



بیمارستان دیجیتالی

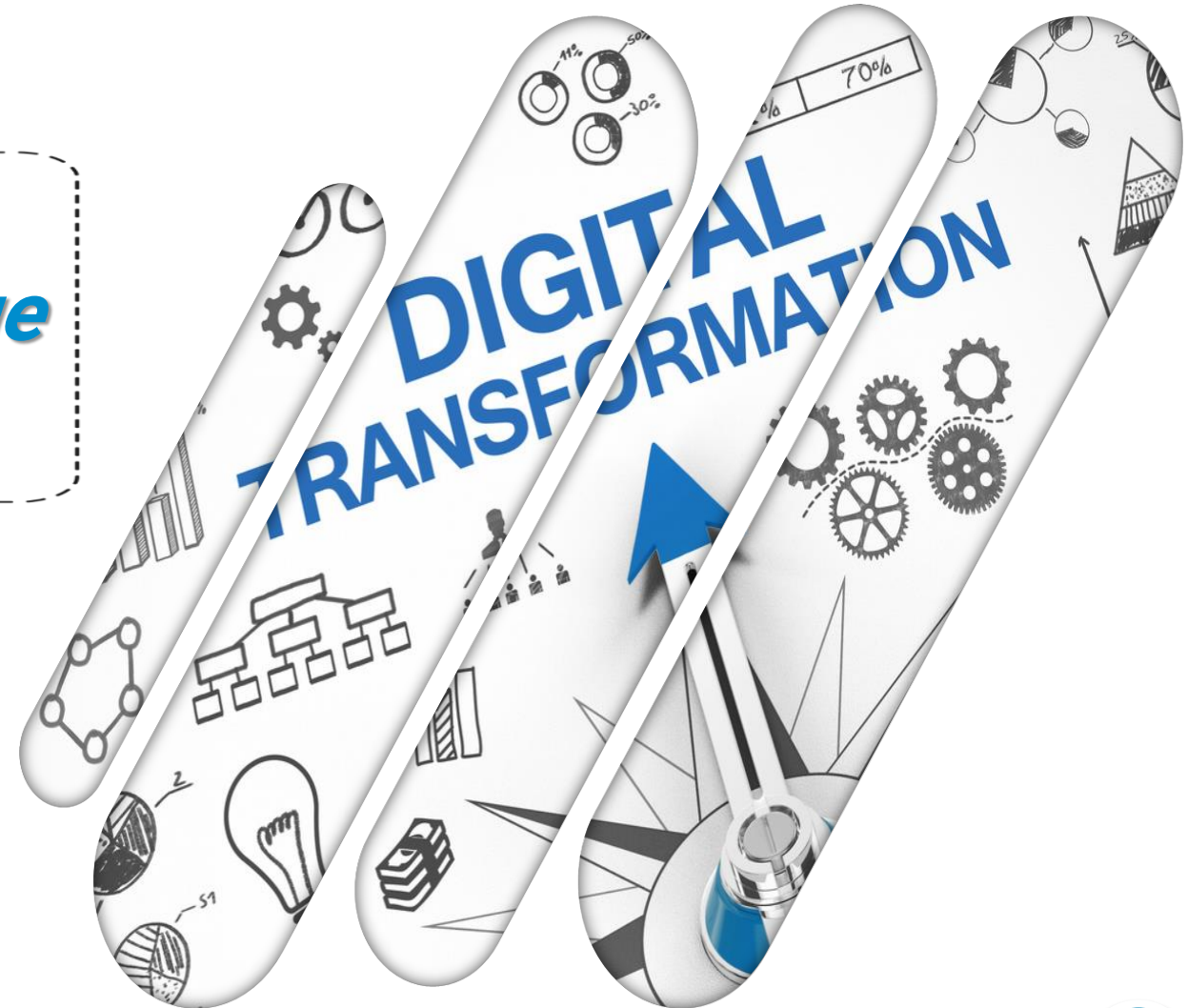
مهدی شایرنجانی

عضو هیات علمی دانشگاه تهران
بنیان‌گذار گروه تحول دیجیتال

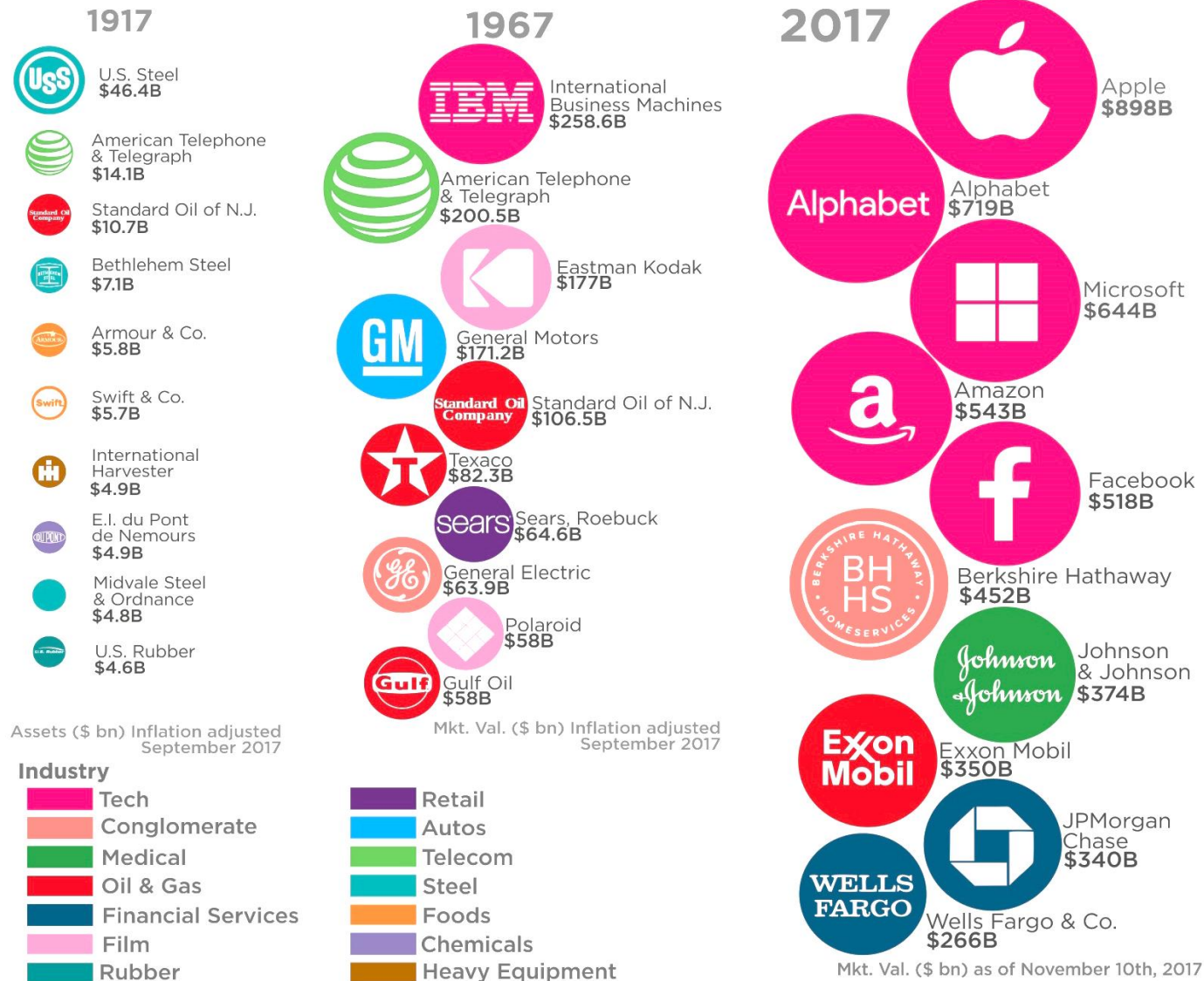
اسفند ۱۳۹۶



We Are *Living* In The *Digital Age*

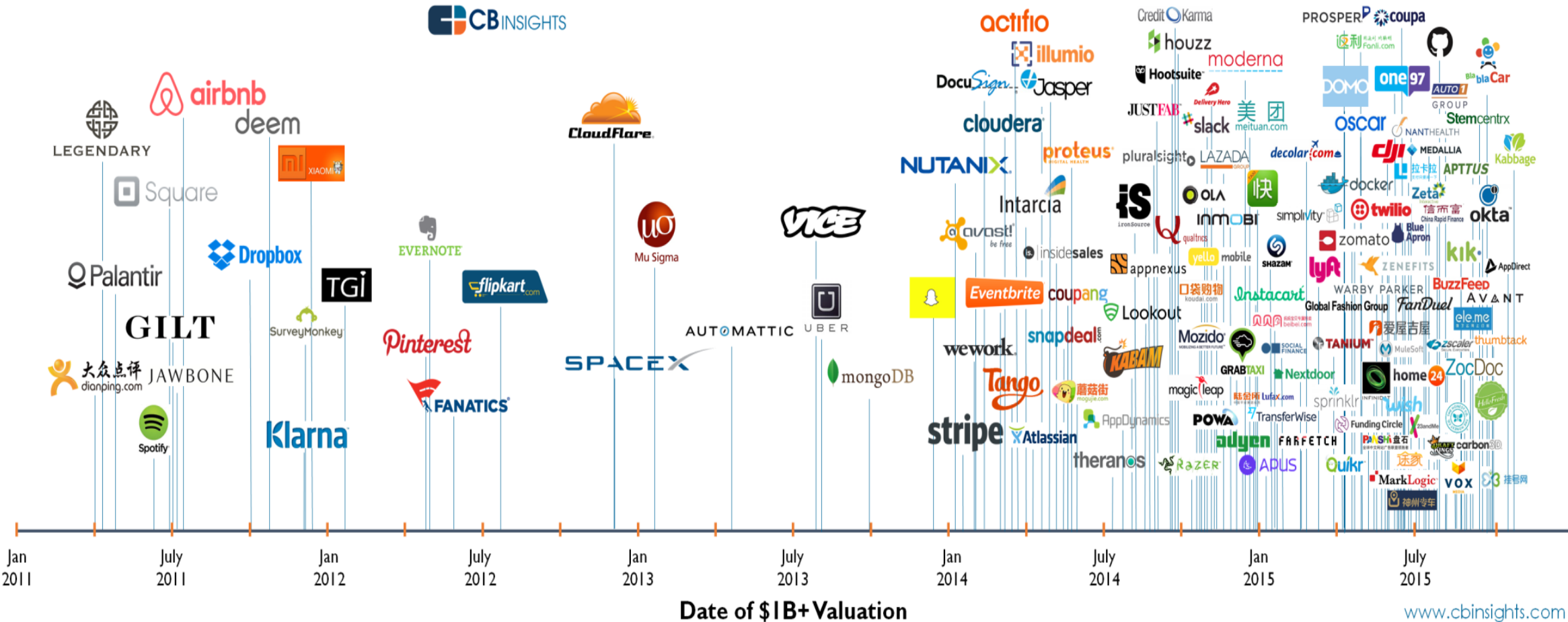


100 Years of America's Top 10 Companies



The Increasingly Crowded Unicorn Club

CB INSIGHTS



World Economic Forum, 2016

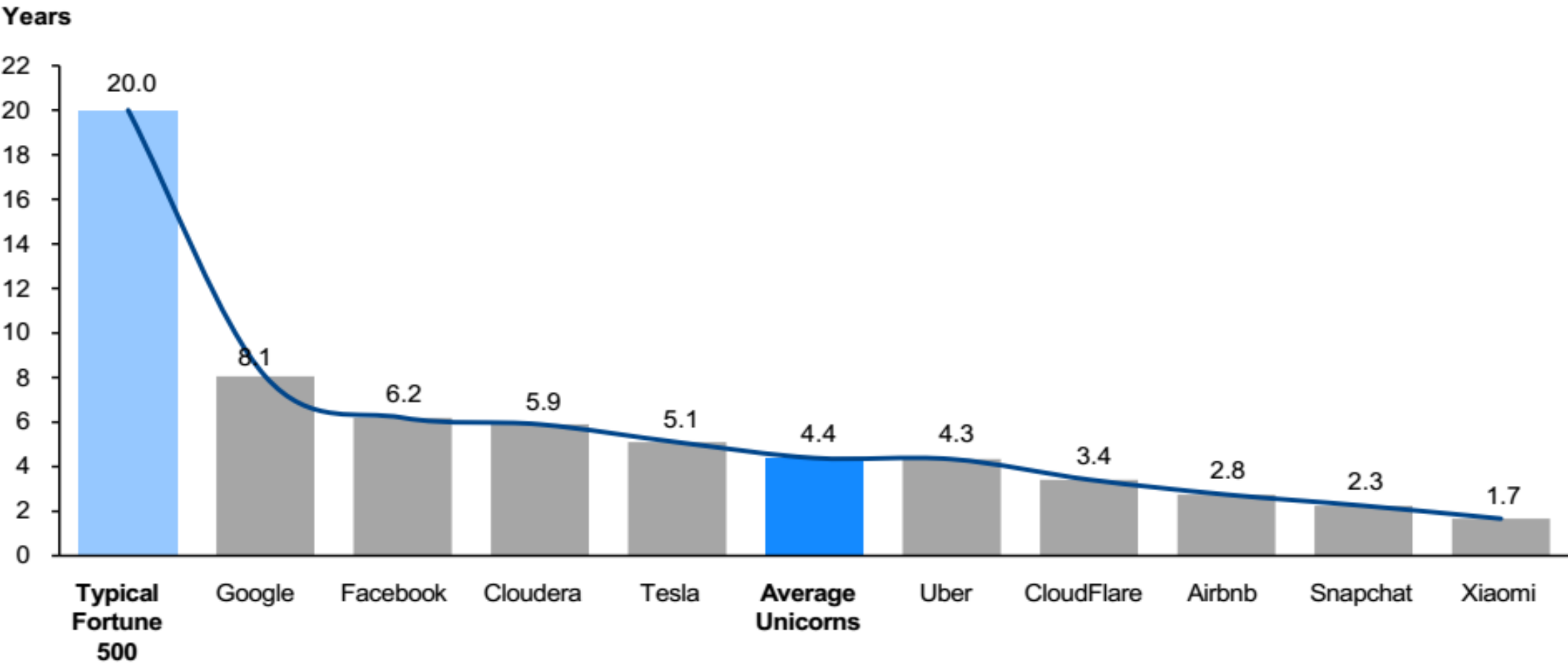
“

**In The New World, It Is Not
The Big Fish Which Eats The
Small Fish, It's The *Fast Fish*
