Course Title

Future Ready Healthcare

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Be Prepared!
Planning for Emergencies in the Design and Construction of Health Care Facilities
37th Annual AHCA Seminar and Expo

Copyright Materials

Learning Objectives

At the end of the this course, participants will be able to

1. Audience will understand what “Future Ready” for Healthcare means.

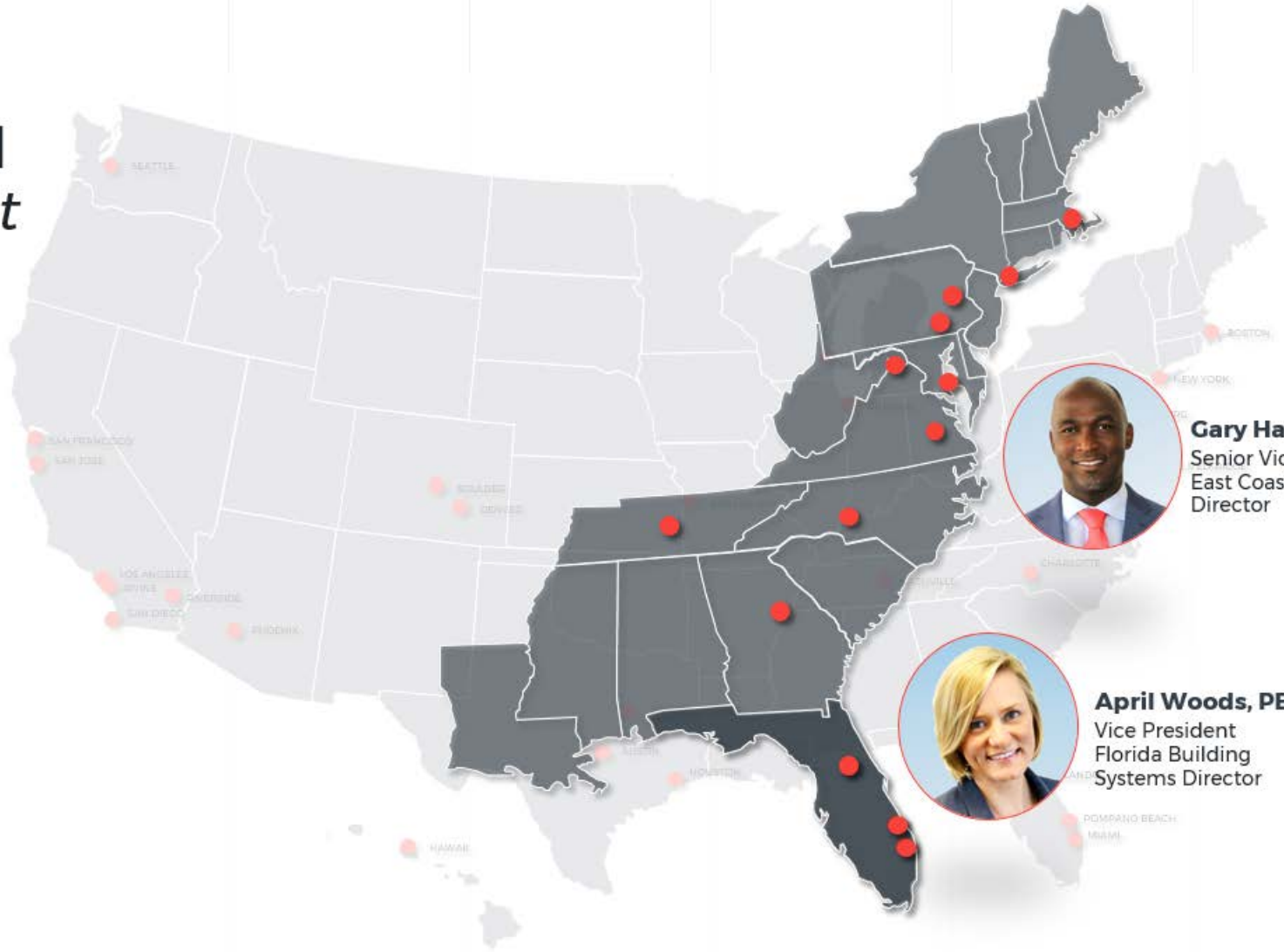
2. Audience will understand the what disruptions are driving the change in healthcare design.

3. Audience will understand what the future of healthcare looks like.

4. Audience will understand the considerations that are necessary to design future ready healthcare facilities.

Locations

National *Footprint*



Gary Hamilton, PE
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East Coast Healthcare
Director

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Vice President
Florida Building
Systems Director

What is Future Ready Healthcare?

- Future Ready is our approach to thinking beyond the conventional so that we can design and deliver healthcare projects that are ready for the changes and challenges our world will face in the future.
- By understanding the trends that will impact our region, and our society, we can develop solutions to protect our healthcare clients' interests, future proof the work we do and positively impact the communities in which we live and work.

Why?


