

Disrupters in 2018 and Beyond



Chris Pagano
Director, Sg2



Providers Becoming Insurers

The Old Guard

- Kaiser Permanente
- Geisinger
- Presbyterian

The New Entrants

- Northwell
- Inova—Aetna
- CHI

Nobody Is Staying in Their Lane Anymore

Insurers Buying Providers

- UnitedHealth Group—DaVita
- Anthem—CareMore
- Humana—Conviva
- Highmark—West Penn Allegheny

Potpourri

- Aetna—CVS
- Amazon
- Express Scripts—Cigna
- Health systems, VA—nonprofit generic drug partnership

Pay Attention to the Signals in Your Market

**Patients are paying more
(even when covered).**

**Employers are getting
fed up with costs.**

**Payers are
changing shape.**

**Deregulated policy landscape
is shifting innovation to states.**

Pay Attention to the Signals in Your Market

Patients are paying more
(even when covered)

**Pace to risk is uneven
across markets.**

changing shape.

Deregulated policy landscape
is shifting innovation to states.



Geisinger “Fresh Food Farmacy” for Diabetic Patients

Nationwide Children's
Allscripts and
Cityblock

Redefine How You Meet the Needs of Your Community

Providence Guest Housing

Sources: Court E. Allscripts, Lyft partner on health care transportation. *MarketWatch*. March 6, 2018; Providence Health & Services website; Leopold J. Getting hospitals into the affordable housing game. October 19, 2017; Geisinger Health website; Cityblock website. Oak Street Health website. All websites accessed April 26, 2018.

Maximum Download Speed

Cost of DNA Sequencing per Genome

The Internet of Things

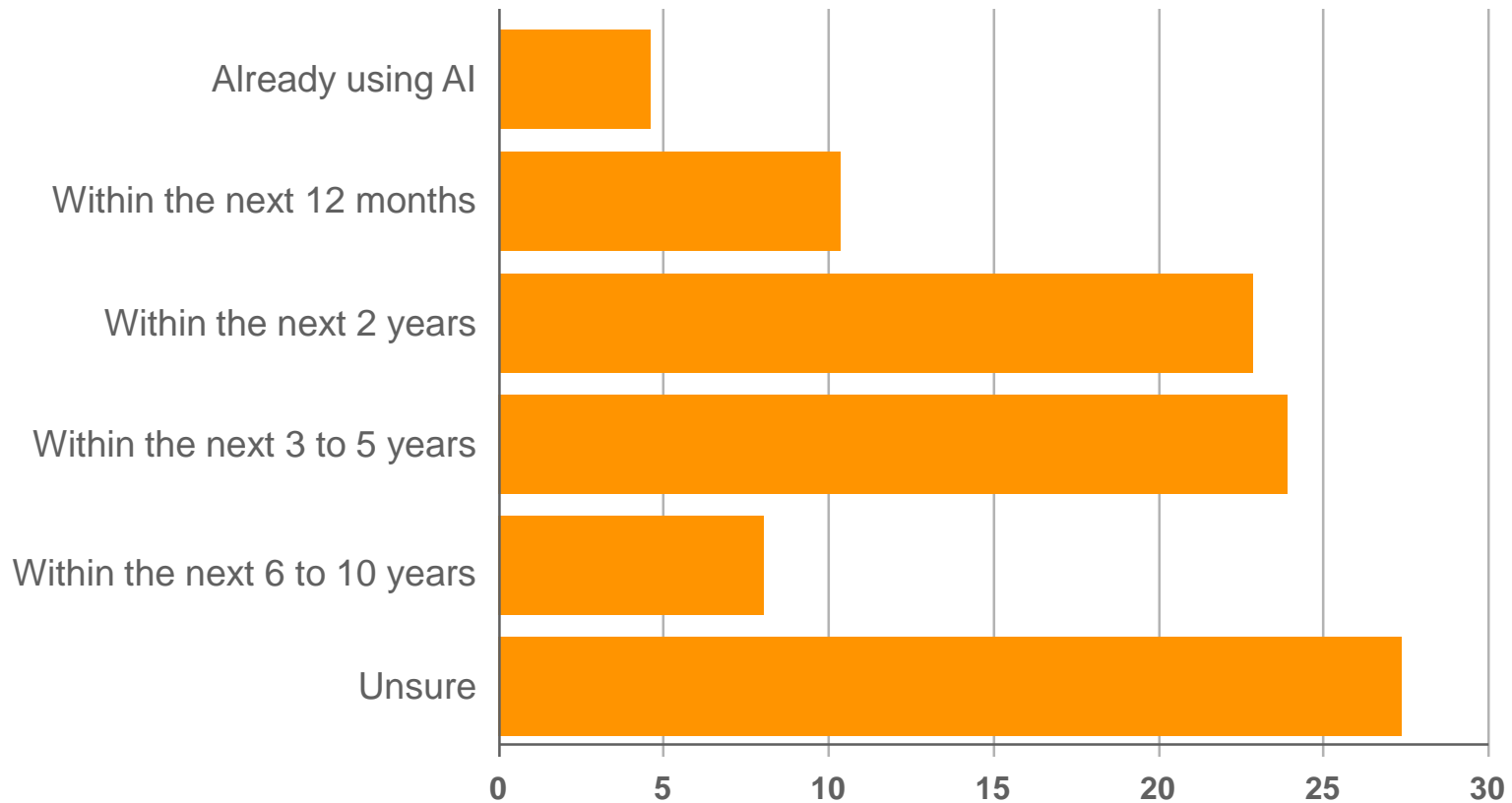
Pace of Change Accelerating at an Exponential Rate

