



AMERICAN  
COLLEGE *of*  
CARDIOLOGY

**INNOVATION@ACC**



Moving Cardiovascular  
Care **FORWARD**

Google

facebook tinder



UBER



amazon

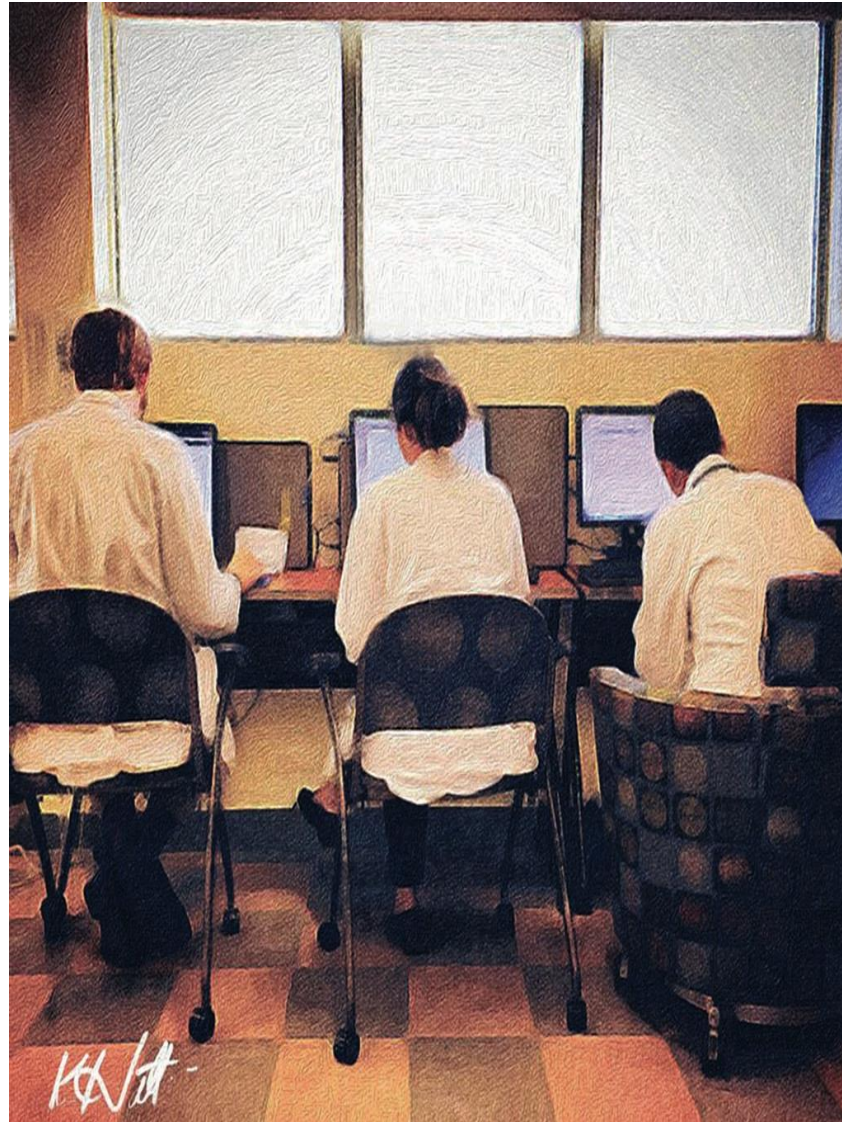


NETFLIX

# Healthcare 2017: 'still a DMV model'



# Today's clinician-patient relationship



Kartik A. Valluri, MD;  
*Ann Intern Med.* 2016;165(7):W12

The wonder drug

# A digital revolution in health care is speeding up

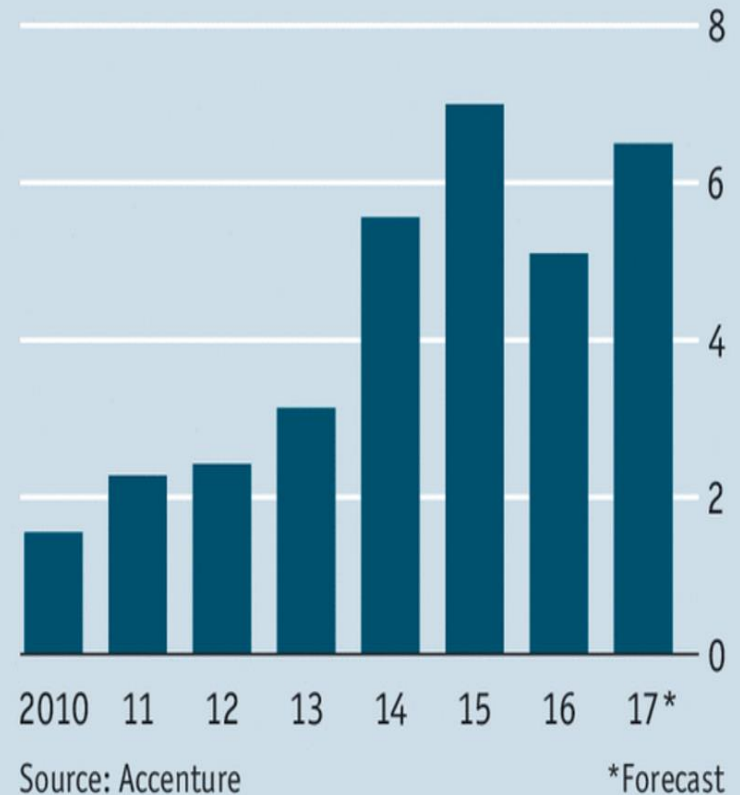
*Telemedicine, predictive diagnostics, wearable sensors and a host of new apps will transform how people manage their health*



Economist. March 2, 2017

## Adrenaline rush

United States, digital health startup funding, \$bn



Economist.com

**Clinical Admin (68 Companies)**

**Digital Med Devices (71 Companies)**

**EHR/EMR (65 Companies)**

**Population Health Mgmt (50 Companies)**

**Online Health Communities (21)**

**Gamification**

**Patient Engagement (46)**

**Genomics (29 Companies)**

**Medical Big Data (53 Companies)**

**Services Search (28)**

**Health Technology**

Contact  
[info@venturescanner.com](mailto:info@venturescanner.com)  
 to see all 863 companies

**Doctor Networks (28 Companies)**

**Mobile Fitness / Health Apps (55 Companies)**

**Payments & Insurance (21)**

**teleHealth (55 Companies)**

**Remote Monitoring (21)**

**Online Health Sites (21 Companies)**

**Healthcare Mobile Communications (21 Companies)**

**IOT Fitness (95 Companies)**

**Robotics (11)**

**Healthcare Marketing (21 Companies)**

**Clinical Admin (68 Companies)**  
 ABILITY, MedHOK, IMPRIVATA, ClearDA, MINIBODY, nextdocs, TALYST, QSI, kareo, MCOGNED

**Digital Med Devices (71 Companies)**  
 proteus, iRhythm, Sotera, OrSense, integrity, sensible, patientsafe, EarlySense, tribonics

**EHR/EMR (65 Companies)**  
 patientkeeper, practice fusion, LifNEXUS, ShareableInk, dr, PROGNOSIS, corventis, AIRSTRIP, AkLex

❖ Solutions in search of a problem

**Population Health Mgmt (50 Companies)**  
 R. Ante, keas, AXIONHEALTH, MEDICAL MEDICAL, wellco, vivig, agile, limeade, ZOOMEGA, KINNSON, sharpa, PHANTAL, TANGO

**Online Health Communities (21)**  
 WisR, OMADA, Glow, patientslikeme, sharecare

**Gamification**  
 OTC, hubbub, SPINRITER

**Patient Engagement (46)**  
 WellDoc, WellFX

**Genomics (29 Companies)**  
 GUARDANTHEALTH, 23andMe, X, S/Bio

❖ Evidence lacking ...and can be an enemy

**Medical Big Data**  
 STATION 53, PREDILYTICS, PREDIFIXION, bina, comprehensive, AYASDI

**Technology**  
 ZocDoc, GoHealth, pd, simplee, LINCOR, sermo

**Doctor Networks (28 Companies)**  
 DICOM Grid, QuantiaMD, perfectserve

❖ Clinical insight and integration are absent

**Mobile Fitness / Health Apps (55 Companies)**  
 LARK, Netpulse, mindbloom, MANGO HEALTH, endomondo, GAIN FITNESS, Sway