CLIMATE
Warmer
Wetter
Stormier
SOCIETY
Global Urbanization
Aging Population
Rising Inequality
Geopolitical Shift
Big Data
Manufacturing
Change
The Sharing Economy
The Gig Economy
TECHNOLOGY
The Digital Economy
Advanced Robotics
Big Data
Internet of Things
Automated Vehicles
Transportation
Network Companies
Mobility as a Service
RESOURCES
Alternative Fuels
Resource
Consumption
Carbon Neutral

Future Ready Healthcare will allow us to:

This is necessary because:

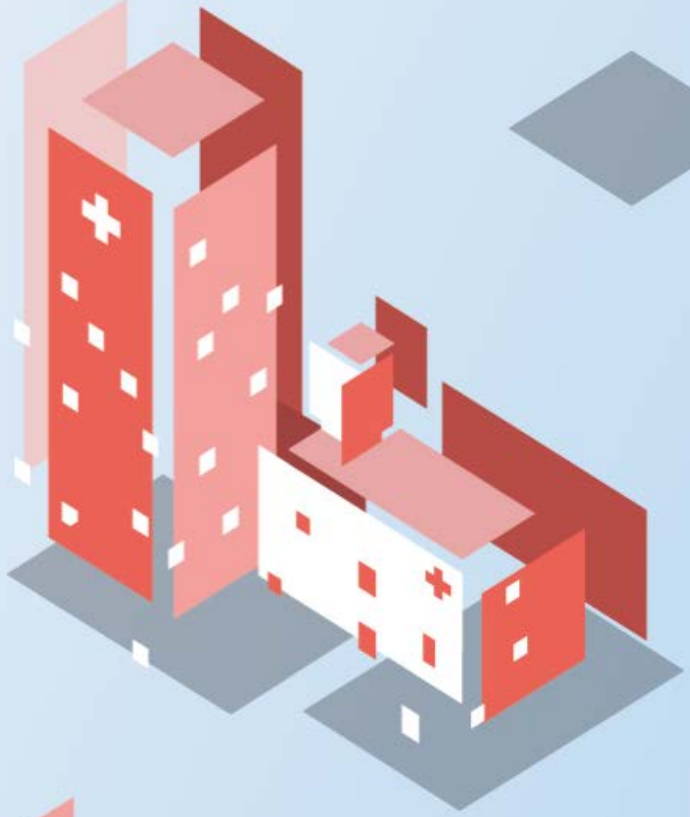
- We plan and design projects that are designed to last for decades.
- Current codes and conventional design standards may not account for future trends.


The healthcare facilities we design
today will have a
70 year design life

What does the future *look like for healthcare?*

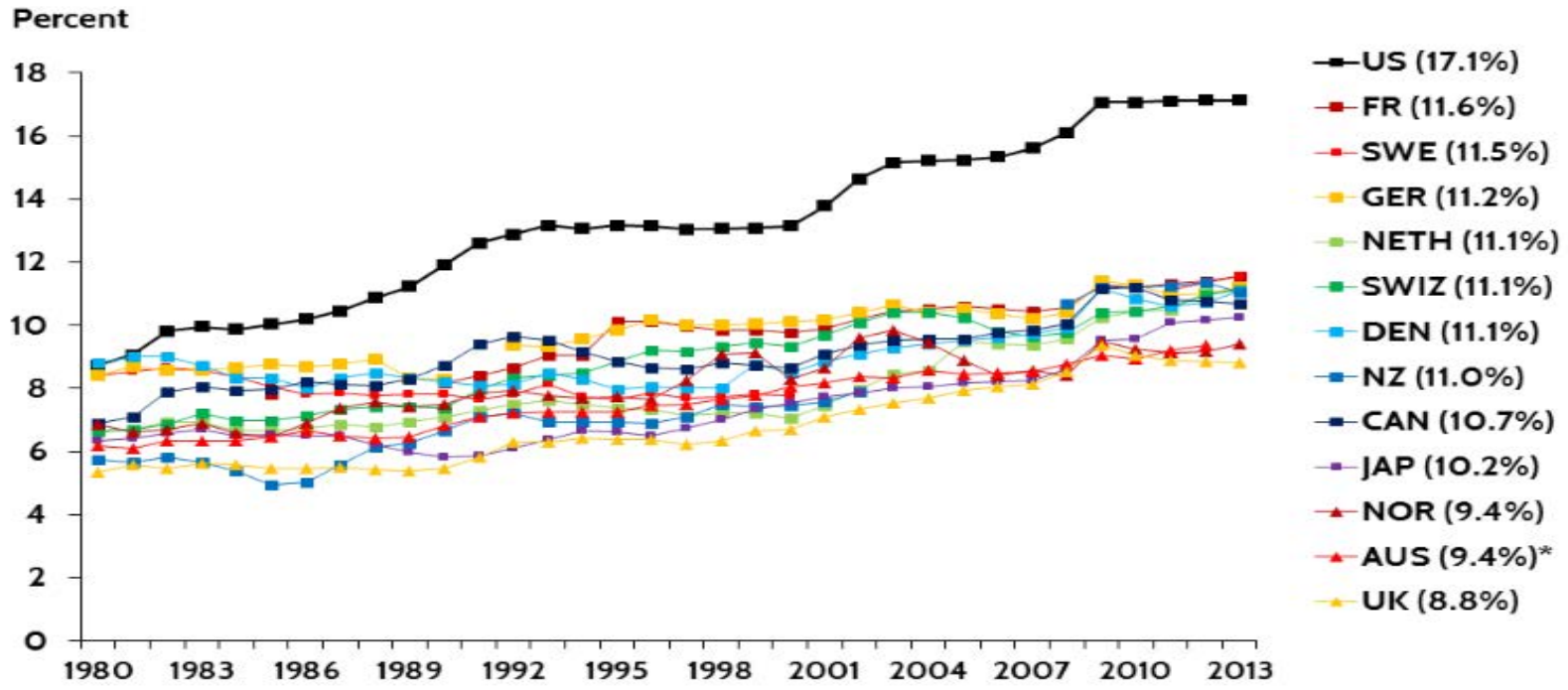
1. Demand for healthcare will change:

- Cost of healthcare rising
- By **2050** many countries will spend more than **20% of their GDP on healthcare**
- 2030 US will have **20%** population greater than **65 years old**



Healthcare Spending

Exhibit 1. Health Care Spending as a Percentage of GDP, 1980–2013



* 2012.

Notes: GDP refers to gross domestic product. Dutch and Swiss data are for current spending only, and exclude spending on capital formation of health care providers.

