



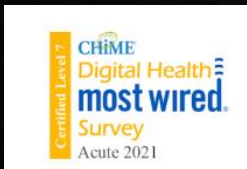
Innovation in every moment

Rady Children's Digital Transformation: Reimagine the Future in Times of COVID19

# Today's Agenda

- ◇ Context: About Rady Children's
- ◇ The challenges of COVID-19 and where we are now
- ◇ The benefits of HIE
- ◇ What is next: Reimagining Care
  - ◇ The Hype Cycle
  - ◇ Emerging technologies
  - ◇ Coming full circle – our direction

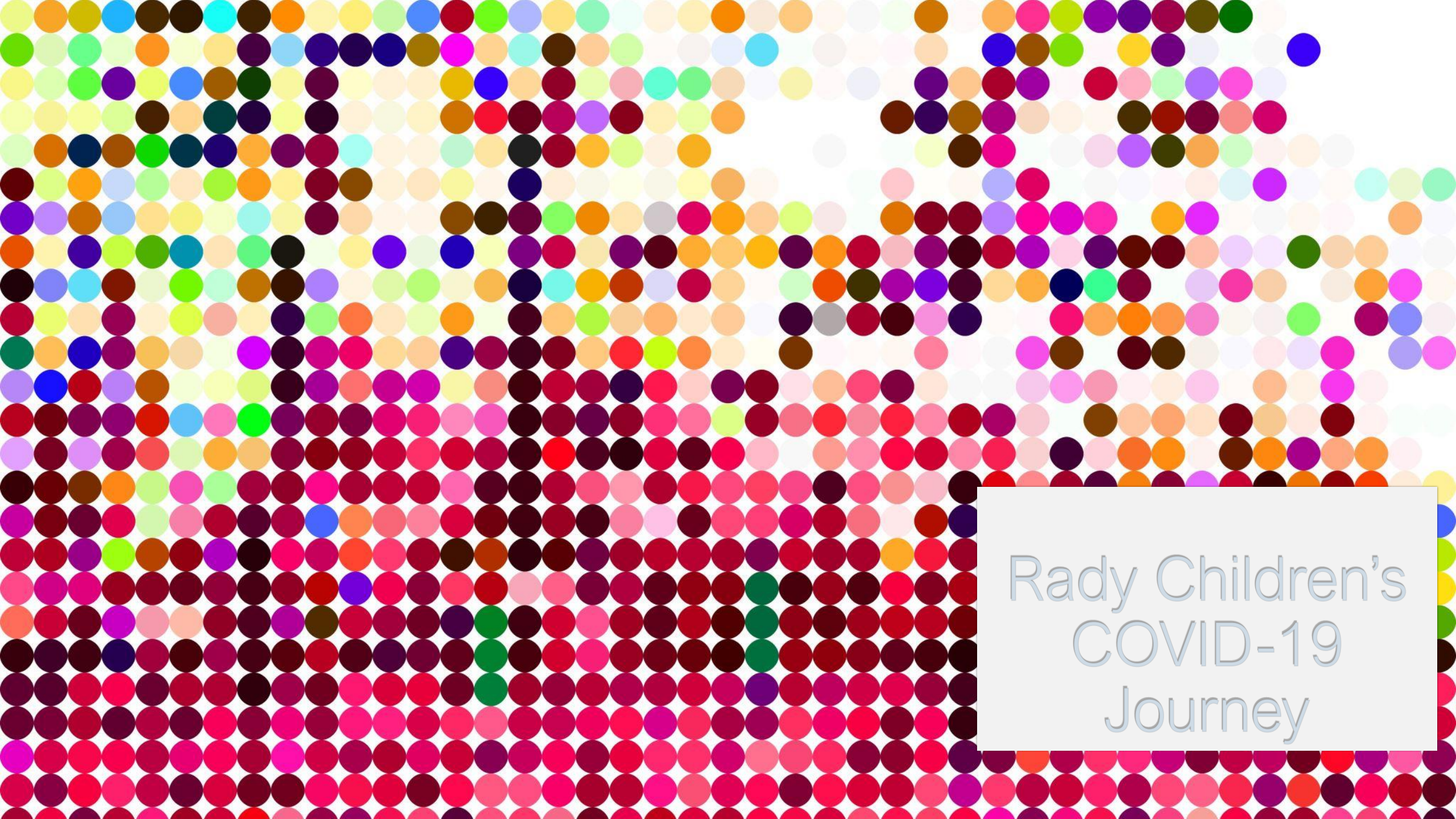
# About Rady Children's



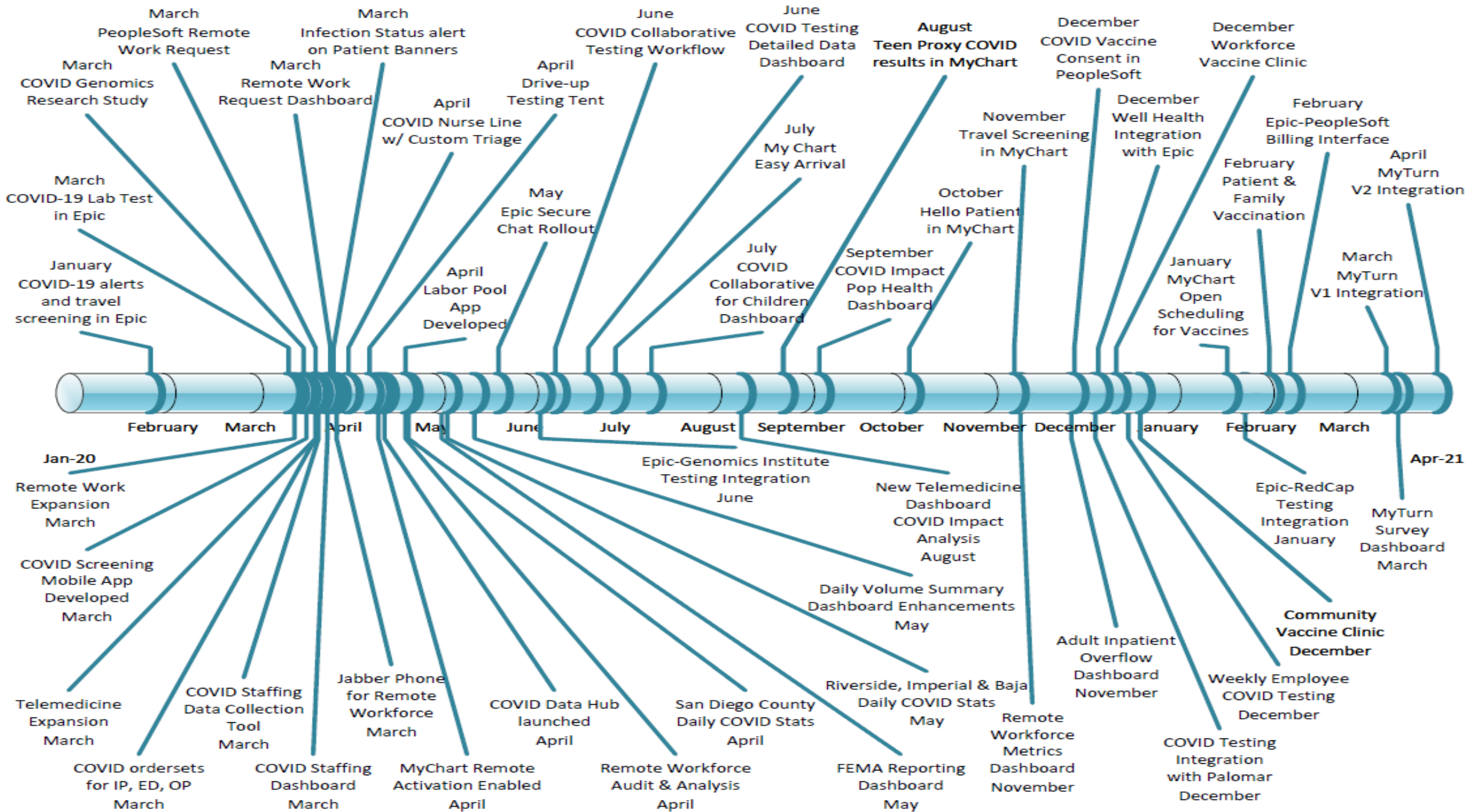
