

THE SPECTRUM OF TECHNOLOGIES

CURRENT + FUTURE STATE OF HEALTHCARE

B A L L I N G E R



@ballinger_ae

SPEAKERS



LOUIS A. MEILINK, JR., FAIA, FACHA, ACHE
Senior Principal



@LMeilinkA #HCDvirtual



ERIN NUNES COOPER, AIA, ACHA, LEED AP
Principal



@cgdgreen #HCDvirtual

POLL

During today's presentation, we will pose questions to the audience.

To participate in the poll:
SEND A TEXT TO 22333
WITH THE WORD BALLINGER

RESPONSES:
TEXT **A, B, C, D, E, or F**
OR
SINGLE WORD ANSWERS



POLL



TEXT YOUR RESPONSE TO 22333

Tell us about yourself.

What is your background / profession?

(Facilities, Architect, Interior Designer, Product Vendor,
Construction, etc.)

POLL

Tell us about yourself.

What is your background / profession?

(Facilities, Architect, Interior Designer, Product Vendor,
Construction, etc.)

Nurse Leader

Architect OPERATIONS
FACILITIES Interior Designer

LEARNING OBJECTIVES

1

Identify the impact of changing technology on conventional planning and design metrics.

2

Understand a spectrum of healthcare technologies that influence planning, design, and adaptation of facilities.

3

Explore emerging state technology and equipment in healthcare environments.

4

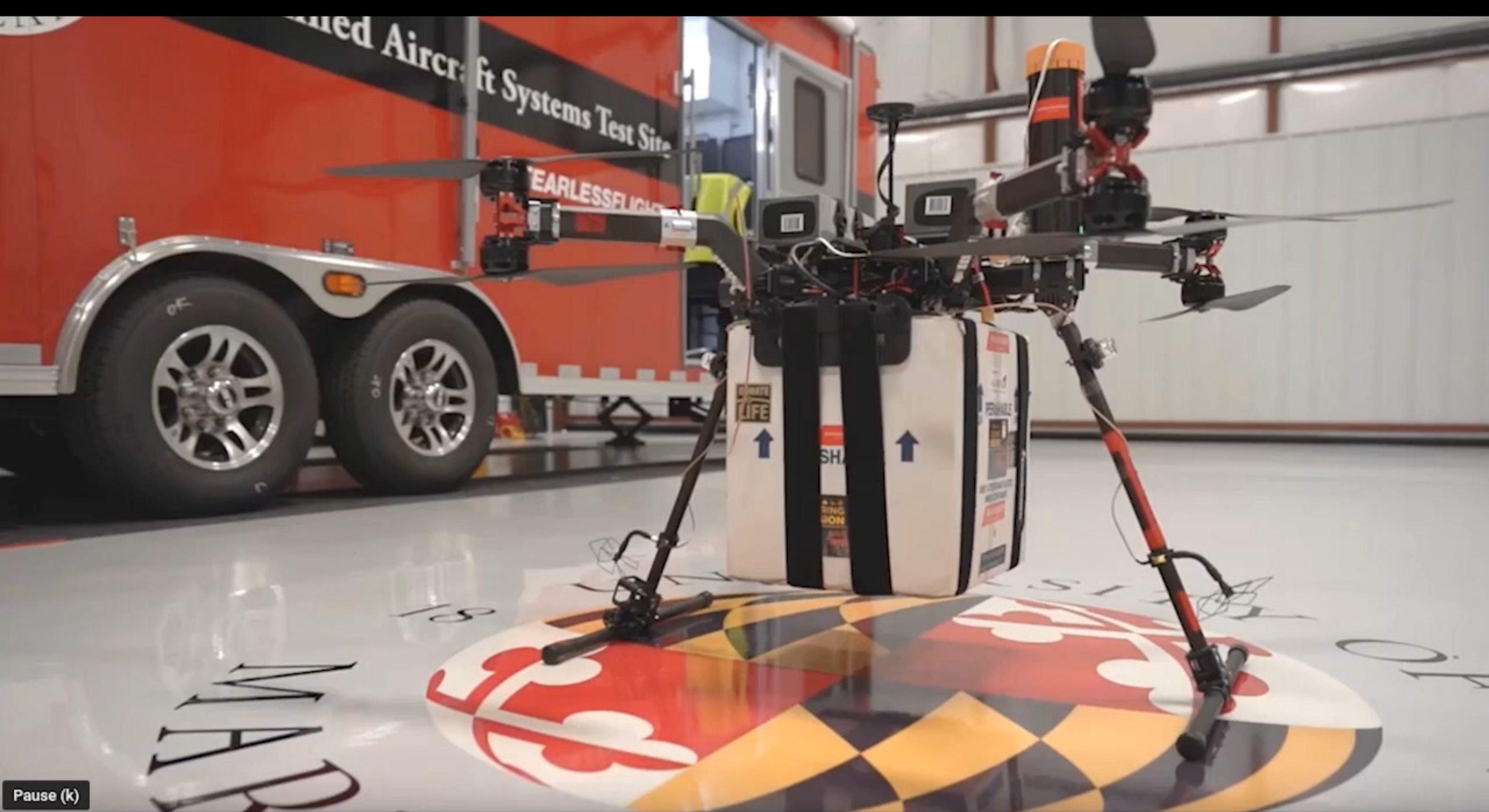
Apply concepts of multi-disciplinary programs in facilities.



A. JAMES CLARK

A. JAMES CLARK HALL
Fischell Department of Bioengineering
Robert E. Fischell Institute for Biomedical Devices







CURRENT STATE OF HEALTHCARE

POLL

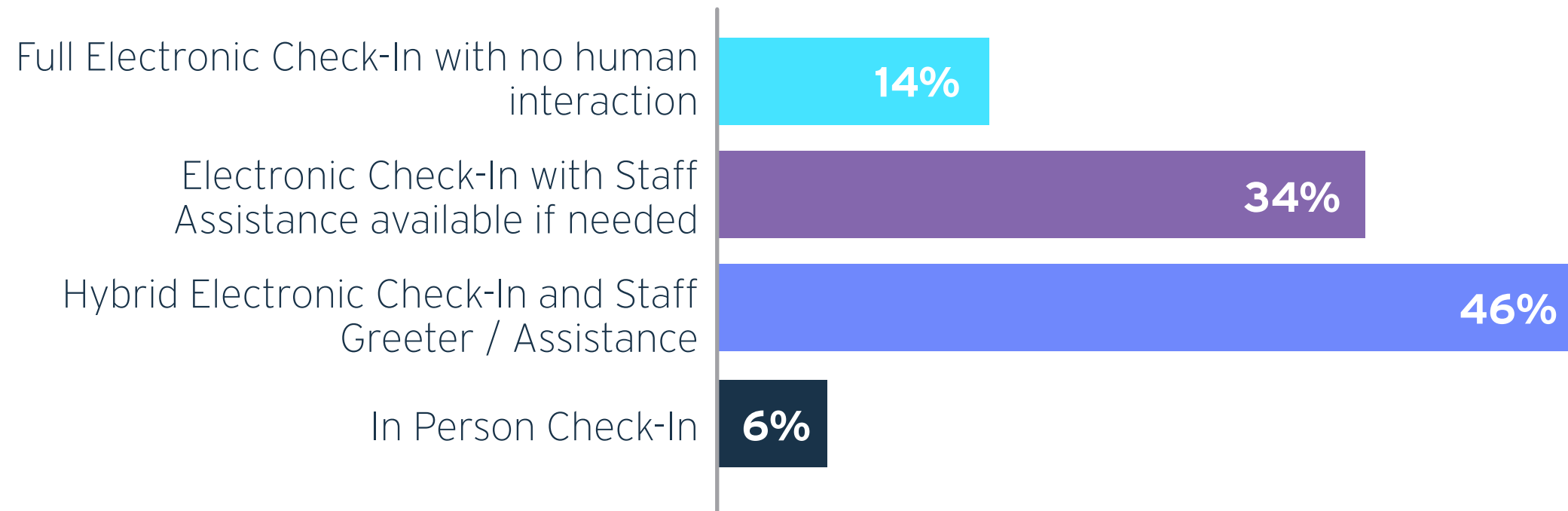
TEXT YOUR RESPONSE (A, B, C or D) TO 22333

You arrive at a healthcare facility for a scheduled procedure.
Which method of check-in do you prefer?

- A.** Full Electronic Check-In with no human interaction
- B.** Electronic Check-In with Staff Assistance available if needed
- C.** Hybrid Electronic Check-In and Staff Greeter / Assistance
- D.** In Person Check-In

POLL

You arrive at a healthcare facility for a scheduled procedure.
Which method of check-in do you prefer?