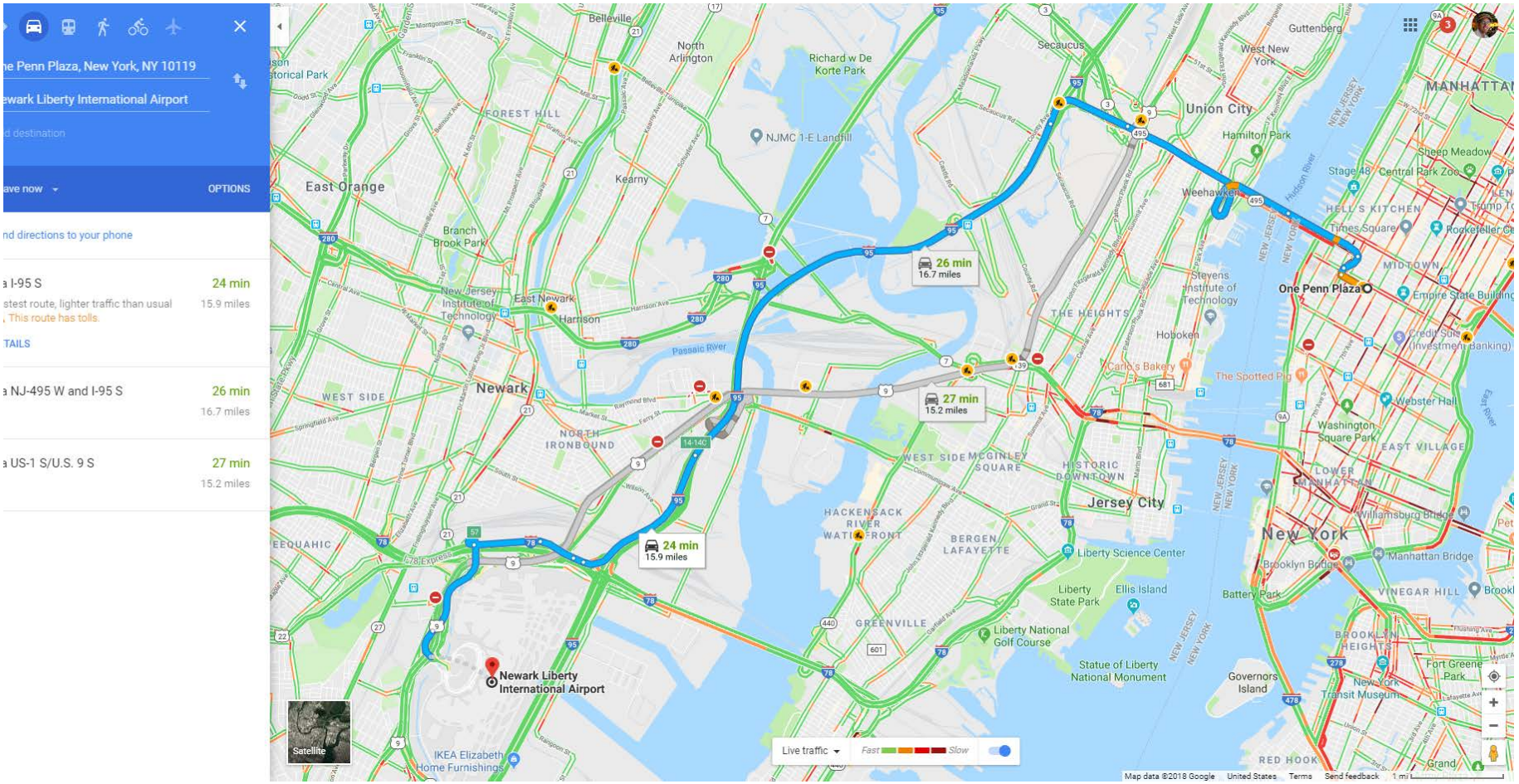
Source: OECD Health Data 2015.