**Payments & Insurance (21)**  
 oscar, boom, benefits, TC

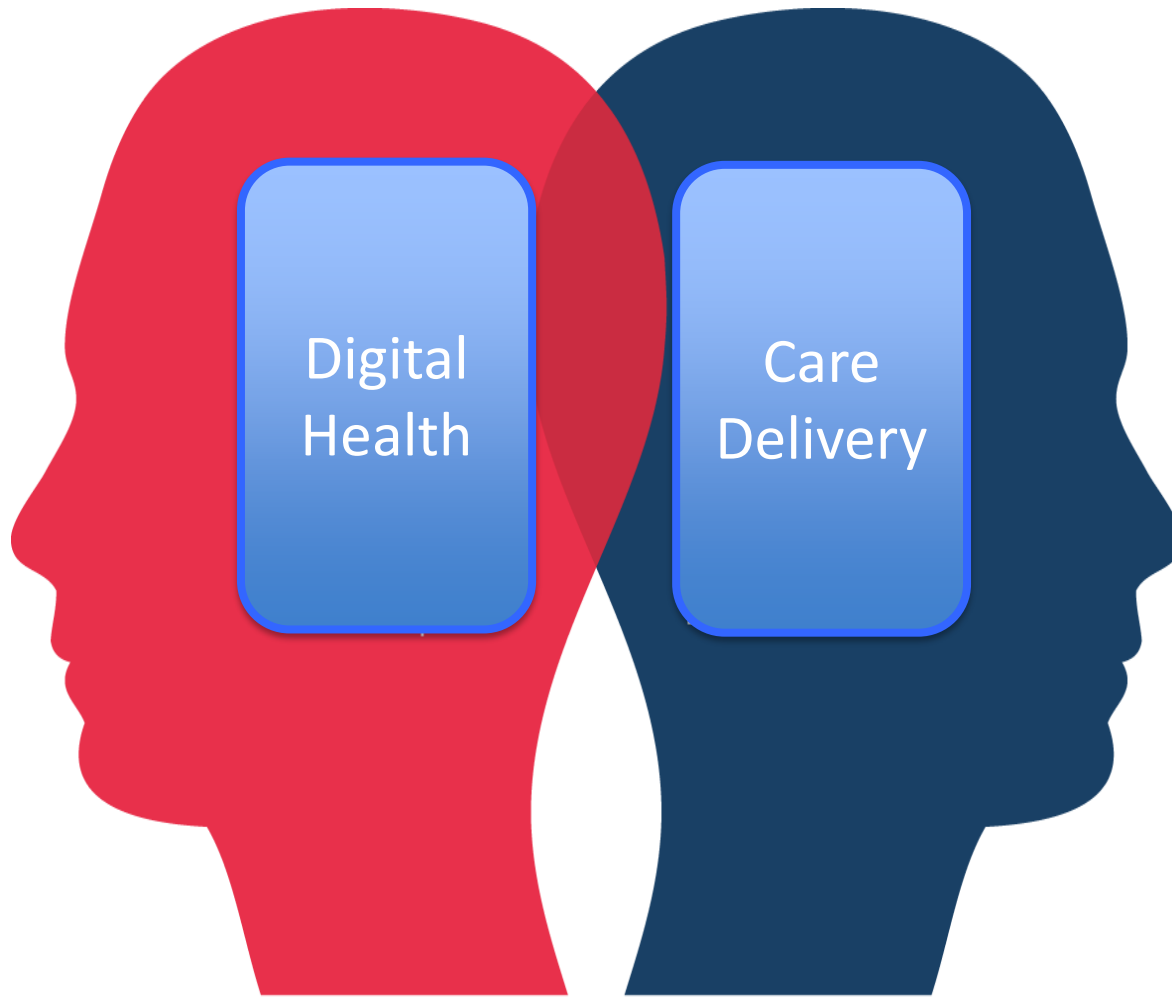
**IOT Fitness (95 Companies)**  
 fitbit, BASIS, BODYMEDIA, Withings, awarepoint, mc10, striiv, watermark

**Monitoring**  
 Caring, Lively, motherknows, QMedic, Core.com, Caring.com, vitalconnect

**Healthcare Mobile Communications**  
 voalte, tiger text, vocera, VISUM

**Healthcare Marketing**  
 evariant, Qappature, brightwhistle, Actavis Networks, connecture

**Robotics (11)**  
 ekse, myomo







# CardioSource WorldNews

vol 5, no 2 / FEBRUARY 2016

A publication of the  
American College  
of Cardiology

## EXPERT COMMENTARY

**FRED BOVE:** Driving  
Innovation...p.7

**ANDREW FREEMAN:** U.S.  
Dietary Guidelines for Adults  
2015: Confusion or Clarity?...p.48

## CLINICAL NEWS

HCT No Longer an Acceptable  
Option for Treating Essential  
Hypertension?...p.13

*Exercise at the Extremes:  
Relationship Between Exercise  
Volume and Risk Reduction...*p.13

**PROVE-IT to IMPROVE-IT:**  
The Power of Ezetimibe and  
Simvastatin Post-ACS...p.16

*Note to HFrEF Patients: Eat Well  
and Keep Moving...*p.18

Patient-Centered Outcome  
Measures After Stroke...p.18

*More Evidence for Lower BP  
Targets...*p.19

ACC.org/CSWN



Forget publish or perish;  
today, it's **INNOVATE or DIE**



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# CARDIOVASCULAR INNOVATION SUMMIT

September 28, 2016 • 7:00 a.m. – 3:30 p.m.



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# Lead



- Roadmap for innovation
- Digital health evaluation
- Implementation



## HEALTH POLICY STATEMENT

# 2017 Roadmap for Innovation— ACC Health Policy Statement on Healthcare Transformation in the Era of Digital Health, Big Data, and Precision Health

A Report of the American College of Cardiology Task Force  
on Health Policy Statements and Systems of Care



**CADRE** Health  
An **Evidence Enabling** Organization



**Stanford**  
MEDICINE



CARDIOVASCULAR  
RESEARCH  
FOUNDATION

At the heart of innovation



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# Institute for Computational Health

A partnership of



AMERICAN  
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CARDIOLOGY

and



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# Facilitate



- Professional / career development
- Convene / crowdsource
- Networks



## Member Sections



Academic Cardiology Section

Geriatric Cardiology Section

Adult Congenital and Pediatric  
Cardiology Section

Heart Failure and Transplant Section

Cardio-Oncology Section

Imaging Section

Cardiovascular Management Section

International Center

Cardiovascular Team Section

Interventional Section

Cardiovascular Training Section

Peripheral Vascular Disease Section

Prevention of Cardiovascular Disease

# New: Healthcare Innovation



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# Digital Health Challenges



ISRAEL  
INNOVATION  
INSTITUTE  
TRANSFORMING INNOVATION TO SERVE SOCIETY



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APPLICATION DEADLINE: 26.9.17

# VITAL NEXT

CONTINUUM OF CARE. REDEFINED

Tuesday, 03.10.17 | 9:00-20:00

American College of Cardiology and Israel Innovation Institute  
global challenge competition