NEWYORK-PRESBYTERIAN

DAVID H. KOCH AMBULATORY CARE CENTER, New York, NY

ALEXANDRA COHEN HOSPITAL FOR WOMEN + NEWBORNS , New York, NY





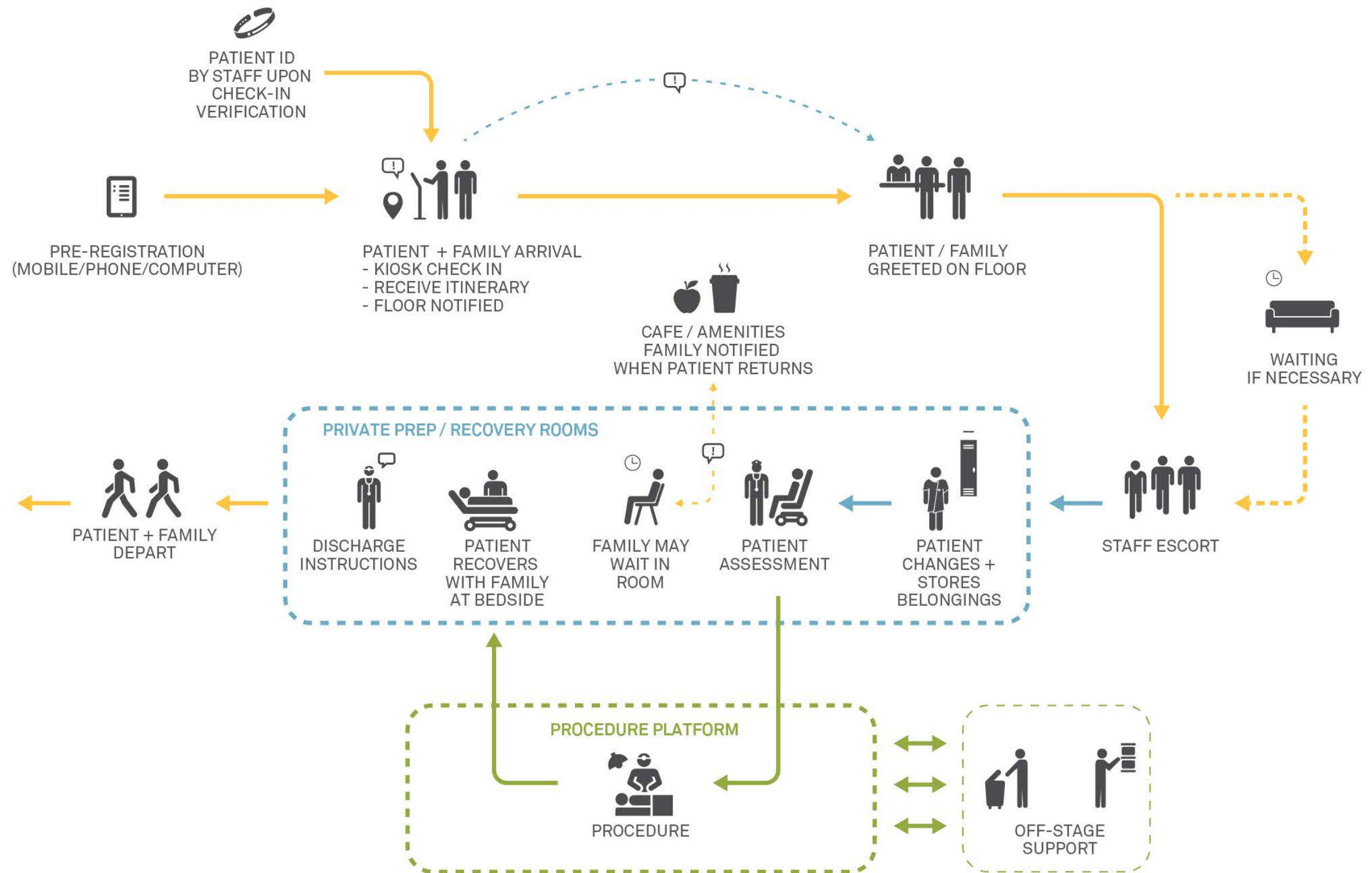


HOSPITAL FOR WOMAN & NEWBORNS

AMBULATORY CARE

PUBLIC SPACE

18	Postpartum + Antepartum
17	Postpartum
16	Postpartum
15	Neonatal Intensive Care Unit
14	Labor + Delivery
12	Maternal Fetal Medicine / Food Service
11	Mechanical
10	Mechanical
9	Pre-Admission Testing + Digestive Diseases
8	Endoscopy
7	Shared Staff Support + Diagnostic Imaging
6	Ambulatory Surgery
5	Interventional Radiology
4	Radiation Oncology + Infusion





NewYork-Presbyterian
David H. Koch Center

Find a Physician

Clinical Services

Health Library

Research & Clinical Trials

For Patients & Visitors

LEED

• Ambulatory Surgery

• Radiation Oncology

• Endoscopy

• Gastroenterology

• Pre Admission Testing

• Cohen Women's Hospital



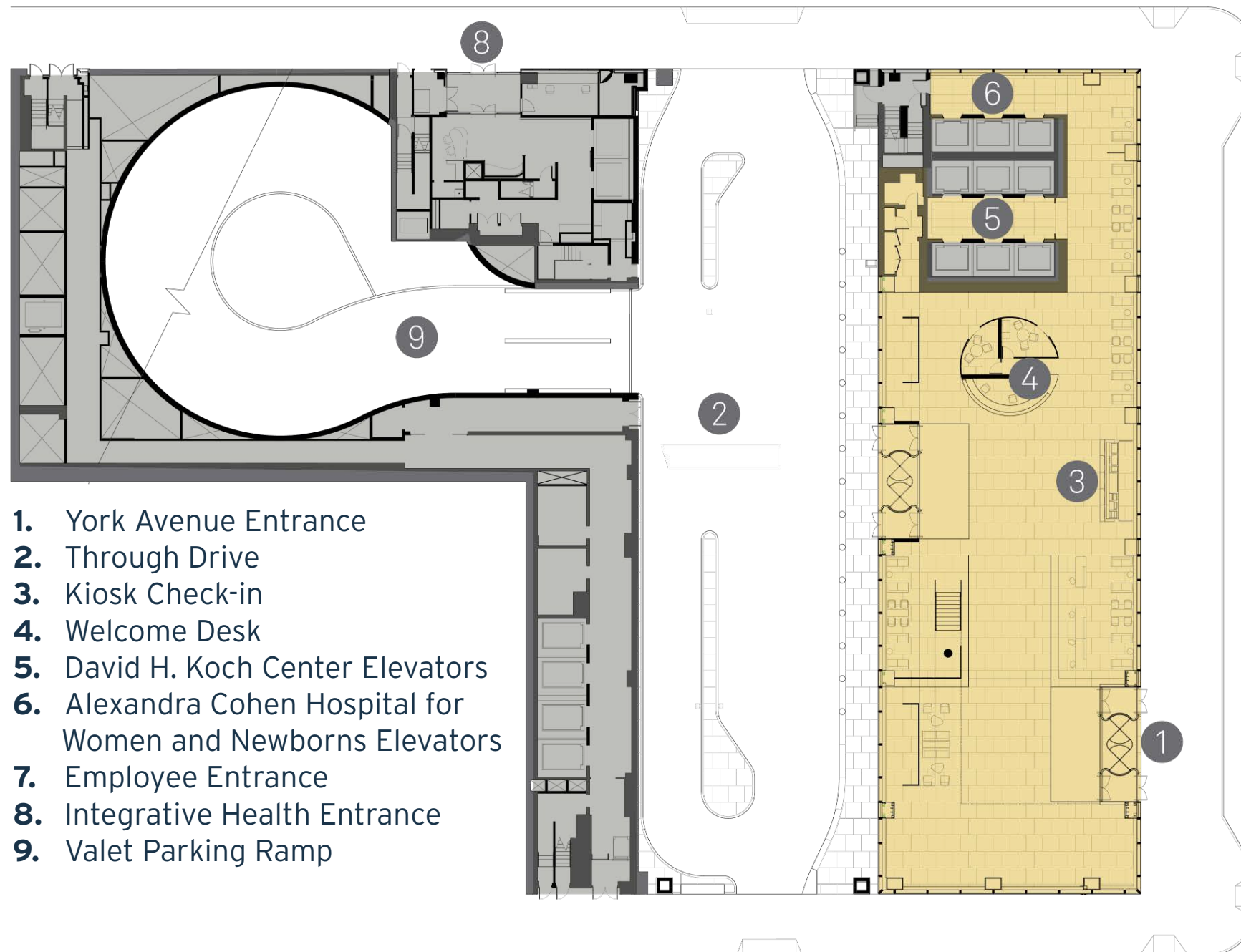


DAVID H. KOCH CENTER

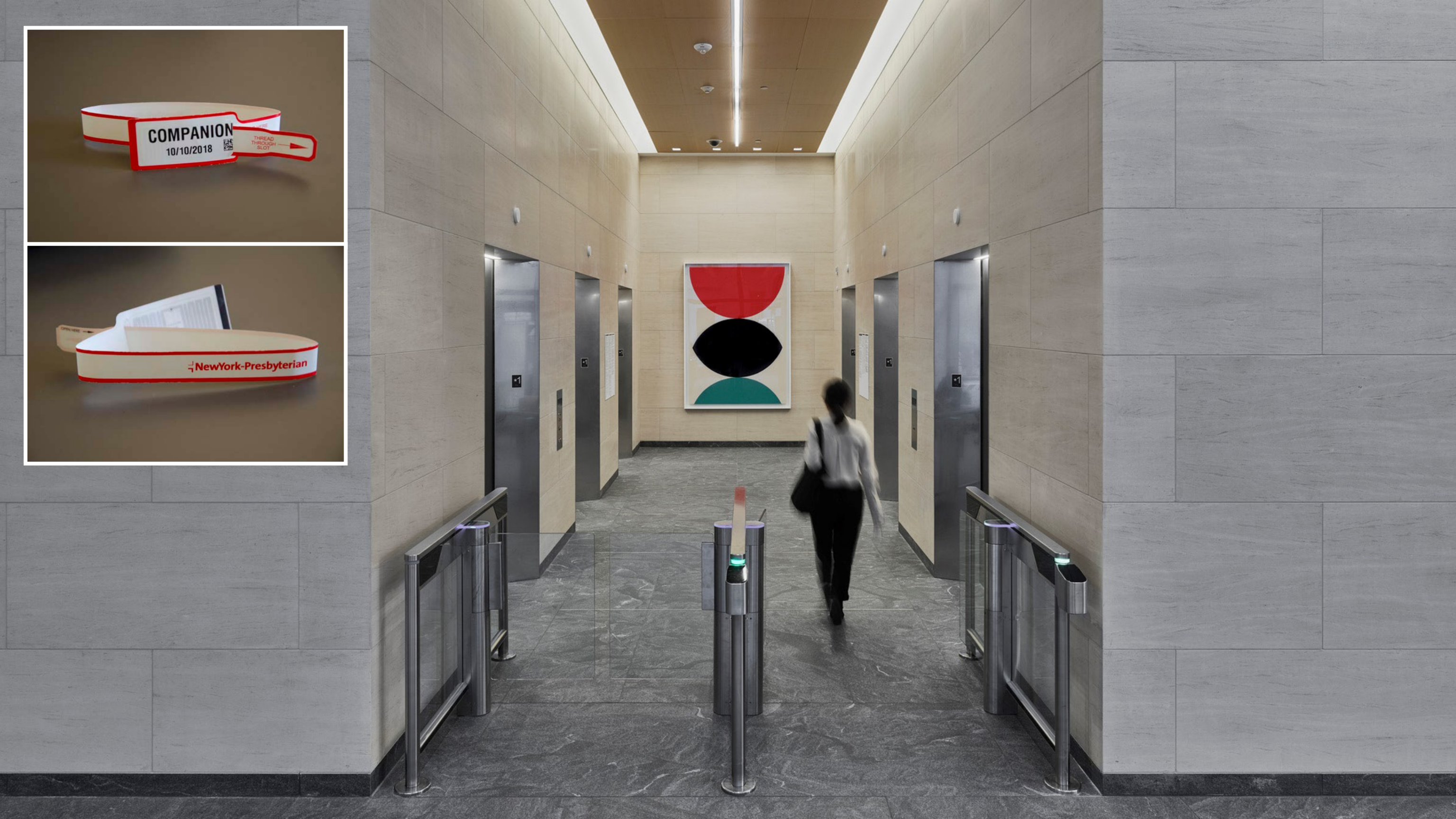
1335 YORK AVENUE



1ST FLOOR







6TH FLOOR

- 42,000 GSF Floor
- 12 Operating Rooms
- 36 Prep/Recovery (Universal)
- 600 NSF Operating Rooms
- **Surgical Specialties**
 - ENT
 - GYN
 - Ophthalmology
 - General
 - Pain
 - Orthopedic
 - Plastic
 - Oral