What does the future *look like for healthcare?*

2. IT will revolutionize how customers access health services:

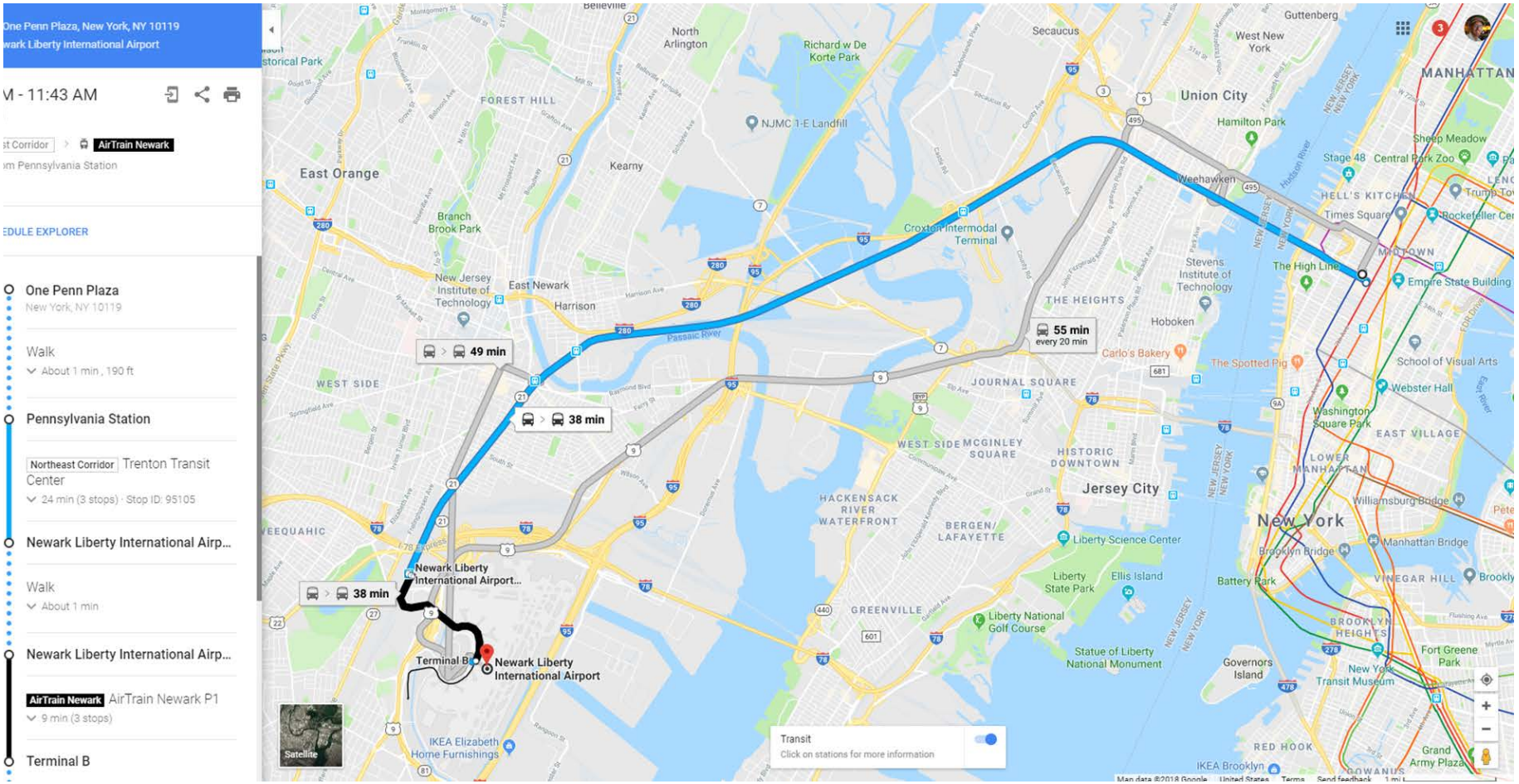
- Cognitive computers will organize all details of health system
- Virtual Reality and Artificial Intelligence (AI)
- Flexible touch screens controlled by patients
- Data can be exported to provider before hospital visit

LETS START WITH AN ANOLOGY



Google Map for New York Visit

Map showing Driving



Google Map for New York Visit

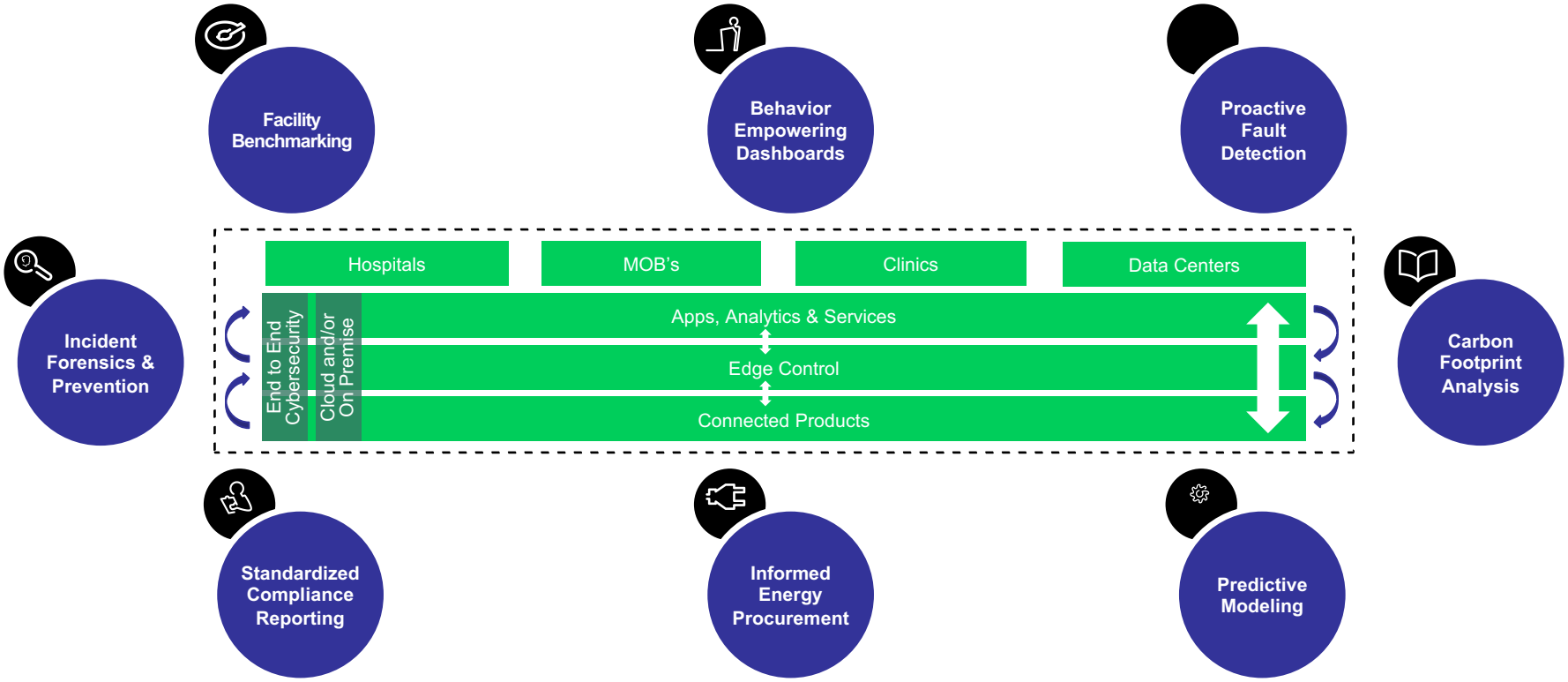
Map showing Walking


Imagine picking a restaurant for dinner without seeing the reviews – why are our healthcare buildings still acting like old maps?
Great Ormond Street, *London*

OCCUPANT AWARE BUILDINGS

BUILDING AWARE OCCUPANTS

How Healthcare Facilities will use BIG DATA?