Which Eats The *Slow Fish***

Klaus Schwab
*Founder And Executive
Chairman
World Economic Forum*



Time to Reach a Valuation of \$1 Billion or More



World Economic Forum, 2016

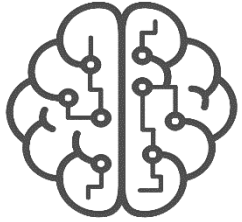
“

**The Future Of Every Industry
Is Digital, And That Future Is
Closer Than You Think.**

Venkat
Venkatraman



Disruptive Technologies



Artificial Intelligence



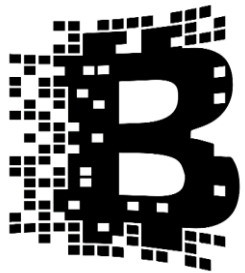
Big Data &
Data Analytic



Virtual Reality &
Augmented Reality



Social Media



Blockchain



Mobility



Internet of Things



Cloud Computing

Social Media

- Patient Empowerment
- Patient Engagement
- Social Branding



Virtual & Augmented Reality

- Pharma Company Can Provide More Innovative Drug Information
- Can Assist Surgeons in the OR



Big Data & Data Analytic

- Improving Patient Care
- Disease Trends Study
- Fraud Detection



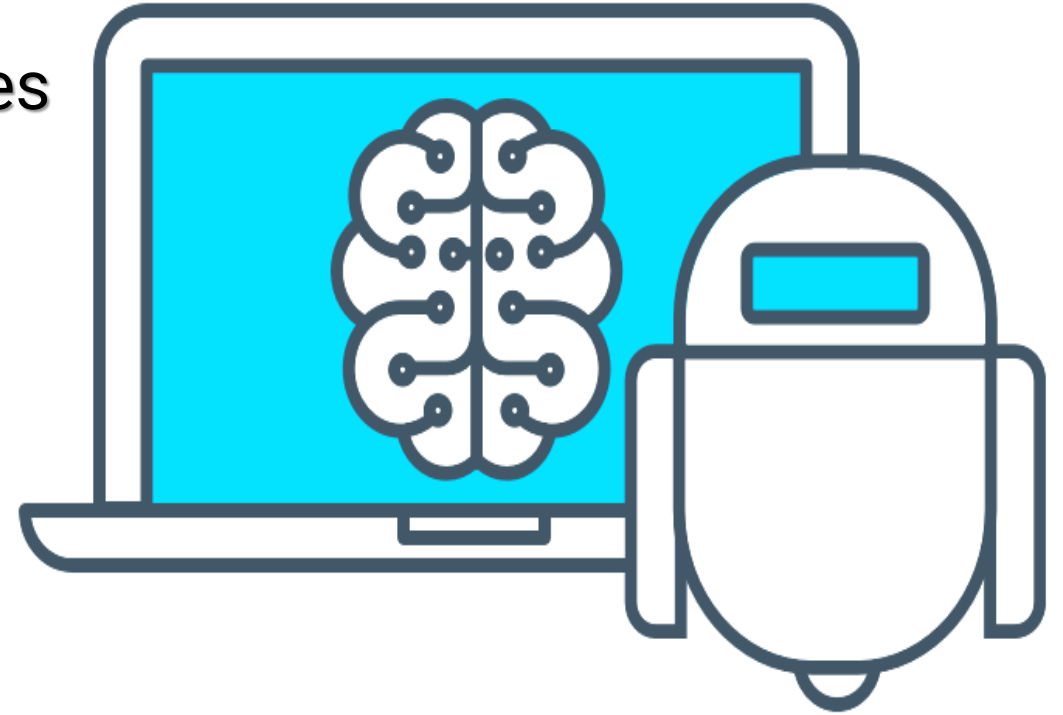
Artificial Intelligence

- \$47 Billion AI Spending in Healthcare Predicted in 2020
- ChatBots Will Serve as Health Assistants