## Fast Facts FY2020

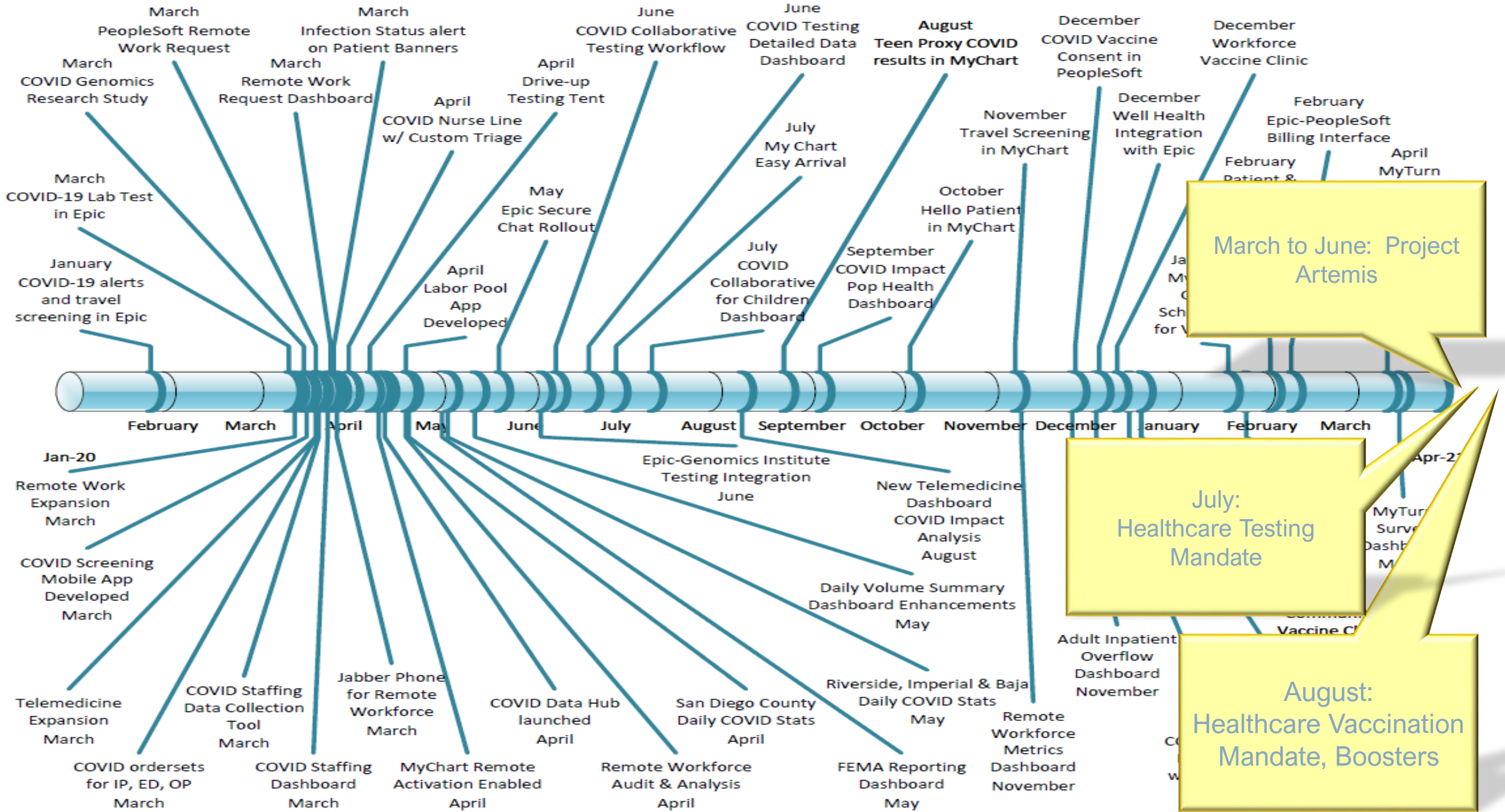
<b>Beds:</b>	524
<b>Revenue:</b>	\$1.2B
<b>Capitated Lives:</b>	250,000+
<b>Employees:</b>	5,100+
<b>Physicians:</b>	800+ affiliated 400+ subspecialists
<b>Nurses:</b>	1,500+
<b>Admissions:</b>	18,000+
<b>Surgeries:</b>	18,000+
<b>ED and UC Visits:</b>	136,000+
<b>Outpatient Specialty Visits:</b>	261,000+
<b>Outpatient PCP Visits:</b>	460,000+

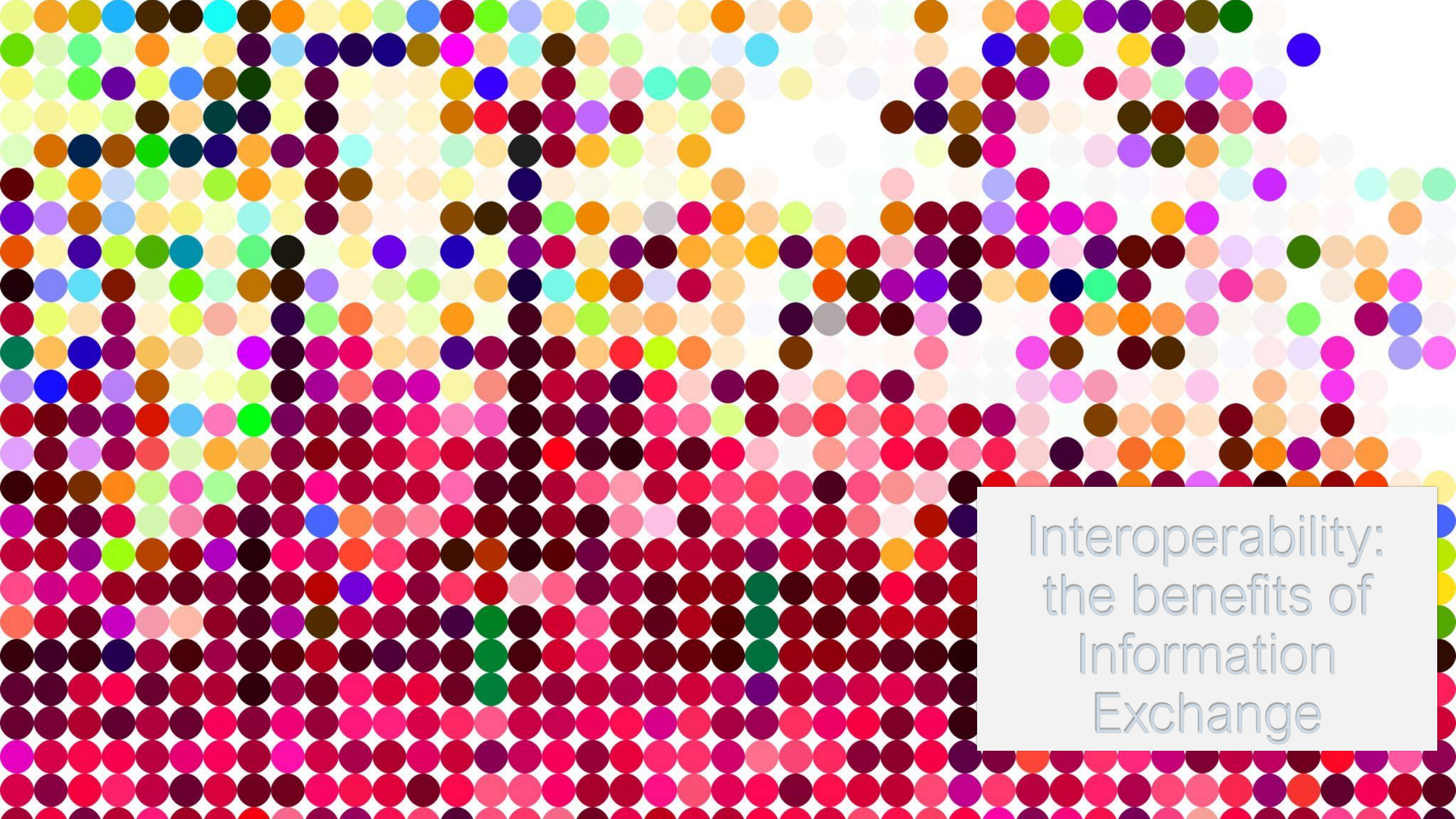
Region's pediatric provider of choice and safety net