What does the future *look like for healthcare?*

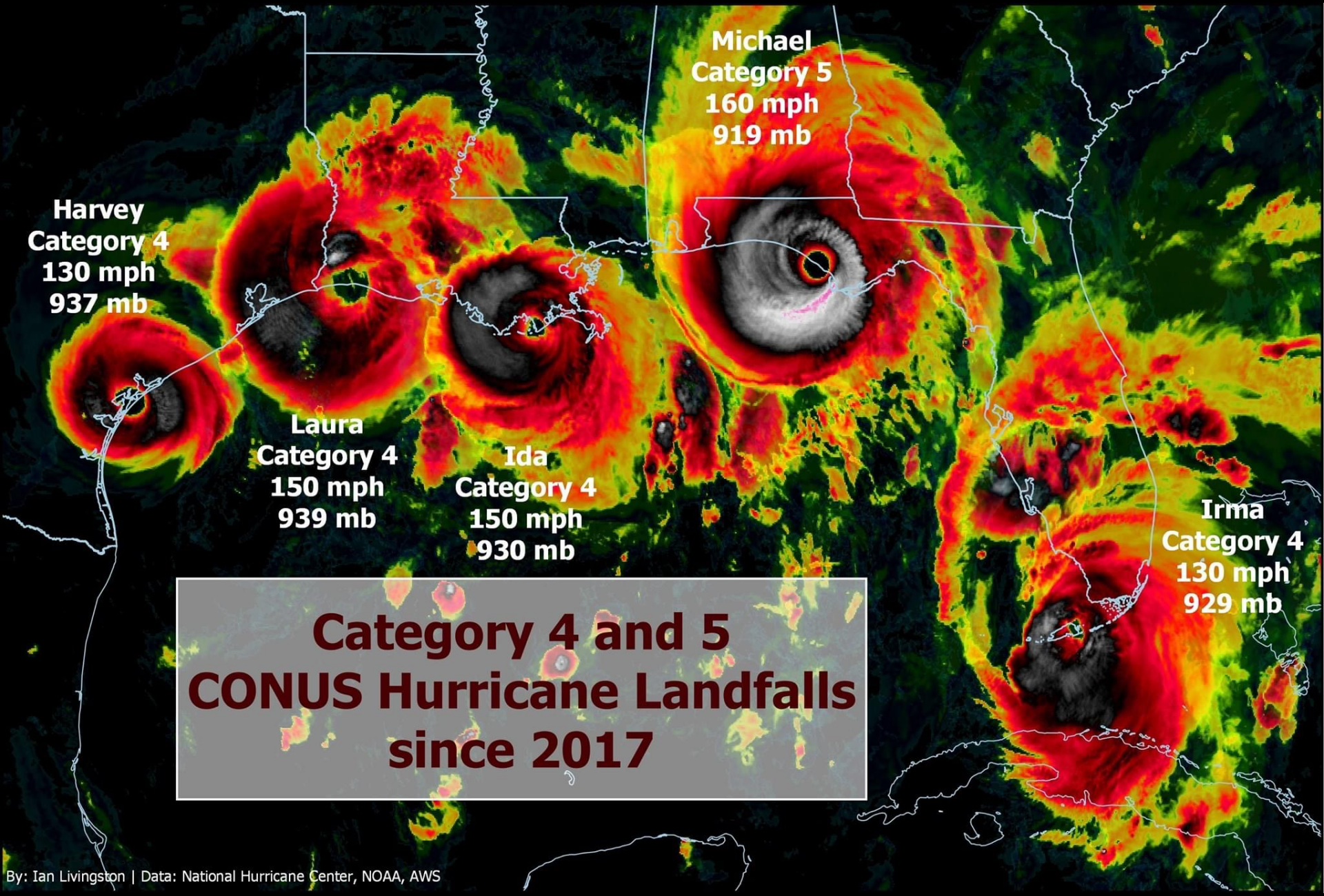
3. Healthcare will be integrated into the community

- Outpatient care
- Urgent Care
- Community Clinics
- Fitness Center
- Telemedicine
- Home care

What does the future *look like for healthcare?*

4. Climate change will bring more extreme weather

- Higher Ambient Temp. & Humidity
- More natural disasters & Super storms
- Sustainability


Michael
Category 5
160 mph
919 mb
Harvey
Category 4
130 mph
937 mb
Laura
Category 4
150 mph
939 mb
Ida
Category 4
150 mph
930 mb
Irma
Category 4
130 mph
929 mb
Category 4 and 5
CONUS Hurricane Landfalls
since 2017
By: Ian Livingston | Data: National Hurricane Center, NOAA, AWS