MOORE'S LAW

Cost of Data per Megabyte

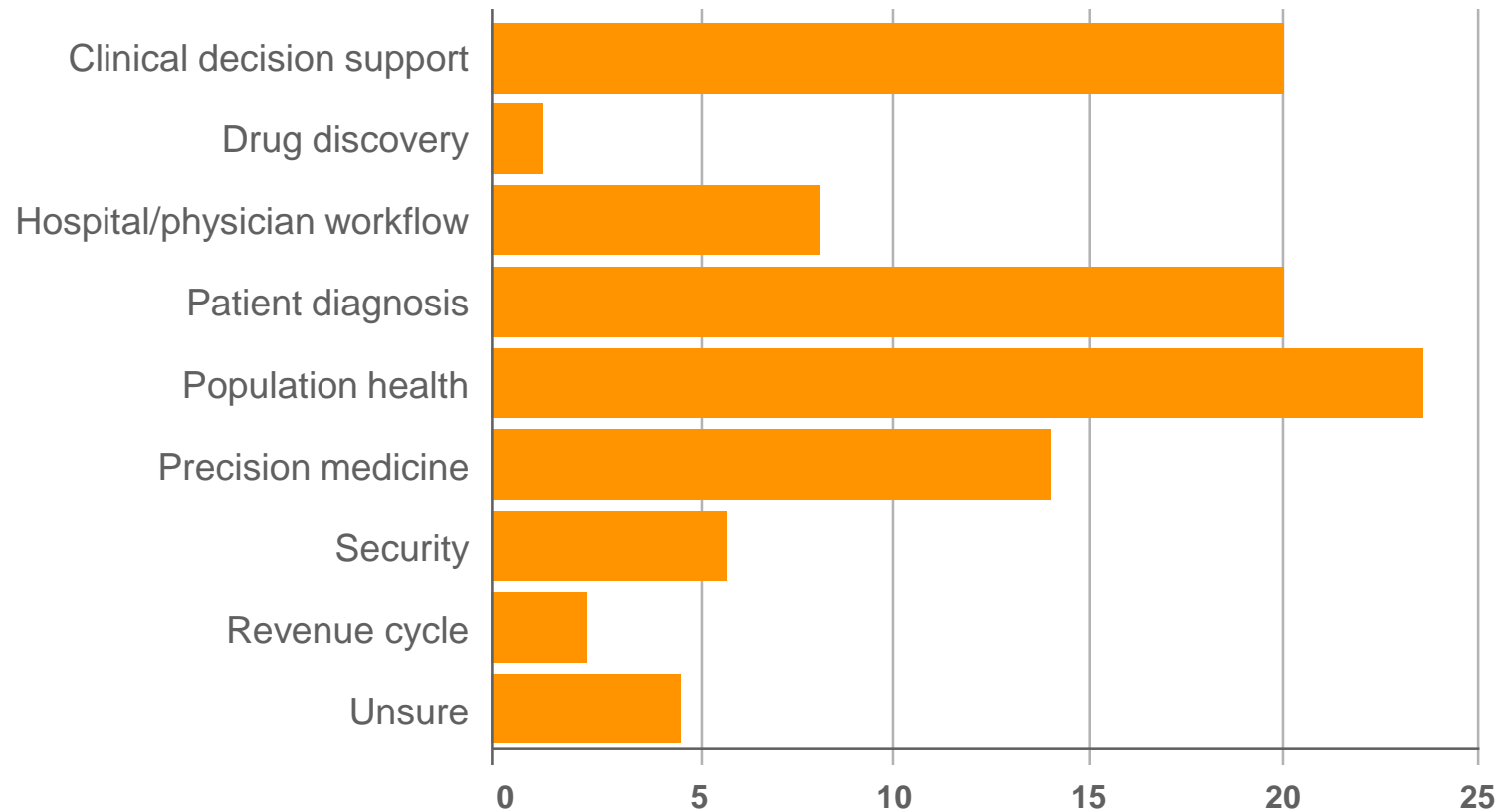
Health Systems Are Already Beginning to Implement...