Rady Children's  
COVID-19  
Journey







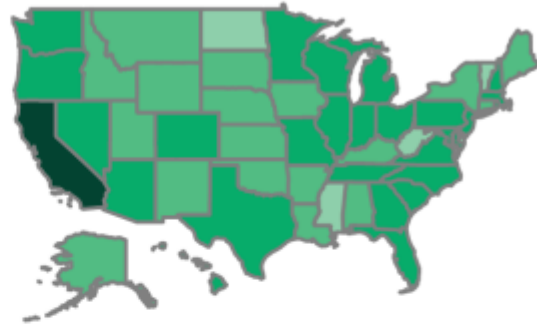
Interoperability:  
the benefits of  
Information  
Exchange

# HIE patterns

## Patient Records Exchanged

You've exchanged patient records with organizations spanning

**50 STATES**



*Darker shading indicates higher exchange volume*

<b>2,847,100</b>	<b>2,711,827</b>	<b>12,750,683</b>	<b>407</b>
Exchanges in 2021 YTD	Exchanges in 2020	Since Care Everywhere Go-Live in 2010	Epic Organizations Exchanged With
<b>2,129</b>	<b>1,698</b>	<b>45,044</b>	<b>1,453</b>
Epic Hospitals Exchanged With	Epic EDs Exchanged With	Epic Clinics Exchanged With	Non-Epic Connections Exchanged With

