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

March 12, 2019

Liz Schmitz AIA, EDAC, LEED AP
Stantec





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HC 101 Series

As part of the Academy's multi-channel, on-line approach, these sessions provide emerging and experienced professionals with convenient and economical opportunities to develop their chosen area of interest.

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



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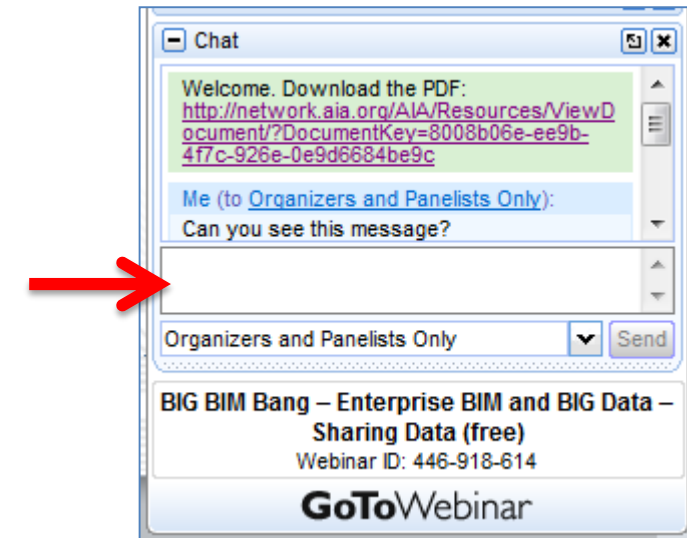
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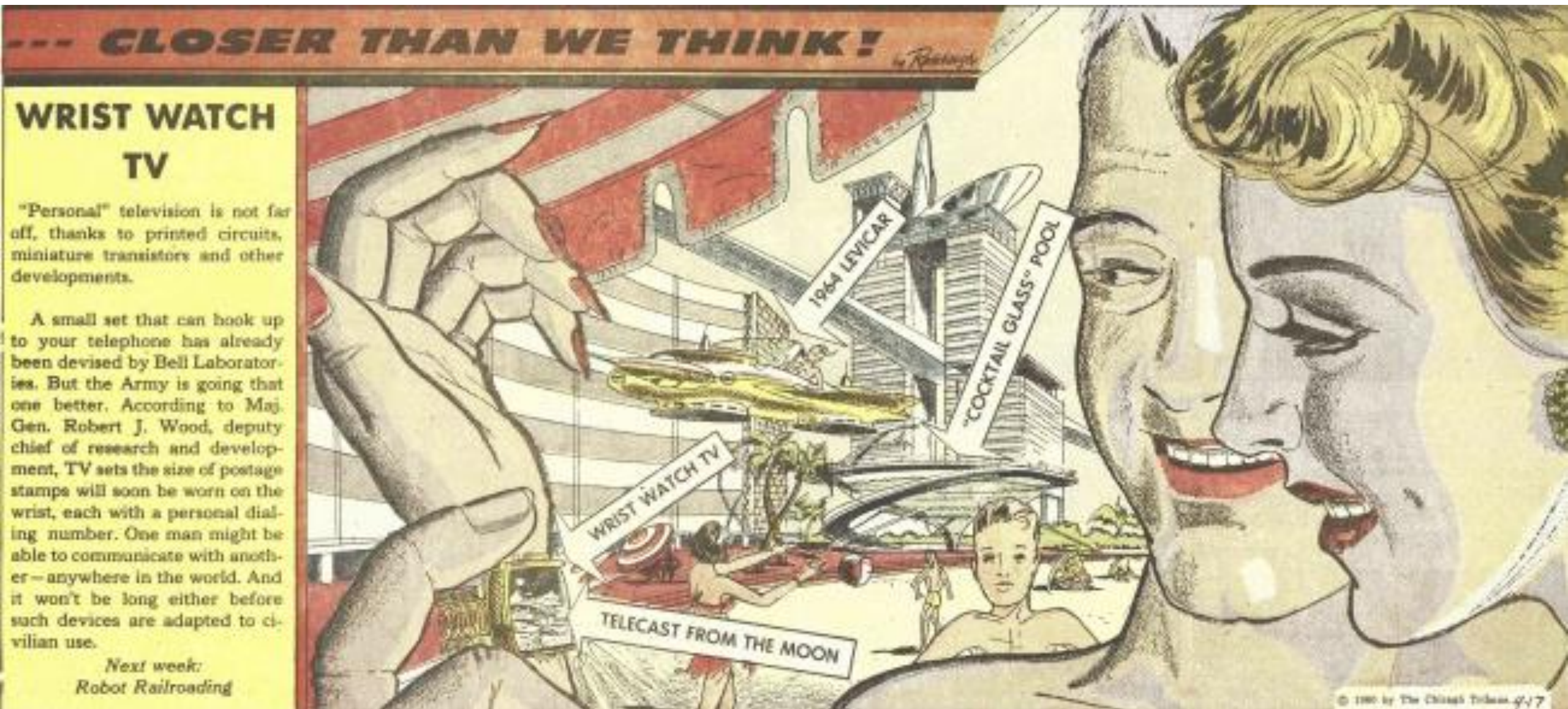
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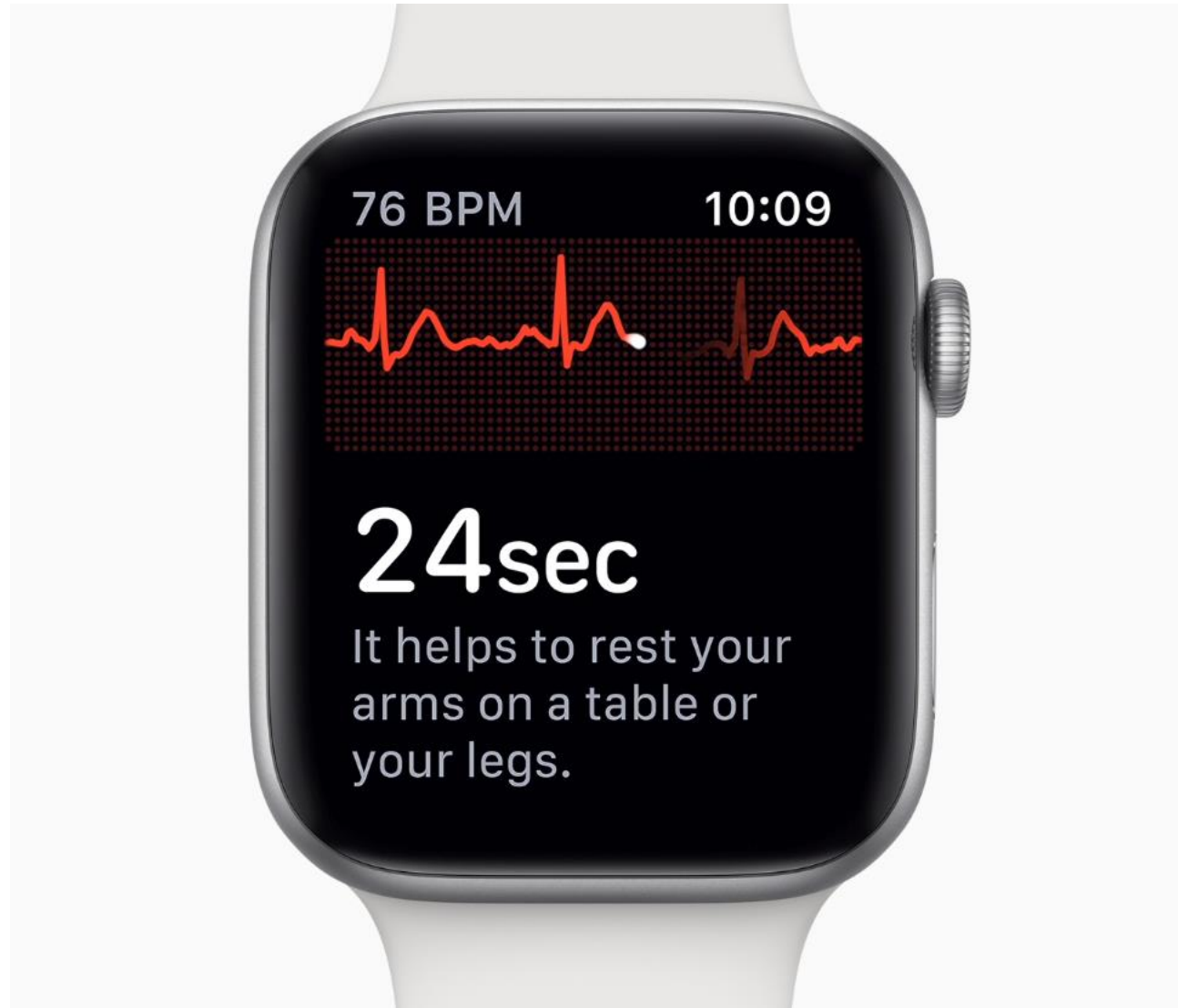
From Ancillary to Essential: Technology's Role in Healthcare Design and Operations