When do you expect your org to leverage AI?

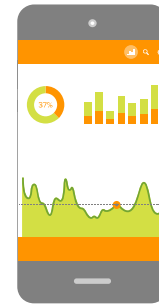
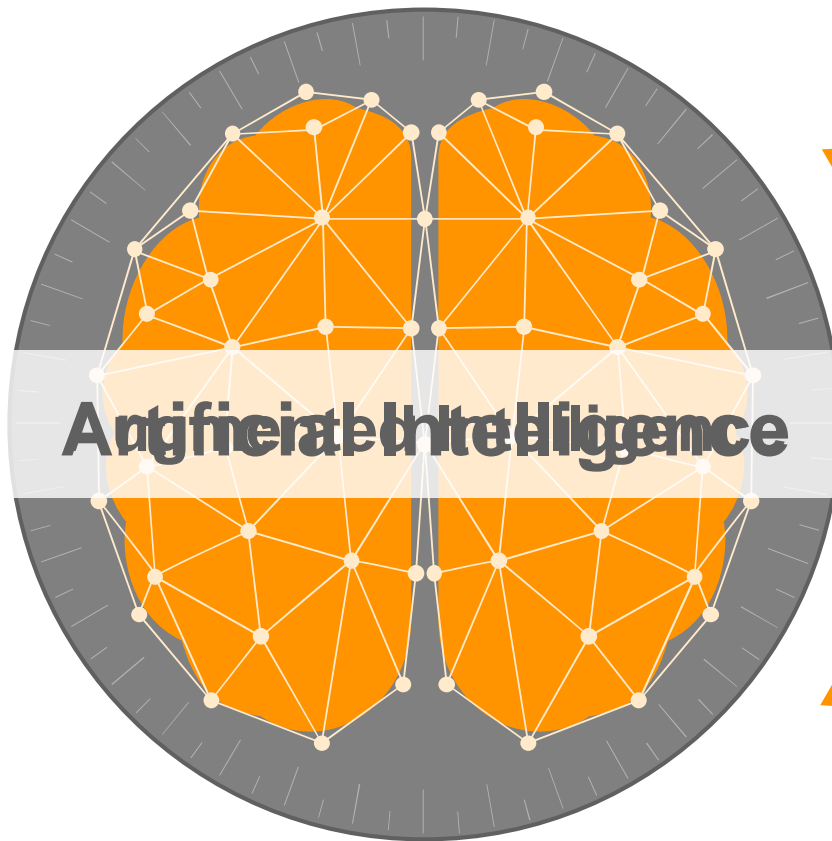


...And Are Exploring Potential Applications

AI's greatest initial impact in health care



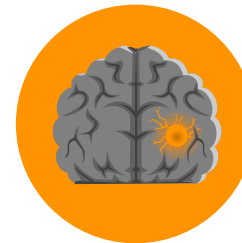
Ignore the Hype—Focus on the End Use



**Intelligent
Assistance**



**Intelligent
Assistants**



**Intelligent
Algorithms**

Digital Assistant

A software agent designed to assist people with tasks or services 1) using deep machine learning data from a variety of sources, including **user interactions**, to understand consumer preferences and provide frequent, **personalized information** through natural language and 2) using a variety of technological capabilities

