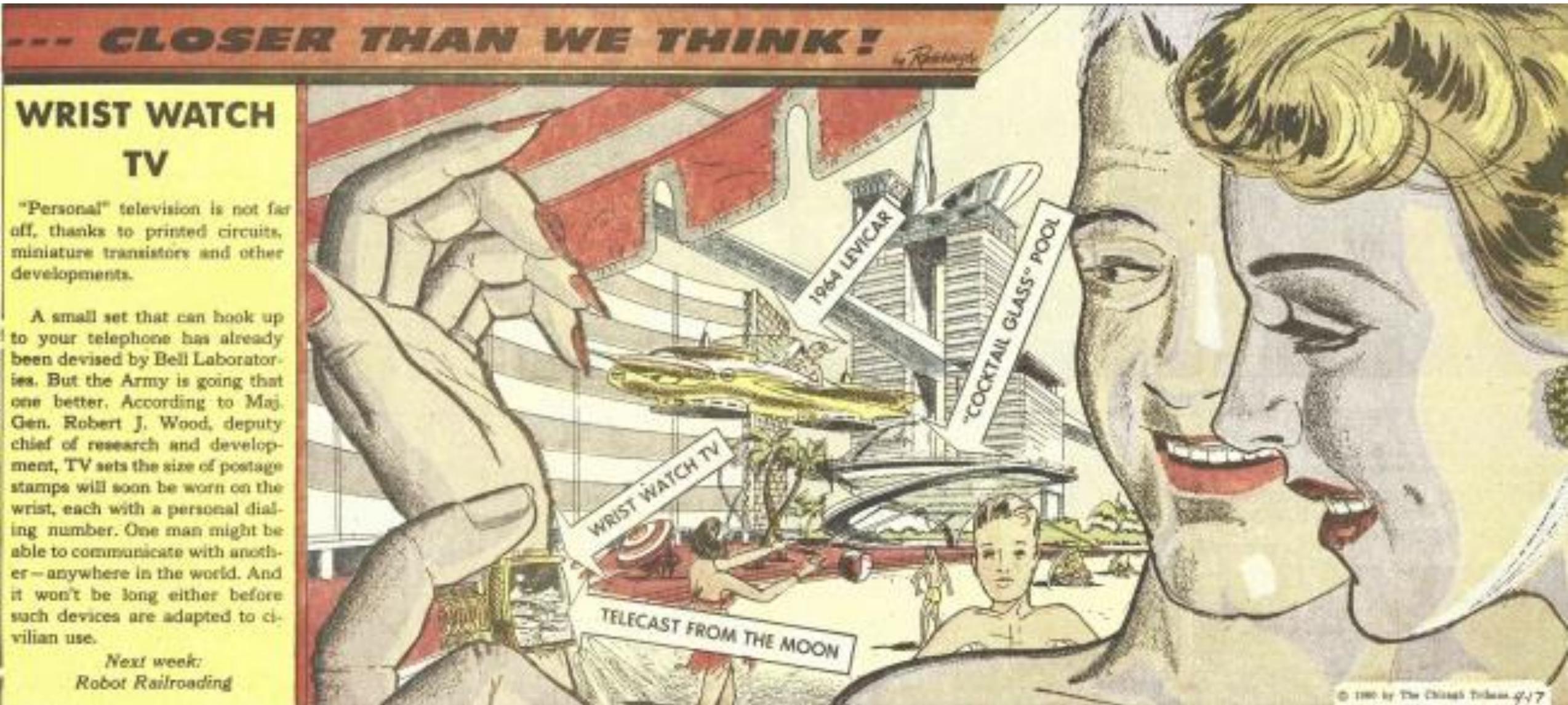
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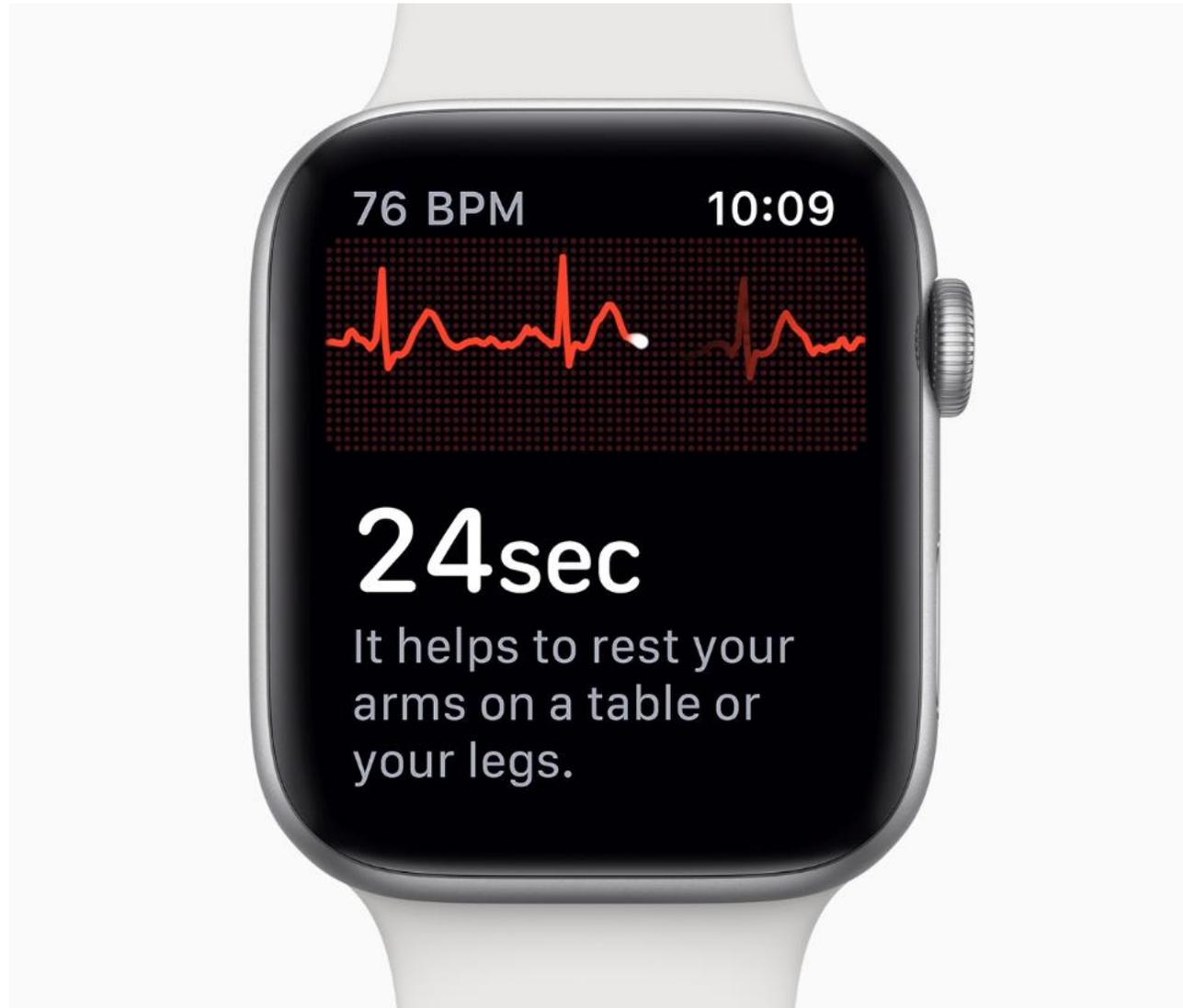
From Ancillary to Essential: Technology's Role in Healthcare Design and Operations

Then...



Arthur Radebough, 1950's Illustrator

Now...



Then...