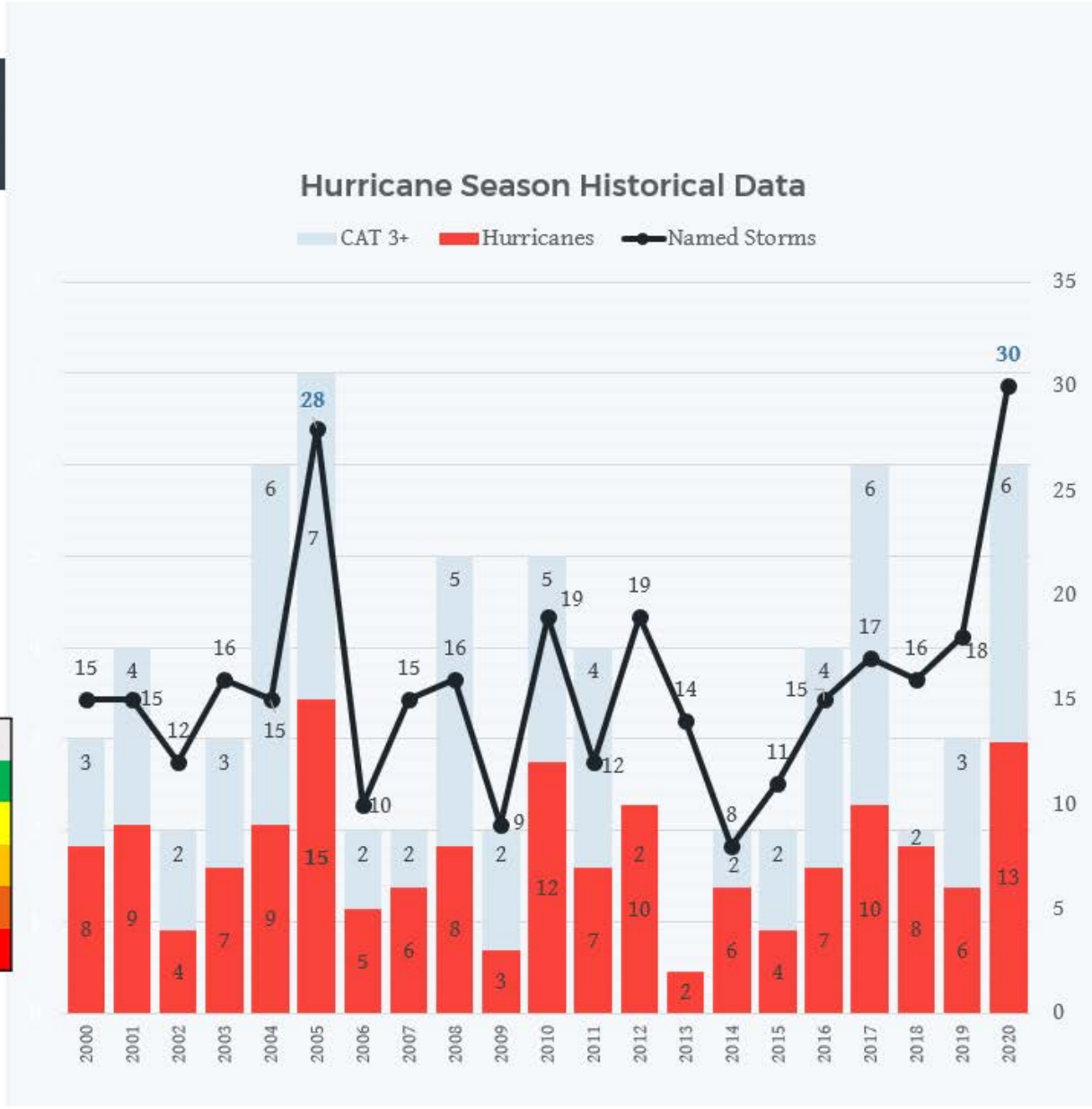
Hurricane Season

June 1st – November 30th

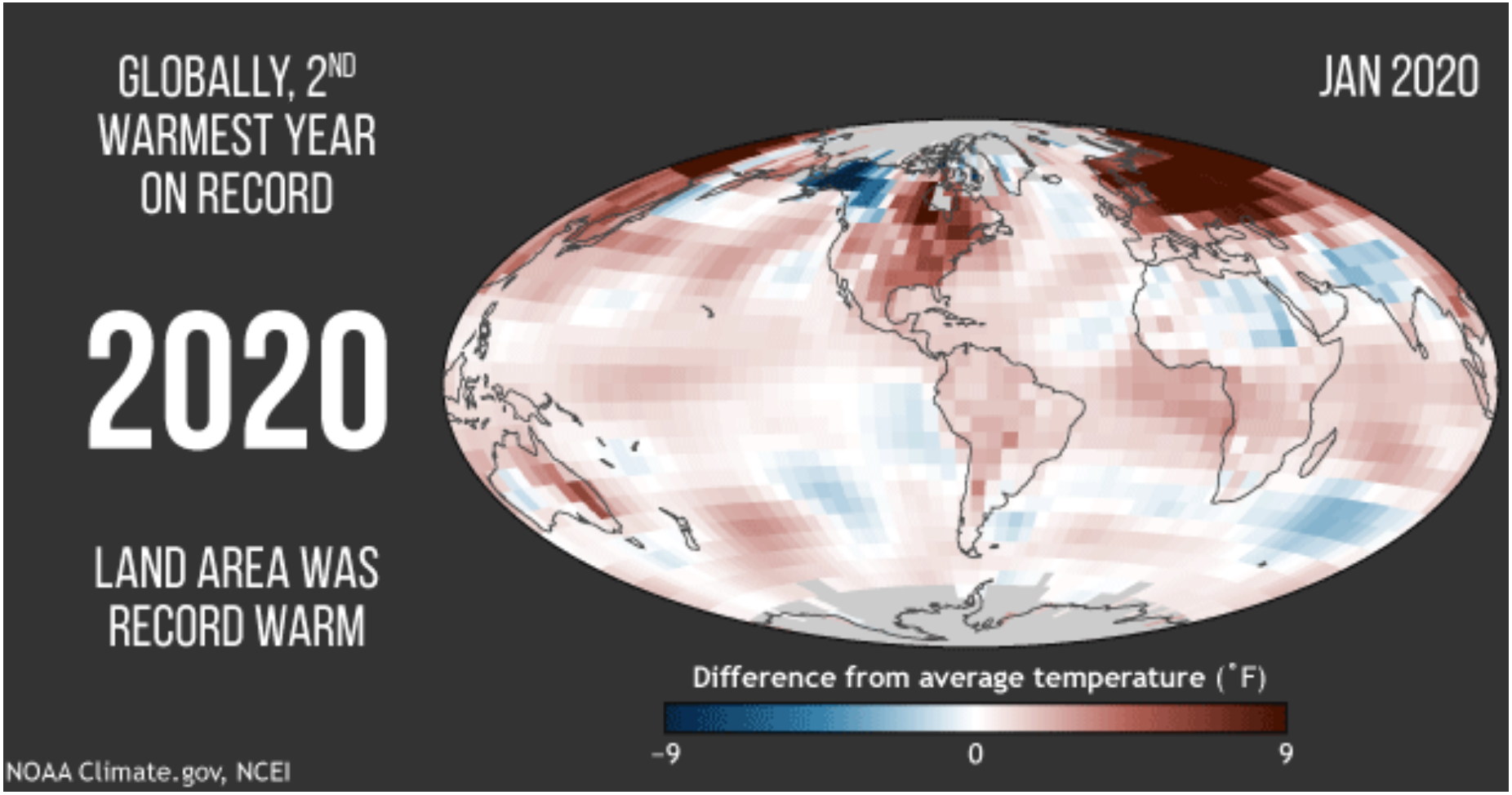
A normal season, as defined by NOAA, has **9 to 12** named storms, of which five to seven reach hurricane strength and **one to three become major hurricanes.**