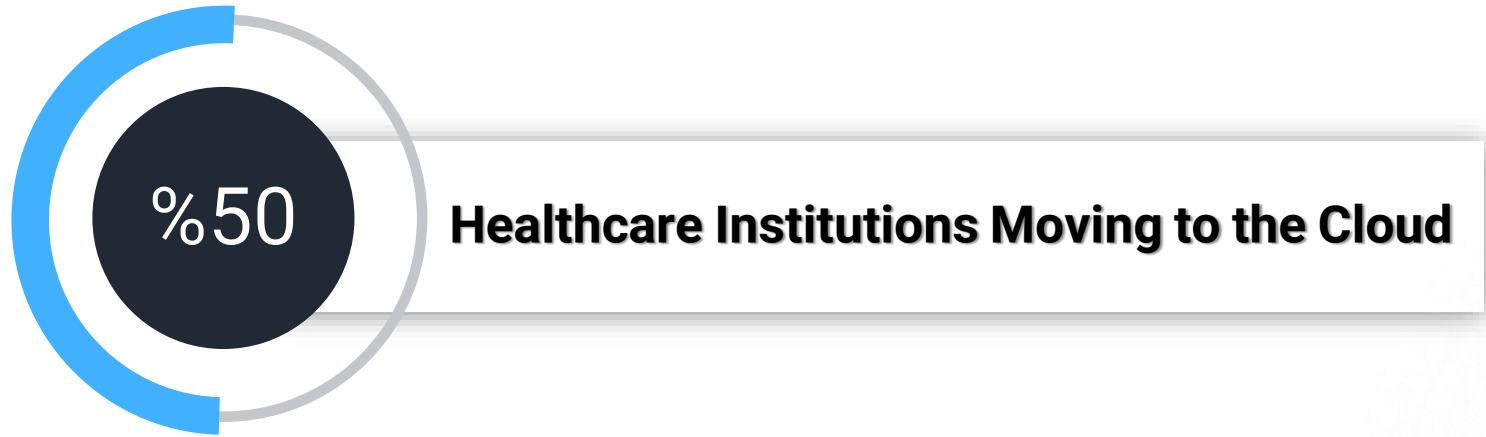


Artificial Intelligence

- AI Aids in Disease Identification and Diagnosis
- **Like:** Evaluate DNA to Diagnose Illnesses
- **Like:** Predict Heart Disease Risk