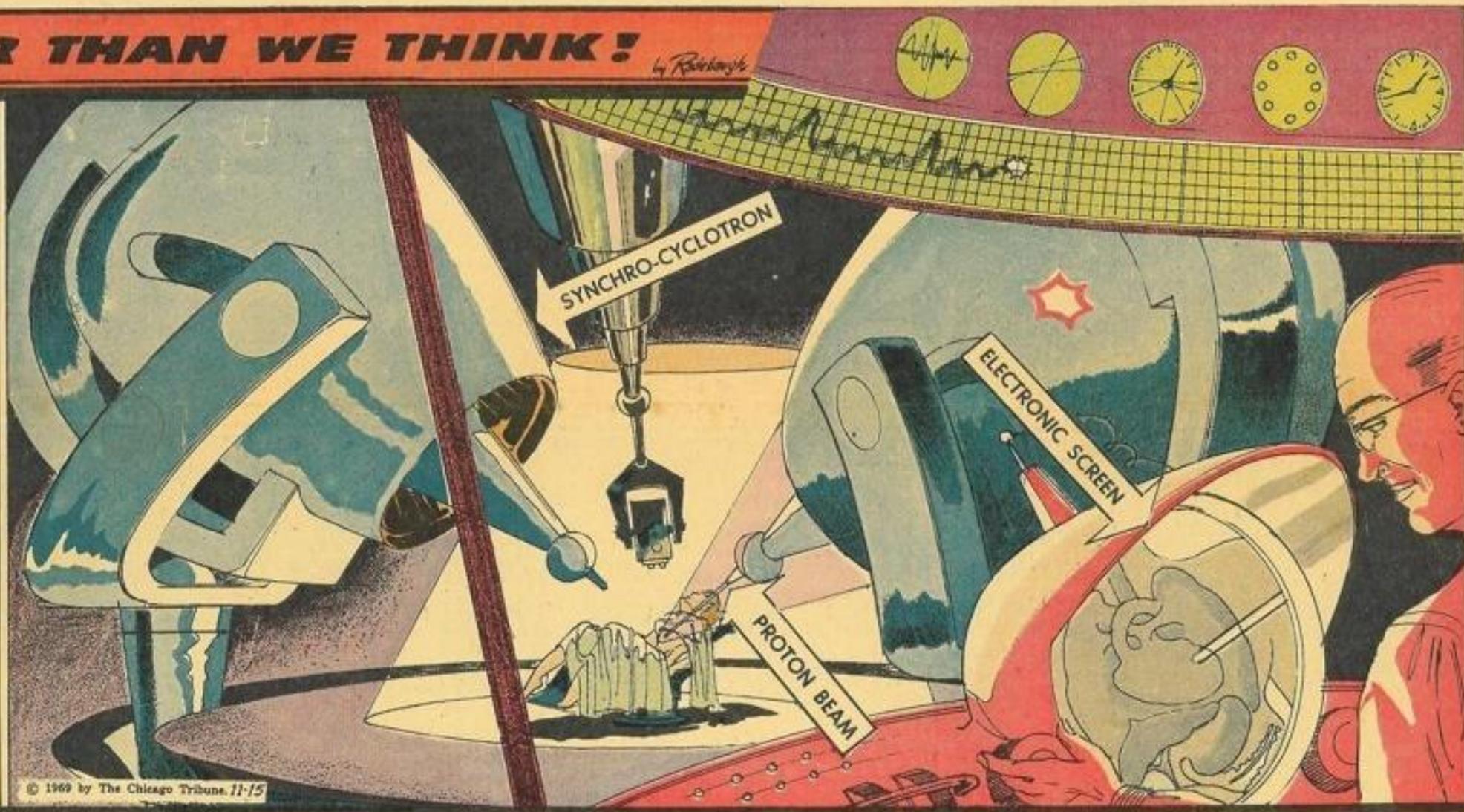
--- **CLOSER THAN WE THINK!** *by Radebough*

BLOODLESS SURGERY

With the development of an "atomic knife," tomorrow's hospital operations may be as easy on the patient as relaxing in an easy chair—no incisions, no bleeding. The technique has already been used successfully in reducing hormone flow from the pituitary, in relieving depressed mental states by "cutting" brain segments, and in treating certain cases of cancer.

Specialists at the University of California and in Uppsala, Sweden, have been able to destroy unwanted tissues by directing a proton beam toward them. Later, many researchers feel, the method may be used in any operation that doesn't require reconnecting of tissues.

Next week:
Stop-and-Go Rockets



Arthur Radebough, 1950's Illustrator

Now...

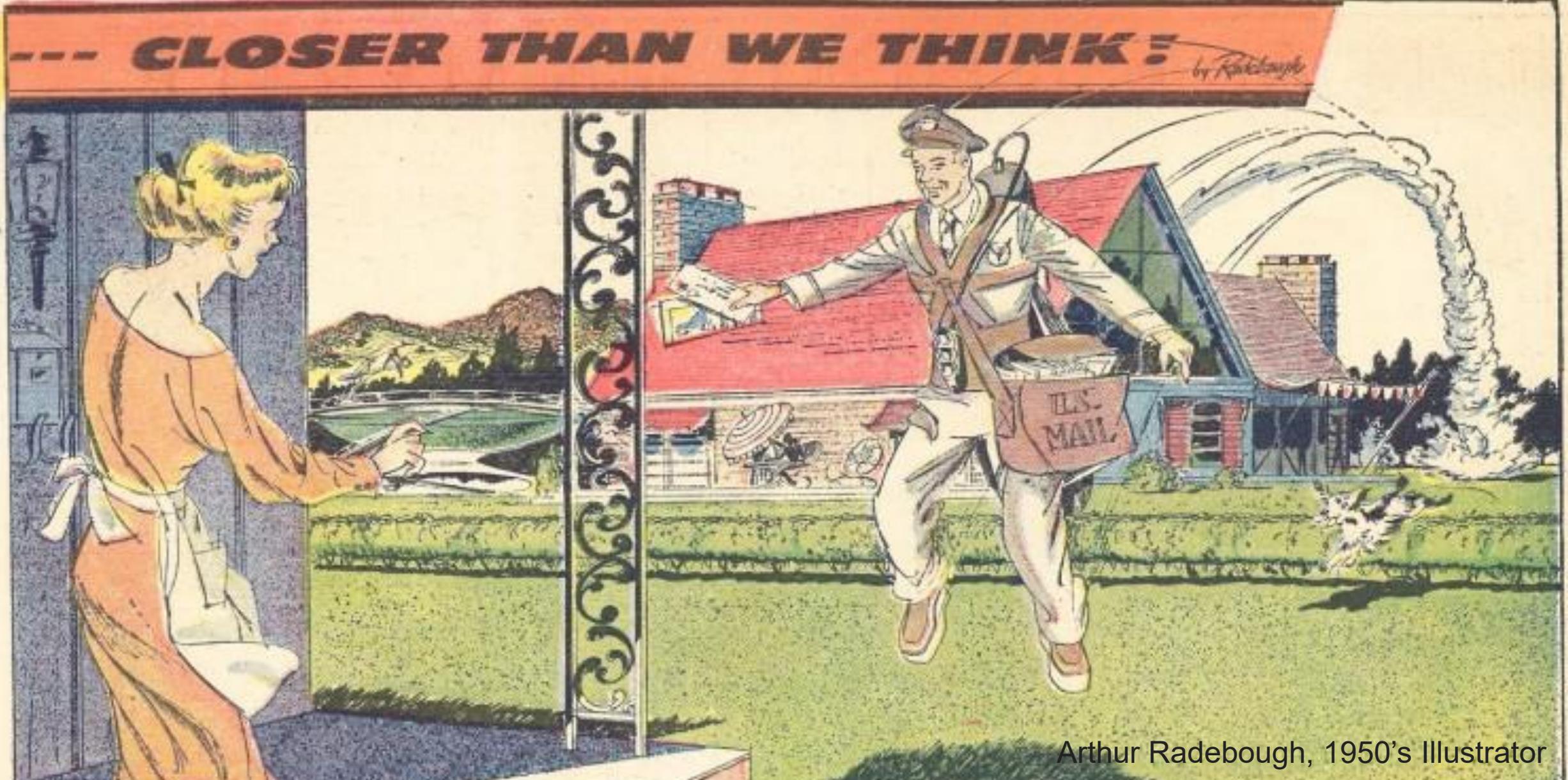


Emory University Proton Therapy Center

Then...

THE STAR WEEKLY, TORONTO, OCTOBER 4, 1958

5



Arthur Radebough, 1950's Illustrator

Now...