## Top Trading Partners

■ Sent ■ Received

Kaiser Permanente Southern California



Scripps Health



UC Health (San Diego / Irvine / Riverside) and Affiliates



Clinics using NextGen



San Diego Health Connect HIE



OCHIN



CVS Health & MinuteClinic



Loma Linda University Health and CareConnect Partners



Neighborhood Health Care

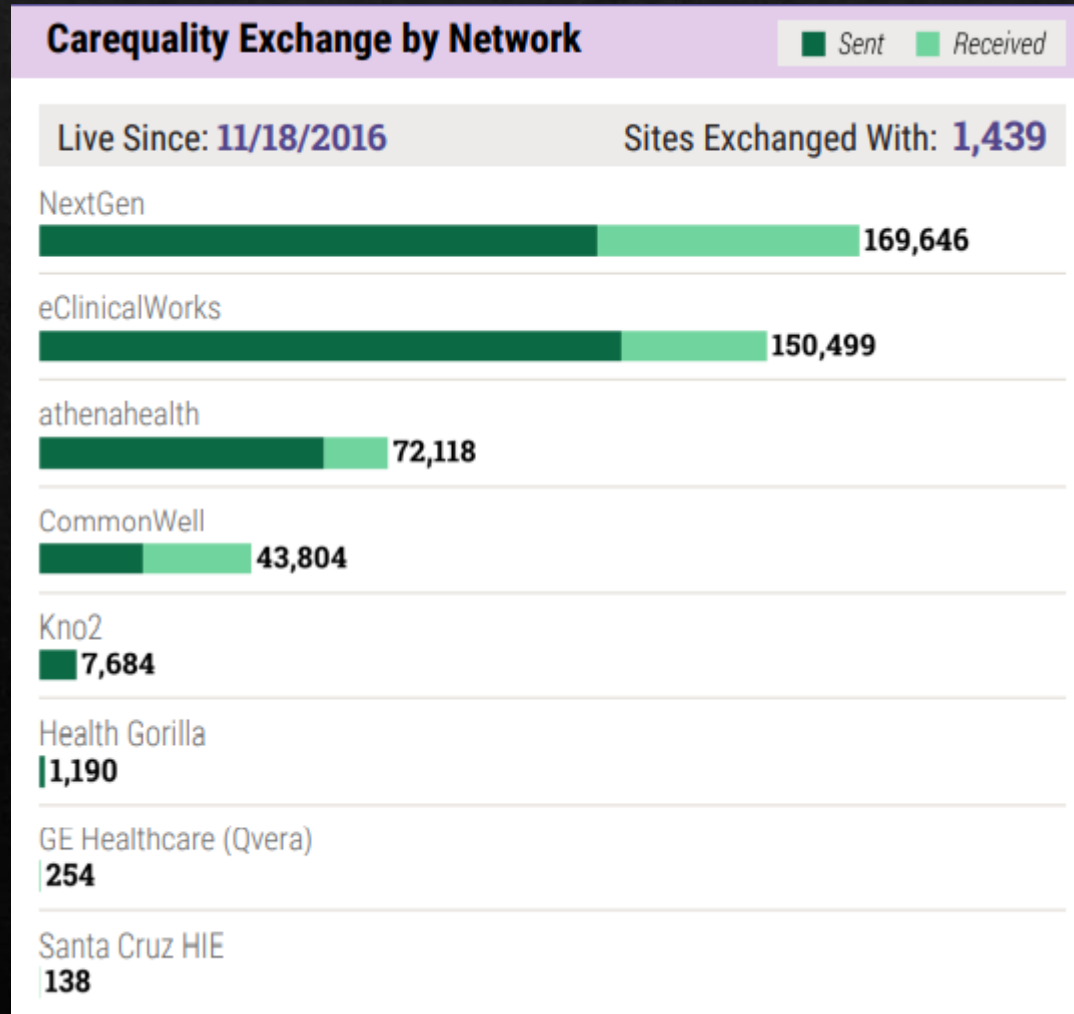


Pacific Dental Services



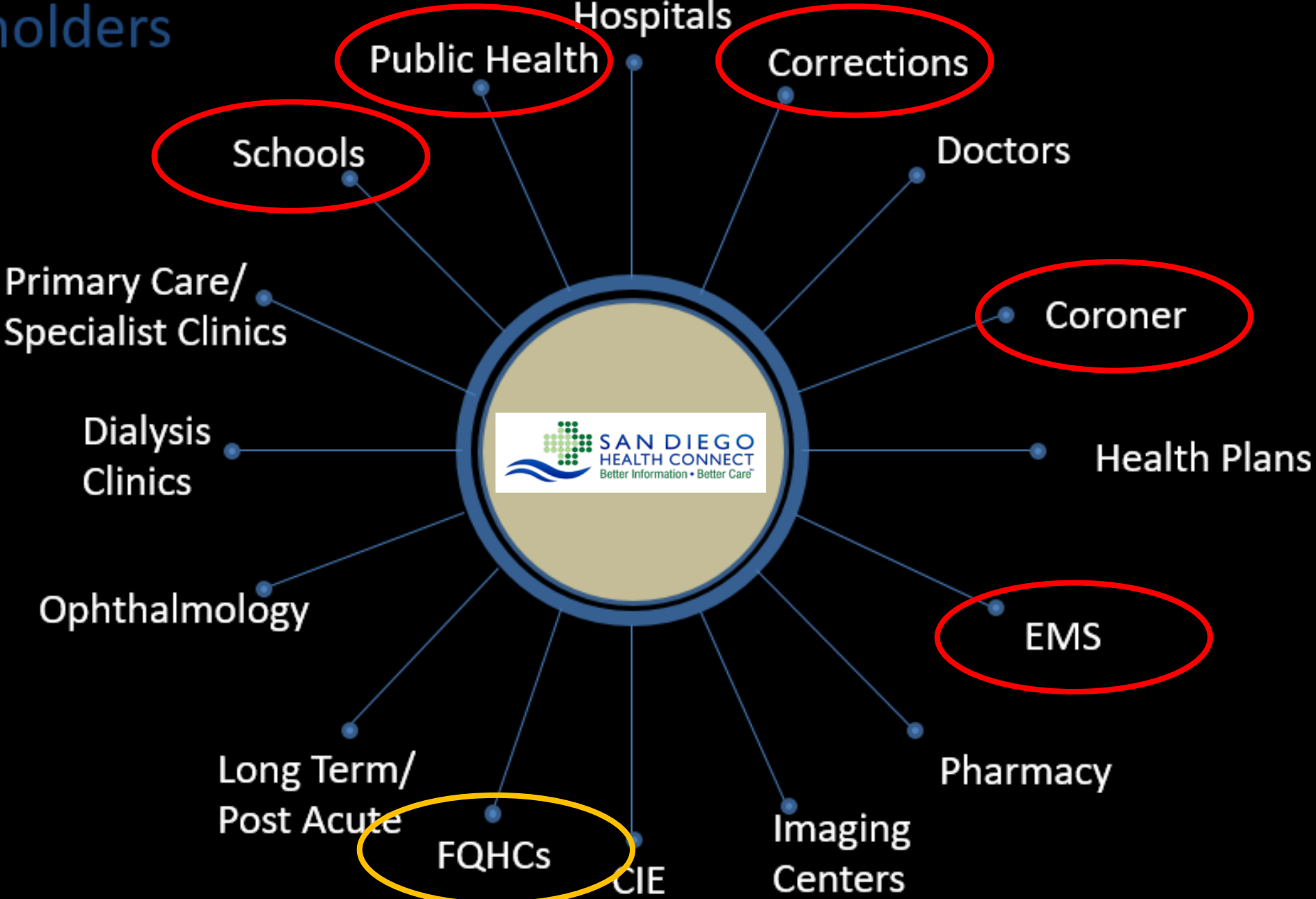


# The world has changed!!

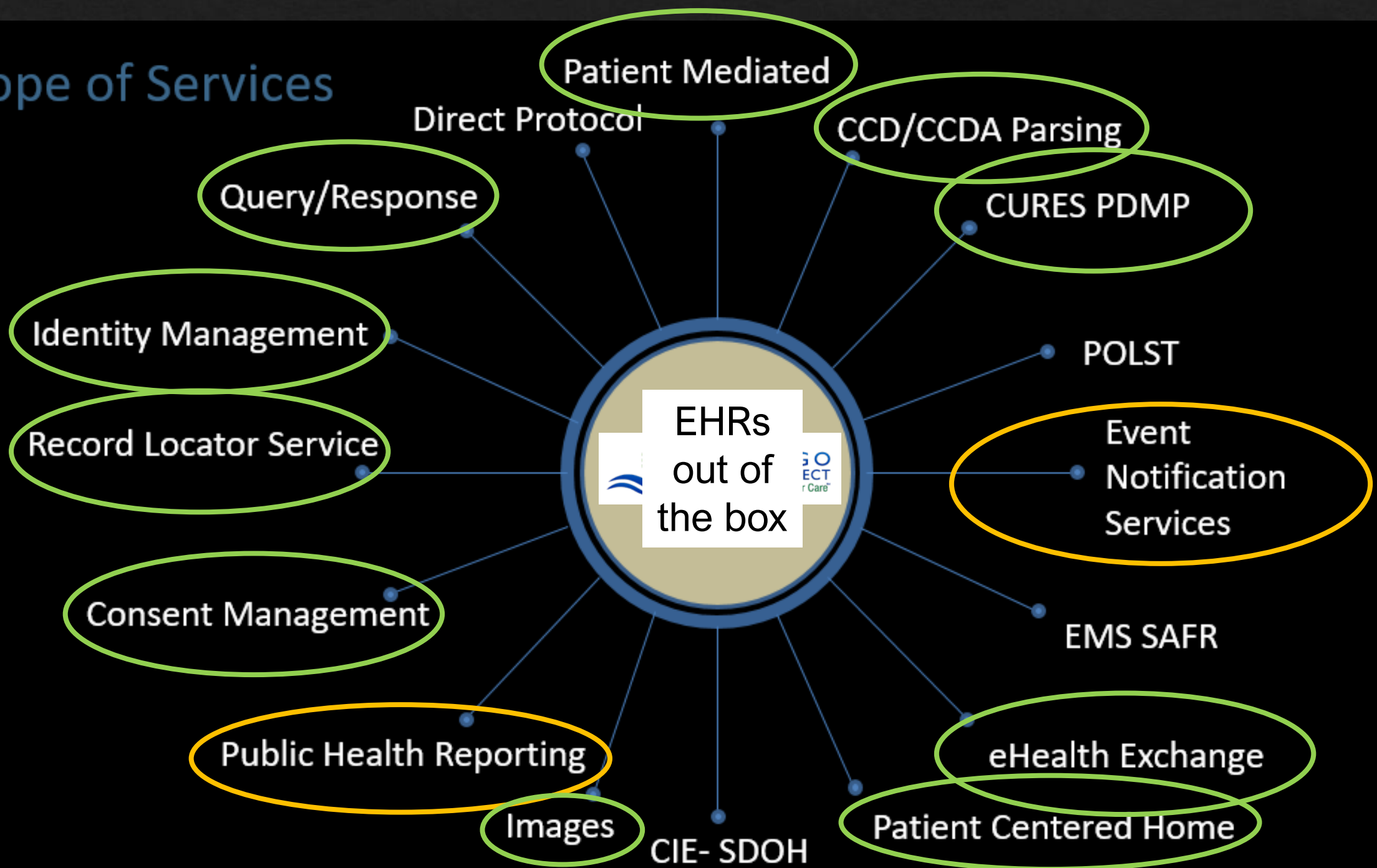


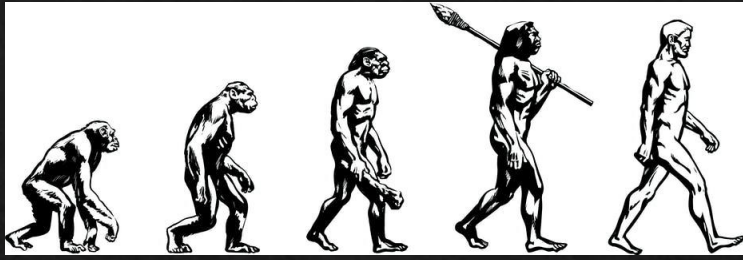
EHRs talk to  
one another

# HIE Stakeholders



# Scope of Services





# Evolution

– HIE Portal



Short term

– SAFR – EMS Connector



Mid term

– Public Health Reporting



Longer term

– Syndromic Surveillance



Longer term

– Immunization Registry

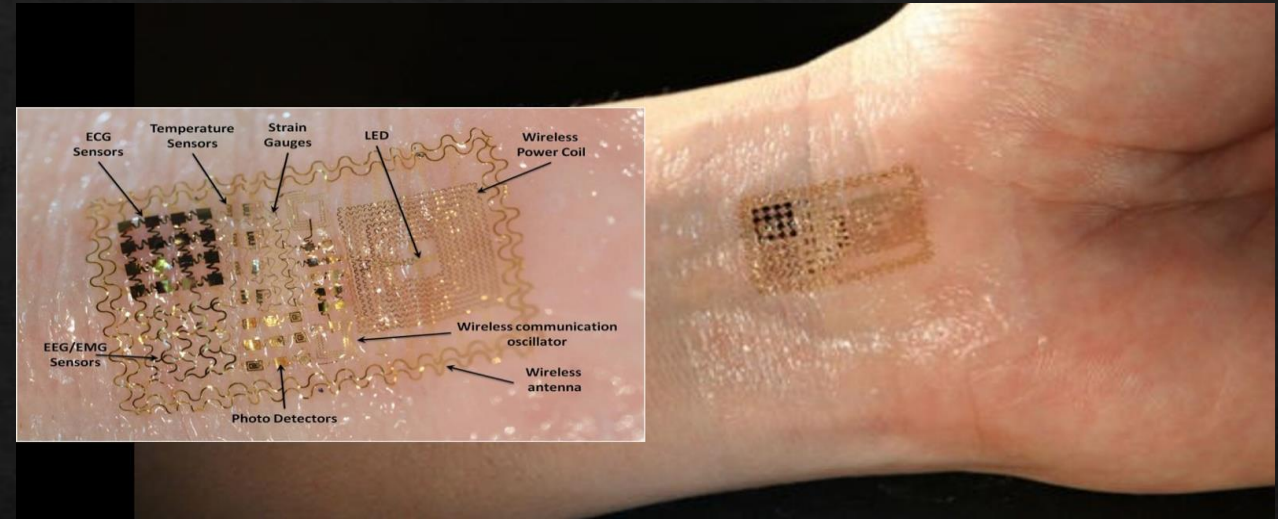


Longer term



# Integration of IoMT

- Falls and loss of consciousness
- Weight monitoring
- Heart rate and electrophysiology (ECG)
- Glucose monitoring
- Home air quality
- Oxygen saturation monitoring
- Asthma rescue/maintenance inhaler use
- Medication adherence
- Physical activity tracking