ANGELMD



ACC.18<sup>®</sup>  
67<sup>th</sup> Annual Scientific Session & Expo



# FUTURE HUB

THE FUTURE OF HEALTH TECHNOLOGY AND INNOVATION

March 10-12, 2018

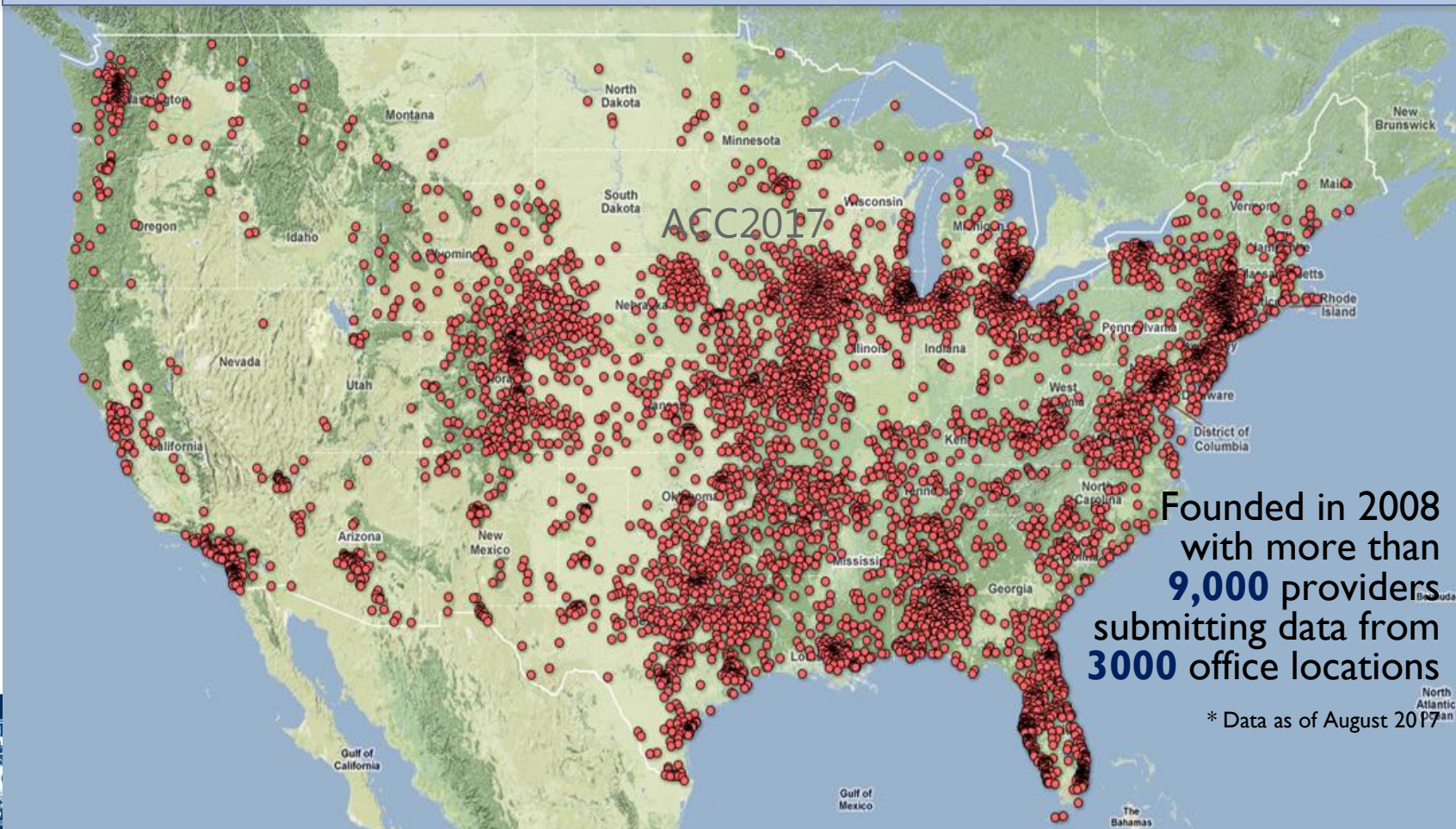
**THE FUTURE OF CARDIOVASCULAR HEALTH CARE STARTS NOW.** The Future Hub will inform, educate and inspire ACC.18 attendees with the latest innovations in Digital Health, Medical Devices, and Ed Tech (Educational Technology).

# PINNACLE



Largest outpatient CV registry in the U.S.

Over **50 million** records from **12 million** unique patient lives to-date



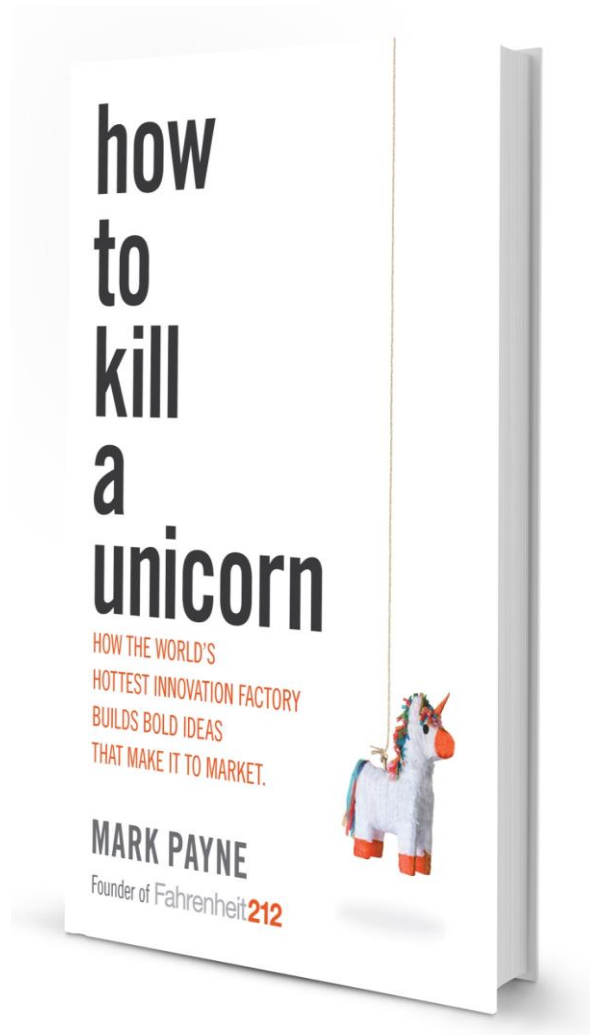
Founded in 2008  
with more than  
**9,000** providers  
submitting data from  
**3000** office locations

\* Data as of August 2017



CC

# Partner



- Innovation projects
- New partnerships
- Co-create



Google

ANGELMD

Aetna®  
Foundation

PREMIER

MYIA

verily

BCG  
THE ROYAL CONSULTING GROUP

BCG  
Digital  
Ventures

BUTTERFLY  
Network, Inc.