Endoscopy





OR01



OR02

OR03

OR04

OR05





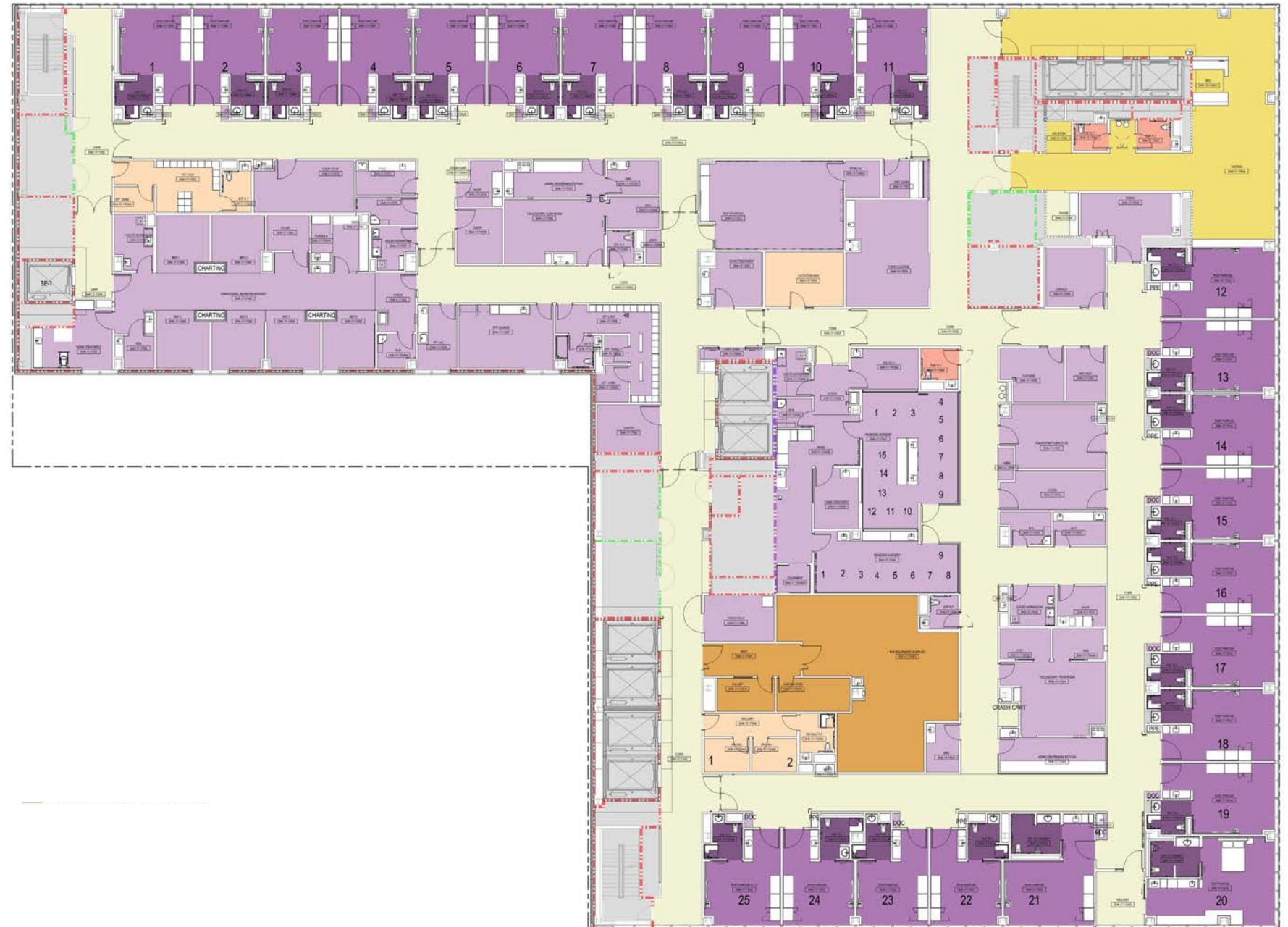


SHARMIN AND BIJAN MOSSAVAR-ZAHMANI
Sky Lobby



17TH FLOOR

- 42,000 GSF Floor
- 3 Floors
- 25 Private Rooms Per Floor
- **Other Floors Include:**
 - Ultrasound
 - NICU
 - NICU OR
 - NICU MRI
 - Labor, Delivery, Recovery
 - C-Section + OR





DAVID H. KOCH CENTER

123
WALL STREET

Do Not Enter

CLEARANCE 12'-10"

Entrance

123
WALL STREET

The background is a dark blue field filled with a repeating pattern of white line-art icons. These icons include a DNA double helix, a person wearing a VR headset, a smartphone with a signal wave, a medical monitor displaying a heart rate line, a robotic figure, and a smartwatch with a heart icon.

TECHNOLOGY IN HEALTH

POLL

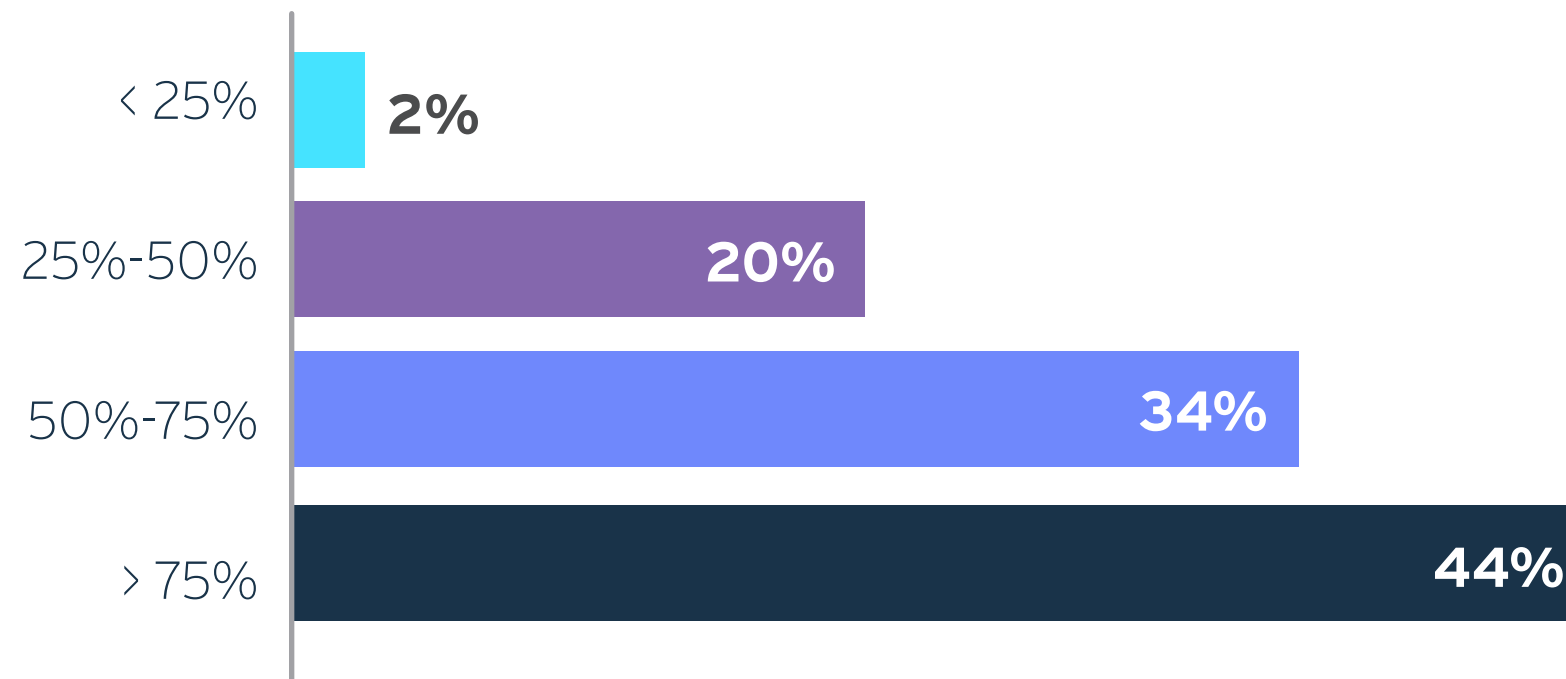
TEXT YOUR RESPONSE (A, B, C or D) TO 22333

In your opinion, what percentage of new inpatient beds will be telemedicine capable in the next 5 years?

- A.** < 25%
- B.** 25% - 50%
- C.** 50% - 75%
- D.** > 75%

POLL

In your opinion, what percentage of new inpatient beds will be telemedicine capable in the next 5 years?