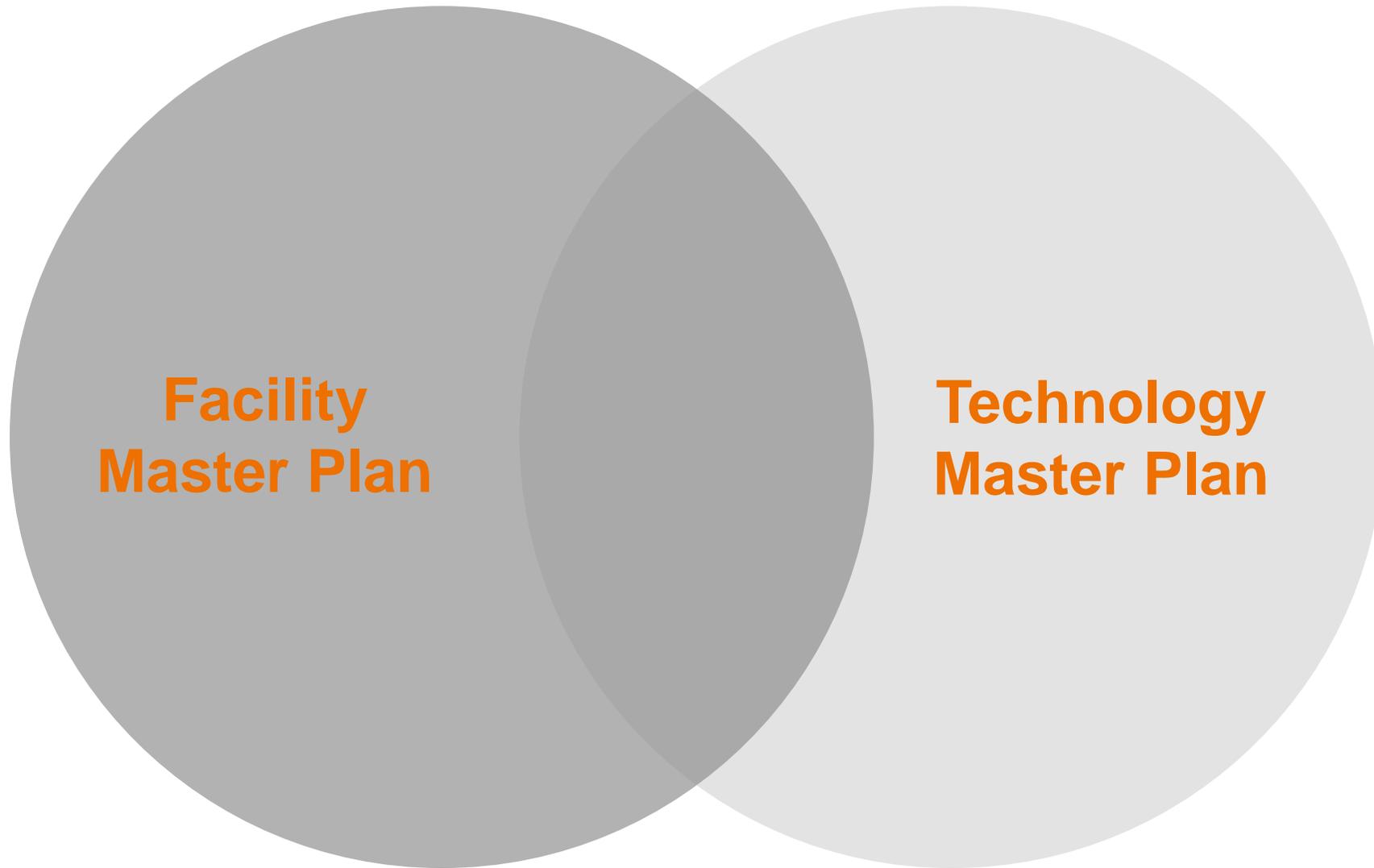


Then...

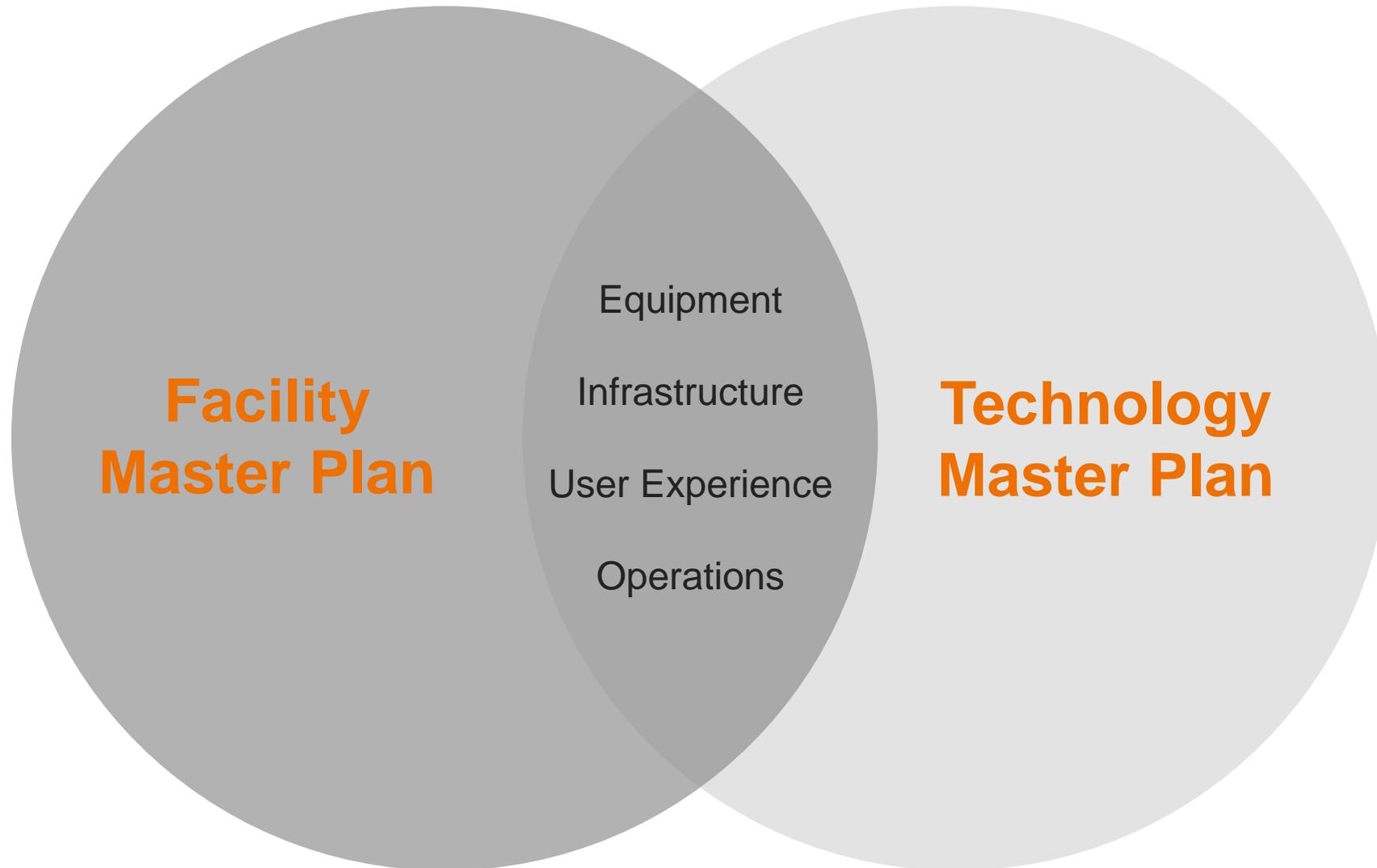
**Facility
Master Plan**

Technology

Now...



Now...



Quiz



How many pieces of technology do you see?

Technology from Three Perspectives:

Patient

Operations

Care Providers



Technology from the Patient's Perspective



**Virtual
Care Environment**



**Outpatient /
Community Setting**



**Hospital
Setting**

Virtual Medicine

Telehealth



Technology from the Patient's Perspective



**Virtual
Care Environment**



**Outpatient /
Community Setting**



**Hospital
Setting**

Community Wellness Center

Higher Acuity:

Sicker Patients
Older Demographic
Complex Care



Community Wellness Center

Autism Treatment

Evidence-Based Design Goal:

- 1 Control stimuli from lights & windows in design for Autism



Burkhart Center for Autism Education and Research

Community Wellness Center

Constant Technology
Integration



Technology from the Patient's Perspective



**Virtual
Care Environment**



**Outpatient /
Community Setting**



**Hospital
Setting**

Hospital

Patient Expectations:

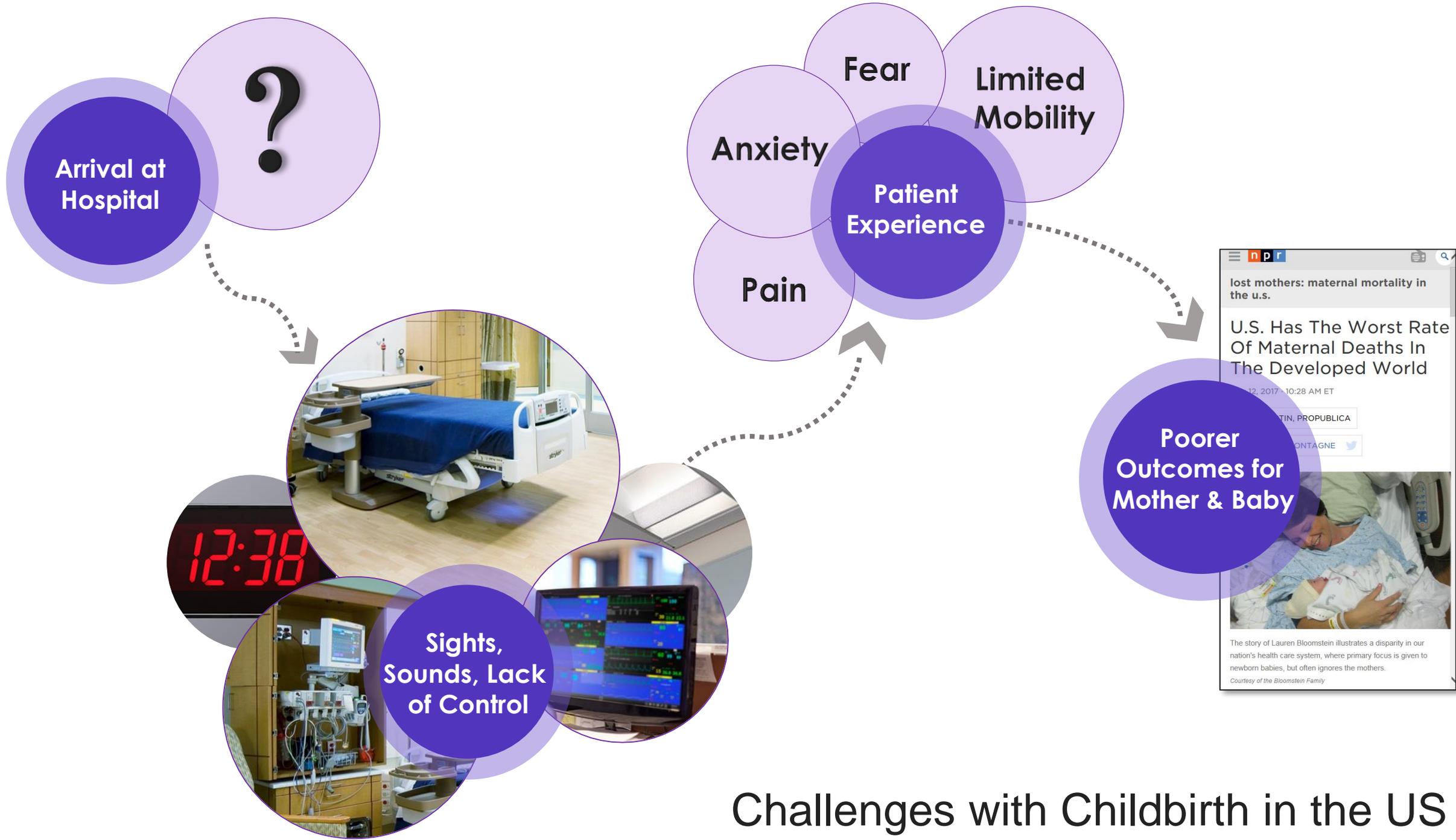
Integrated Technology
Enhanced Communication
Higher Quality of Care



*Children's Specialized Hospital Long Term Care Unit
Mountainside, New Jersey*

Case Study:

The Childbirth Experience



Challenges with Childbirth in the US

Arrival at Hospital

Digital Wayfinding

Austin Academic Medical Center Campus

Dell Seton Medical Center at The University of Texas

Hospital Floor Plan

Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Level 7
Lower Level

Campus Legend

- A Emergency Department Entrance (From 15th Street)
- B Main Entrance (From Red River Street)
- C Skybridge Entrance (From Parking Garage to Hospital Level 1)
- 1 Dell Seton Medical Center at The University of Texas 1500 Red River Street
- 2 Hospital Parking Garage 601 East 15th Street
- 3 Health Transformation Building & Parking Garage 1400 North Interstate 35 Frontage Road
- 4 Health Discovery Building
- 5 Health Learning Building (Dell Medical School)
- 6 Clinical Education Center 1400 North Interstate 35 Frontage Road
- 7 UT School of Nursing
- 8 Waller Creek & Waterloo Park
- 9 Frank Erwin Center

Department Directory

Department	Level	Department	Level	Department	Level
Acute Care	4,5,6,7	Education	LL	Phlebology	1
Admissions	1	Emergency Department	1	Preadmission Testing	1
Bio Med	5	Endoscopy	2	Radiology (MRI, CT, Nuclear Medicine)	LL
Cardiopulmonary Services (CPNS)	6	Environmental Services	7	Respiratory Therapy	2
Cath Lab	2	Epilepsy Monitoring Unit (EMU)	7	Security	LL,1
Chapel	1	Foundations	7	Skybridge (parking garage access)	1
Coffee Shop	1				

Department Directory

Department	Level	Department	Level	Department	Level
Acute Care	4,5,6,7	Education	LL	Phlebology	1
Admissions	1	Emergency Department	1	Preadmission Testing	1
Bio Med	5	Endoscopy	2	Radiology (MRI, CT, Nuclear Medicine)	LL
Cardiopulmonary Services (CPNS)	6	Environmental Services	7	Respiratory Therapy	2
Cath Lab	2	Epilepsy Monitoring Unit (EMU)	7	Security	LL,1
Chapel	1	Foundations	7	Skybridge (parking garage access)	1
Coffee Shop	1				

Evidence-Based Design Goal:

3 Provide for wayfinding to reduce stress

Get Directions on Your Phone!

We offer two easy options to help you get where you're going in the hospital.

1 Text Your Destination to 1-512-271-4335

Text a patient room number or words like "parking" or "food" to get turn-by-turn photo directions sent to your phone. Note that this number provides directions from this location in the hospital only.

OR

2 Use the "Dell Seton Hospital Directions" App

Download the free app for iPhone or Android to get photo directions. Visit Seton.net/FindYourWay to get started.

Go to Seton.net/FindYourWay for more information.



Your current location is:
Hospital Entrance
Red River Street
Level 1

Dell Seton Medical Center at The University of Texas | ASCENSION



¡Puedes Obtener Direcciones en tu Teléfono!

Te ofrecemos dos opciones fáciles para ayudarte a llegar a donde vas en el hospital.

1 Texta tu destino por mensaje a 1-512-271-4335

Para obtener direcciones enviadas a tu teléfono, escribe un número de la habitación del paciente o palabras como "estacionamiento" o "comida". Este número sólo proporciona instrucciones desde esta ubicación en el hospital. No olvides que este número ofrece direcciones únicamente en el hospital.

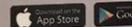
OR

2 Usa la Aplicación "Dell Seton Hospital Directions"

Descarga gratis la aplicación para iPhone o Android para obtener instrucciones de ruta con fotos. Para entrar, visita Seton.net/FindYourWay

*Aviso: la aplicación y las rutas escritas por mensaje de texto solo están disponibles en inglés.

Visita Seton.net/FindYourWay para obtener más información.



Actualmente se encuentra en:
Entrada al Hospital
Red River Street
Nivel 1

Dell Seton Medical Center at The University of Texas | ASCENSION



Conceal Medical Equipment

Sights,
Sounds,
Lack of
Control



Sights,
Sounds,
Lack of
Control

Provide for Positive Distraction

Herning Hospital in Jutland, Denmark

<https://modos.dk/delivery-room/>



Patient Control of Environment

Sights,
Sounds,
Lack of
Control

Operable blinds
Adjustable lighting
Music options
Temperature controls

Evidence-Based Design Goal:

4 Provide patient with a sense of control



Enable Mobility

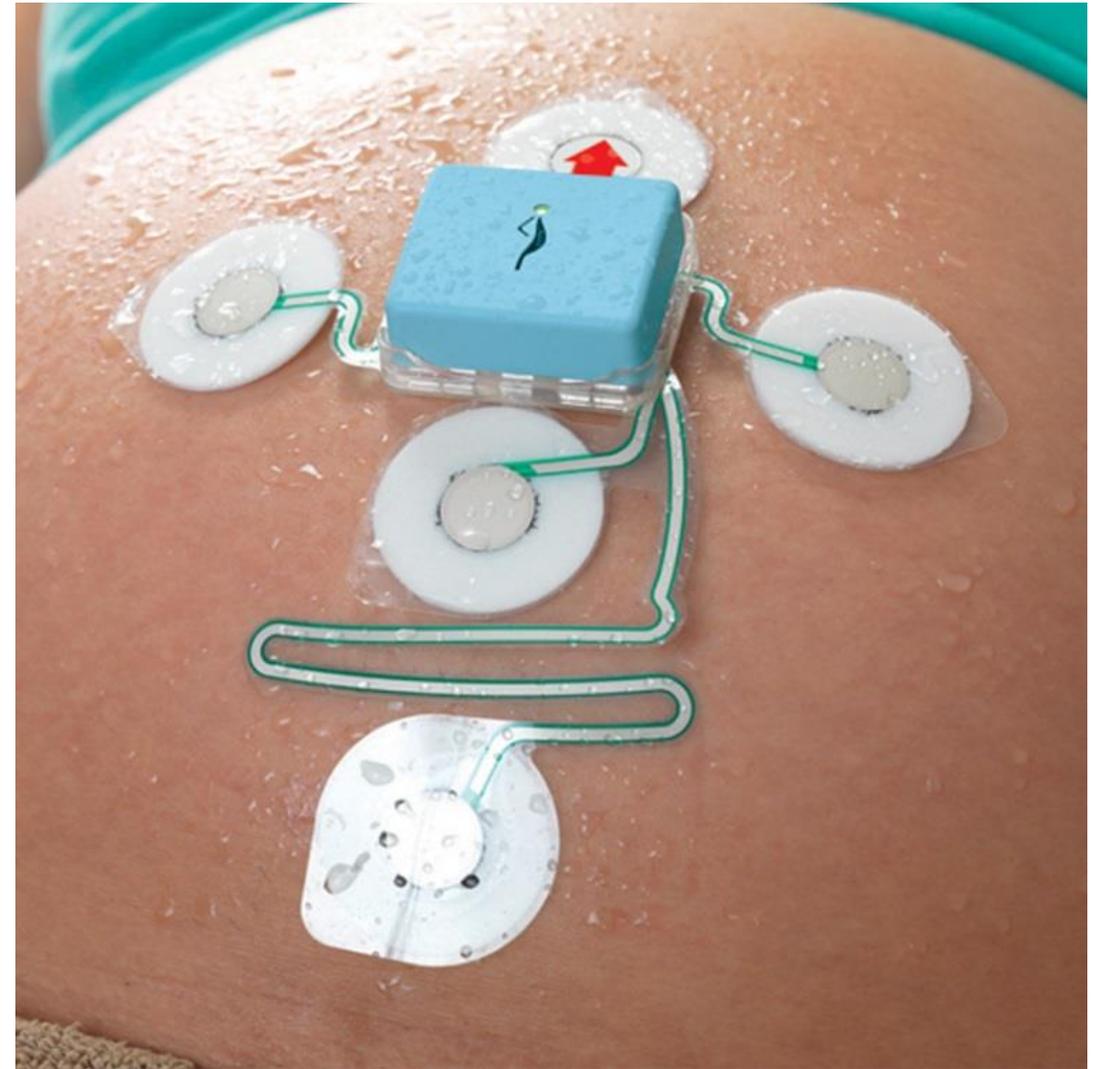
Photo credit: <https://www.gehealthcare.com/en/products/maternal-infant-care/fetal-monitors/monica-novii-wireless-patch-system>

Sights,
Sounds,
Lack of
Control



Evidence-Based Design Goal:

- 5 Enable mobility to speed up labor and reduce interventions



Customized Experience

Improved Mobility

Less Anxiety

Patient Experience

Greater Comfort

Better Outcomes for Mother & Baby

Sights, Sounds, Sense of Control

Arrival at Hospital

Get Directions on Your Phone!

We offer two easy options to help you get where you're going in the hospital.

1 Text Your Destination to 1-512-271-4335

Text a patient room number or words like "parking" or "food" to get turn-by-turn photo directions sent to your phone. Note that this number provides directions from this location in the hospital only.

Your current location is:
Hospital Entrance
Red River Street
Level 1

Chipping Away at the Challenges with Childbirth in the US



Mother as
Brand
Ambassador

HCAPS
(Hospital Consumer
Assessment of Healthcare
Providers and Systems)

Social Media



*Florida Hospital for Women
Orlando, FL*

What are some issues on our client's minds?



Case Study: Patient Perception of Care



Safety & Security



Equipment Procurement in a World of Constant Change



Technology in Design & Construction



Applications of AI



Case Study: Staff Retention

What are some issues on our client's minds?



Case Study: Patient Perception of Care



Security & Safety



Equipment Procurement in a World of Constant Change



Technology in Design & Construction



Applications of AI



Case Study: Staff Retention

Physical Building Security

Access Controls

Security Cameras



Physical Building Security

Children & Infants

RFID



*Penn Medicine
Chester County Hospital NICU*

Infection Control

Reducing Nosocomial (Hospital Acquired) Infections

E-Glass

Evidence-Based Design Goal:

- 7 Reduce infection risks from privacy curtains



Switchable
Privacy
Glass-
ON



Switchable
Privacy
Glass-
OFF

Infection Control

Handwashing Compliance



Evidence-Based Design Goal:

- 8 Prompts to improve hand-washing compliance

Infection Control

UV Sterilization



Evidence-Based Design Goal:

- 6 Use UV light to prevent the spread of germs



Preventing Medication Errors

Robotic Pharmacy Picking

Pneumatic Tube Systems for Medication Delivery

Evidence-Based Design Goal:

- 9 Leverage technology to help prevent medical errors



Sobrasoto Pavilion

Preventing Medication Errors

Bar Code Scanners at the Patient Bed

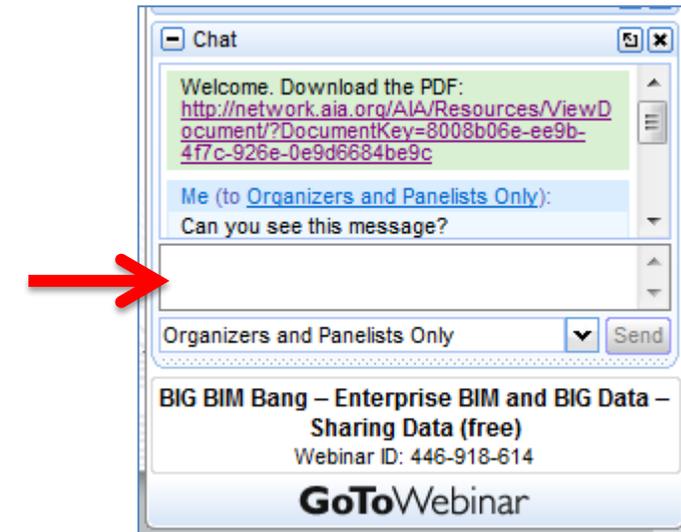


Evidence-Based Design Goal:

- 9 Leverage technology to help prevent medical errors

Question Reminder

Submit your questions and comments via the chat box.



What are some issues on our client's minds?