Then...

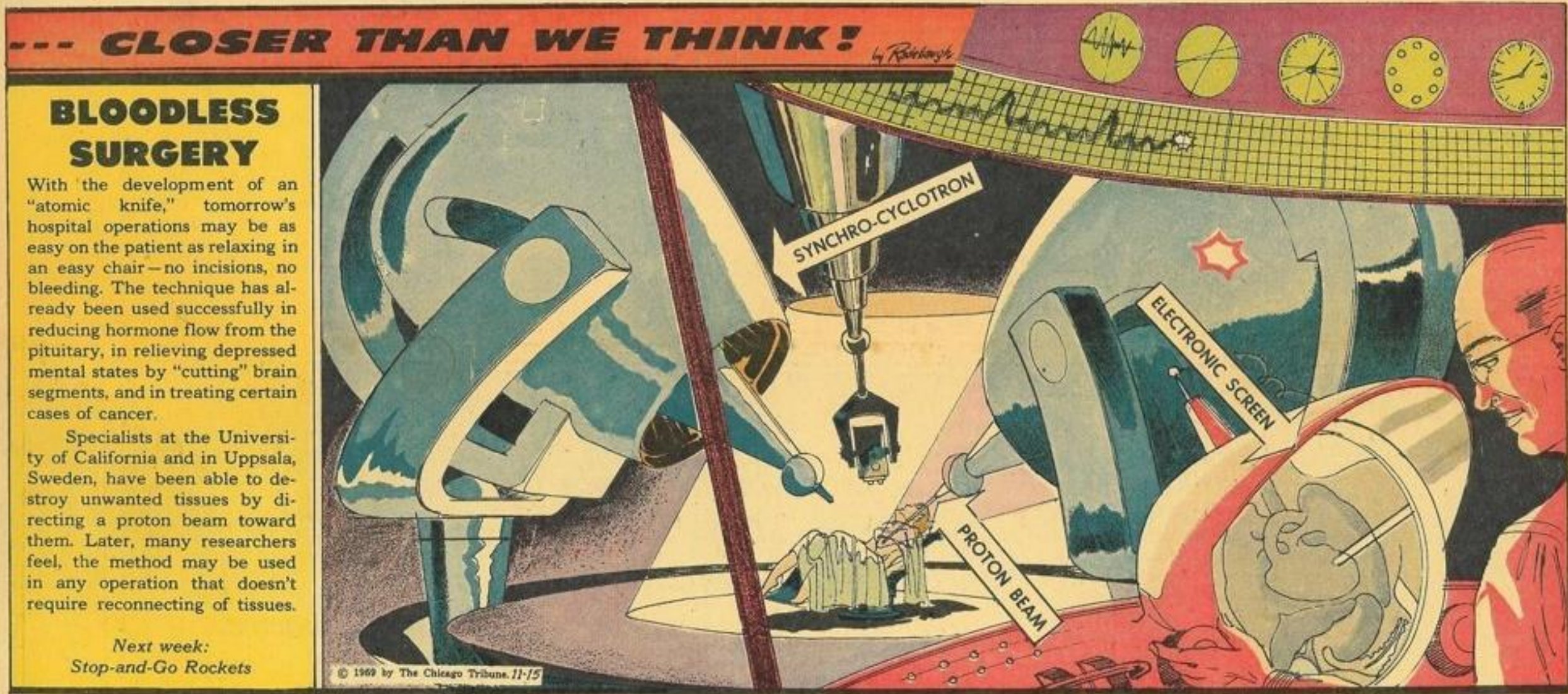


Arthur Radebough, 1950's Illustrator

Now...



Then...



Arthur Radebough, 1950's Illustrator

Now...