ADVANCES IN TELEMEDICINE

PATIENT-TO-PROVIDER



E-Visits



Wearables



Secure Messaging

ADVANCES IN TELEMEDICINE

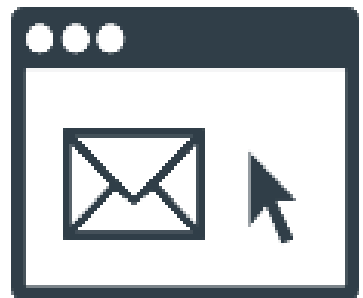
PATIENT-TO-PROVIDER



E-Visits



Wearables



Secure Messaging

PROVIDER-TO-PROVIDER



E-Consults



Implantables



Second Opinion
Consults

ADVANCES IN TELEMEDICINE

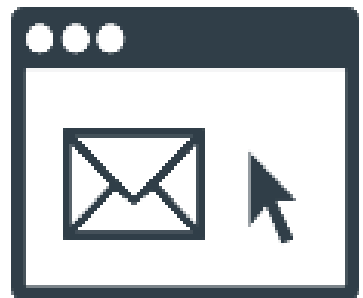
PATIENT-TO-PROVIDER



E-Visits



Wearables



Secure Messaging

PROVIDER-TO-PROVIDER



E-Consults



Implantables



Second Opinion
Consults

FAMILY-TO-PATIENT/PROVIDER



E-Visits/Social Visits



Notifications +
Scheduling

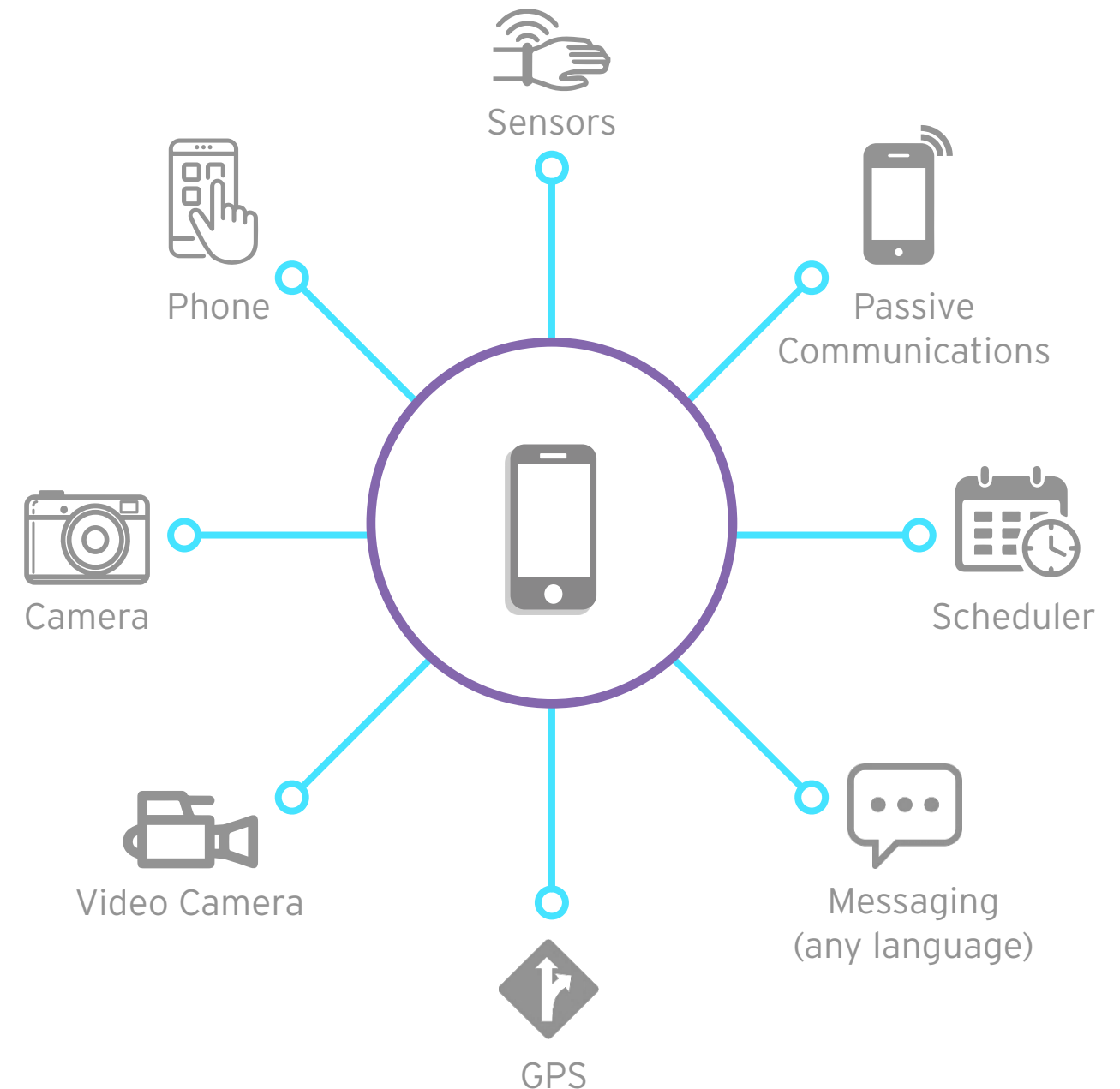


Post Discharge
Communications

BRING YOUR OWN DEVICE

POWERFUL HEALTH TOOLS THAT MOST PATIENTS ALREADY OWN

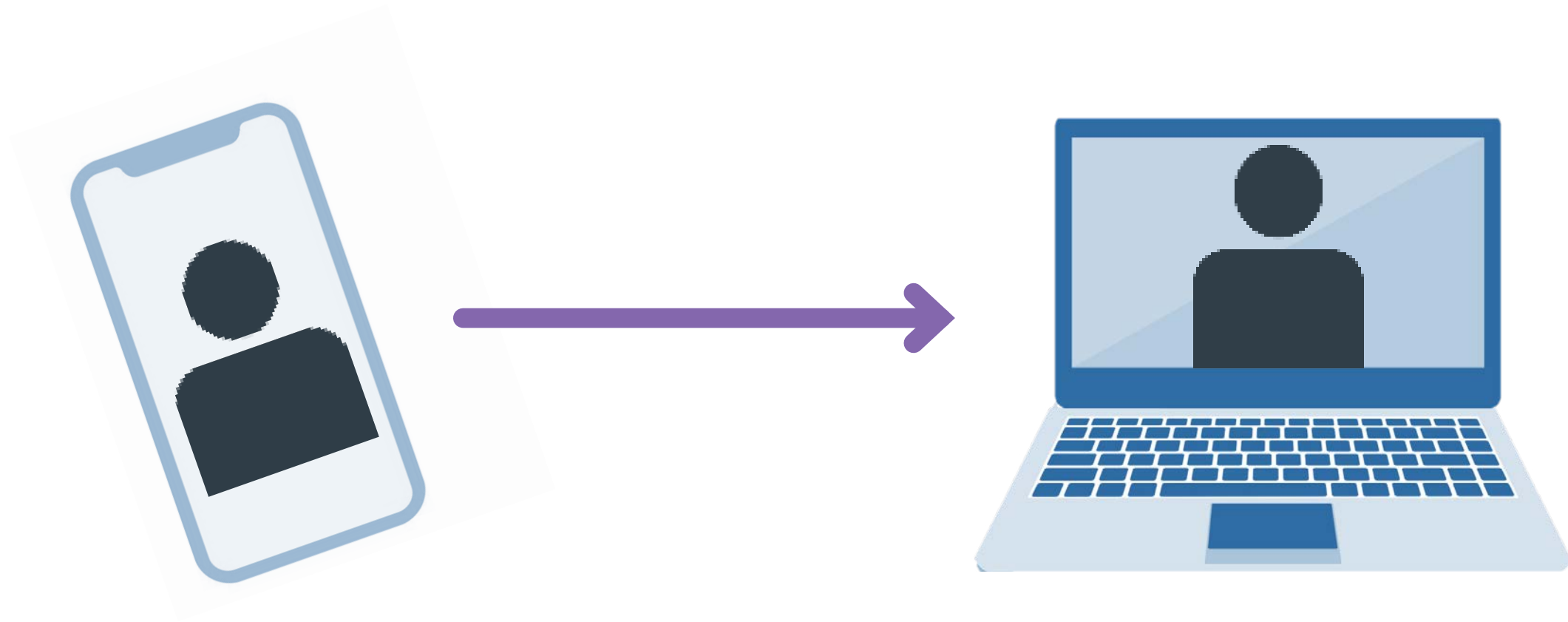
Smartphone adoption among adults aged 65+ in the U.S. has **quadrupled** in the last 5 years