Digital Assistants' Skills in Home Health

- Allow patients to report vital sign data
- Provide reminders for medication and exercise
- Facilitate patients to call for caregiver help and coordinate transportation
- Use hardware to facilitate virtual visits

Potential Benefits

- Reduction in loneliness
- Elimination of redundancy for caregivers and improvement in caregiver productivity



LIBERTANA HOME HEALTH

- Recently piloted with 5 clients and caregivers
- Historically, caregivers manually recorded and entered vital sign information into the EMR
- Libertana will be releasing features to allow for patient families to receive daily medical reports.



- Digital assistants are being used to support both “patient-facing” tasks, such as appointment scheduling, and “physician-facing” administrative tasks, including EMR input.
- Digital assistants can streamline claims processing, allowing for claims to be submitted faster and more accurately, lowering reimbursement denials, delays and appeals.
- Nuance’s “Florence” and NoteSwift’s “Samantha” are both available on the market today.

PILOT STUDY

- Landmark Hospital piloted Florence to decrease the amount of time that physicians were spending “facing away from the patient.”
- Florence acts as a “copilot” to the physician.
- Florence delivered time savings ranging from 35% to 50% for complex orders.



Sources: Tai-Seale M et al. Electronic health record logs indicate that physicians split time evenly between seeing patients and desktop medicine. *HealthAffairs*. April 2017; Ofri D. The patients vs paperwork problem for doctors. *The New York Times*. November 14, 2017; Lee B. Doctors wasting over two-thirds of their time doing paperwork. *Forbes*. September 7, 2016; Sg2 Interviews, 2017.



What Is the Difference?

- Virtual reality (VR) provides immersive experiences.
- Augmented reality (AR) layers digitally created images over real-life settings.

Areas of Impact in Health Care

- Anatomy and surgery education
 - Cleveland Clinic using AR for anatomy education
- Exposure therapy
 - VR being used to treat PTSD
- Distraction therapy
 - VR being used for dementia treatments

VENDORS IN THIS SPACE

- Magic Leap
- Google
- Microsoft HoloLens
- Oculus Rift

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Sources: Ingram. M. Medical Students Are Using Augmented Reality to Study Patients in 3D. Fortune. May 3rd, 2018. Sg2 Analysis, 2018.

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Sources: Nikias, Max, C.L. How Virtual Reality Can Transform PTSD Treatment. The Wall Street Journal. May 11th, 2018. Sg2 Analysis, 2018.

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Blockchain: What Is It?

A distributed ledger that can log transactions across multiple sites and serve as a digital database. This **decentralized system** is used to confirm and record the movement of company data across multiple stakeholders. It offers a **secure**, high-integrity, “neutral” third-party mechanism for tracking data and understanding how it is changing over time.



Areas of Impact in Health Care

- Interoperability
- Security
- Population health
- Claims processing
- Medical record keeping

VENDORS TO WATCH

- Factom
- HealthCombix
- Gem
- MedRec

EMERGING EXAMPLES

Optum,
UnitedHealthcare,
Humana and
others launch
pilot

Improving
patient
engagement
through data
control

Supply
management
and
medication
monitoring

Revenue
cycle
management
and fraud
prevention

New life
science–
oriented
business
models

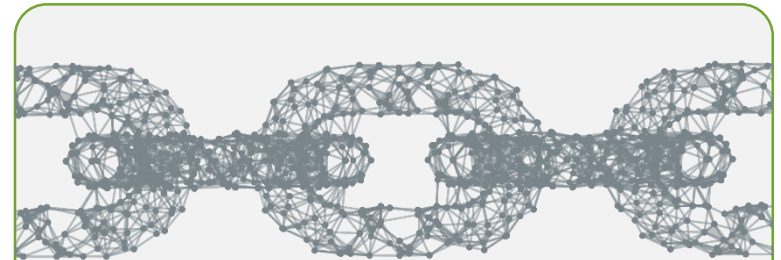
Ensure data
integrity in
clinical trials
and increase
enrolment