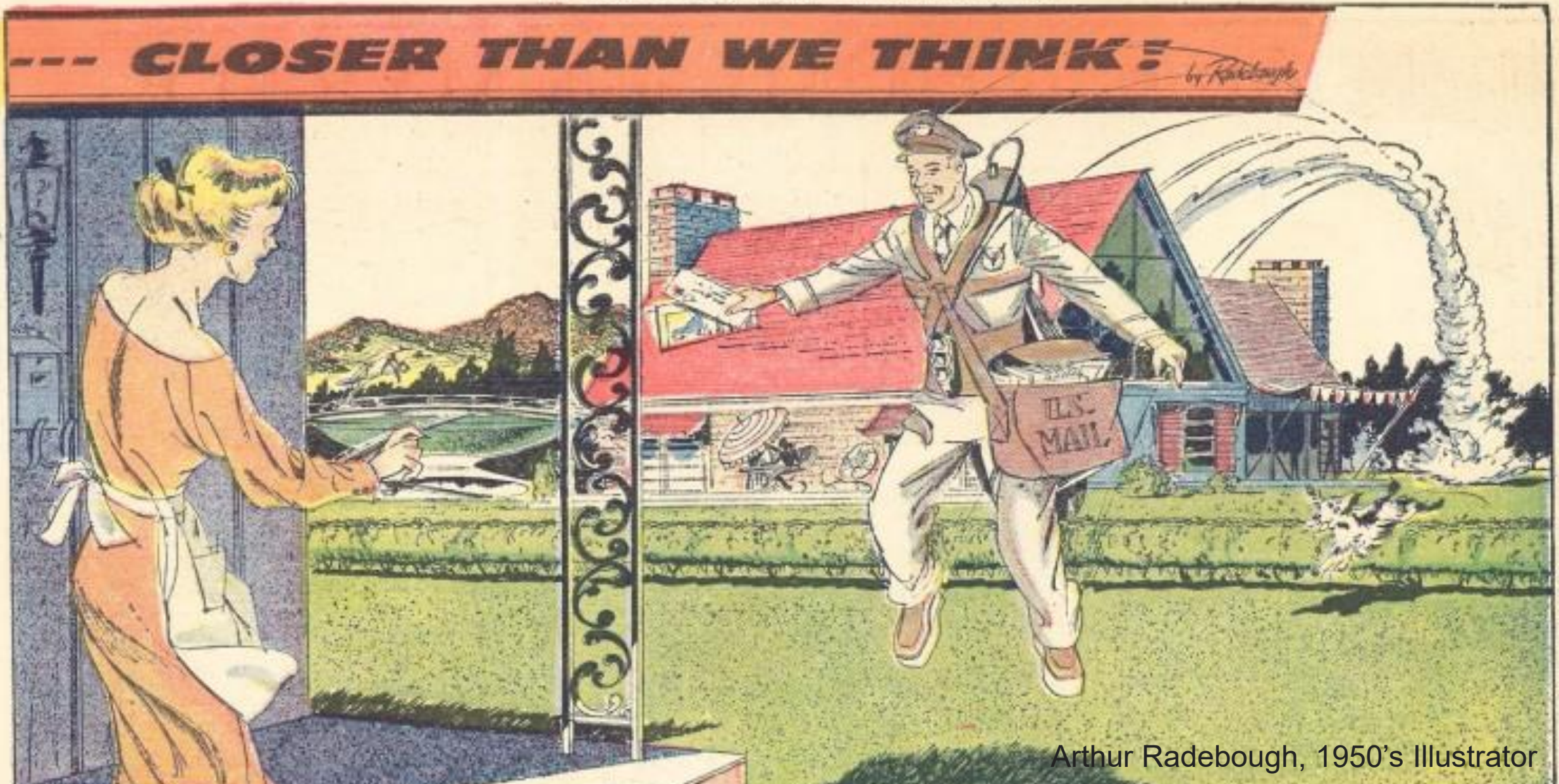


Emory University Proton Therapy Center

Then...

THE STAR WEEKLY, TORONTO, OCTOBER 4, 1958

5



Arthur Radebough, 1950's Illustrator

Now...



Then...