**EXPANDED
LIFESPANS**

PATIENT-TO-PROVIDER



ACCESS TO PRIMARY CARE

TO PATIENT-TO-PRIMARY CARE PHYSICIAN RATIO, PER 100,000 PATIENTS



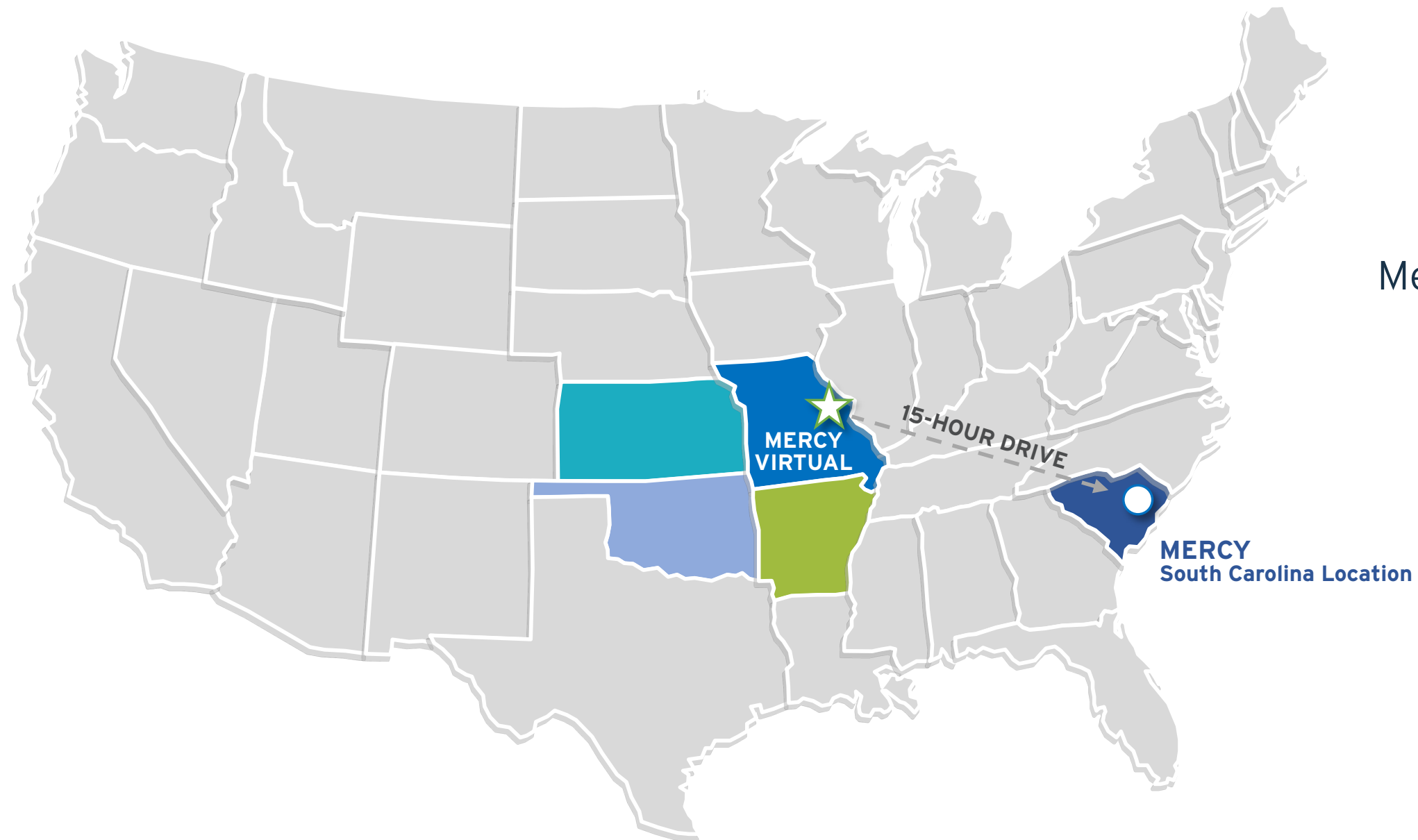
URBAN



RURAL

----->
25% Decrease

MERCY VIRTUAL



Mercy Health Care System
spans 44 hospitals
across 5 states
843 Miles

VIRTUAL VISIT

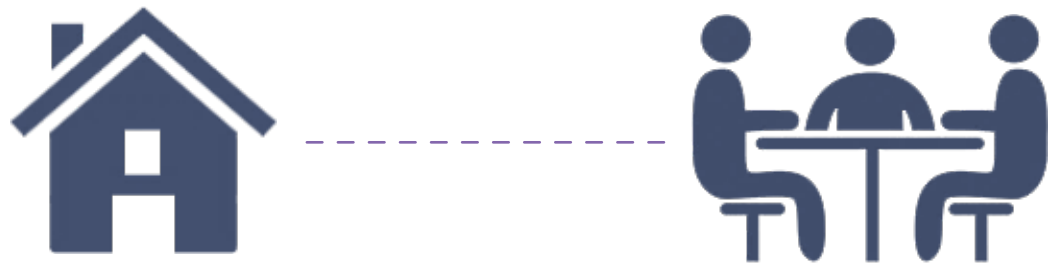


RISING NUMBERS OF NOMADIC WORKERS

Remote Workers Represent
43% of Employed Americans;
(66M People)

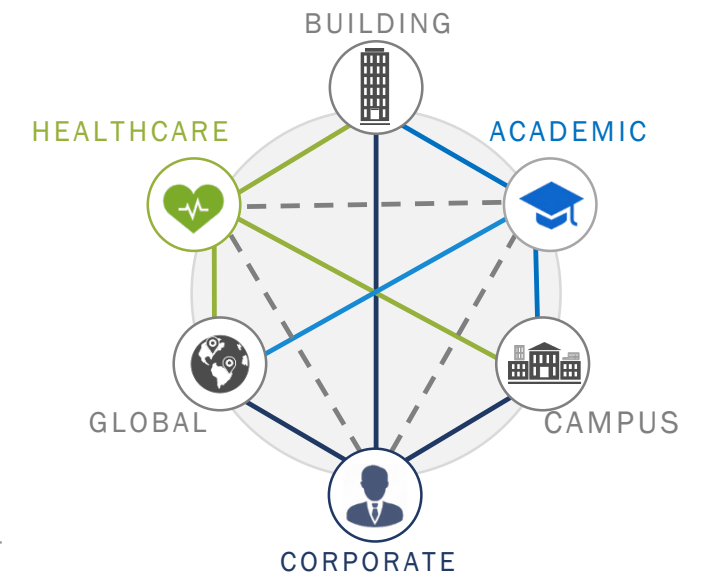
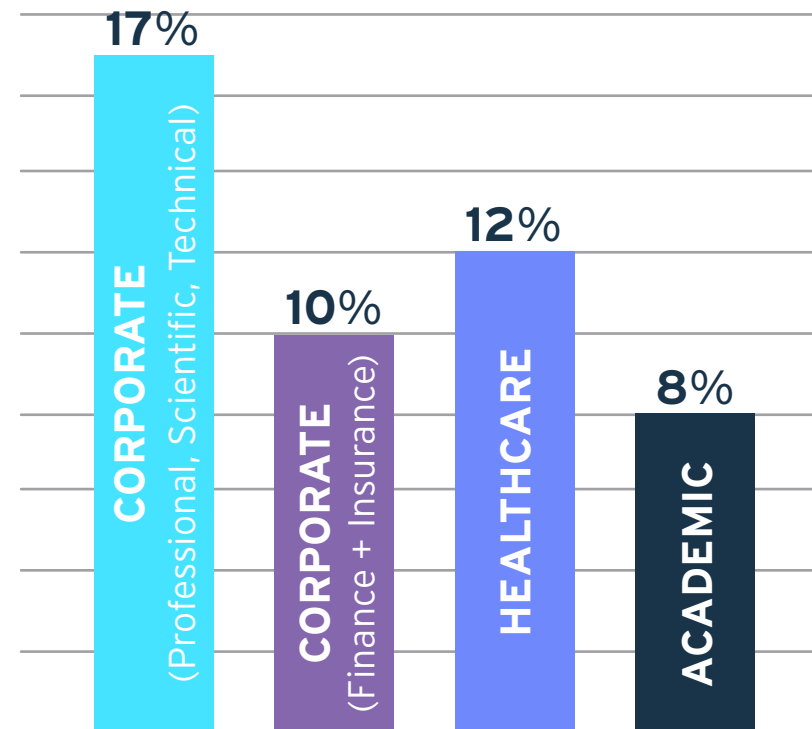
"There Will Be **1 Billion Nomads By 2035.**"

PETER LEVELS
The Future of Digital Nomads



Workplace is an occasional anchor point
rather than a daily travel destination

REMOTE WORK ACROSS INDUSTRIES



TELEMEDICINE ADOPTION

TELEHEALTH PROGRAM MATURITY, BY CARE SETTING

Acute Care



Primary Care



Post Acute Care



- Greater than 3 years
- Less than 3 years
- No telehealth program

TOP SPECIALTY APPLICATIONS



Stroke



Psychiatry



Neurology



Radiology



Pediatrics

CONNECTIVITY

100% of patient rooms at the Liberty Campus are telemedicine capable

Cincinnati Children's Telehealth Network
lends expertise to providers around the world



NYP STROKE TRUCK

The Mobile Stroke Treatment Unit allows **1 neurologist** to oversee care on **multiple ambulances**.



Microphone and speakers for audio transmission between ambulance and neurologist

Adjustable camera with high-def imaging for neurologist to view patient

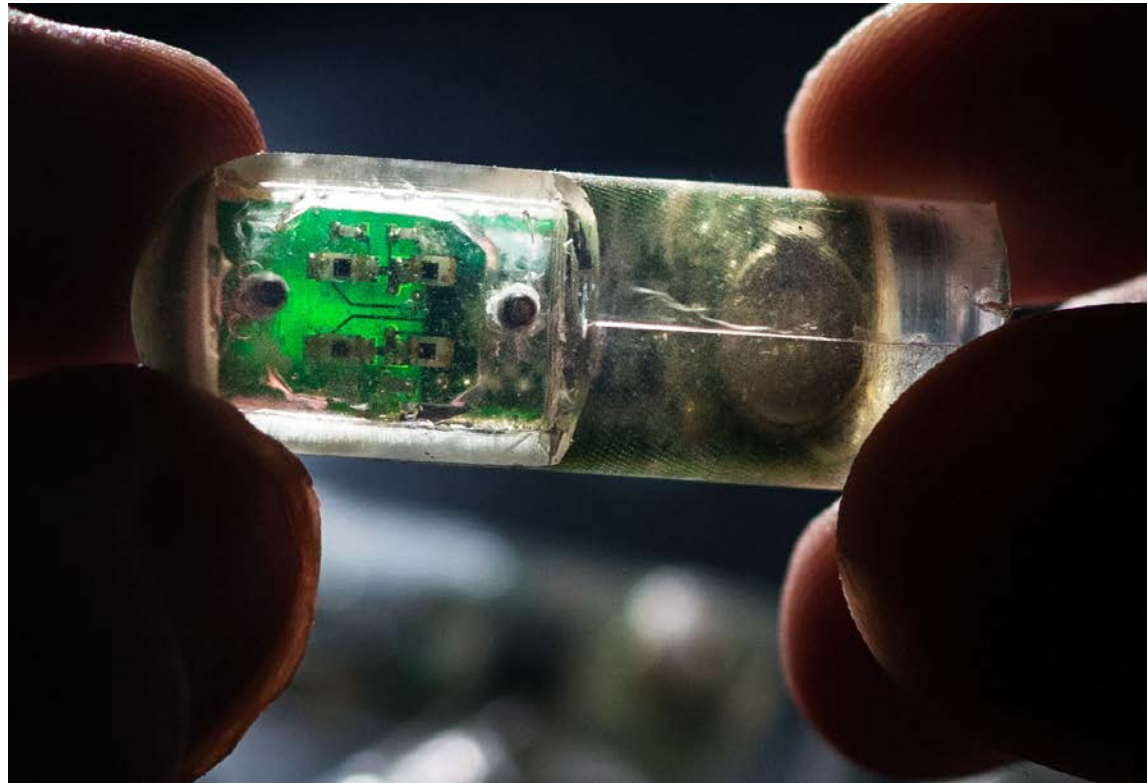


INTERNET OF THINGS

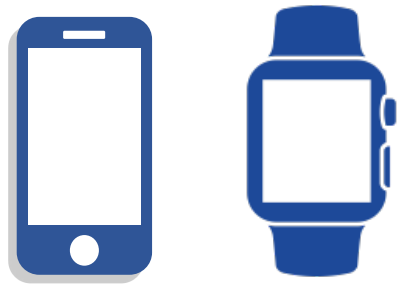
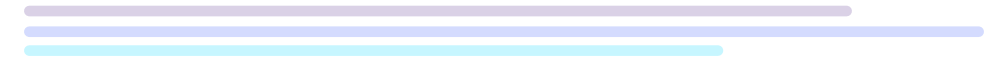