Cloud Computing



- Distributed Health Data
- HIS as a Service



Cloud Computing

➤ Cloud Spending in Healthcare

\$3.7 billion
in 2015

\$9.5 billion
by 2020

Internet Of Things

- Logistics
- Building Management
- Clinical Care
- Telemedicine

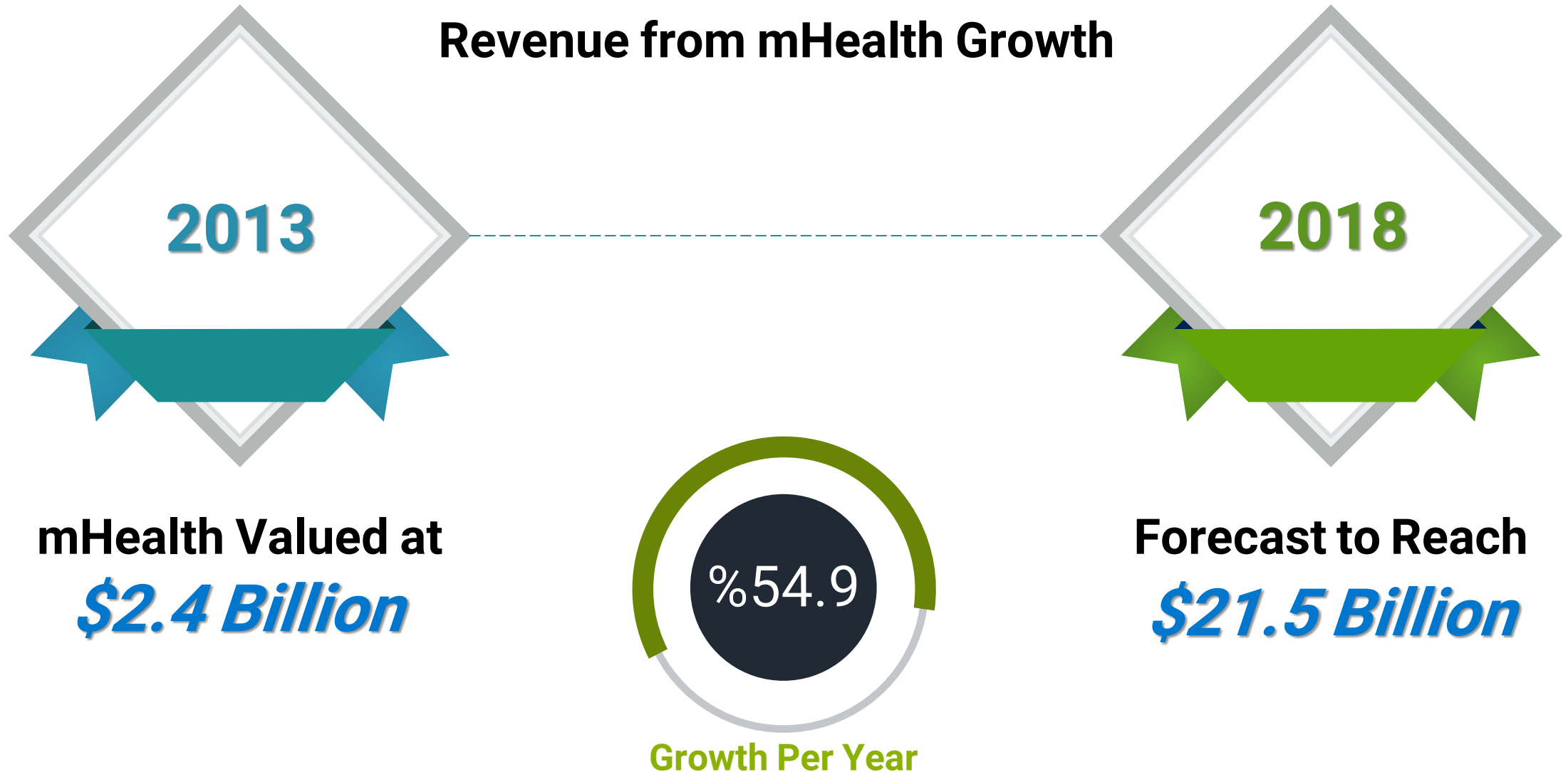




4 Million **Free Apps**

300,000 **Paid Apps**

Revenue from mHealth Growth





Mobility

- Improved Access to Care
- Improved Patient Engagement
- Improved Patient Safety