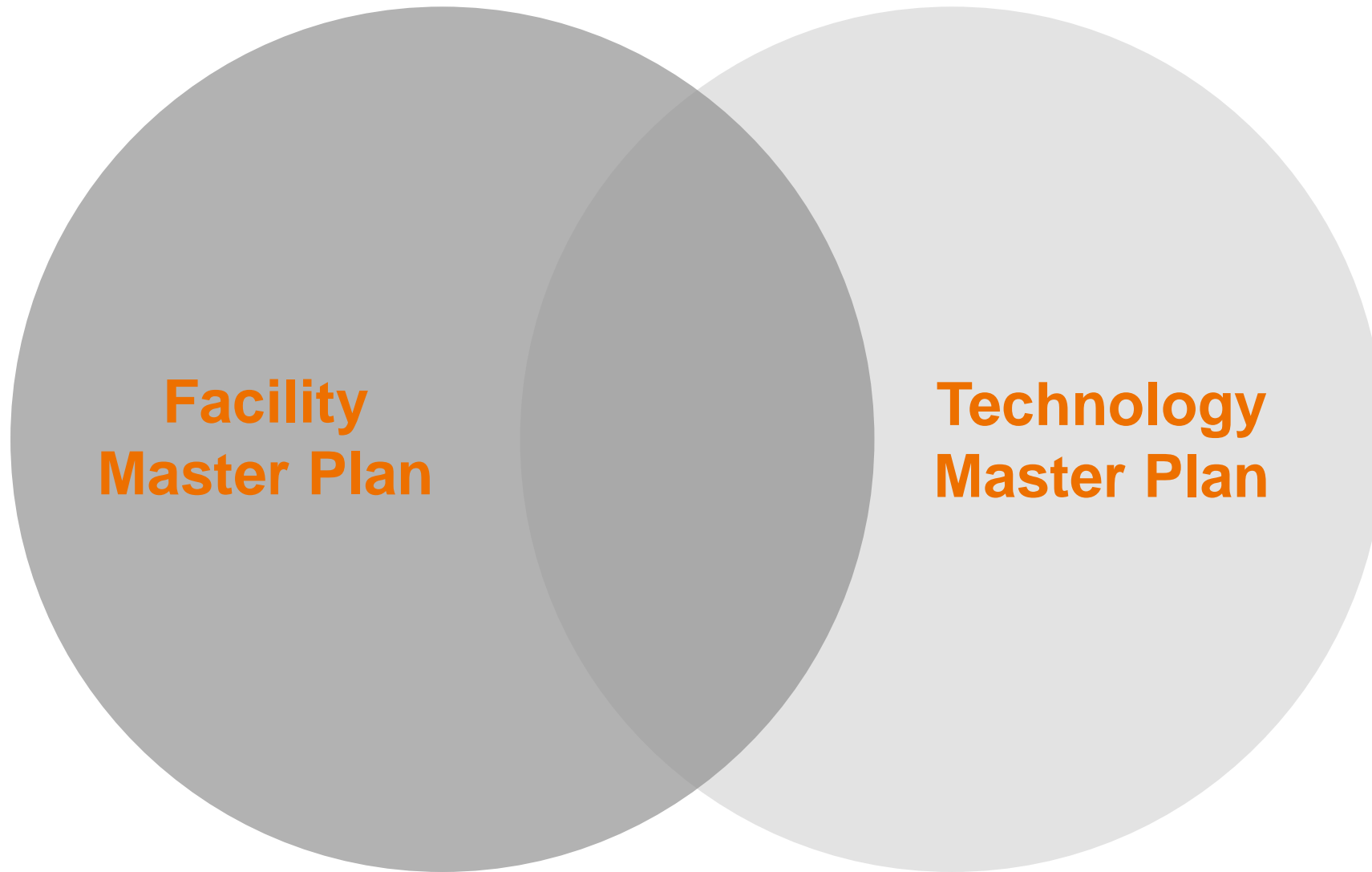


**Facility
Master Plan**

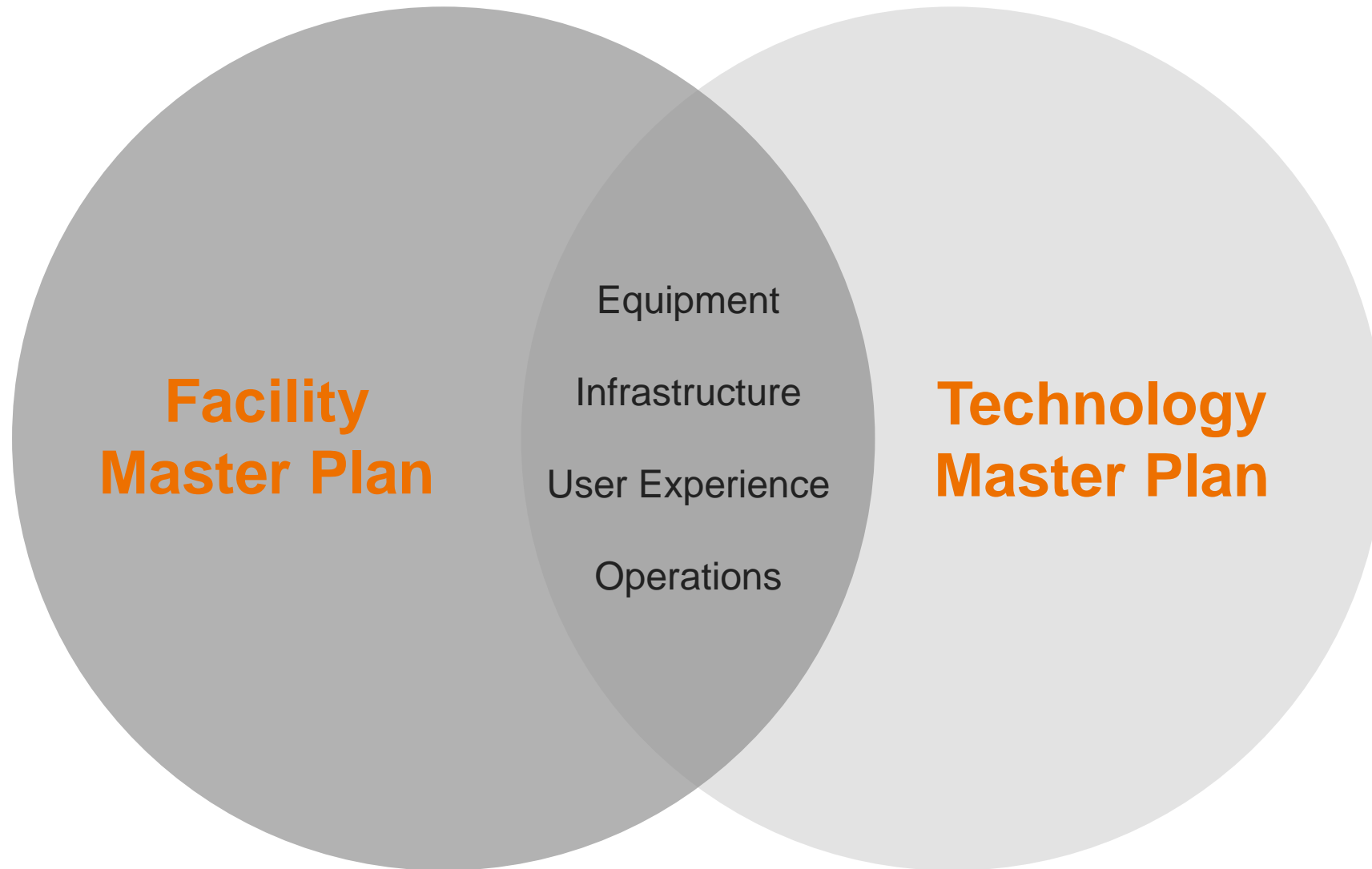


Technology

Now...

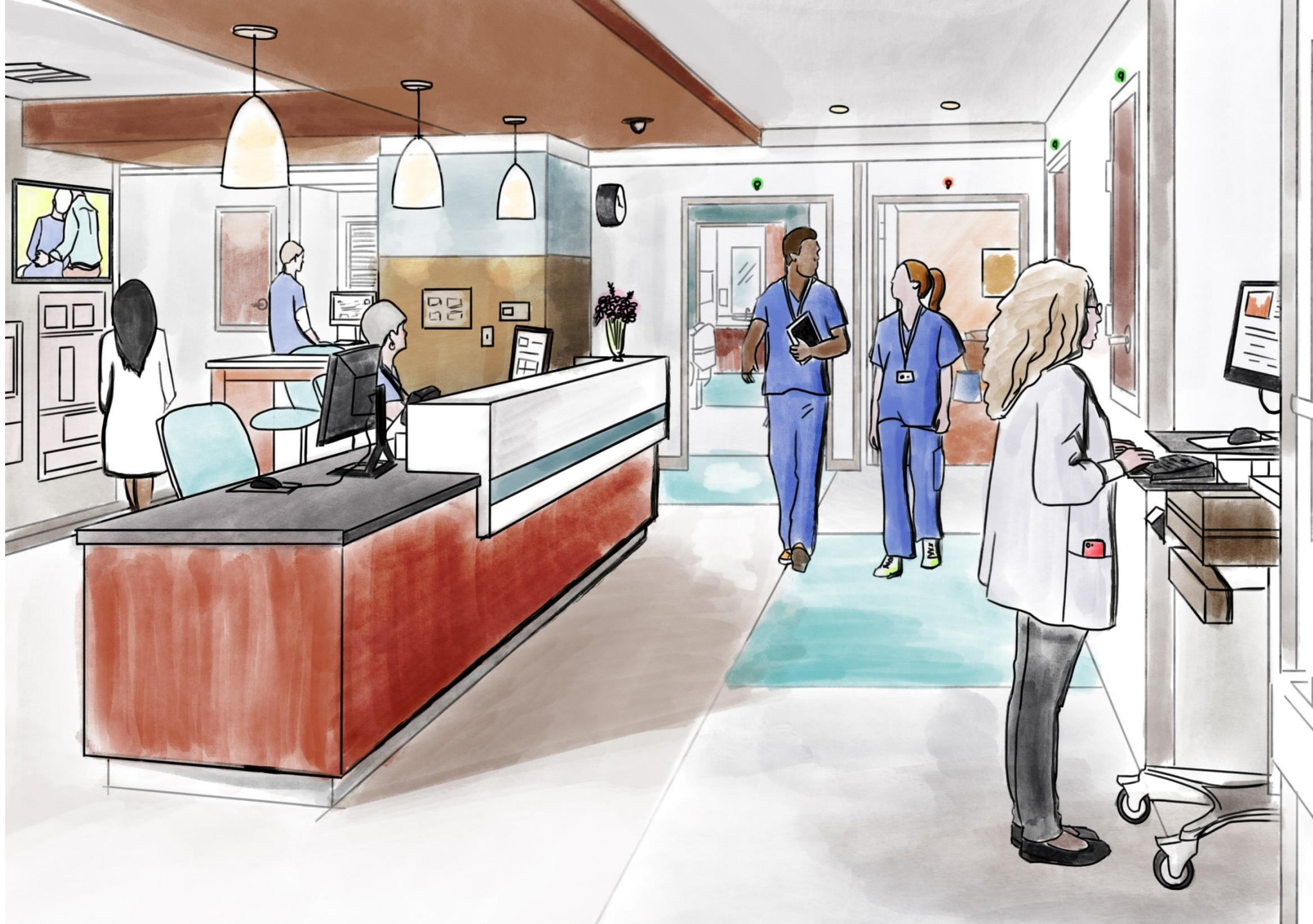


Now...



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**



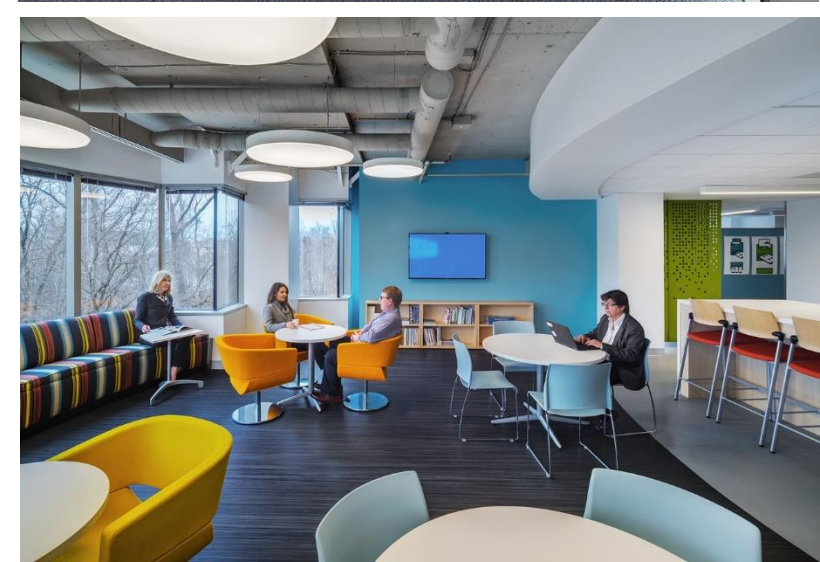
**Outpatient /
Community Setting**



**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



Charleston Area Cancer Center

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:

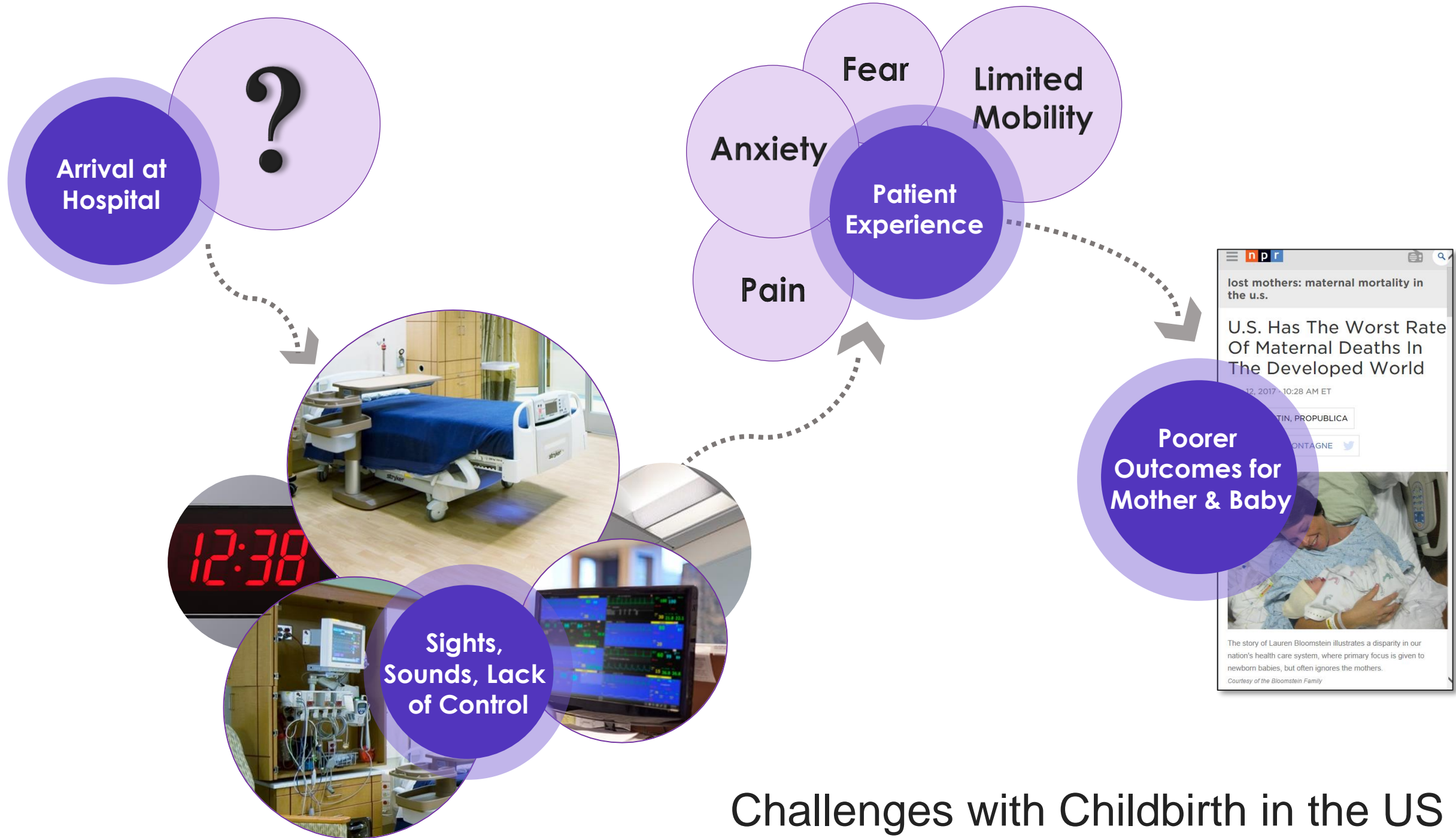
Integrated Technology
Enhanced Communication
Higher Quality of Care



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

Case Study:

The Childbirth Experience



Arrival at Hospital

Digital Wayfinding



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.

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 sólo 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

Sights,
Sounds,
Lack of
Control



Conceal Medical Equipment



Sights,
Sounds,
Lack of
Control

Provide for Positive Distraction

Herning Hospital in Jutland, Denmark

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



Evidence-Based Design Goal:

- 2 Provide positive distraction to reduce pain



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



Sights,
Sounds,
Lack of
Control

Enable Mobility

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



Evidence-Based Design Goal:

- 5 Enable mobility to speed up labor and reduce interventions



**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



**Sights,
Sounds, Sense
of Control**



**Customized
Experience**

**Greater
Comfort**

**Patient
Experience**

**Improved
Mobility**

**Less
Anxiety**

**Better
Outcomes for
Mother & Baby**



**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



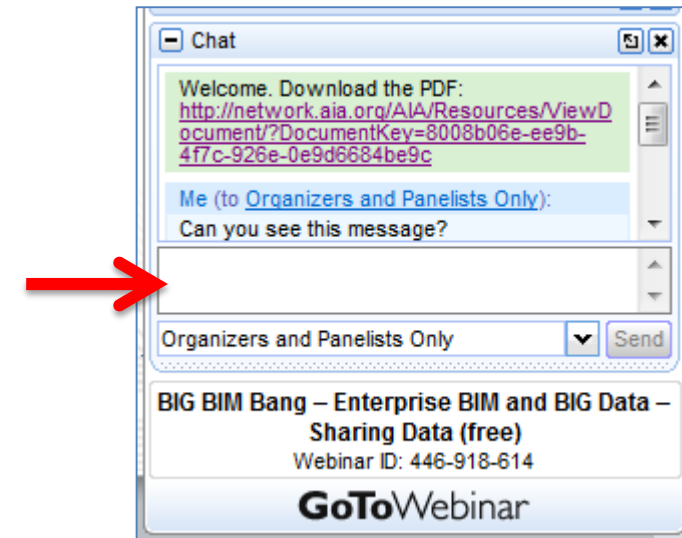


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Question Reminder

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



Technology in Design & Construction



Applications of AI

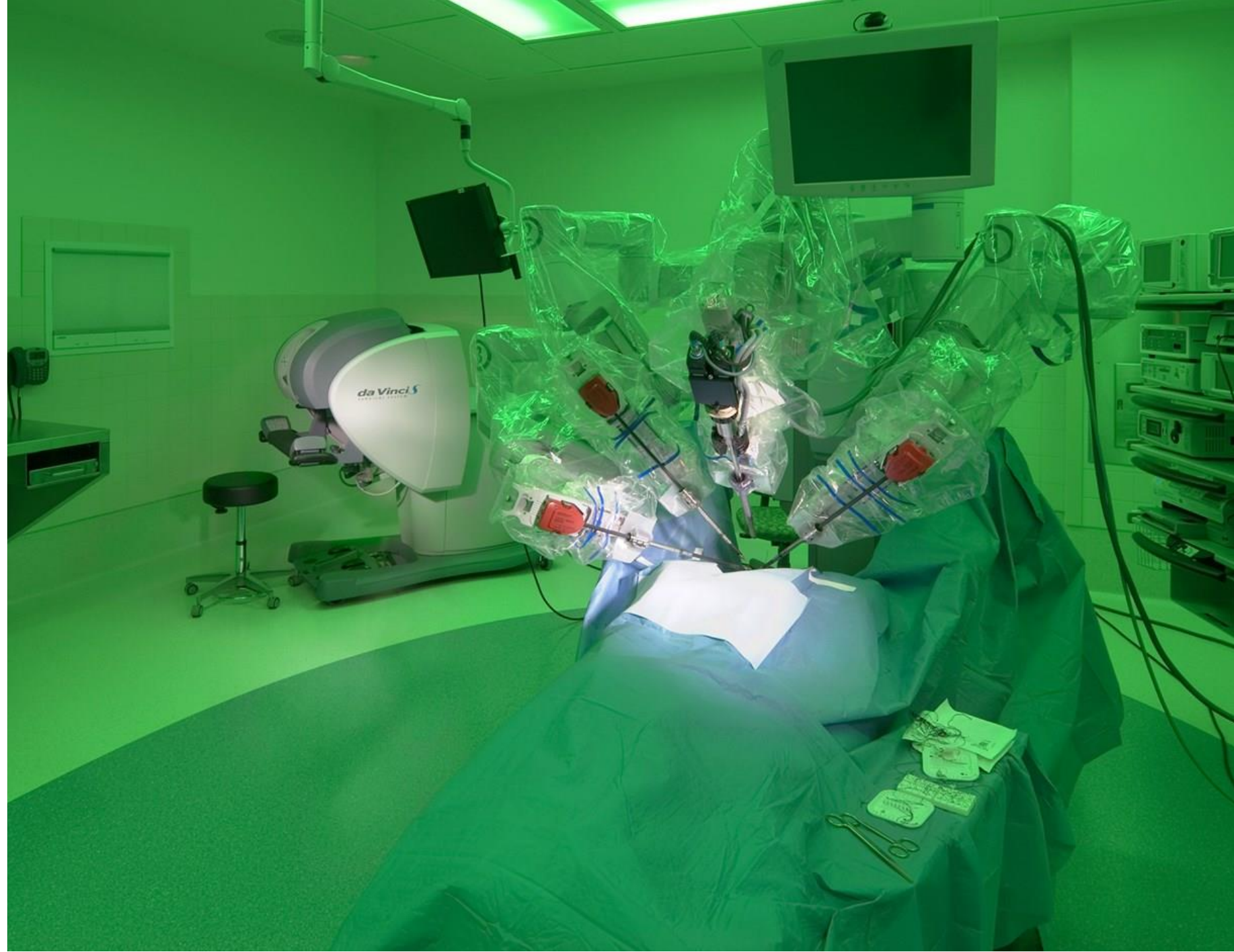


Case Study: Staff Retention

Established Technology

Robotic Surgery

Minimally Invasive



Newer Technology

Hybrid Operating Rooms:

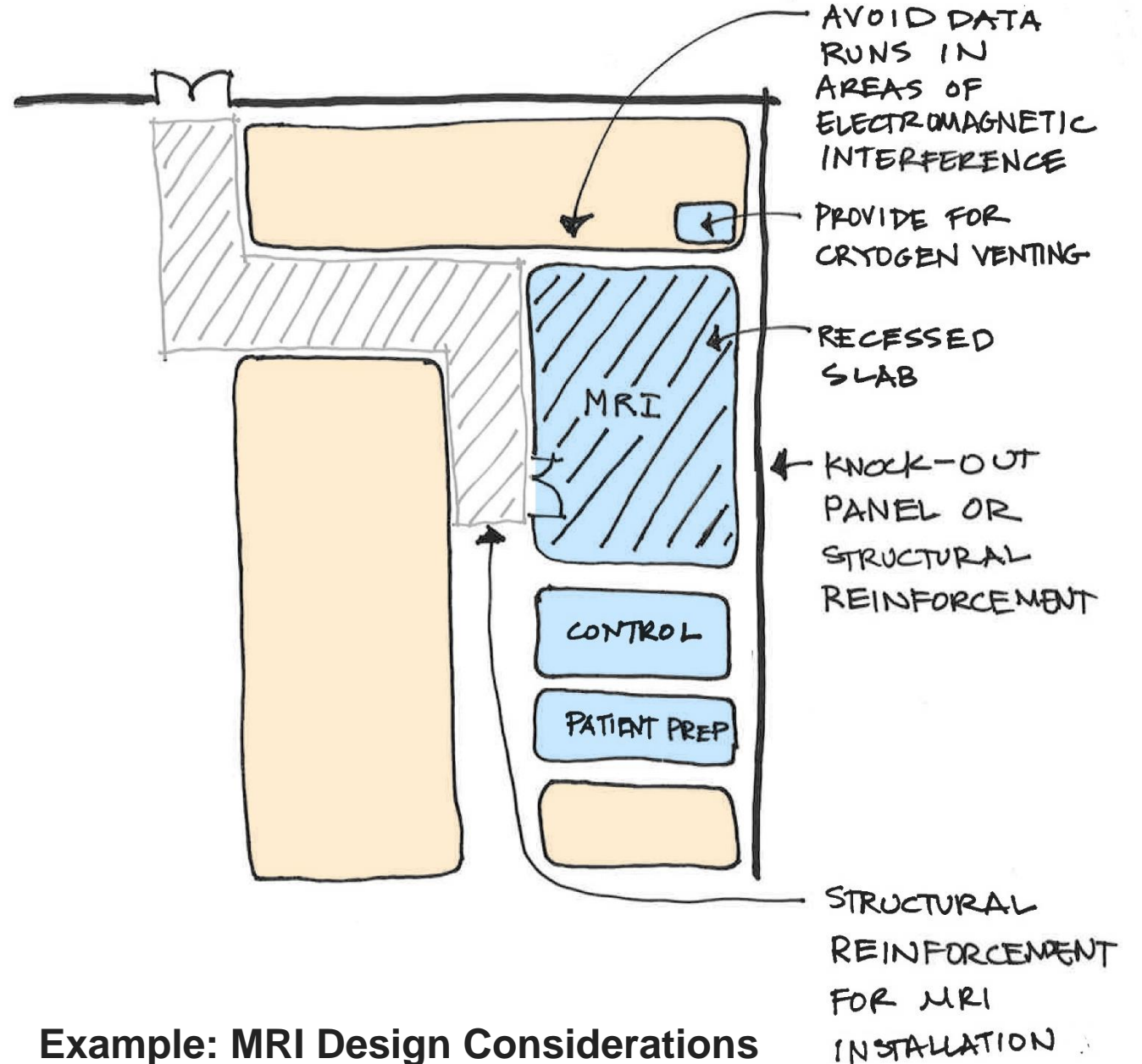
- Imaging
- Surgery



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

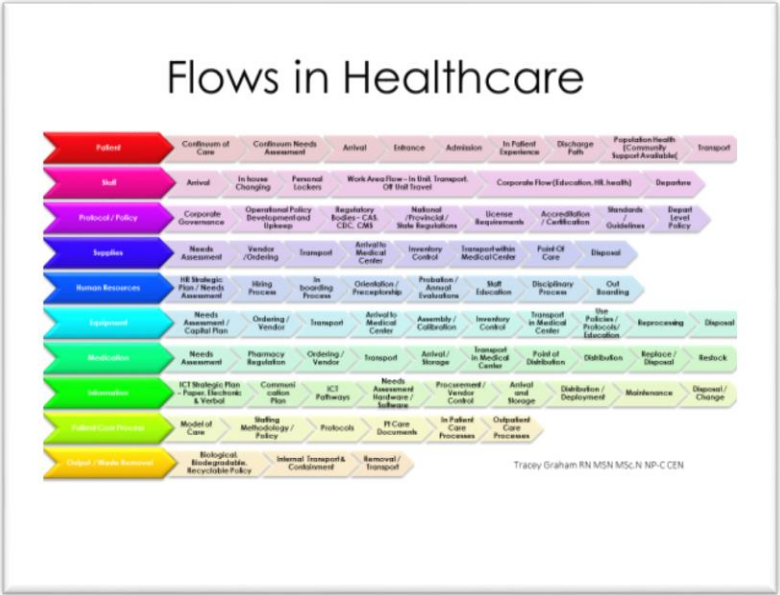
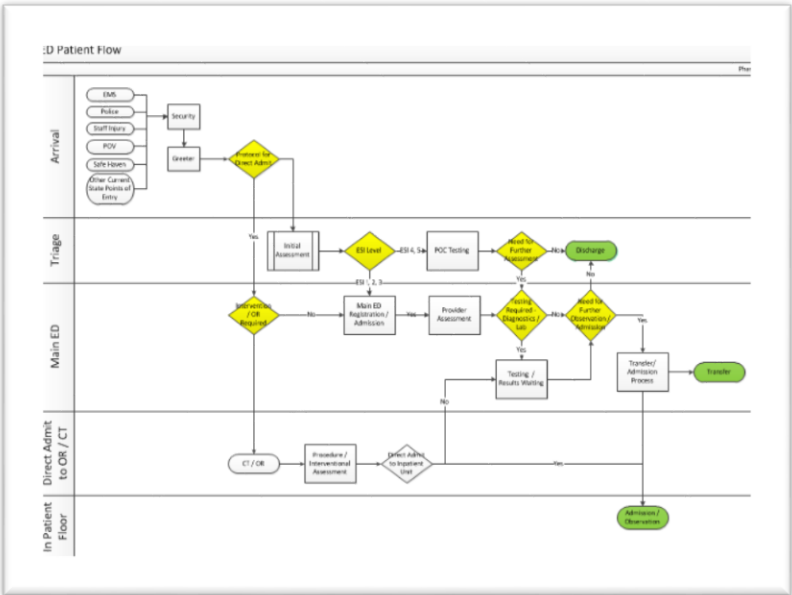
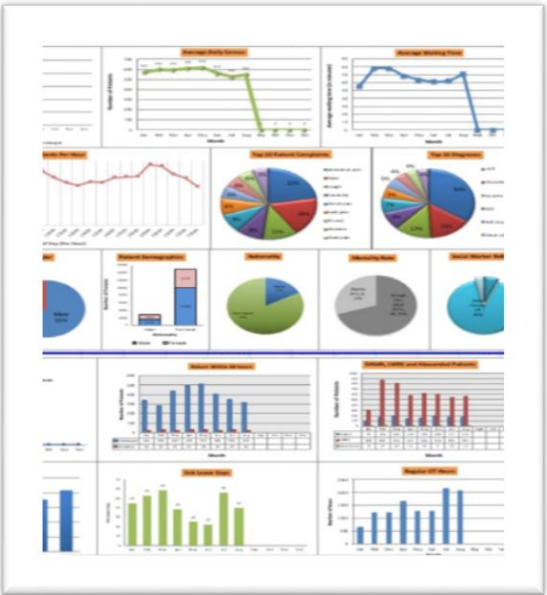