Pilot Overview

- Beth Israel Deaconess teamed with MIT Media Lab to test MedRec
- Tracked 6 months of inpatient and outpatient medication data
- Blood work records, vaccination history, prescriptions and other therapeutic treatments
- Simulated data exchange between institutions by using two databases

Features

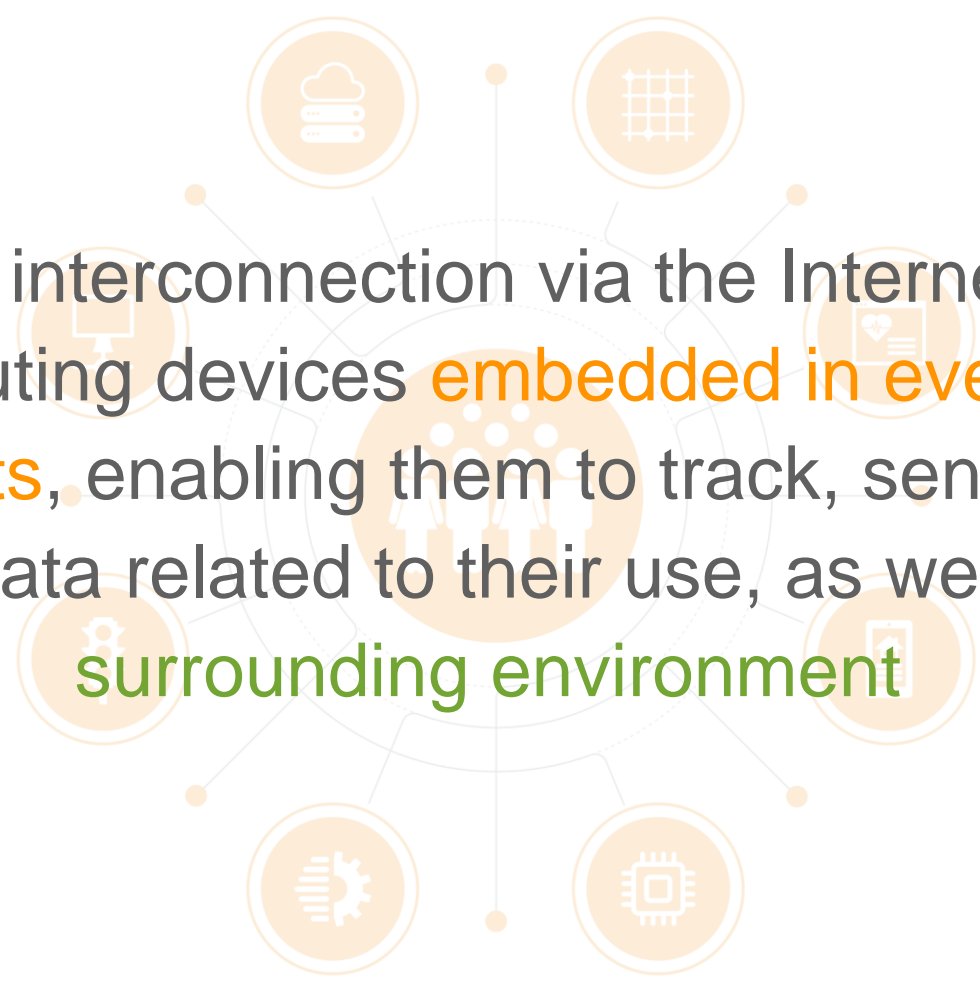
- Transitioned control of medical data to the patient
- Built in audit trail of all actions



MedRec

- One of 15 winners of a blockchain competition hosted by HHS
- Developed by MIT Media Lab
- Blockchain designed to provide a transparent and accessible view of a patient's medical history

Sg2's Definition of the Internet of Things (IoT)