What is Next:  
Reimagining the  
Future

# Rady Children's Digital Transformation: Reimagine the Future



Reimagine Care:  
Care Redesign



Reimagine Work:  
Workforce Innovation

**Innovation in every moment**

# Reimagine the Future Guiding Principles

- ◇ **Nimbleness, flexibility and adaptability**
- ◇ Focus on innovation
- ◇ Strategic plan alignment
- ◇ Delivering whole child care to the patient
- ◇ **Within the constraints of recovery**
- ◇ Sustainable
- ◇ Alignment to culture and mission
- ◇ **Employee and Family Focused**



# What does the future of healthcare look like 5-10 years from now?

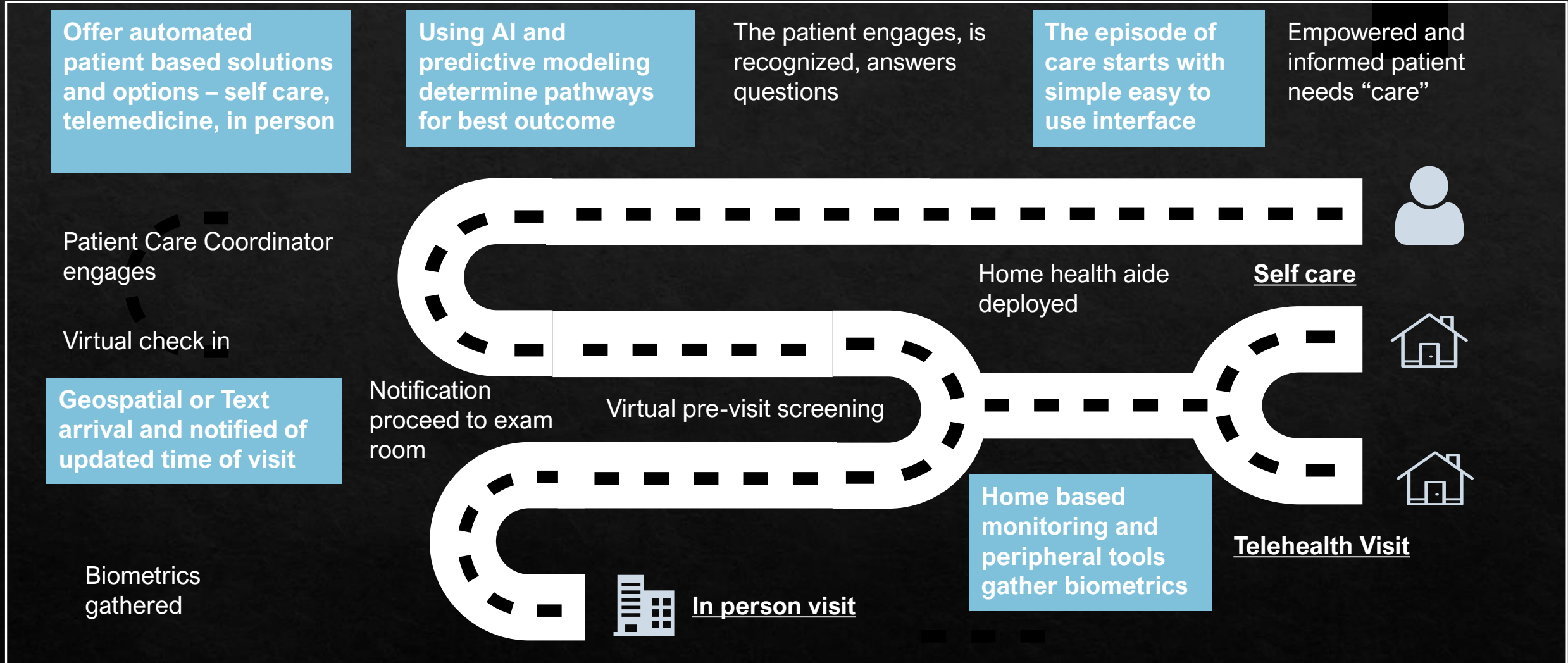
- ◆ The global telemedicine market size was USD 41.63 billion in 2019. ... The market is projected to grow from USD 79.79 billion in 2020 to USD 396.76 billion in 2027 at a CAGR of 25.5%<sup>1</sup>
- ◆ The global healthcare artificial intelligence (AI) market is expected to grow at a CAGR of 41.4% from 2020 to 2027 to reach \$51.3 billion by 2027<sup>2</sup>
- ◆ The global “Internet of Medical Things (IoMT)” Market is anticipated to reach USD 142.45 billion by 2026, with a CAGR of 28.9%<sup>3</sup>