SMART TECHNOLOGIES



HUMANIZING MEDICINE



SMARTPHONE +
WEARABLE SENSORS



AI + MACHINE
LEARNING



INGESTIBLE
SENSORS



VR + AUGMENTED
REALITY

“Ultimately healthcare comes down to **human-to-human interaction**. So if you are going to go into **artificial intelligence, machine learning**, etc., it’s got to be able to **re-humanize**, as opposed to de-humanize care.”

STEVEN J. CORWIN, MD
CEO, NewYork-Presbyterian

EMERGING

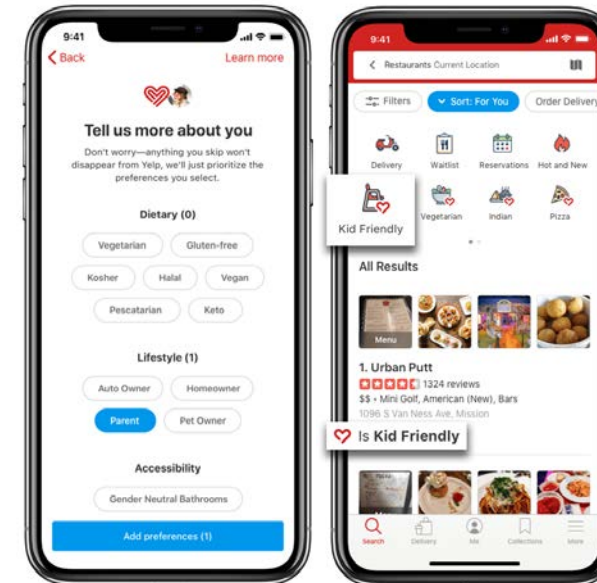
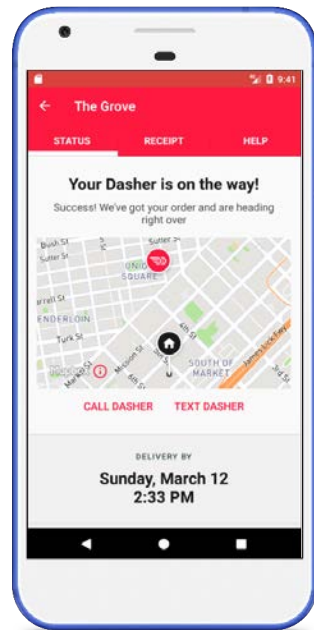
ROBOTS