Eureka  
MOBILE RESEARCH

CATALYST  
HEALTH-TECH  
INNOVATION

node  
health HEALTHPALS

HIOIS  
Personalizing Evidence  
Improving Outcomes

3M

biome

Stanford  
MEDICINE

CAMBRIDGE  
DESIGN  
PARTNERSHIP

BODY INTERACT™  
CLINICAL REASONING EDUCATION

athenahealth  
we connect care™

SHL  
Telemedicine



amwell

CARDIOVASCULAR  
RESEARCH  
FOUNDATION  
At the heart of innovation

OPTUM Labs™

START-UP  
NATION  
CENTRAL

ROOM

CENTER FOR OUTCOMES RESEARCH AND EVALUATION  
CORE

WORLD  
ECONOMIC  
FORUM

doximity  
Linking Medical Minds

Scripps

XG HEALTH  
SOLUTIONS  
powered by Geisinger

INTERVENT  
Better health for life™

CISCO

movinganalytics

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INNOVATION  
INSTITUTE  
TRANSFORMING INNOVATION TO SERVE SOCIETY

national partnership  
for women & families



SIGNALPATH  
RESEARCH • REWIRED

PBGH  
PACIFIC BUSINESS  
GROUP ON HEALTH

Hugo

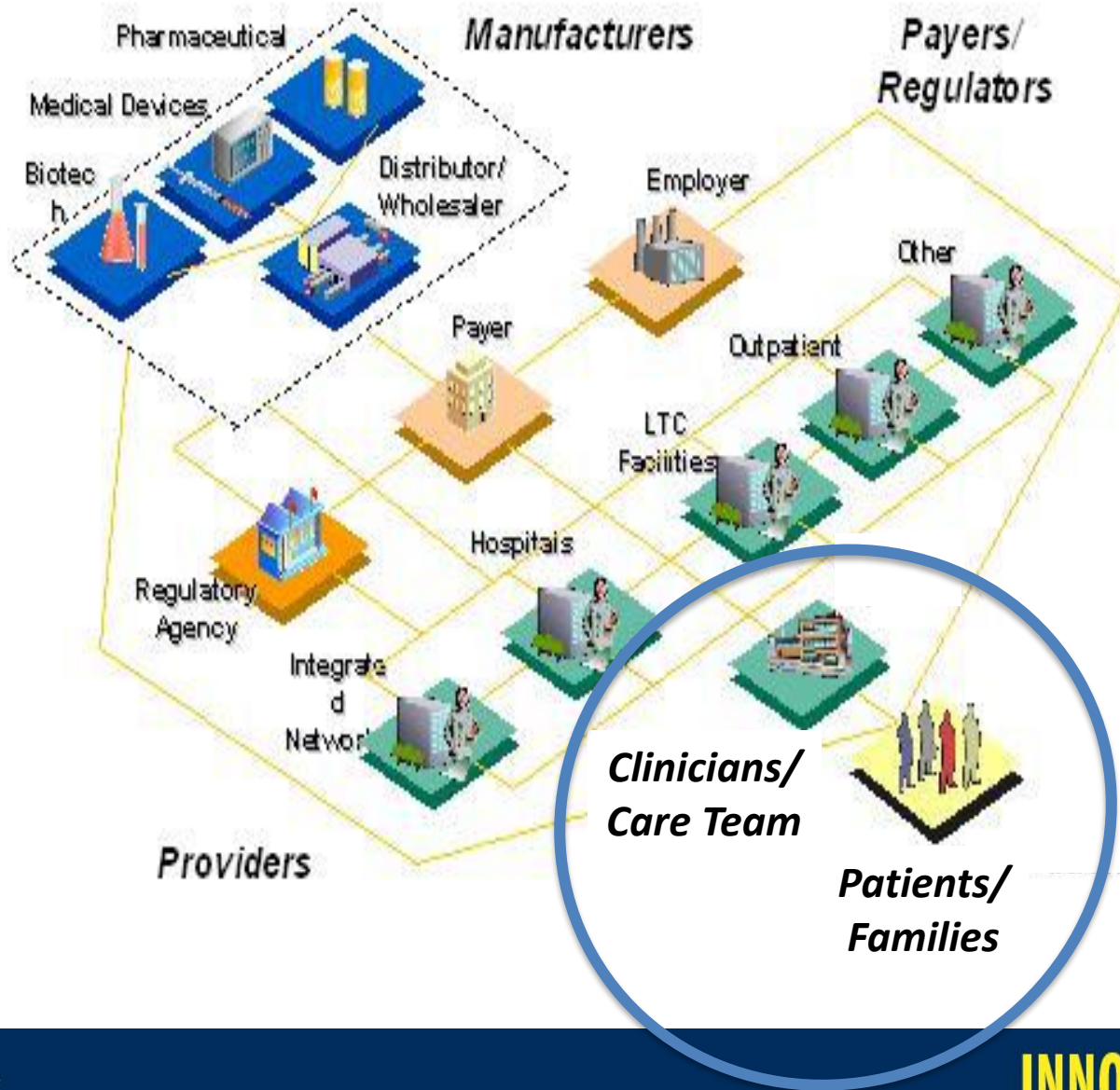
WIKISTRAT™  
CROWDSOURCED CONSULTING

ROCK  
HEALTH+

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# Healthcare Stakeholders

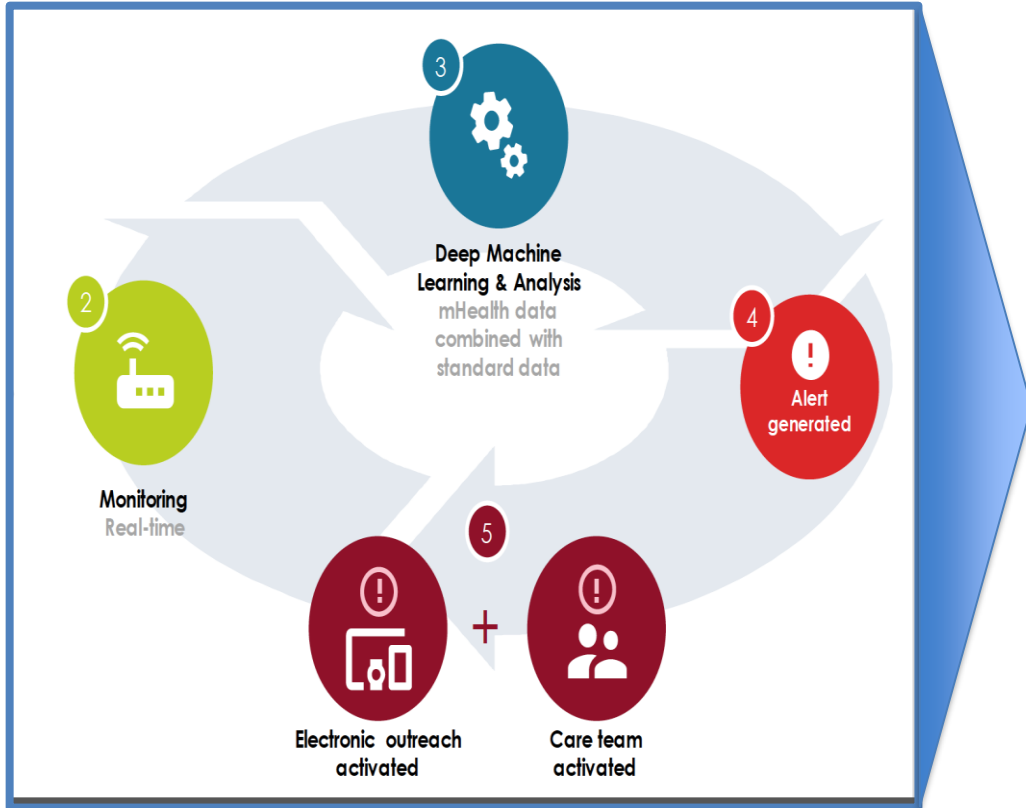




+



Start-up company



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Since 2007, billion  replaced



DX



# 2017 Roadmap for Innovation— ACC Health Policy Statement on Healthcare Transformation in the Era of Digital Health, Big Data, and Precision Health



A Report of the American College of Cardiology Task Force  
on Health Policy Statements and Systems of Care