<sup>1</sup> <https://www.fortunebusinessinsights.com/industry-reports/telemedicine-market-101067>

<sup>2</sup> <https://www.businesswire.com/news/home/20210118005340/en/Healthcare-Artificial-Intelligence-Market-2027---Market-is-Expected-to-Grow-at-a-CAGR-of-41.4---ResearchAndMarkets.com>

<sup>3</sup> [https://www.marketwatch.com/press-release/internet-of-medical-things-iomt-market-size-2021-in-depth-analysis-market-dynamics-with-top-players-impact-of-covid-19-case-study-analysis-industry-impact-and-global-forecast-till-2026-2021-03-15#:~:text=Mar%2015%2C%202021%20\(The%20Expresswire,increasing%20prevalence%20of%20chronic%20diseases.](https://www.marketwatch.com/press-release/internet-of-medical-things-iomt-market-size-2021-in-depth-analysis-market-dynamics-with-top-players-impact-of-covid-19-case-study-analysis-industry-impact-and-global-forecast-till-2026-2021-03-15#:~:text=Mar%2015%2C%202021%20(The%20Expresswire,increasing%20prevalence%20of%20chronic%20diseases.)

# What Care Redesign means to the patient on the Ambulatory Clinical Path

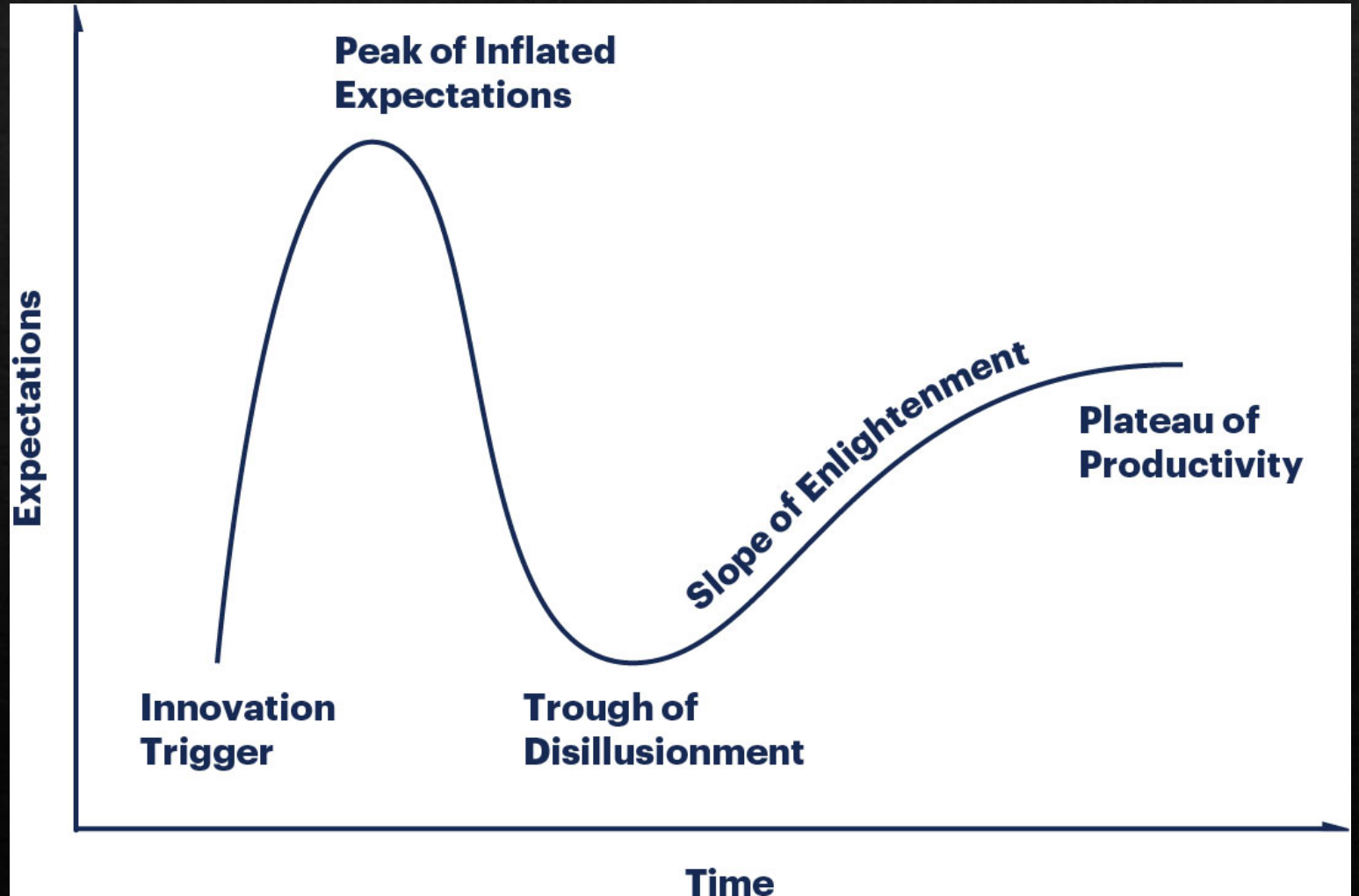


Throughout the episode:

- Constant data gathering
- Predictive modeling
- AI to determine patient based best outcome
- Seamless transitions
- Patient engagement and feedback
- Automated actions-based events, triggers and analytics