OF HEALTHCARE



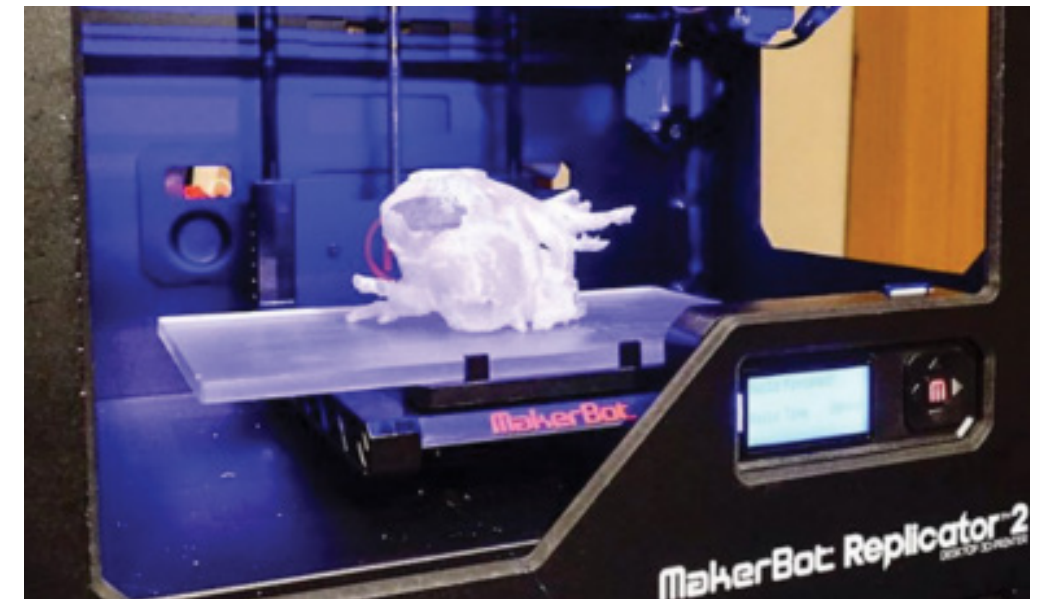
CARE STATUS + PREFERENCES

INSPIRED BY HOSPITALITY



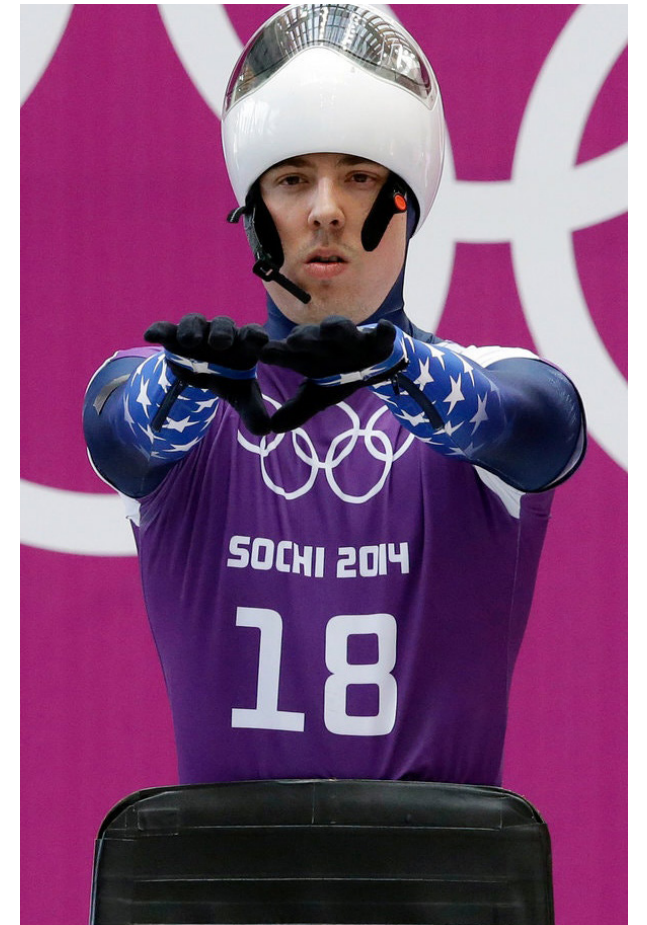
IN HOSPITAL

MAKERSPACES



MOVING WITHIN THE HOSPITAL

INSPIRED BY ATHLETES + SPORTS





**VIRTUAL
REALITY**

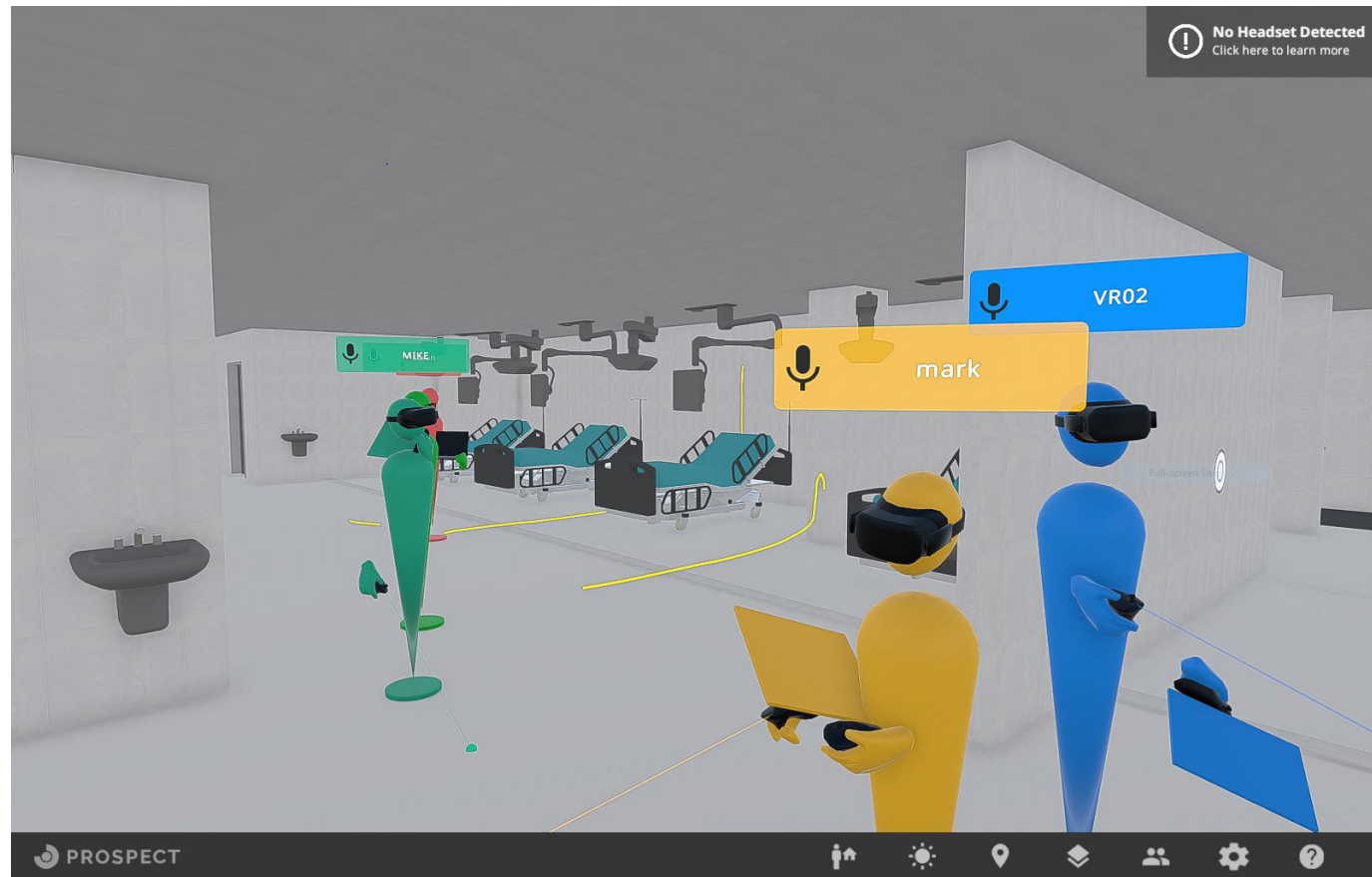
VIRTUAL GREETERS

INSPIRED BY RETAIL



VIRTUAL REALITY

IN HEALTHCARE DESIGN



VIRTUAL EXPERIENCES

INSPIRED BY GAMING + ENTERTAINMENT



MARSHMELLO FORTNITE CONCERT (LIVE)

February 2019



TRAVIS SCOTT FORTNITE CONCERT (LIVE)

April 2020



**PRECISION
MEDICINE**

PERSONALIZED MEDICINE

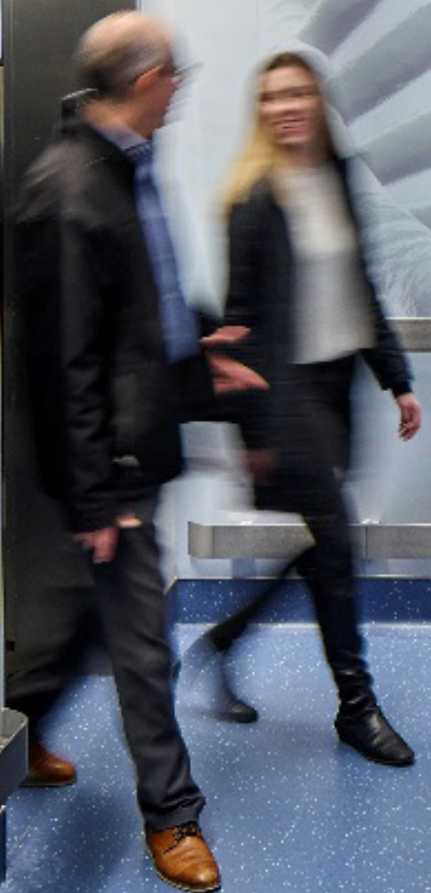
BASED ON DNA



B



Raymond G. Perelman
Center for Cellular and
Molecular Therapeutics





The background is a dark blue field filled with a repeating pattern of white line-art icons. These icons include a DNA double helix, a person wearing a VR headset, a smartphone with a signal wave, a robot, a heart rate monitor on a wrist, a computer monitor displaying a heart rate line, and a person wearing a hard hat.

HEALTH + TECHNOLOGY

MOVING FORWARD

POLL

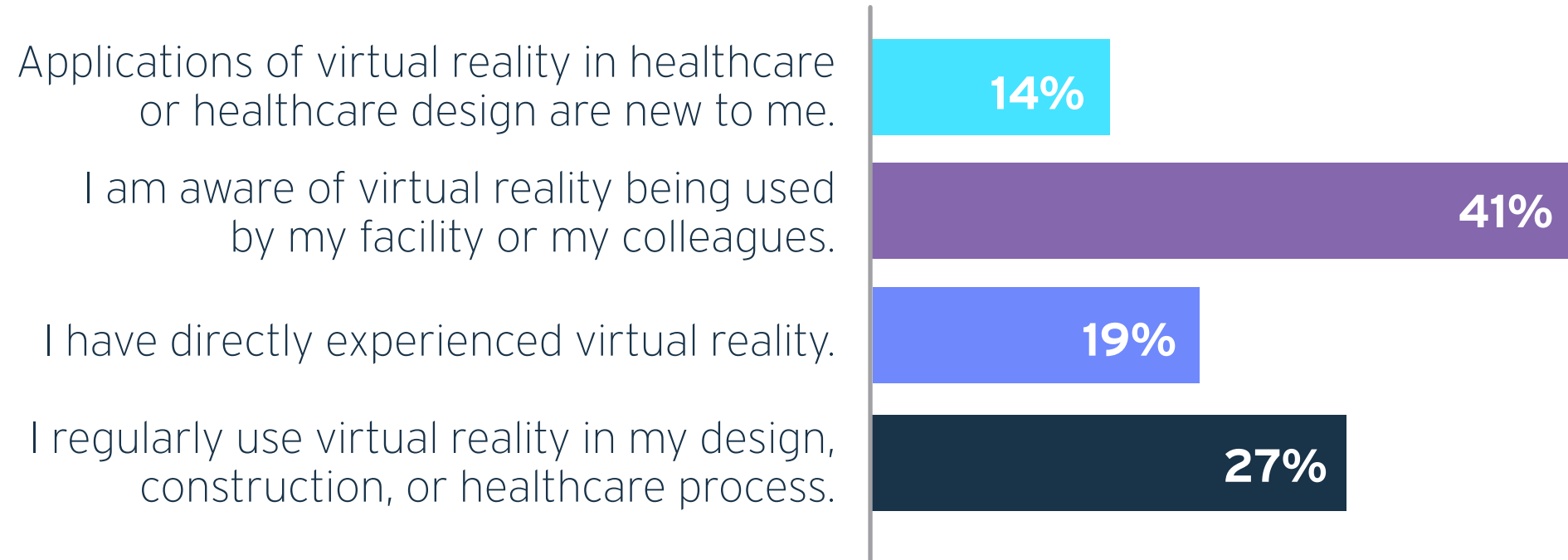
TEXT YOUR RESPONSE (A, B, C or D) TO 22333

How familiar are you with virtual reality in healthcare or healthcare design and construction?

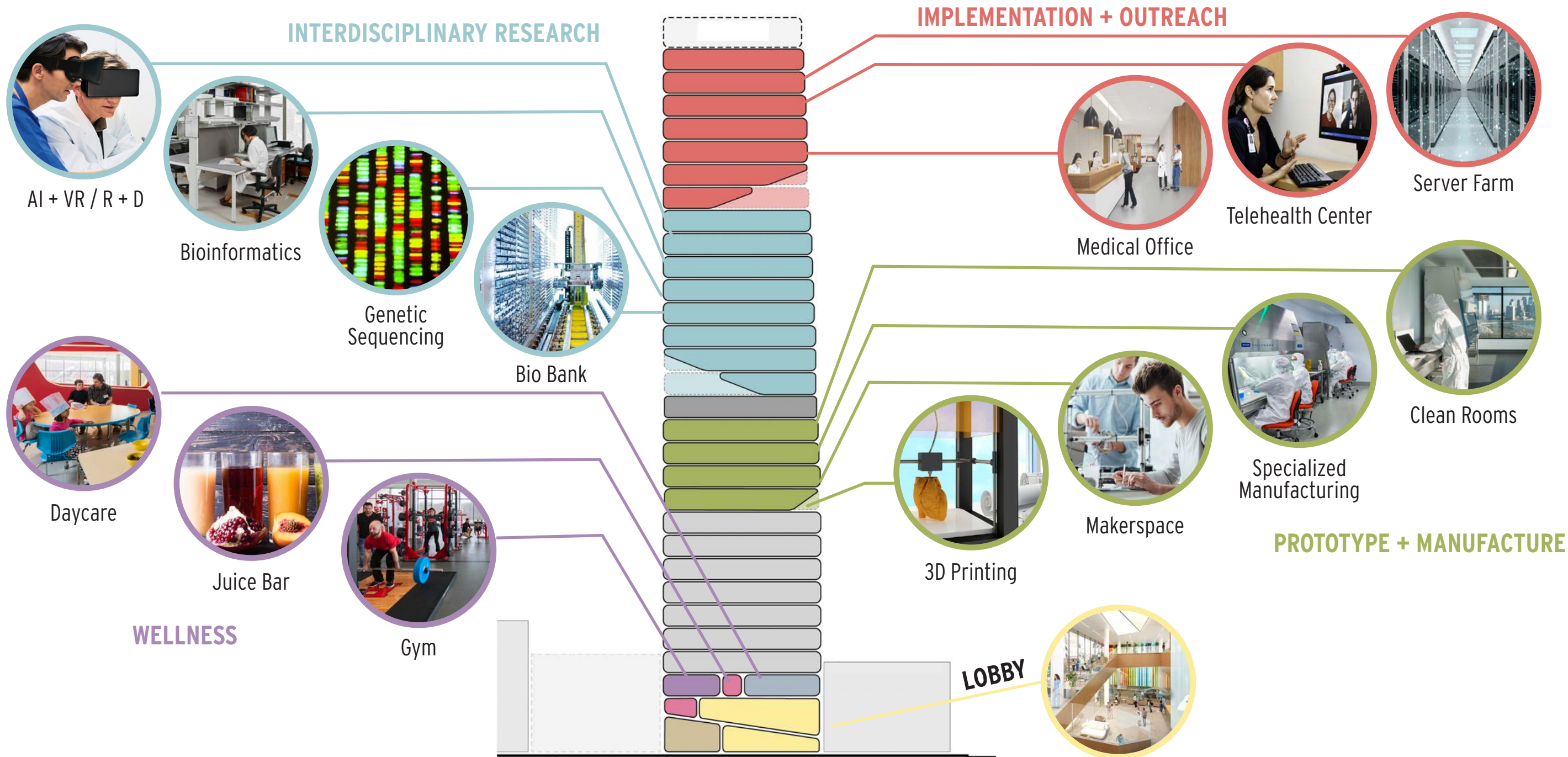
- A.** Applications of virtual reality in healthcare or healthcare design are new to me.
- B.** I am aware of virtual reality being used by my facility or my colleagues.
- C.** I have directly experienced virtual reality.
- D.** I regularly use virtual reality in my design, construction, or healthcare process.