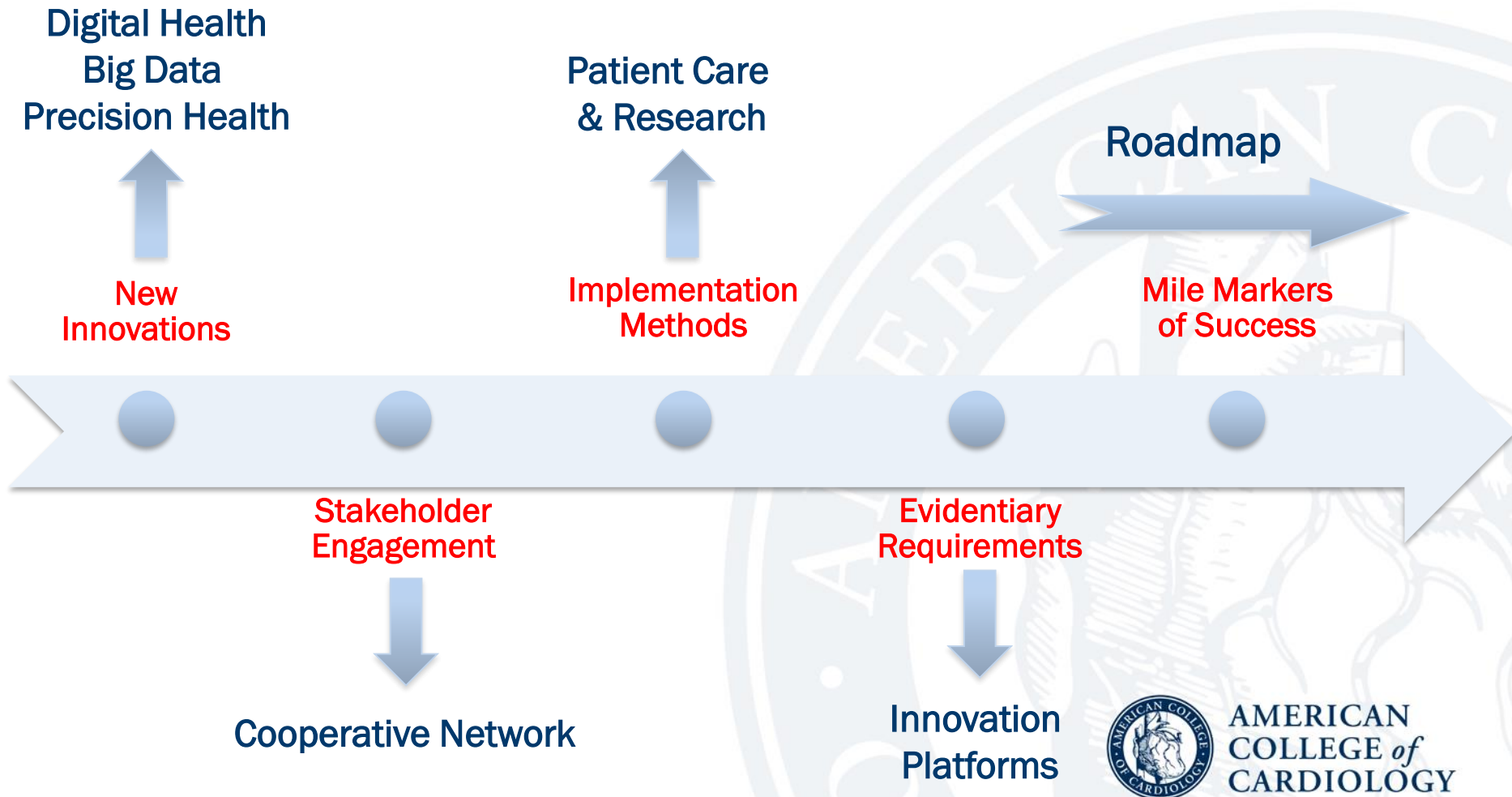
Sanjeev Bhavnani MD  
#ACCInnovation Webinar  
December 11, 2017



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# Innovation → Insights → Knowledge

## Priority Objectives @ACC

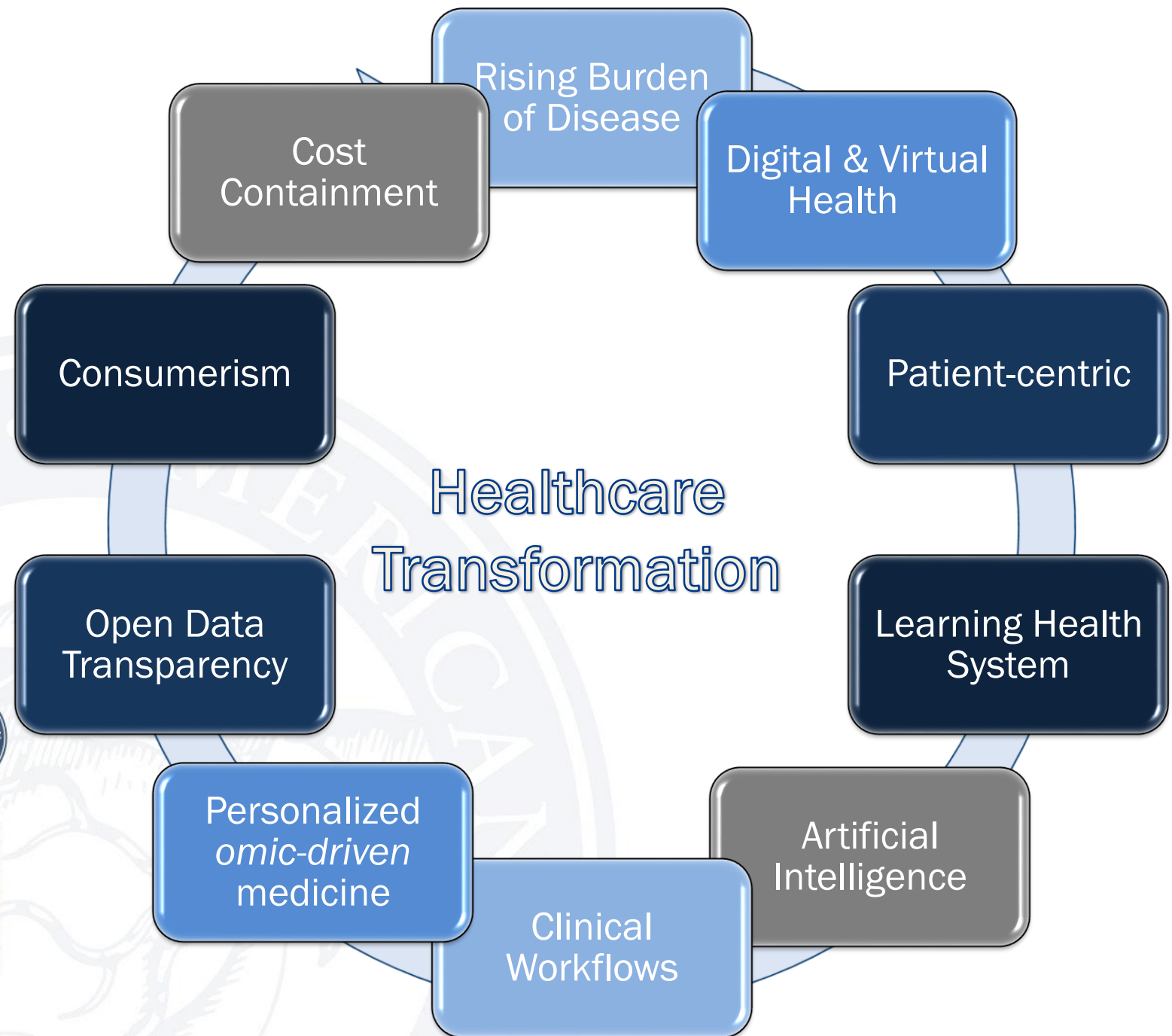


# Why Transform Now?



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# Healthcare Transformation



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Stakeholder Engagement

Evidentiary Requirements

THINGS COME APART  
A PHOTOGRAPH BY TODD MCELLELLAN



280 parts



0 parts

1 part

1970

1980

1990

2000

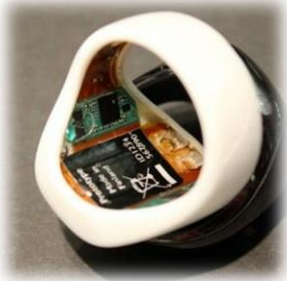
2010

2020

2030



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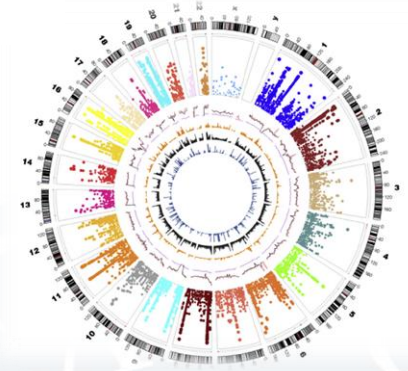
Smart Ring