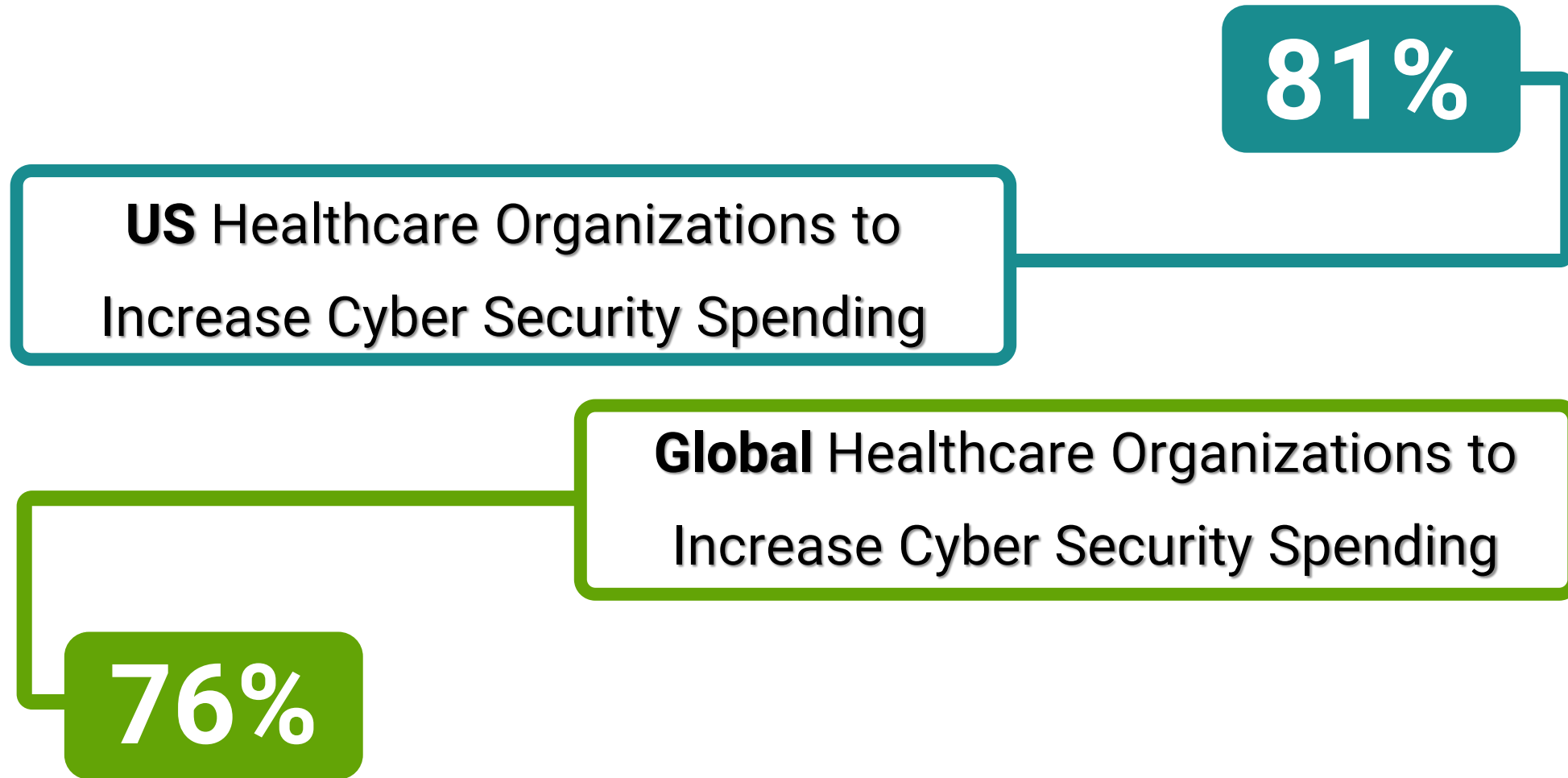


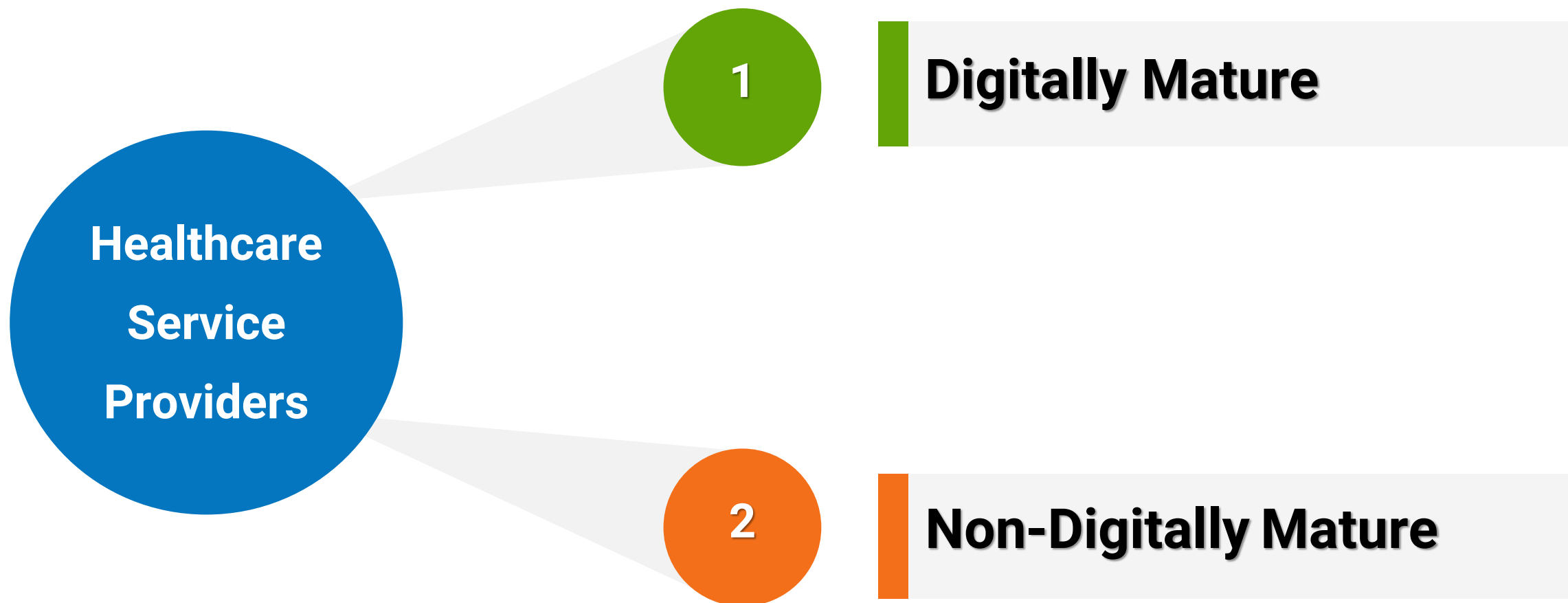
“

**The Opportunity To Raise The
Quality of life Is The Biggest
Business Opportunity going**

Anand Mahindra
*Chairman and Managing
Director
Mahindra & Mahindra*









Use **Mobile Channels** to Offer Services to Customers

Use **Mobile Channels** to Offer Services to Customers



63%

Use **Social Media** to Offer Services to Customers

Use **Social Media** to Offer Services to Customers



13%



Have an **Integrated View** of Customer Data

Have an **Integrated View** of Customer Data



Invest in Building **Digital Skills**

Invest in Building **Digital Skills**



Benefits of Digital Health for Providers



Benefits of Digital Health for Providers

A Telehealth Cause:



Digital Hospital

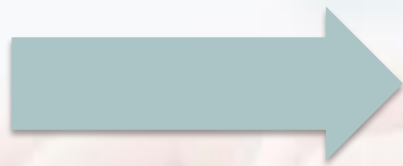
The Hospital of the Future

How Digital Technologies Can Change Hospitals Globally

Rapidly-
Evolving
Technologies



Growing
Consumerism



Expected to
Disrupt
Hospitals
Worldwide

Aging Problem

in Some Countries

Demand for **More Beds**

in Others

Consider Rethinking How to **Optimize** Inpatient and Outpatient Settings

How to **Integrate** Digital Technologies into Traditional Hospital Services

to Truly Create a Health System Without Walls

Digital Transformation Domains in Hospitals



Redefined Care Delivery



Digital Patient Experience



Enhanced Talent Development



Operational Efficiencies Through Technology

Digital Transformation Domains

Redefined Care Delivery



- Centralized Clinical Command Centers and Digital Continuous Monitoring

Digital Patient Experience



Enhanced Talent Development



Operational Efficiencies Through Technology



- Cloud-Based Healthcare



Digital Transformation Domains

Redefined Care Delivery

Centralized Clinical Command Centers and Digital Continuous Monitoring

Cloud-Based, Interoperable Electronic Health Records

▲ “Air Traffic Controls” Like Command Centers

Provides Real-time Data to Manage Patient Capacity and Other Operational Processes

▲ Move From Episodic to Collaborative and Longitudinal Care

▲ Using Wearables Sensors

▲ Using Big-Data Analytics

Patient Harm Can Be Predicted and Suggested Interventions Fed to Caregivers

Digital Transformation Domains

Redefined Care Delivery

- Centralized Clinical Command Centers and Digital Continuous Monitoring

- Cloud-Based, Interoperable Electronic Health Records

The Digital Hospital of the Future Includes an Air Traffic-Like Control System to Continually Monitor Patients and Integrate Data to Chart the ***“Flight Paths”*** of Patients.

Digital Transformation Domains

Redefined Care Delivery

Centralized Clinical Command Centers
and Digital Continuous Monitoring

Cloud-Based, Interoperable Electronic
Health Records

- ▲ Interoperable Data From Different Sources Will Likely Be a Reality in The Hospital of the Future!
- ▲ Real-time Patient Data at The Point of Care Can Improve Patient Outcomes
- ▲ Genetic, Social, and Behavioral Patient Information, as Well as Financial, Clinical, and Administrative Records
- ▲ Patients Can Own Their Data, Add to and Edit Their Health Records, and Proactively Communicate With Their Caregivers

Digital Transformation Domains

Redefined Care Delivery



Digital Patient Experience



Enhanced Talent Development



Operational Efficiencies
Through Technology



● Digital and Artificial Intelligence Technologies

● Simplifying Admission, Discharge, and Other Processes

Imagine the Art of the Possible: How Can Digitally Integrated Technologies Help Patients Throughout the Care Process and Post-discharge Activities?