Case Study: Patient Perception of Care



Safety & Security



Equipment Procurement in a World of Constant Change



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Applications of AI

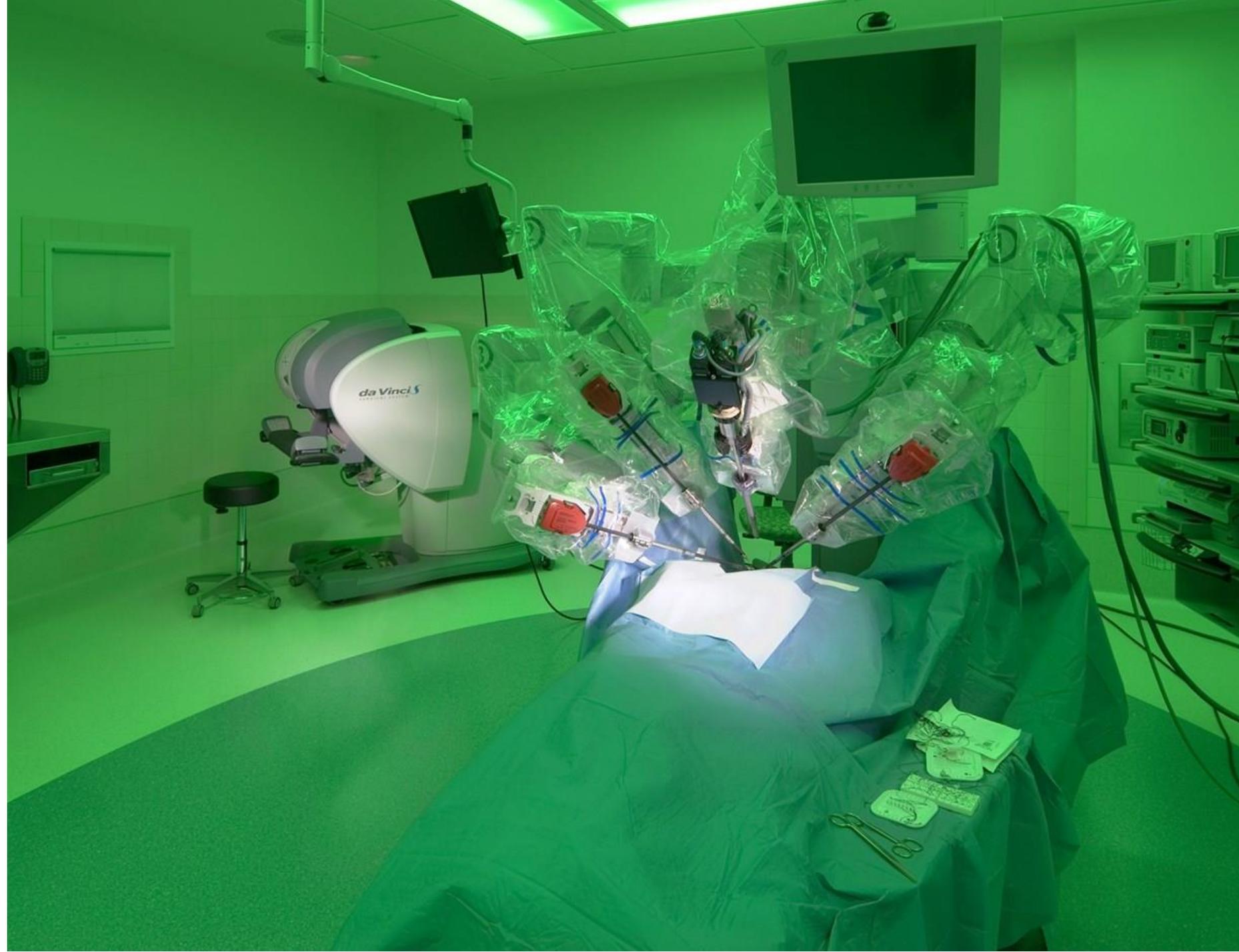


Case Study: Staff Retention

Established Technology

Robotic Surgery

Minimally Invasive



Newer Technology

Hybrid Operating Rooms:

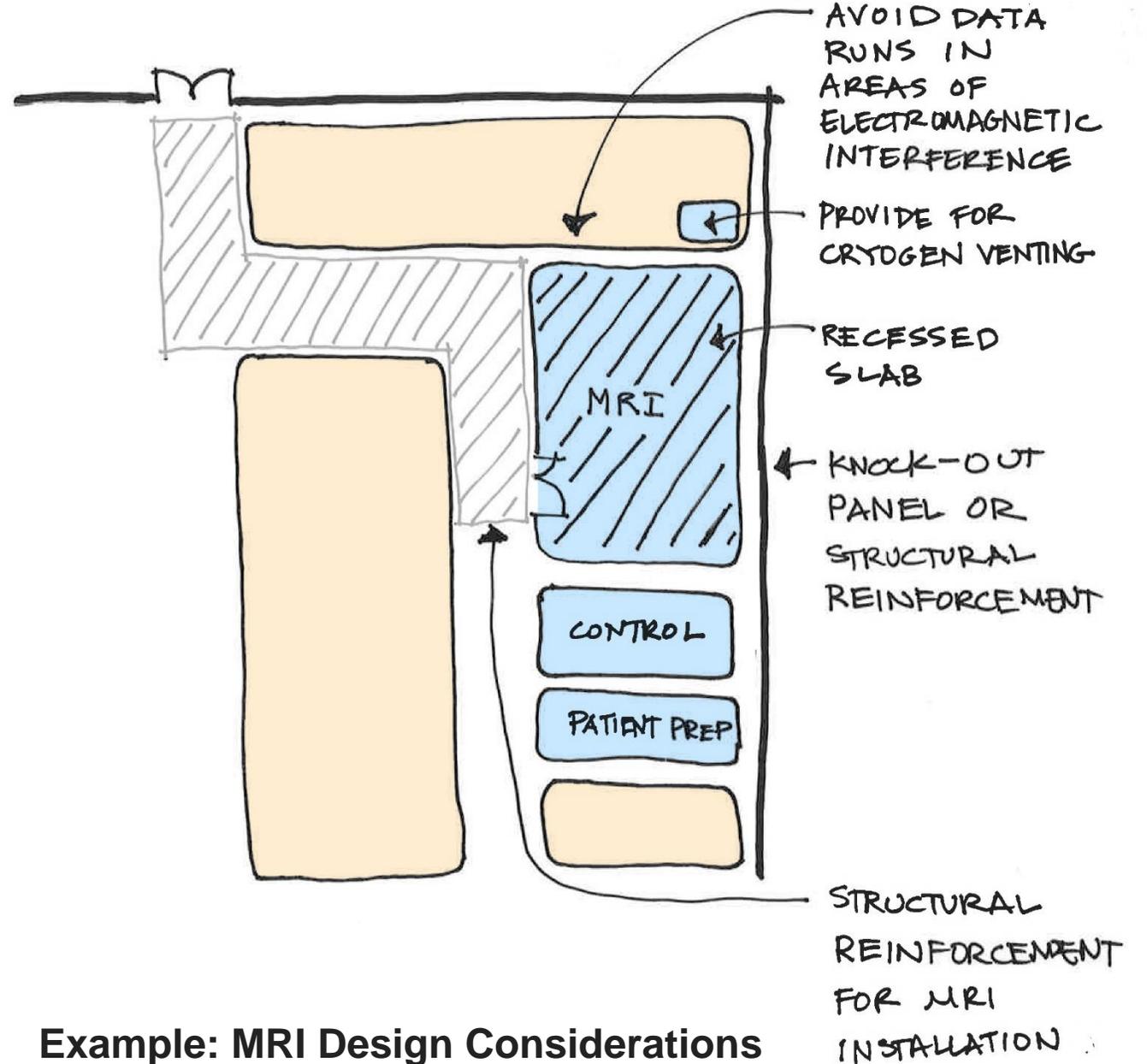
- Imaging
- Surgery



Future Technology

Shell space for future technology

- Future purchase
- Unknown technology



Example: MRI Design Considerations

What are some issues on our client's minds?



Case Study: Patient Perception of Care



Safety & Security



Equipment Procurement in a World of Constant Change



Technology in Design & Construction



Applications of AI



Case Study: Staff Retention

Virtual Reality

Frequent visualization of project at all stages

Philanthropy



Drones

Construction Observation



BIM Tools

Useful beyond
construction



*North Island Hospital
Campbell River and Comox Valley, Vancouver Island, BC*

What are some issues on our client's minds?