Smart Computer



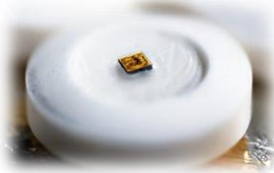
Smart Skin



-omic sequencing



Smartphone Exam

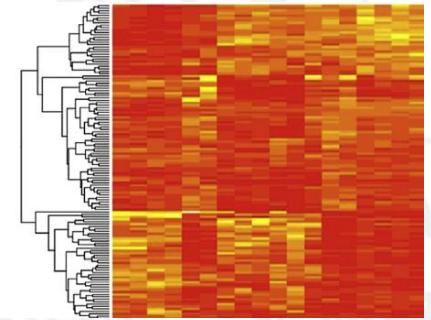


Smart Pills

Smartphone  
Lab Testing



Smartphone  
Ultrasound



Machine Learning



Smart Necklace

Smartphone Genome  
Sequencing



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# Digital Health

- Nanobots
- 3-D Printing
- Robotics
- Handheld Ultrasound
- Ultrasound-Chip Array
- Ingestible Sensors
- Implantable Sensors
- Telemedicine
- Mobile Clinics
- Virtual Reality
- Activity Tracking
- Wearable Devices
- Short Messaging Service
- Smartphone-Device
- Smartphone Microscopy
- Smart Tattoo
- Organ-on-a-Chip
- Lab-on-a-Chip
- Microfluidics

# Electronic Medical Records

- Data Visualization
- Ridge Regression
- Natural Language Processing
- Artificial Intelligence
- Machine Learning
- Brain-Computer Interface
- Bioinformatics
- Learning Health System
- Open Online Medicine
- Patient Generated Data
- Blockchain
- DNA Storage
- Phenotypic Clustering
- Social Media
- Knowledge Banks
- Crowdsourcing

# Big Data

# Precision Health

- Exposome
- Microbiome
- Epigenome
- Proteome
- Metabolome
- Circadian Rhythm
- Optogenetics
- Pharmacogenetics
- Epigenetics

- WGS
- Nanopore Sequencing
- RNA-seq
- SNP
- Exome Sequencing
- Genome Engineering
- CRISPR
- Embryonic-Structural Variants
- iPSC

'Innovation Genome'



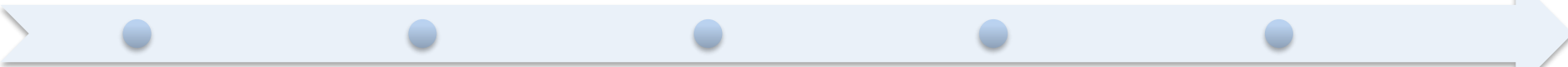
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New Innovations

Implementation Methods

Mile Markers



Stakeholder Engagement

Evidentiary Requirements



Patient Advocacy



AMERICAN COLLEGE OF SURGEONS  
Inspiring Quality: Highest Standards, Better Outcomes