Digital Transformation Domains

Redefined Care Delivery



Digital Patient Experience



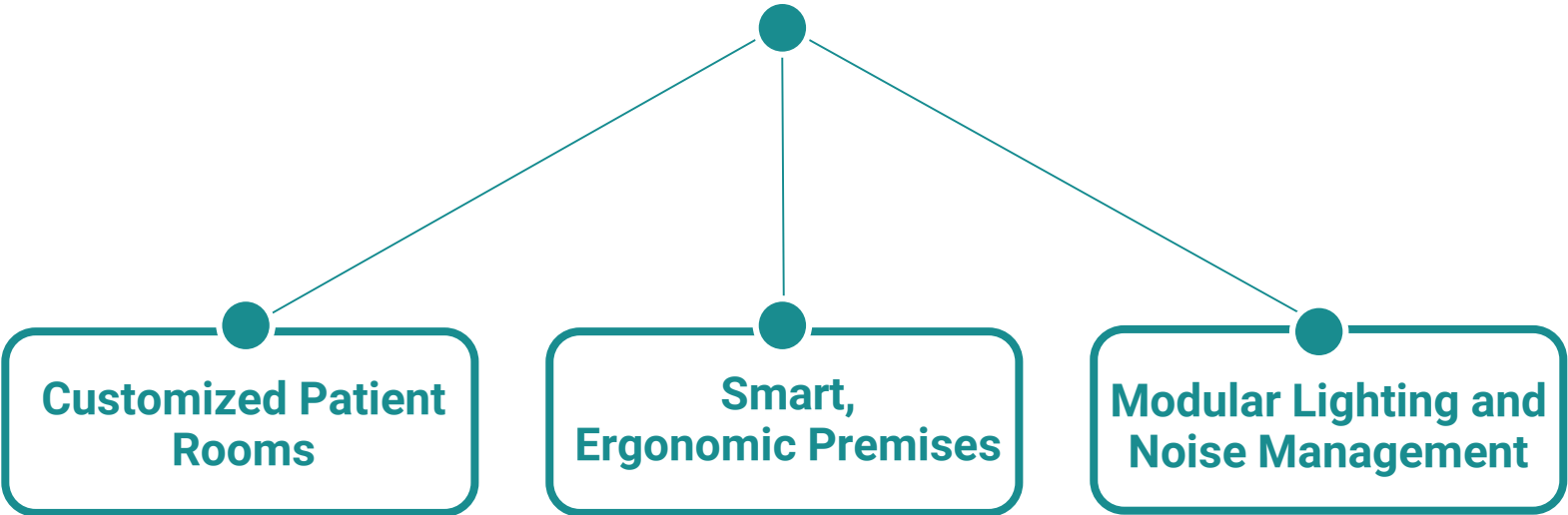
Enhanced Talent Development



Operational Efficiencies
Through Technology



Hospitals Will Likely Have Prosocial Designs
for Patient and Staff Well-being



Digital Transformation Domains

Enhanced Talent Development

● Intelligent Staff Recruitment and Scheduling

▲ Nurse and Staff Turnover is a Challenge in Several Countries!

● Virtual Learning and Development

▲ Cloud-based Capabilities Can Help Filter Resumes and Profiles More

Digital Transformation Domains

Enhanced Talent Development

● Intelligent Staff Recruitment and Scheduling

● Virtual Learning and Development

▲ Analytics Could Play a Role in Determining Salary and Benefits

▲ Technology—Specifically IoT and RFID —Also Can Track Performance Management

IoT and RFID Devices Can Track When Staff Members Arrive, Determine How Many Patients They See, and Determine the Amount Spent on Patient Care Versus Administrative Tasks

Digital Transformation Domains

Enhanced Talent Development

● Intelligent Staff Recruitment and Scheduling

● Virtual Learning and Development

- ▲ Help Surgeons Map Out Their Surgeries Before Conducting
- ▲ Increase Specialized Expertise Available to a Larger Audience
- ▲ Some Academic Medical Centers are Currently Developing VR Programs to Train Surgeons