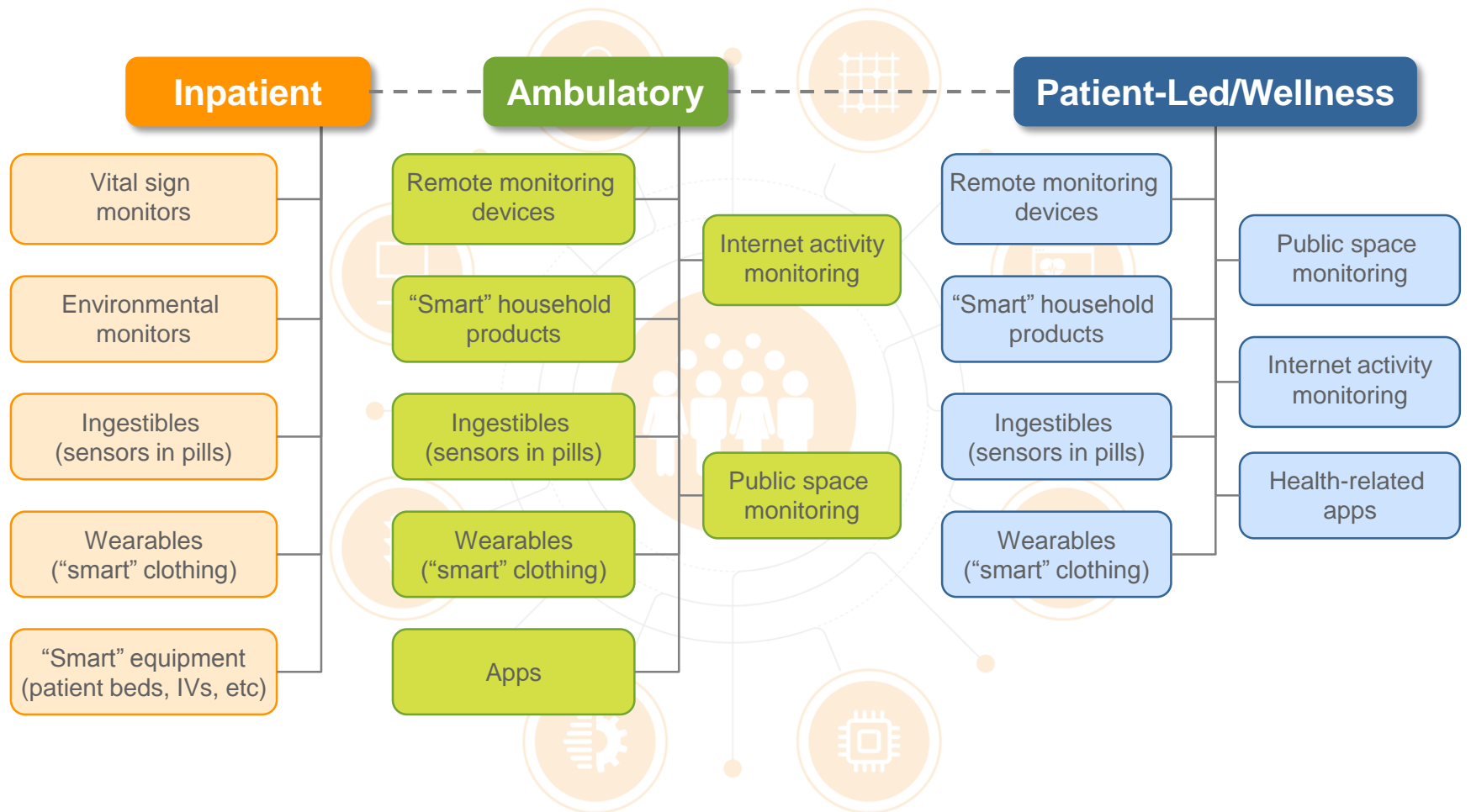


The interconnection via the Internet of computing devices **embedded in everyday objects**, enabling them to track, send and receive data related to their use, as well as their **surrounding environment**

IoT in Health Systems Connects Patients to the care they need



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Which organizations will shape health care in the future?

Apple

?

Alphabet

?

Amazon

?

Apple Brings Multifaceted Approach to Health Care



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● Apple's Assets Related to Health Care

- iOS ecosystem
- Wearable technology (eg, Apple Watch)
- HealthKit—development platform
- ResearchKit—clinical and medical research platform
- CareKit—medical app development platform
- HomeKit—connected home platform
- ARKit—augmented reality platform



Henry Soch. Apple Watch and KardiaBand. January 2018.