Medtronic



Industry

Multi Stakeholder Engagement

Startup



ROCK HEALTH+

Business



Policy



UCSF

Duke UNIVERSITY

Academia

Clinicians



VA



U.S. Department of Veterans Affairs

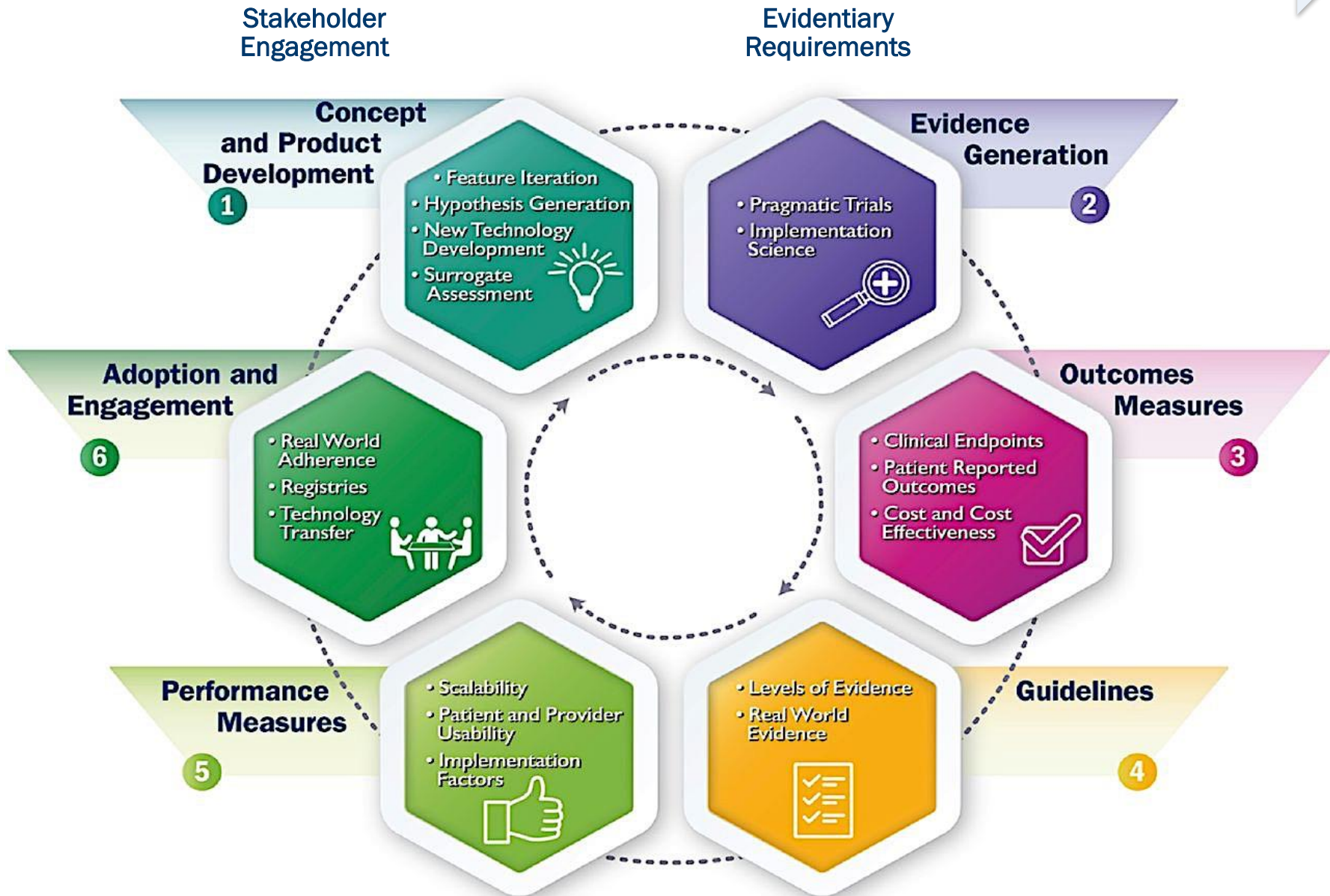


Weill Cornell Medicine



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Yale



New Innovations

Implementation  
Methods

Mile Markers

Stakeholder  
Engagement

Evidentiary  
Requirements

## Compact for Human-Centered Designs

Priority Problems to Solve

Facilitate meaningful information exchange

User (patient, caregiver, clinician) activation

Dedicated infrastructure and resources

Cultural empowerment and best practices



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New Innovations

Implementation  
Methods

Mile Markers

Stakeholder  
Engagement

Evidentiary  
Requirements

Evaluation

Integration

Engagement

Care  
Efficiency



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New Innovations

Implementation  
Methods

Mile Markers

Stakeholder  
Engagement

Evidentiary  
Requirements

Evidentiary requirements  
New trial designs  
Genome-EHR  
Real-world evidence

Integration



Engagement

Care Efficiency



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New Innovations

Implementation  
Methods

Mile Markers

Stakeholder  
Engagement

Evidentiary  
Requirements

Evidentiary  
requirements  
New trial designs  
Genome  
Real-world  
evidence

Clinical  
Workflows  
Reimbursement  
EHR Integration



Engagement

Care Efficiency



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New Innovations

Implementation  
Methods

Mile Markers

Stakeholder  
Engagement

Evidentiary  
Requirements

Evidentiary requirements  
New trial designs  
Genome  
Real-world evidence

Clinical Workflows  
Reimbursement  
EHR Integration

Patient Expectations  
Privacy  
Costs  
Diverse Communities

Care Efficiency



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New Innovations

Implementation  
Methods

Mile Markers

Stakeholder  
Engagement

Evidentiary  
Requirements

Evidentiary requirements  
New trial designs  
Genome  
Real-world evidence

Clinical Workflows  
Reimbursement  
EHR Integration

Patient Expectations  
Privacy  
Costs  
Diverse Communities

Quality of Care  
Clinical Throughput  
Disease Management  
Patient-Reported



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New Innovations

Implementation  
Methods

Mile Markers

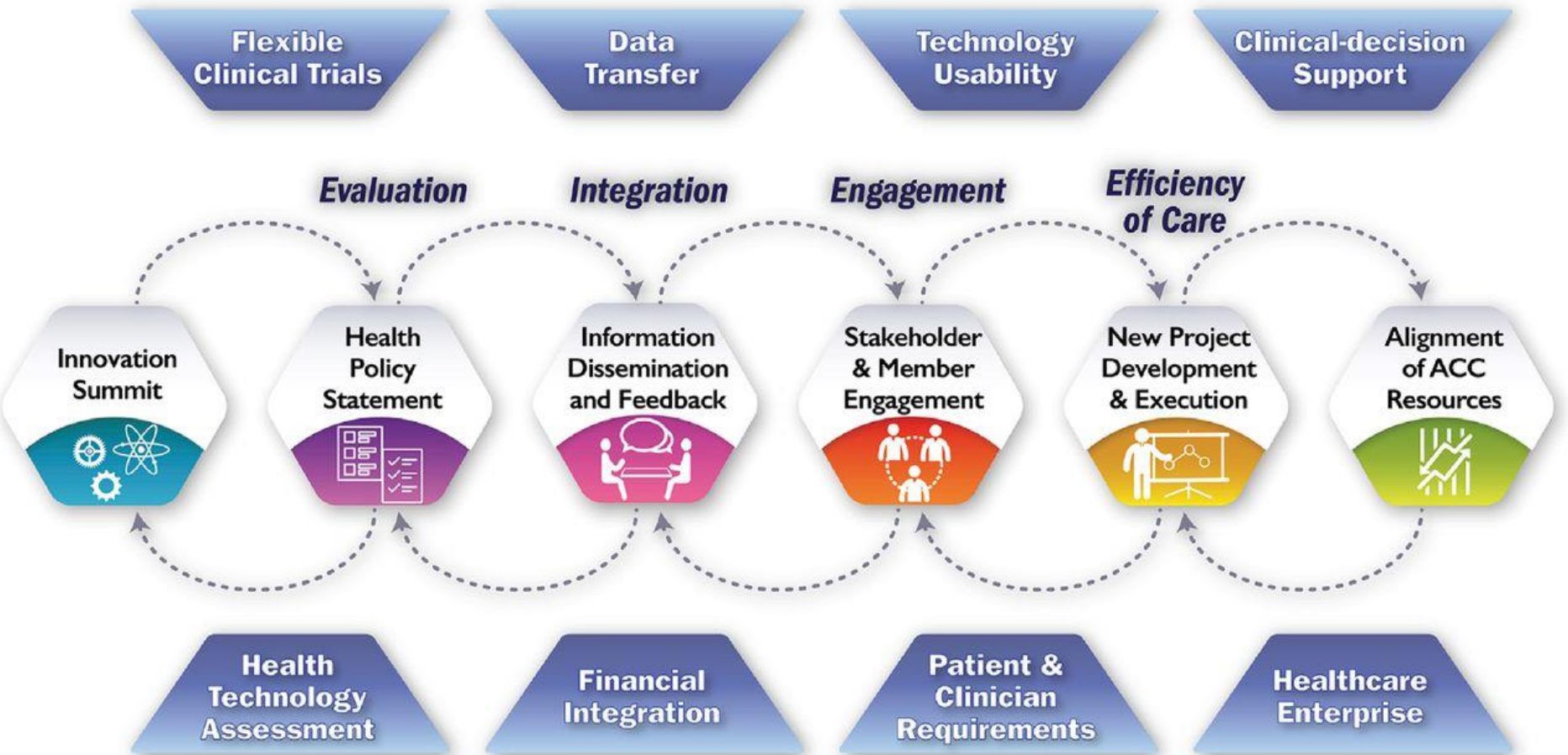
Stakeholder  
Engagement

Evidentiary  
Requirements



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# #ACCInnovation



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# ACC Innovation Section

Regina S. Druz, MD, FACC, FASNCC

December 11, 2017



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# Meet Dr. Salim Hayek

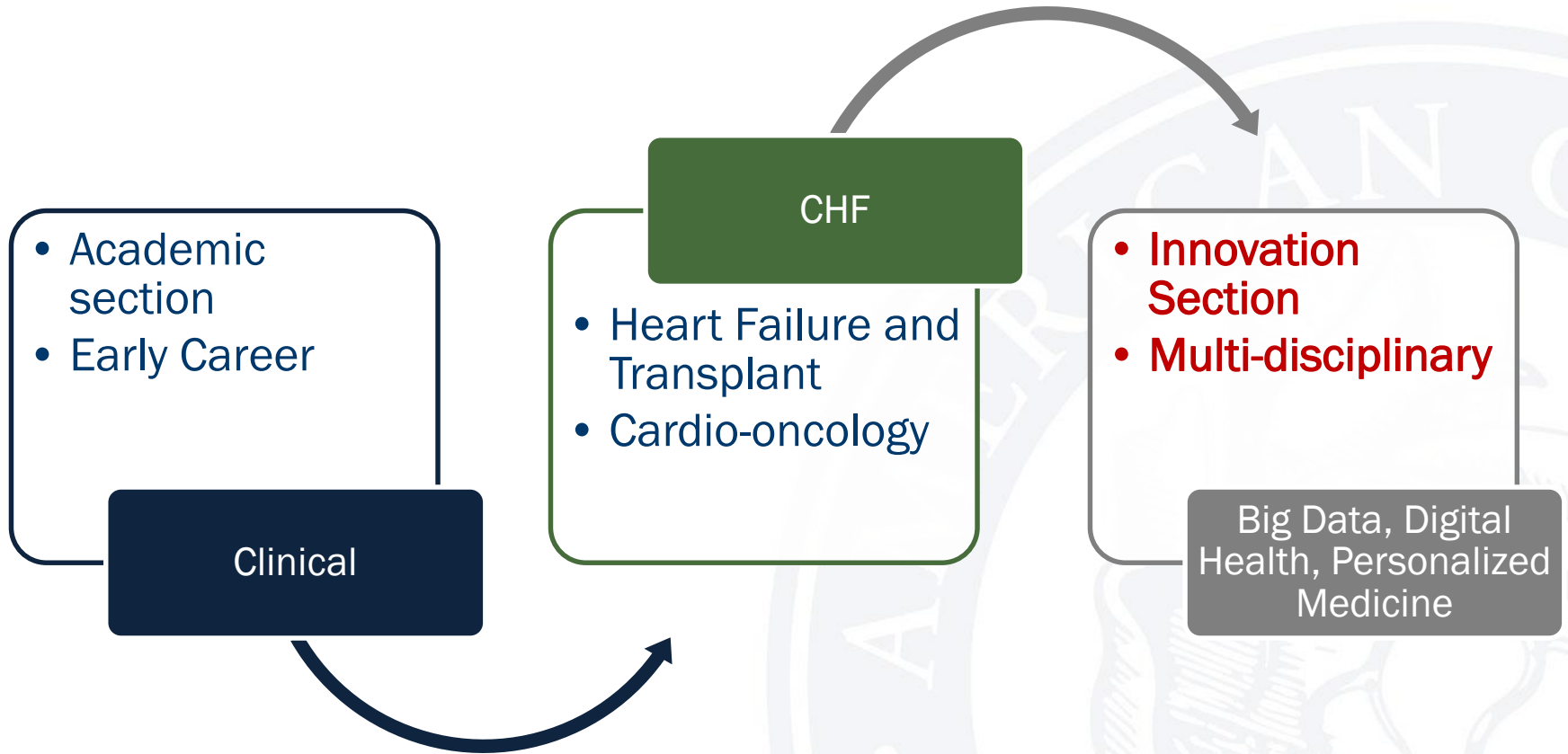


- FIT
- Innovation Section member
- Interests:
  - Clinical Cardiology
  - Heart Failure
  - "Omics" technology
  - Psychosocial data
  - Predictive analytics
  - Mobile health