Case Study: Patient Perception of Care



Safety & Security



Equipment Procurement in a World of Constant Change



Technology in Design & Construction

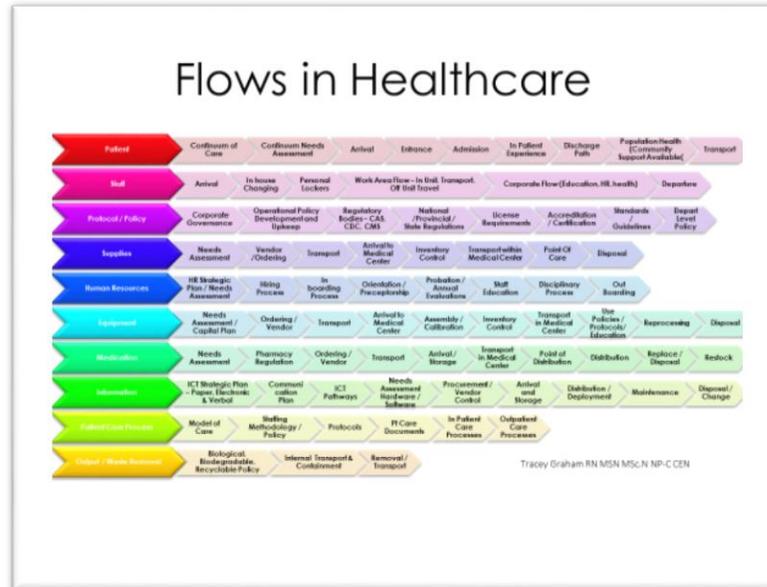
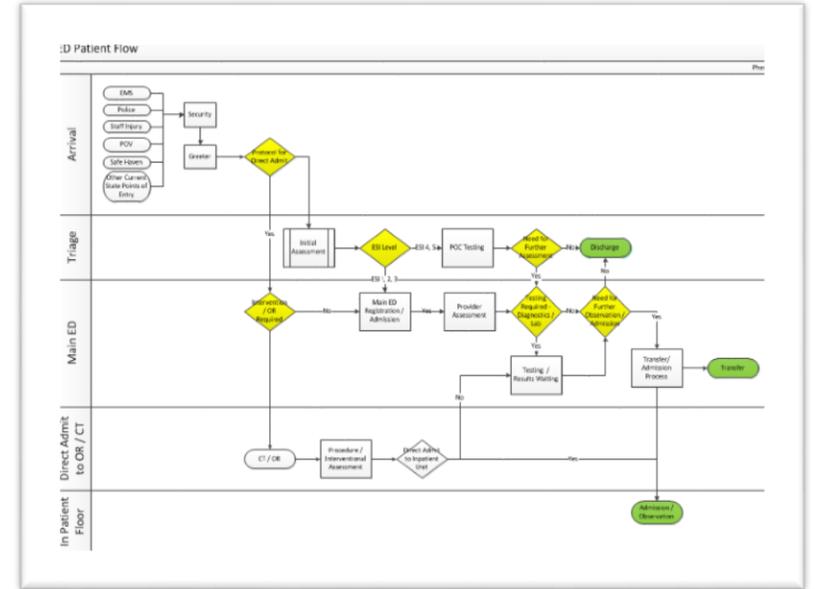
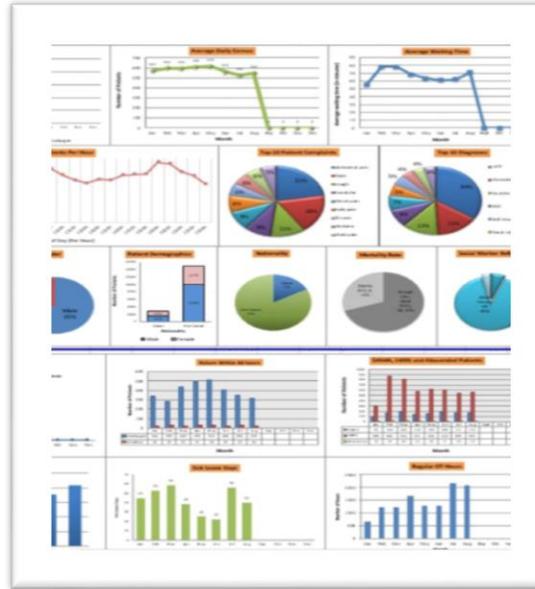


Applications of AI - Analytics



Case Study: Staff Retention

Data Analytics & Lean Driven Strategic Planning



What are some issues on our client's minds?



Case Study: Patient Perception of Care



Safety & Security



Equipment Procurement in a World of Constant Change



Technology in Design & Construction



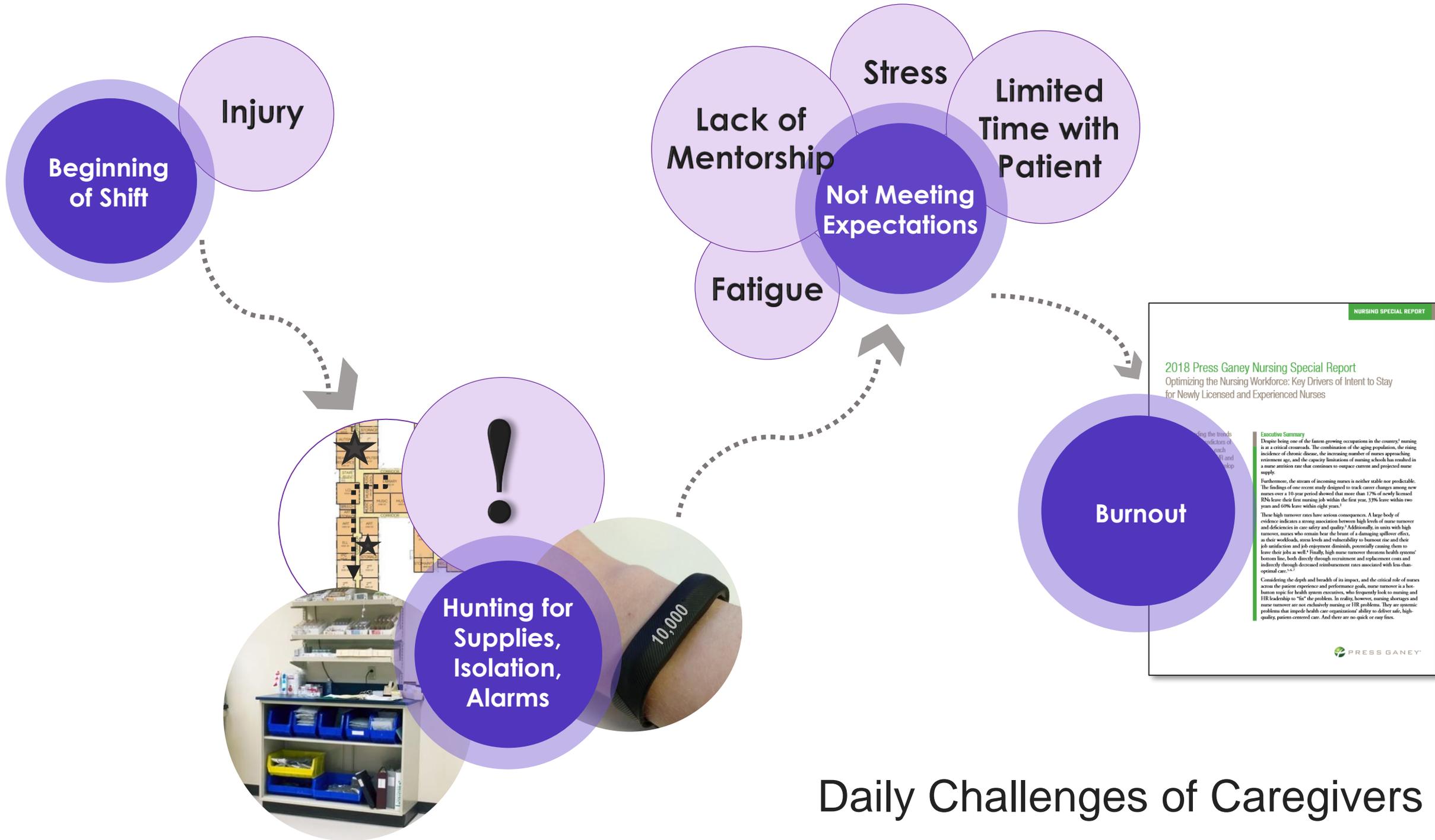
Applications of AI



Case Study: Staff Retention

Case Study:

The Care Provider Experience



Daily Challenges of Caregivers

Protecting Staff from Injury

Patient Lifts

Evidence-Based Design Goal:

- 10 Reduce work-related injuries to caregivers



Robotic Delivery Systems

AGVs can enable caregivers to spend more time with their patient



Evidence-Based Design Goal:

- 11 Enable nurses to focus on the joy of patient care

Education

Simulation & Remote Classrooms



Evidence-Based Design Goal:

- 12 Employ simulation as a training tool

Promoting Collaboration

- Care team stations
- Charting alcoves
- Informal meeting spaces
- Private spaces to ensure HIPPA compliance

Evidence-Based Design Goal:

- 13 Promote collaboration and teamwork to reduce attrition



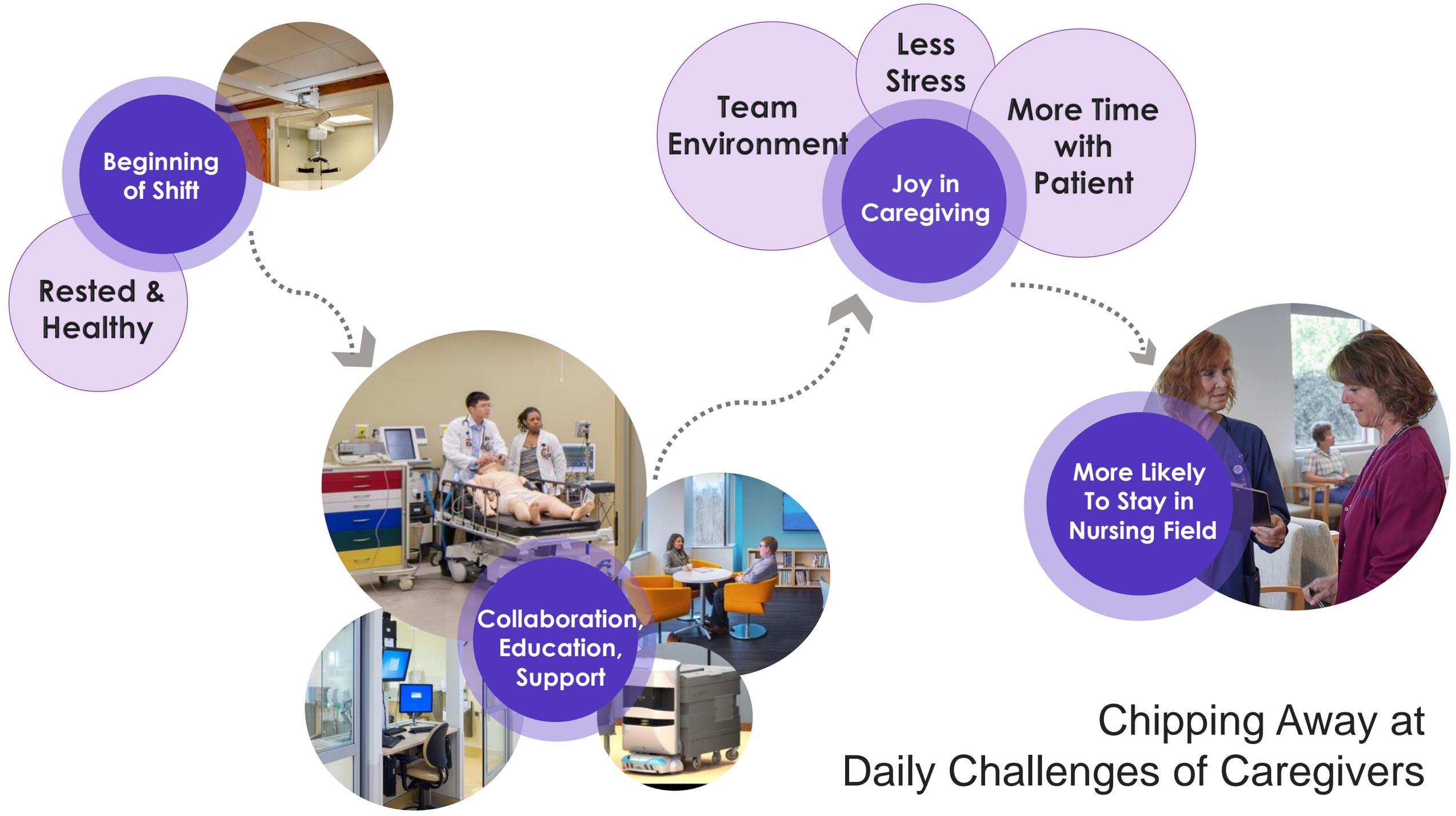
Engaging Staff in Technology Solutions

Medical Device Alarm Fatigue

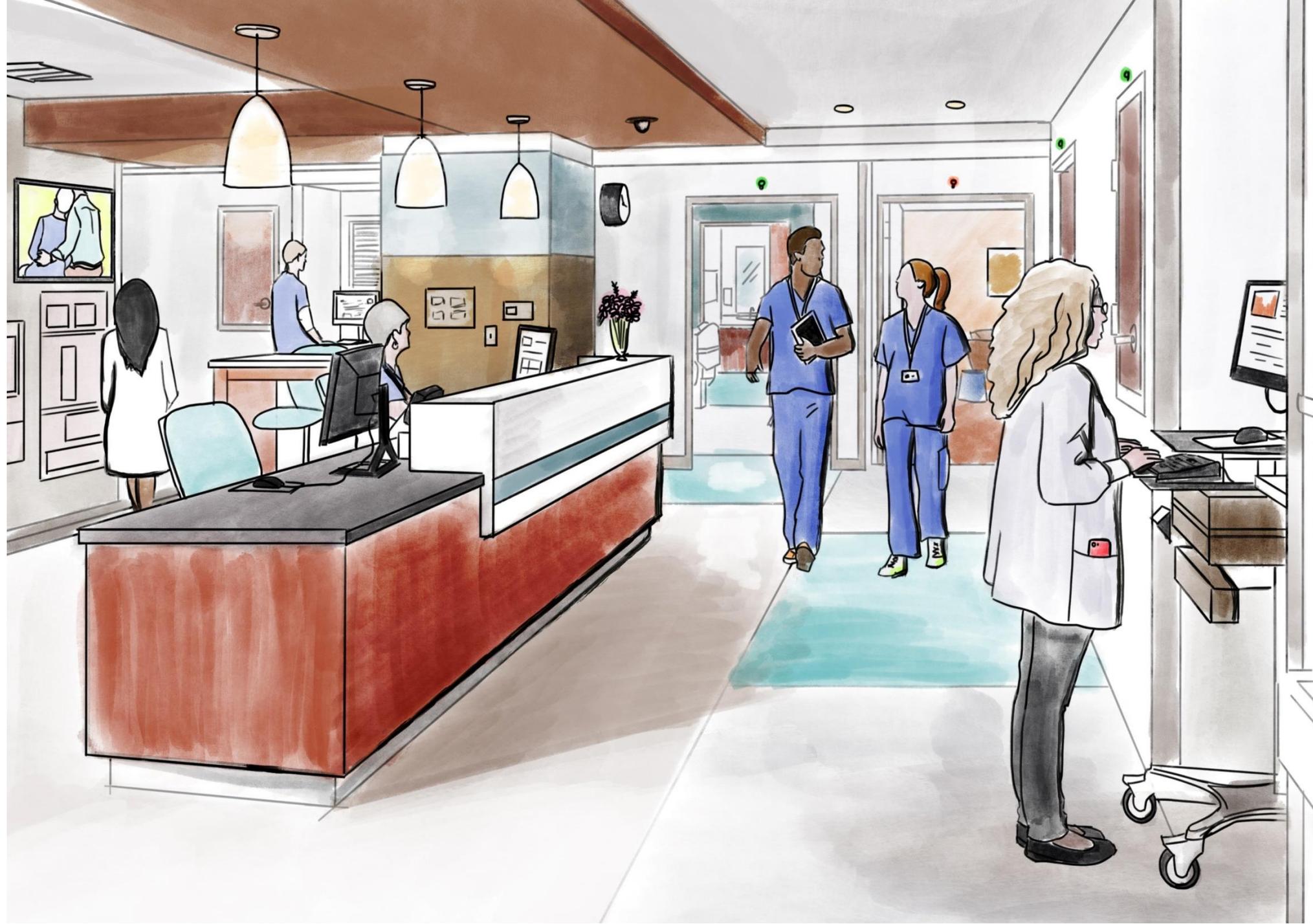


Evidence-Based Design Goal:

14 Reduce alarm fatigue to improve patient safety



Quiz



Quiz

1. Digital Art Display
2. Pneumatic Tube
3. Dimmable LED lighting
4. Smart Building Controls
5. Switchable Privacy Glass
6. Security Camera
7. Timeclock
8. Nurse Call Indicator
9. Distributed Antenna System
10. Tablet
11. Digital Patient Dashboard
12. RFID Badge
13. Cell Phone (Nurse Call)
14. Barcode Scanner
15. Workstation on Wheels (WOW)
16. Patient Vitals Monitor
17. LED Light with UV Disinfection
18. Robotic Sensing Technology
19. Patient Lift

And counting....



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Time for Questions and Comments



CES Reminder

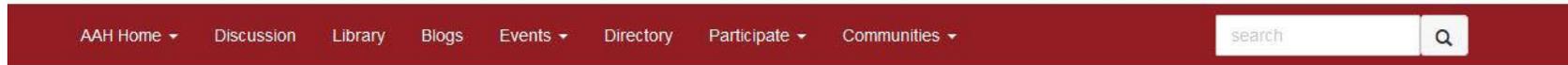
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Date	Series	Topic
4/9	Beyond the Basics	AAH/Center for Health Design Knowledge Repository – How to Use and Example Application
5/14	HC 101 Series	USPS 797 and 800: Update on Design Requirements for Sterile and Non-Sterile Pharmacy Compounding Facilities
6/11	HC 101 Series	IMEG Webinar (Medical Equipment Planning)

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