Sources: Apple website; 2017 Apple World-Wide Developers Conference (WWDC). June 2017, San Jose, CA; Farr C. CNBC Reporting. All websites accessed January 2018.

Apple's Likely Play: Ecosystem Development, Health Records and Augmented Reality



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APPLE'S LIKELY PLAY

Wearables
(eg, for AFib)

Independent aging
using FaceTime

Connected health
transportation

Sleep (through
Beddit acquisition)

EHR integration
of HealthKit info into
Epic and Cerner

Personal health record
through acquisition
of Glimpse and
Health Gorilla

AR
integration in
health education

AFib = atrial fibrillation.

Source: Sonnier P. *The Fourth Wave: Digital Health*. Independently published: 2017.

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Alphabet Will Offer Enhancements Around Products in Their Holding Company



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Select Alphabet Companies

- Google
- Nest
- Verily
- G/
- Calico
- Google^[X]
- Google Capital

ALPHABET'S CAPABILITIES

- AI and machine learning
- Life sciences
- Big data
- Android platform
- Telecommunications
- Planned living and smart city

Alphabet's Likely Play: Enhancements via Product Portfolio and Partnerships



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- AI platform capability through its DeepMind subsidiary
- Verily Life Sciences initiatives:
 - Sanofi partnership to form Onduo diabetes services
 - J&J partnership to form Verb Surgical digital surgery platform
 - GSK partnership to form Galvani Bioelectronics to develop bioelectronic medicines
 - Novartis Alcon partnership to develop smart ocular devices
 - Dexcom partnership to develop continuous glucose monitors
 - Biogen partnership to work on multiple sclerosis progression
- Calico division partnering with AbbVie on the development of new medicines focused on aging and age-related diseases
- Leveraging the Google/Android platform for big data and communications
- Sidewalk Labs partnership with city of Toronto to create a smart city

GSK = GlaxoSmithKline; J&J = Johnson & Johnson.

Source: Sonnier P. *The Fourth Wave: Digital Health*. Independently published: 2017.

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Amazon Offers a Platform and Big Data



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Big data capability

Deep knowledge of consumer behavior and purchasing habits

Echo platform

Digital assistant (Alexa)

Deep expertise in distribution infrastructure

Brick and mortar access points through Whole Foods acquisition



Amazon, JP Morgan, Berkshire Hathaway Partnership



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One Scenario

- Amazon builds digital and physical interfaces for 1.1M employees.
- Standardized supplier marketplace is built.
- Suppliers must compete in marketplace.
- Available to employers.
- Amazon takes a fraction of each transaction.
- Amazon has access to all consumer data.



Key Questions for BJC HealthCare

- ▶ How may the blurring of lines across the industry impact the BJC HealthCare market? Consider new market entrants and evolving partnerships.
- ▶ What is our appetite for risk-based contracts? How does it shape the way we think about strategic technology adoption?
- ▶ How can we take innovative approaches to meet the needs of our community? Which technologies pose the largest opportunity for BJC HealthCare as a means to achieve our strategic goals?

Questions



Sg2 Presenter: Chris Pagano



Chris Pagano Director, Virtual Health, Sg2

As a leader on Sg2's technology and innovation team, Chris provides guidance on the implications and relevance of virtual care in the health industry. He also interprets the impact of emerging technologies on the health care landscape and advises US and international organizations on how best to leverage these offerings within their broader enterprise strategy. Additionally, Chris delivers on-site presentations on virtual health and collaborates with Sg2 Consulting to bring an innovation perspective to projects.

Prior to joining Sg2, Chris was a key member of Northwestern Medicine's Innovation team, leading the development and execution of pilots and projects focused on integrating technologies into clinical service lines in inpatient and outpatient settings. These far-reaching initiatives impacted important strategic areas, including patient experience, access to care, clinician experience, care coordination, and chronic and complex care management.

Previously, he worked with the Cleveland Clinic/Notre Dame Alliance program to lead a team developing the comprehensive business plan for a predictive analytics software tool. This solution will allow organizations to more accurately allocate resources to patient populations in need, as well as provide preventive care to patients at risk.

Chris received his MBA from the Mendoza College of Management at the University of Notre Dame and his BS from the University of Massachusetts.

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