2020 saw 30 named Storms

Category	Wind (mph)	Land Damage	Surge (ft.)
1	74-95	Minimal	4-5
2	96-110	Moderate	6-8
3	111-130	Extensive	9-12
4	131-155	Extreme	13-18
5	155+	Catastrophic	19+



Rising Climate



… what are WE doing to solve this with our designs??

Future Ready Design Considerations

- Intergovernmental Panel on Climate Change (IPCC):
  - Global Surface temperature rise of 1.5°F temperature pre-industrial/present
  - Global warming of 1.5°F to 2°C will happen in the 21st Century

- Global Warming will continue to cause increase:
  - Hot extremes
  - Marine heatwaves
  - Heavy precipitation – super storms
  - Agricultural and ecological droughts
  - Proportion on intense tropical cyclones
  - Reduction in Artic Sea Ice and more Permafrost

What does the future *look like for healthcare?*

5. Electric, autonomous vehicles will allow greater use of space

- Reduce parking
- Faster Emergency responses
- Mobility for Senior Citizen and People with disabilities

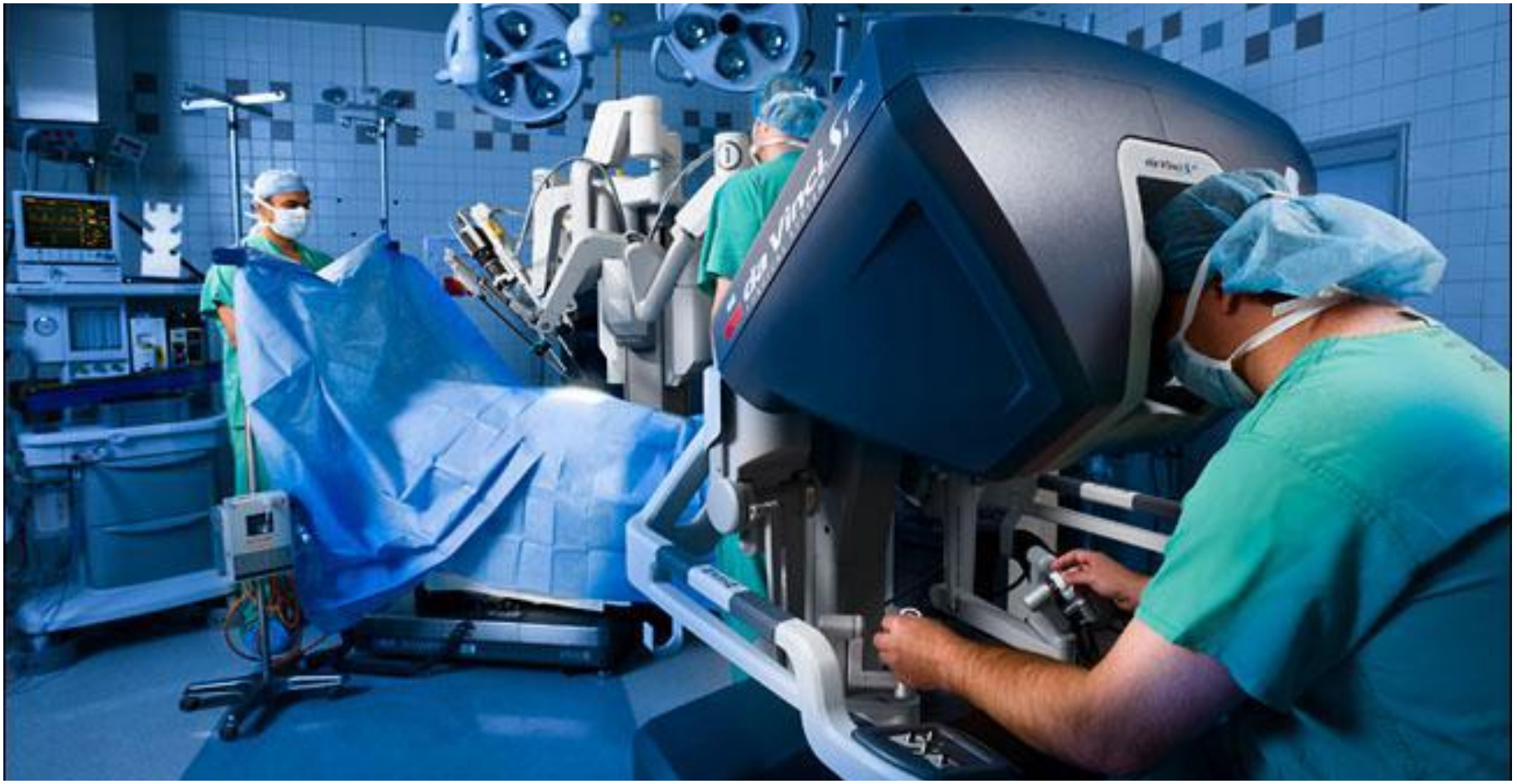
Design Considerations

- Less **waiting space**
- Passive healthcare monitoring - allow integration **biosensors**
- Increase vehicle **occupant safety**
- New **mobility considerations**