Digital Transformation Domains

Redefined Care Delivery



Digital Patient Experience



Enhanced Talent
Development

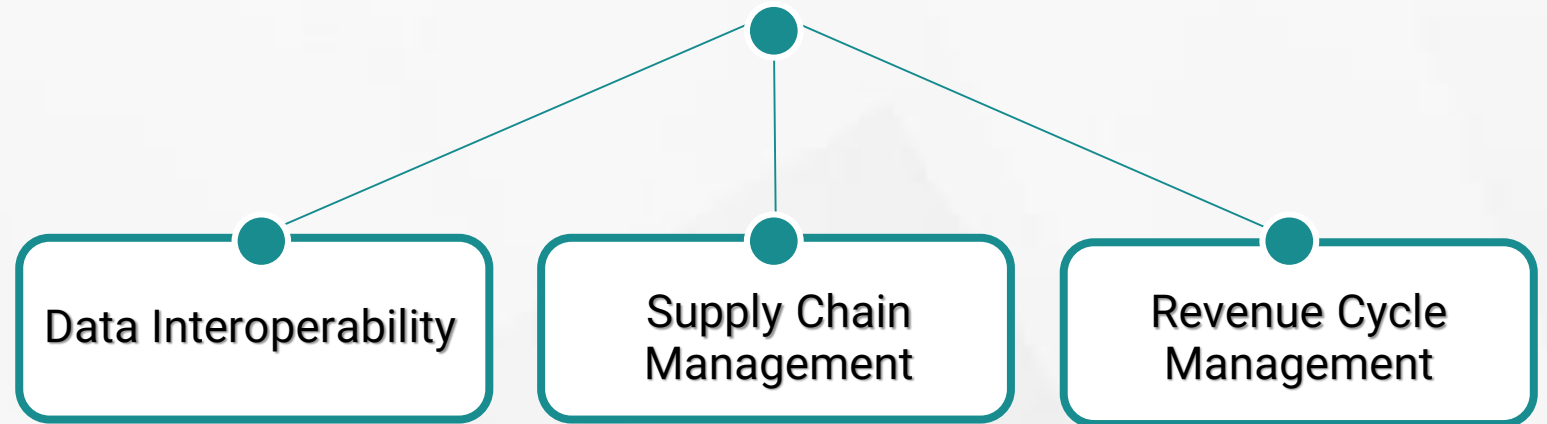


**Operational Efficiencies
Through Technology**



● Automation and Robotics for Care and Ancillary Services

● Blockchain and Secure Contracting Through Next-gen Technologies



Suggested Next Steps

01

Care Delivered
Digitally

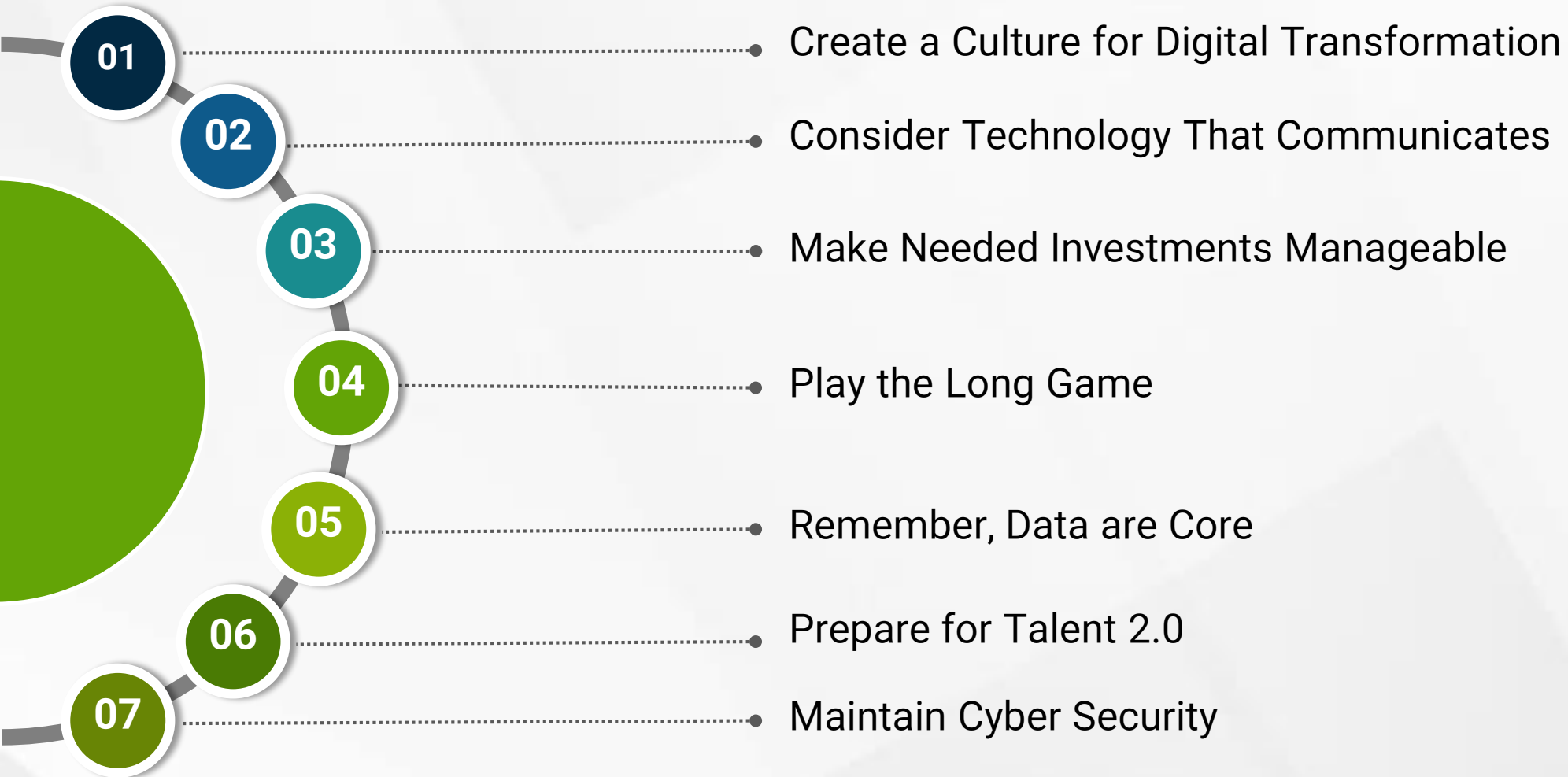
02

Digitized Operations

03

Digitally Enabled
Customer Experience

Organizational Capabilities for Long-term Success





Sunshine Coast University Hospital

Case Study

Opened in April 2017 *Queensland, Australia*



RFID Tags

Used for Equipment, Devices, and Patients

Newborns Will be Fitted With Skin-sensitive Tags that Emit a Pleasant Beep as Mother and Baby Bond



Digital Way-finder

Patients are Directed via Digital Way-finder Kiosks to Their Clinicians



Doctors Use an Application on their Devices to Dictate Notes



Motion Detectors and Easy-to-use Touch Pads are Mounted on Patient Beds to Alert Staff



The Hospital Prioritizes Staff Training and Development



Simulation Suite that has Fully Equipped Operating and ICU Rooms with Simulation Patients and Devices Capable of Running Realistic Scenarios for Clinical Staff



Delivering Linens, Meals, and Medical Supplies with Robots



30,000 Comments from Hospital Users and Staff Guided the 14-month Design Process



Inside, the Bright, Ambient Lighting is Sensitive to Movement

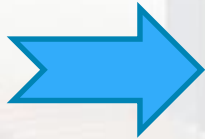
Results

► Building a Hospital Infrastructure that Enhances

Patient Healing

Staff Productivity

► The Hospital is Designed to Help Visitors



Both First-time and Repeat, Feel at Ease



DTGroup.ir



DTGroupir

مهدی شامی زنجانی

عضو هیات علمی دانشگاه تهران
بنیان‌گذار گروه تحول دیجیتال



ShamiZanjani