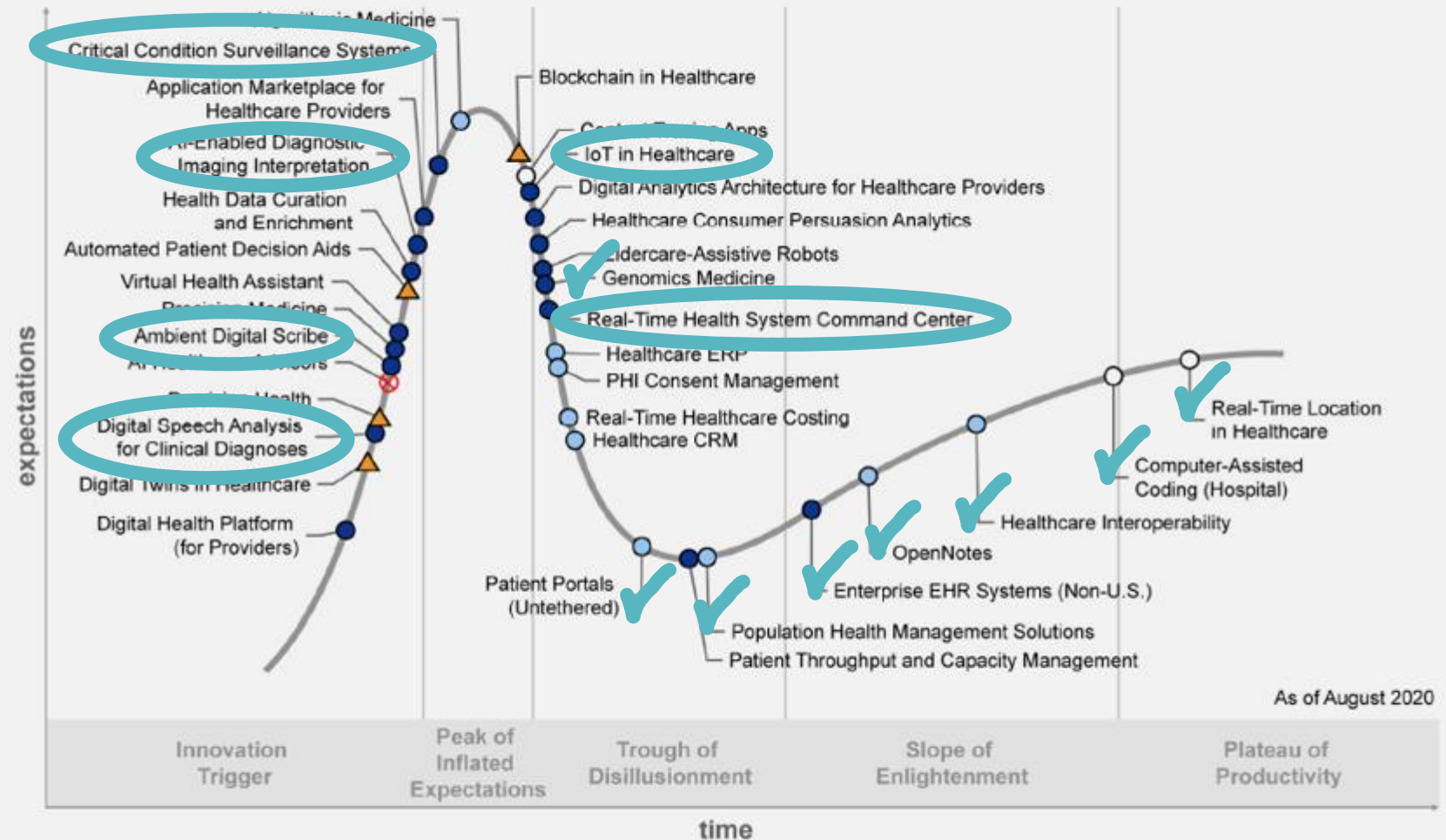
# The Hype Cycle

The hype cycle is a branded graphical presentation developed and used by the American research, advisory and information technology firm Gartner to represent the maturity, adoption, and social application of specific technologies. The hype cycle claims to provide a graphical and conceptual presentation of the maturity of emerging technologies through five phases.



# Healthcare Specific Hype Cycle

Figure 1. Hype Cycle for Healthcare Providers, 2020



As of August 2020

Plateau will be reached:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau

Source: Gartner  
ID: 448168

Rady  
Children's



# Telemedicine



## Why it matters

No longer “leading edge”, now a “must have”

Patient convenience

Lower cost care

Extends geographic expansion

Extends MD career options

## Our Foundation

Zoom-Epic integration

51,000 visits in FY20

130,000 visits in FYTD

## What we need

Peripheral device integration

Multi-State licensure

Continued payment parity

Continued training / optimization



# Telemed Survey

Total Surveys  
**3,549**

% Recommend Telemedicine  
**88.5%**

% With Technology Issues  
**11.4%**

% Additional Visit Needed  
**19.6%**

% Visits that Saved Time  
**93.2%**

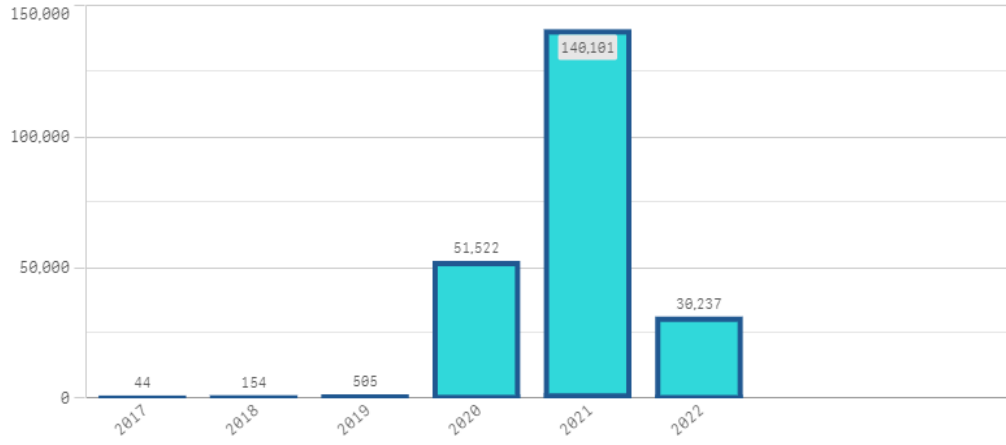
Total Estimated Time Saved (days)  
**100.9**

## Telemedicine by Fiscal Year

### Telemedicine Visit Volume

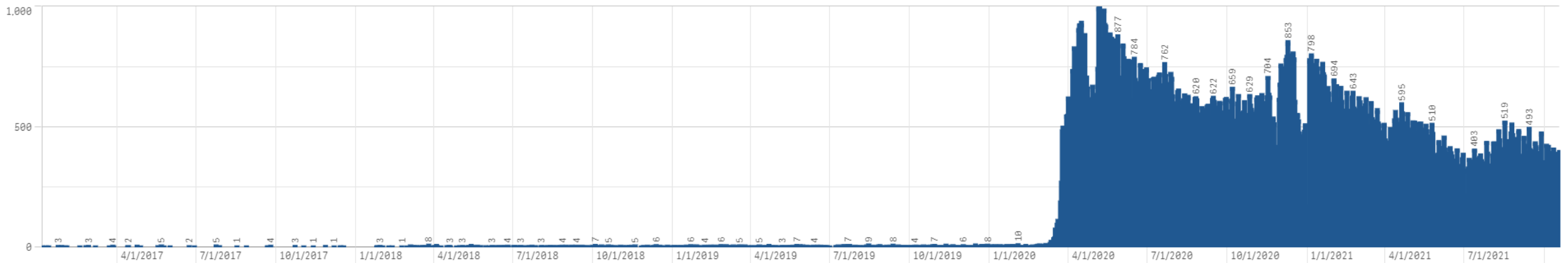
by Fiscal Year

Fiscal Year



### Telemedicine Visit Volume

by Day



# Chatbots



## Why it matters

Faster access / timely response

Personalization and timeliness leads to patient satisfaction

Lower costs



## Our Foundation

Gastro transitions of care pilot from 2015



## What we need

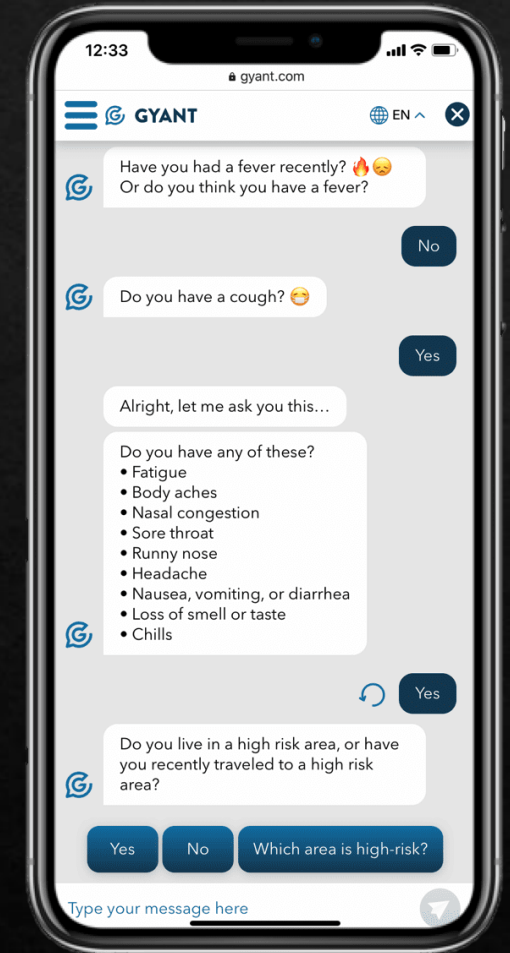
Clear use case(s)

Focused SME and IT resource(s)

Technology partner(s)

Governance

Funding





# Other Robotic Process Automation (RPA)



## Why it matters

Improved efficiency (high volume, clear inputs/outputs, well defined/steady processes)

Consistency (error reduction)

Focus work on higher cognitive tasks (job satisfaction / dissatisfaction?)