Applications of AI - Analytics



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



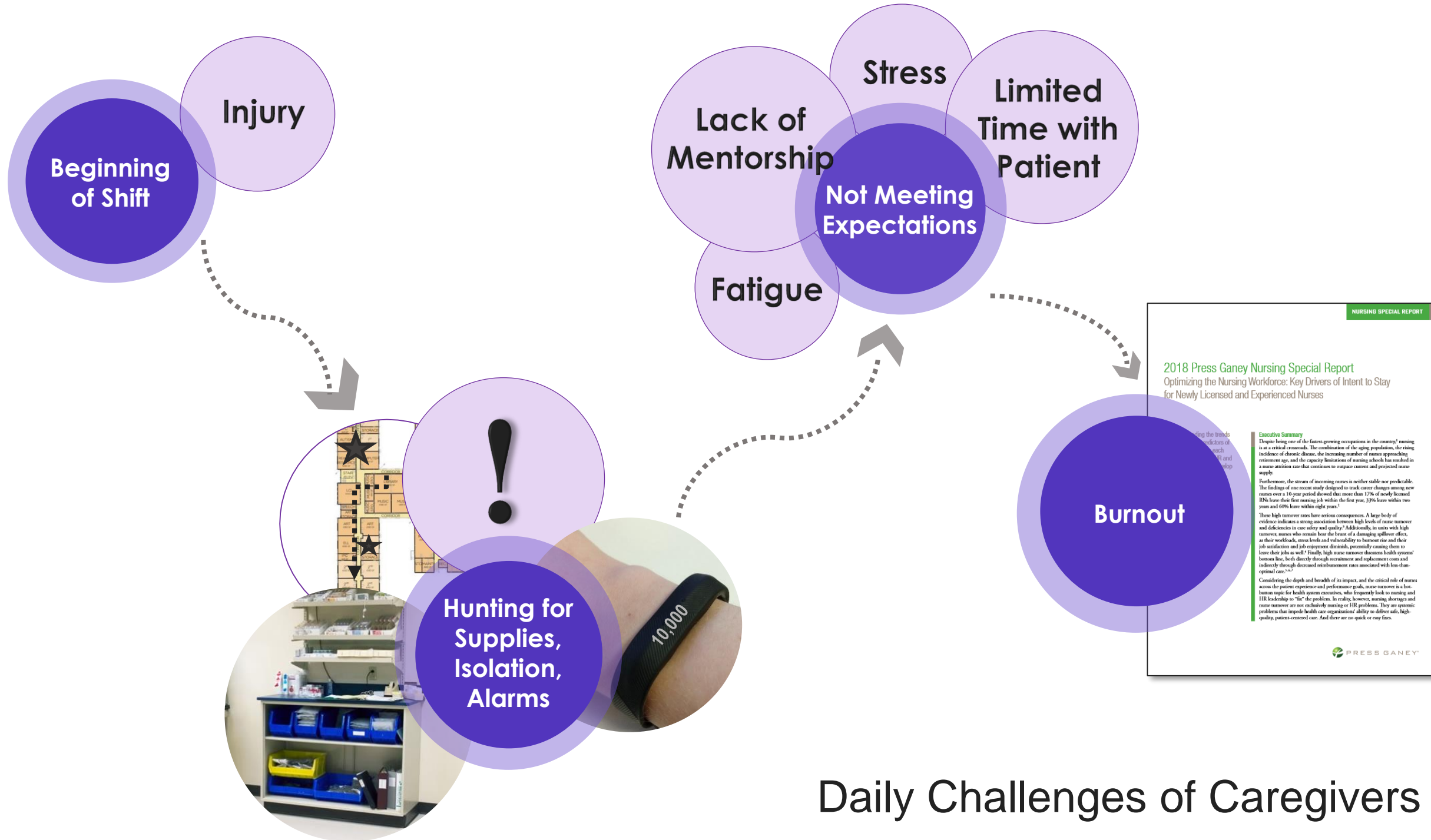
Applications of AI



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



Susquehanna Health



*UCSF
Mission Bay*

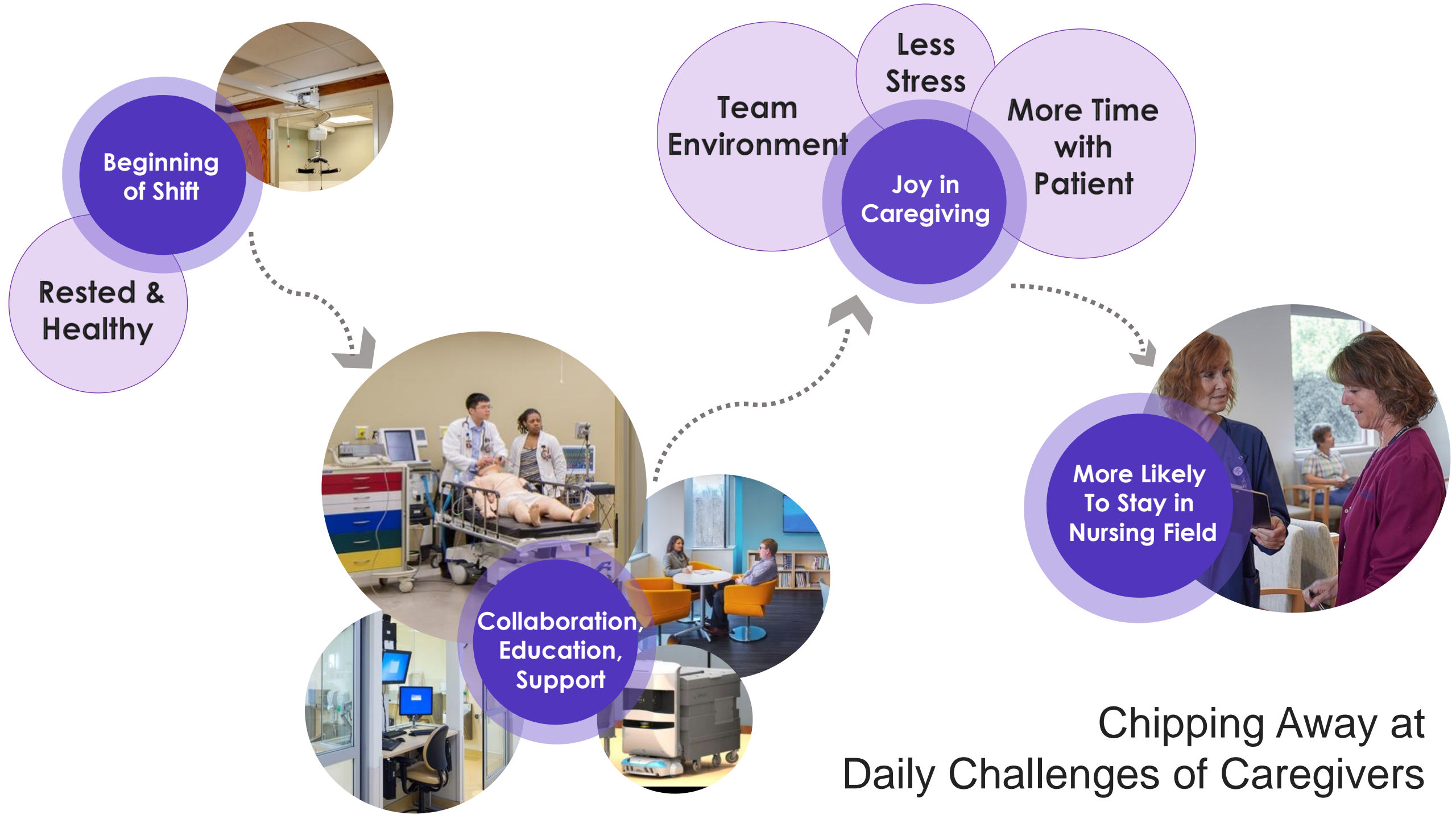
Engaging Staff in Technology Solutions

Medical Device
Alarm Fatigue

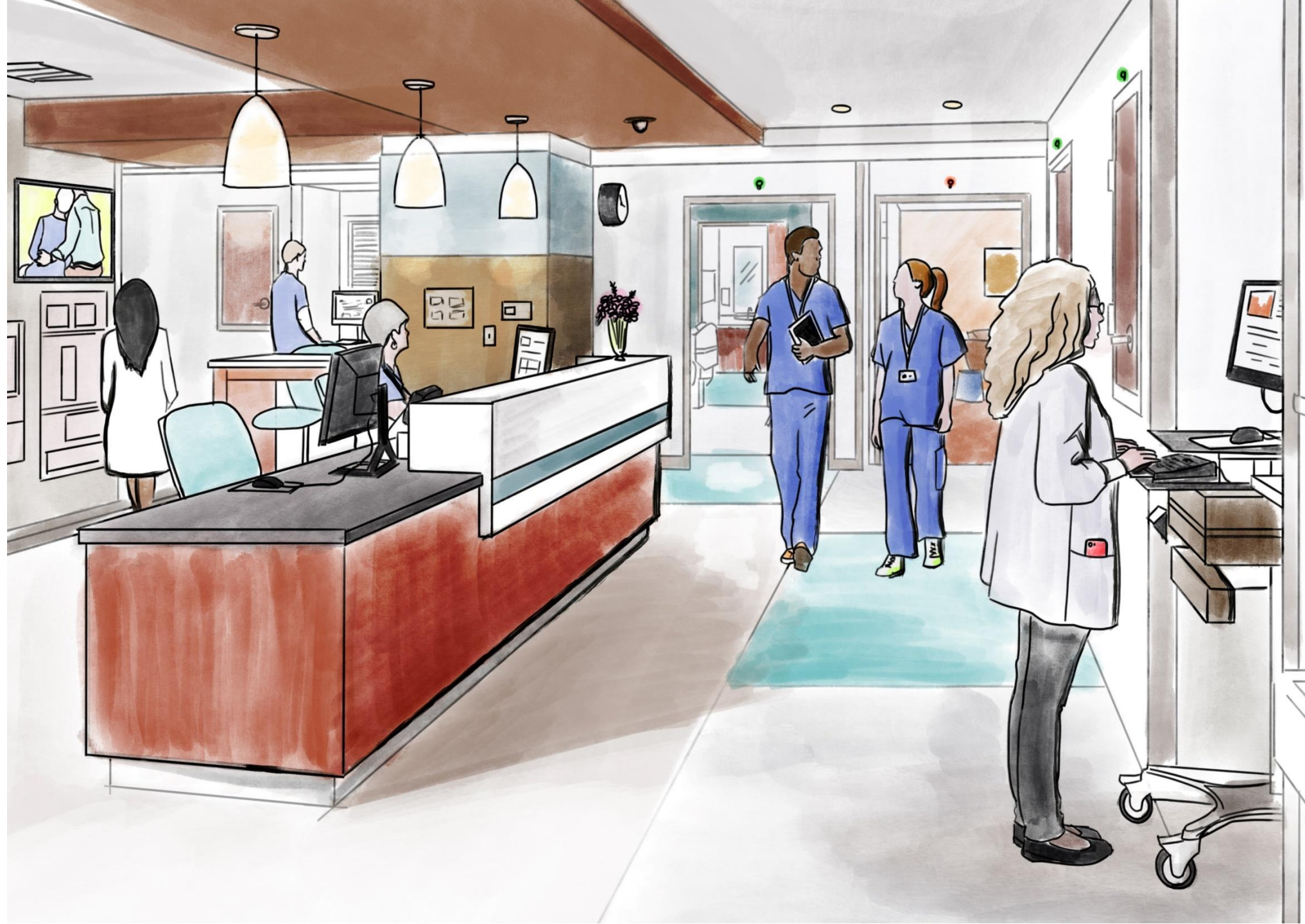
Evidence-Based Design Goal:

- 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





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The survey closes **Friday, March 15, 2019** at 12:30am ET.

For questions, please email knowledgecommunities@aia.org

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The AAH mission is to improve both the quality of healthcare design and the design of healthy communities by developing, documenting and disseminating knowledge; educating design practitioners and other related constituencies; advancing the practice of architecture; and affiliating and advocating with others that share these priorities.

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Upcoming Webinars

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)

Dates & topics are subject to change