What does the future *look like for healthcare?*

7. Operating Rooms with Robots & Cameras

- Coronary artery bypass
- Gall bladder removal
- Hysterectomy
- Total or partial kidney removal
- Kidney transplant



Desert West Surgery, Las Vegas, NV

IBM Watson

What does the future *look like for healthcare?*

7. Majority of patients will be treated at home

- Biosensors
- Remote Monitoring tools
- Telehealth
- GPS

FOUND

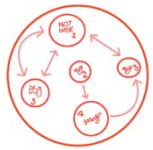
Artifacts from the future

by Joshua Davis

10 Steps to the Future Ready Healthcare

1. Plan
your healthcare campuses to meet patient-centric wellness and lifestyle trends

2. Prepare
your building for the future with the design of flexible and truly adaptable space



3. Understand
how today's Future Ready design enables optimal adjacencies for tomorrow

4. Challenge
your design team to develop environmental controls

5. Create
your technological center of excellence to enable real-time data and diagnostic monitoring

6. Recognize
the impact of changing treatment regimens on your facility and space requirement

7. Prioritize
your investment in spaces that will remain relevant

8. Make
use of new and sustainable materials and surfaces that resist infection and self-heal

9. Maximize
your revenue opportunities by understanding the dynamic change in future healthcare trends

10. Optimize
your facilities operational performance and maintenance of assets by use of smart technology

10 Steps to the Future

1. Plan

your healthcare campuses to meet patient-centric wellness and lifestyle trends

?

With patients taking a greater personal interest in their own health and wellbeing, how will you plan your spaces to respond to healthcare as it moves away from being reactive and intermittent and becomes proactive and continuous?

10 Steps to the Future

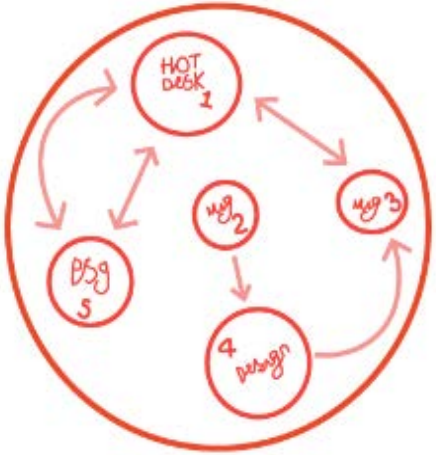
2. Prepare

your building for the future with the design of flexible and truly adaptable space

?

How will you plan your space to meet the future challenges of truly personalized care delivered straight to the patient's home?

10 Steps to the Future



3. Understand

how today's Future Ready design enables optimal adjacencies for tomorrow

?

As healthcare systems morph and evolve and the patient becomes the point of care, how will you plan your space to ensure its optimum location for its future purpose?

10 Steps to the Future

4. Challenge

your design team to develop environmental controls to combat higher peak temperatures

With the world's average temperature predicted to rise by up to 2°C during this century, how will you prepare you buildings for these future possibilities?

10 Steps to the Future

5. Create

your technological center of excellence to enable real-time data and diagnostic monitoring that provides one-stop diagnosis & treatment

?

As patients become more and more involved in their own wellness with the use of apps and wearable micro-devices, how are you going to respond in the development of your space and facilities?

10 Steps to the Future

6. Recognize

the impact of changing treatment regimens on your facility and space requirement as medical science makes exponential progress

?

What are the consequences of the advances we are making in combating major disease through progress in immunology, stem cell technology and genomics?

10 Steps to the Future

7. Prioritize

your investment in spaces that will remain relevant as healthcare becomes more person-centric and community focused

?

With a shift in focus towards a decentralized model of care, how will you invest in your real estate?

10 Steps to the Future

8. Make

use of new and sustainable materials and surfaces that resist infection and self-heal

?

As the cost rise and the drive to deliver healthcare buildings that is more sustainable and pandemic ready, what changes should you make in the development and maintenance of your healthcare building?

10 Steps to the Future

9. Maximize

your revenue opportunities by understanding the dynamic change in future healthcare trends

?

The population will continue to grow and people will live longer, so how will you deliver more healthcare for more people with less funding per head?

10 Steps to the Future

10. Optimize

your facilities operational performance and maintenance of assets by use of smart technology so assets are efficient, responsive & connected

?

In a technologically developing world, with increasing electricity costs, how will you ensure optimal patient experience and minimize energy consumption?

Your Future Ready Will

- Future Ready Healthcare Facilities will be:
  - Agile
  - Responsive
  - Adaptive

- A ‘Future Ready Healthcare Facility’ will leverages information and communication technology to:
  - Increase operational efficiency
  - Provide contextually relevant information with users
  - Improve quality of experience

- Future Ready Design solutions:
  - Must align with business or organizational needs
  - Should be integrated into the design, construction, and operation – not a ‘tech’ cherry on top.

Questions?

This concludes The American Institute of Architects
Continuing Education Systems Course

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