## Our Foundation

Claim status checking and Authorizations RPA (RCHSD / R Systems)

Data and interface job scheduling (RCHSD)

Genomics pipeline (RCHSD/RCIGM)



## What we need

Governance

Standard toolset

Operational champion(s)

Prioritization

SME & IT resources

## 6 BENEFITS OF IMPLEMENTING RPA IN HEALTHCARE

### 1 PROCESSING COST REDUCTIONS

UPath reports the success story of implementing RPA in a hospital that needed to increase operational control in order to improve patients' experience. Automating revenue cycle functions like claims or billing, for instance, resulted in cutting down the cost from \$4 to \$1 per claim.

### 2 STRONGER BILLING CYCLE

Accounts payable and data digitization processes can be automated by means of RPA, thereby improving billing efficiency. By upgrading administrative processes, healthcare companies can significantly economize labour and financial resources.

### 3 HUMAN LABOUR COST REDUCTIONS

By passing on to robots manually-intensive tasks, healthcare professionals save time. They can use these additional time resources to produce higher-value work, by focusing on more fine-grained patient attendance rather than on tedious data entry.

### 4 INCREASED EMPLOYEE SATISFACTION

Craig Richardson, a pioneer of transitioning healthcare to a digital industry, argues that a higher level of healthcare professionals' job satisfaction is directly linked not only with better care for the patients, but also with higher ROI for the company.

### 5 APPOINTMENT TURNOUT OPTIMISATION

Software robots can include several factors in patients' appointment requests: their medical histories, current diagnosis, location, insurance carrier, personal preferences, etc., and use them to set appointments that closely match what is most relevant for the patients.

### 6 SUPERIOR HEALTHCARE QUALITY

By saving time, eliminating the risk of human error, and by allowing the staff to focus on patients, the increased operational efficiency may also expand the applicability range of healthcare. The healthcare system could thus better address the needs of more people.

## RESULTS

### MORE EFFECTIVE PATIENTS' SCHEDULING

Software robots can streamline online scheduling: appointment requests, diagnosis, location, insurance carrier, personal preferences, etc., can be gathered in a report, and forwarded to a referral management representative who actually makes the appointment.

### IMPROVEMENT OF THE CARE CYCLE

RPA boosts data analytics and thus it makes continuous record monitoring possible. Analysing comprehensive amounts of data increases the likelihood of more accurate diagnosis, which leads to better-tailored treatment strategies.

# Artificial Intelligence (AI) Predictive Modelling



## Why it matters

Pattern recognition,  
enables faster insights,  
better care

Improved quality and  
safety

Improved productivity /  
focus on higher  
cognitive tasks

Improved patient flow



## Our Foundation

Sepsis algorithms

Genomics

IT infrastructure  
management



## What we need

Leadership

SME, data science, data  
engineering and IT  
capacity

Expert partners



# Artificial Intelligence (AI) Image Analysis



## Why it matters

Technology advances  
Quality improvement  
across disciplines  
Efficiency gains for  
highly specialized,  
expensive SMEs



## Our Foundation

Relationships with  
UCSD Qualcomm  
Institute  
Merge/IBM  
Siemens  
3D Lab



## What we need

Clinical Champions  
Investment in platforms  
Technical resource  
bandwidth  
Leadership to manage  
change / disruption



A man in a white lab coat with "Rady Children's" and "Justin Ryan, PhD Research Scientist - 3D Lab" on it is sitting at a desk. He is wearing glasses and has his hands clasped. On the desk in front of him are several 3D printed heart models. In the background, there are computer monitors, one showing a 3D heart model, and a window with blinds. A mug with a heart illustration is on the desk to the left.

**JUSTIN RYAN, PH.D**  
RESEARCH SCIENTIST, RADY CHILDREN'S HOSPITAL

for us to use 3D technologies

# Artificial Intelligence (AI) Ambient Intelligence



## Why it matters

Technology advances in speech recognition

Heightened Patient/Family expectations (pervasiveness of Alexa/Siri/Bixby/Cortana/Google Assistant/Google Home)

Focus back to the patient, not the keyboard



## Our Foundation

Basic speech recognition  
mModal/Nuance

Vendor space in consolidation



## What we need

Keep eye on vendor space

Learning/pilots

Technical resource bandwidth

Clinical champions

Investment in platforms & infrastructure (new campus)

# Internet of Medical Things (IoMT)



## Why it matters

Lower cost setting

Increasing quality of consumer devices

21<sup>st</sup> Century CURES

## Our Foundation

Propeller Health (asthma)

Gluco Health (diabetes)

BardyDx, Cardionet,  
ZioPatch/iRythm (heart)

## What we need

Governance / Strategy / Priorities

Leadership

Champion SMEs

CIS / Data / Integration / IT  
bandwidth



We're talking about it

Walking – In use in targeted areas

Flying – We're writing the book on how it's done



We're thinking about it

Crawling -- We're piloting it

Running – Optimizing, widespread use

ADVANCED TECHNOLOGY

- Telemedicine
- Chatbot
- RPA
- Predictive Modeling
- Image Analysis
- Ambient Intelligence
- IoMT

2021



2022

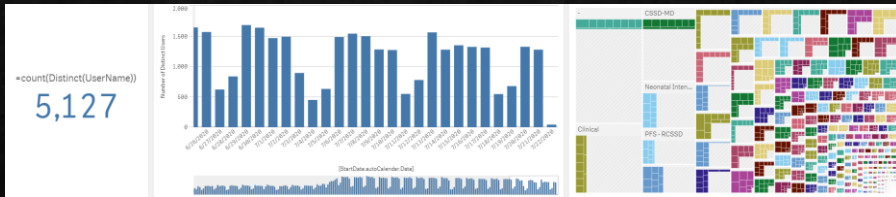


2023



2024





Automation



Offshoring



Staff Augmentation



Strategic Investments

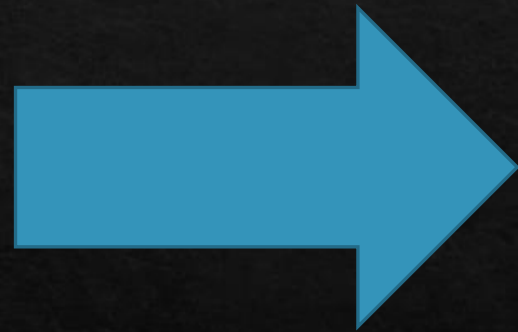


Rady Team

Intelligent sourcing



Digital  
Health



Digital  
First?



# Rady Childrens Hospital



Albert Oriol

CIO

Rady Children's Hospital San Diego

@RadyCIO

**Vielen  
Dank!**

**THANK YOU!**

Innovation in every moment