POLL

How familiar are you with virtual reality in healthcare or healthcare design and construction?









WELLNESS CONSIDERATIONS

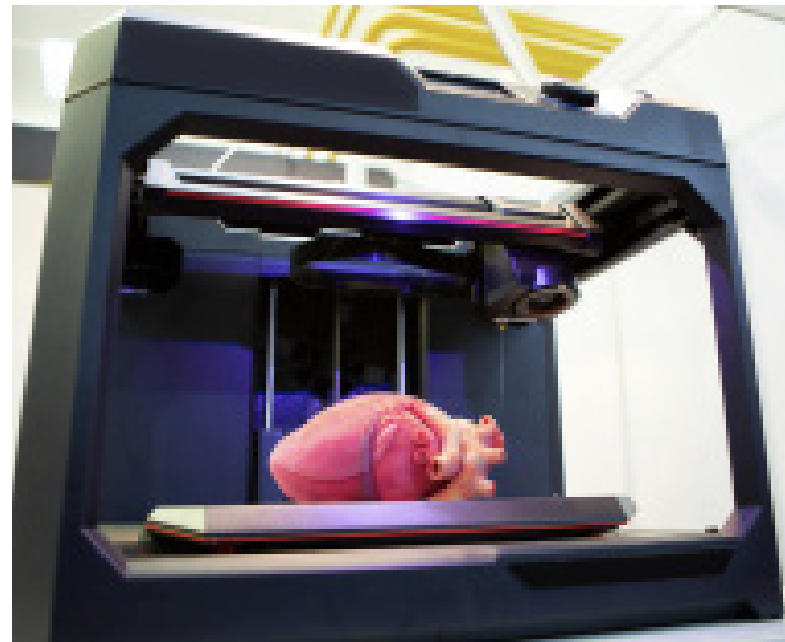


- Childcare
- Nutrition Counseling
- Community Center
- Behavioral Health Services
- Chronic Care Counseling
- Medical-Legal Offices
- Adult Education





LABORATORY CONSIDERATIONS



- Clean Rooms
- Maker Spaces
- 3D Printing Laboratories
- Specialized Manufacturing





CLINICAL CONSIDERATIONS

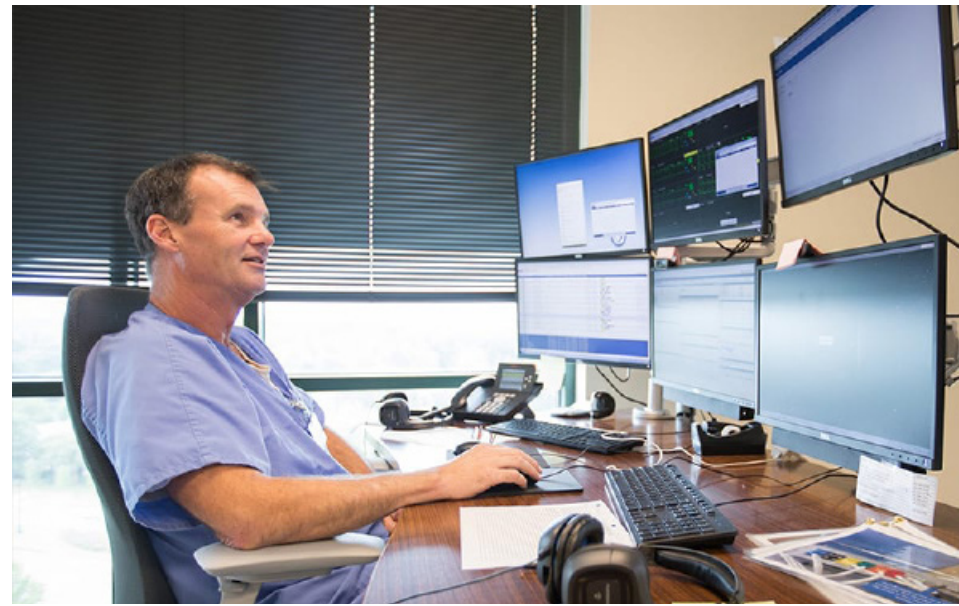


- Genetic sequencing
- Biobank
- Bioinformatics
- Technology Development
- AI and VR

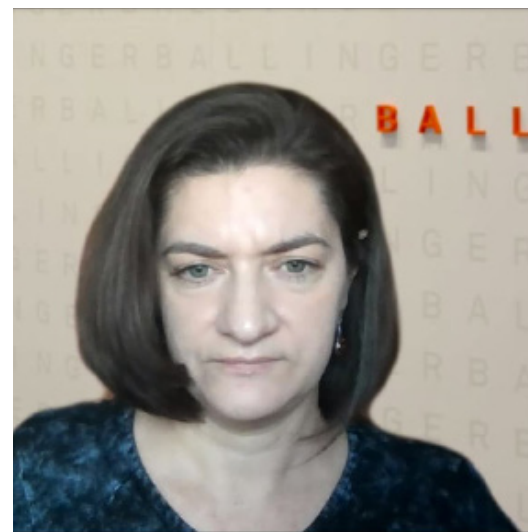




OFFICE CONSIDERATIONS



- Satellite Physician Offices
- Telehealth Center
- Server Farm





POLL

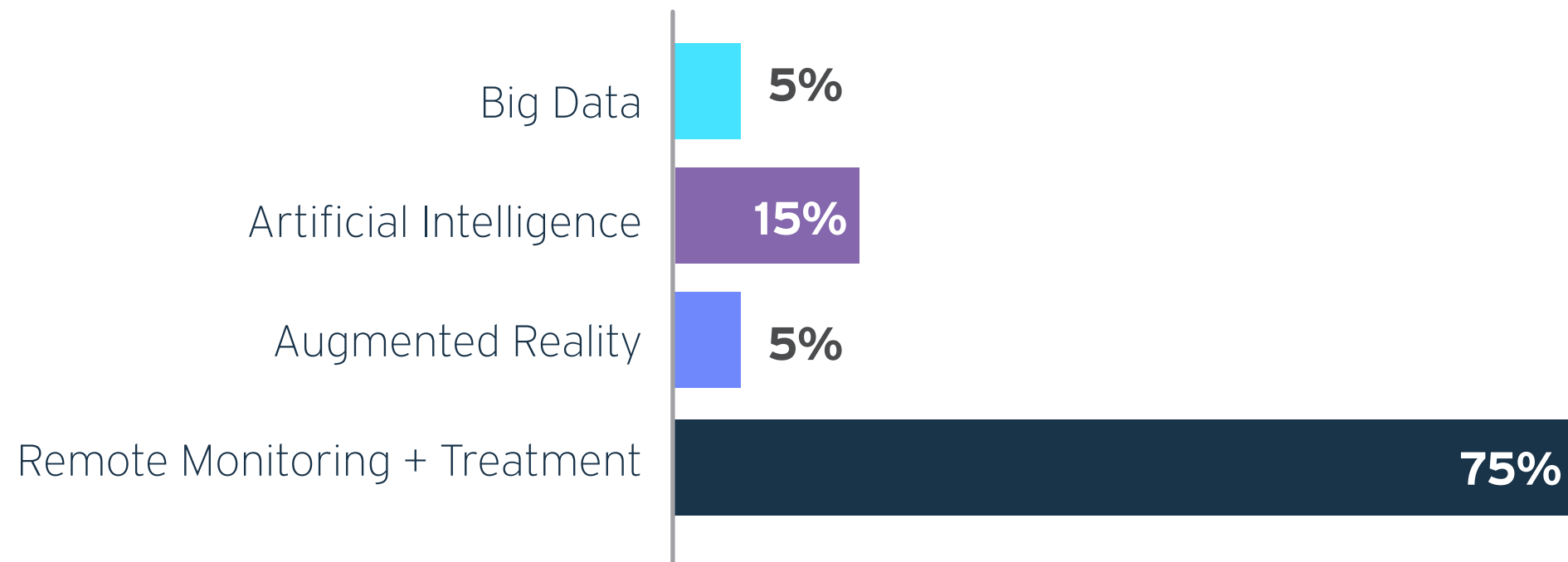
TEXT YOUR RESPONSE (A, B, C or D) TO 22333

Which technology advancement do you foresee having the greatest impact on healthcare facility design in the next 5 years?

- A.** Big Data
- B.** Artificial Intelligence
- C.** Augmented Reality
- D.** Remote Monitoring + Treatment

POLL

Which technology advancement do you foresee having the greatest impact on healthcare facility design in the next 5 years?





VOICE-ENABLEMENT



BIG DATA

FACIAL RECOGNITION





AUGMENTED REALITY

PROFILE 7553-2V
DR. BOLD, C. BOLD
STATUS: SYSTEM OK
MODE: STANDBY
CHANGE SETTINGS

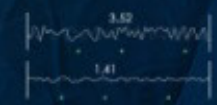
DIGITAL ELECTRONIC HEART SYSTEM

BOLD
BUSINESS



58:34
78 64 52

812 2132 3013 812 2132 3013 812 2132 3013
33432 1478415 31474254 415 812 2132 3013



JOIN THE CONVERSATION



@ballinger_ae

#HCDvirtual