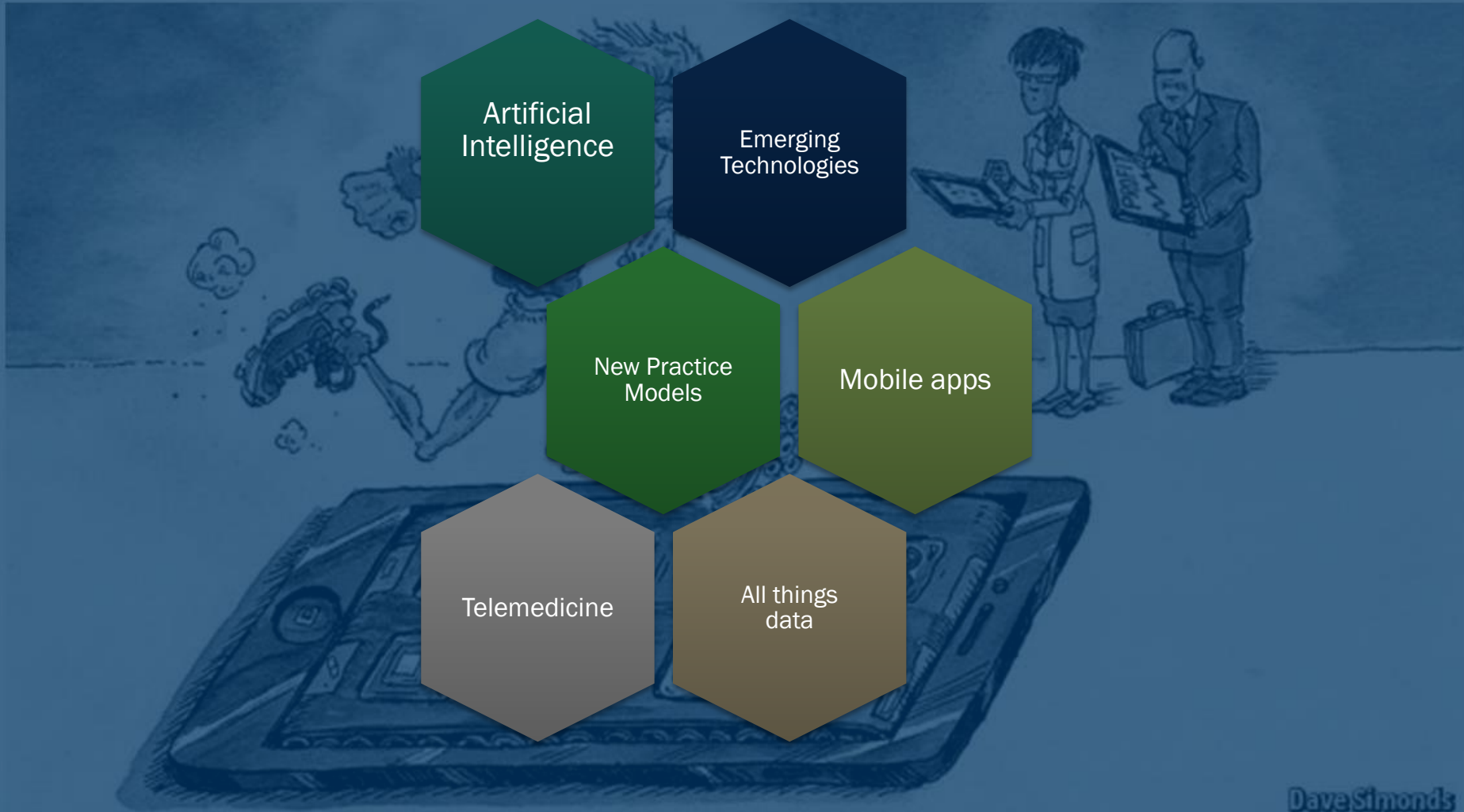
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# His Professional Development and the ACC



*Telemedicine, predictive diagnostics, wearable sensors and a host of new apps will transform how people manage their health*

# Cardiovascular Innovators Landscape



Life

## The rise of medical entrepreneurs

How students are turning their ideas into innovative apps and products

By: Matt Limb



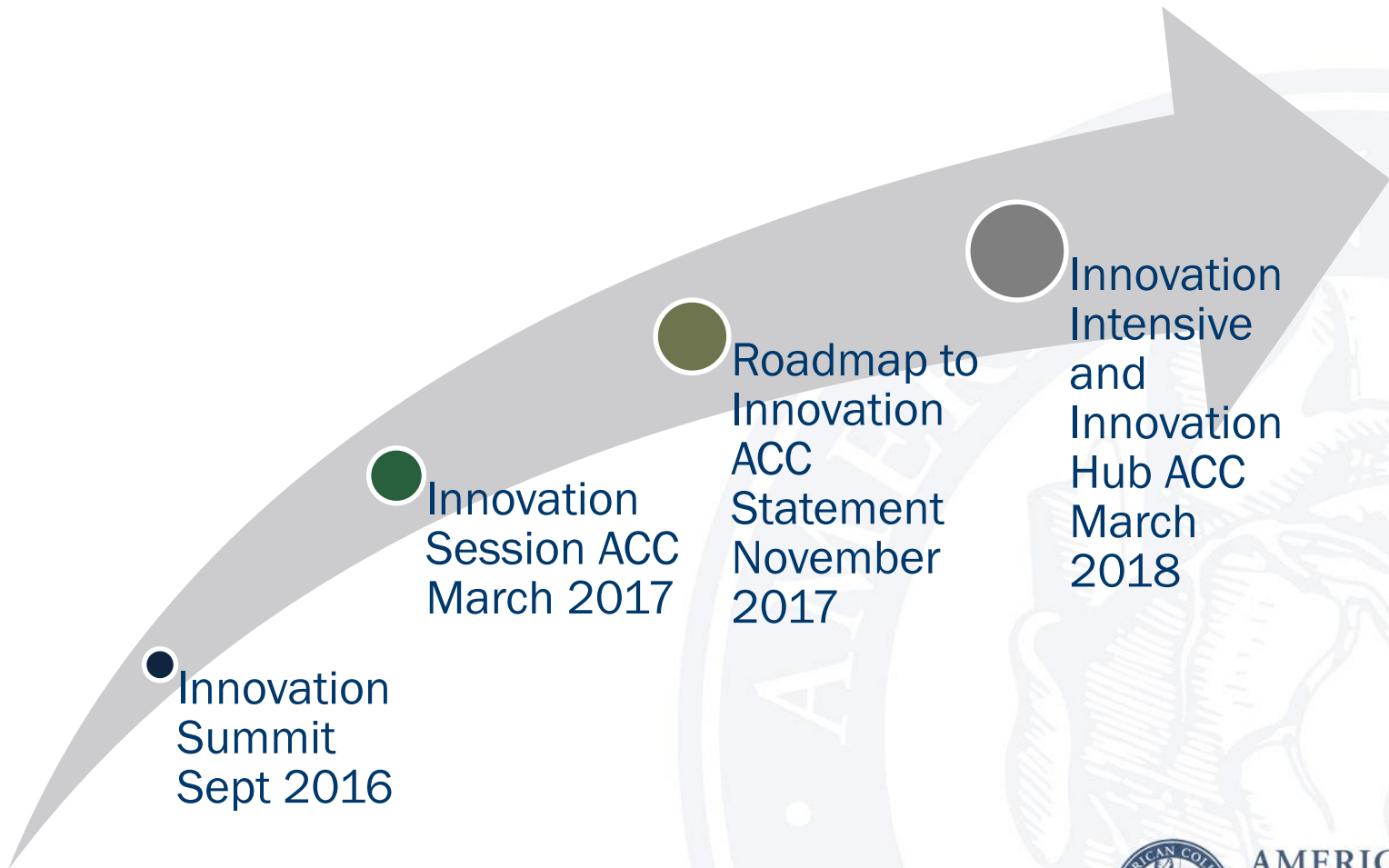
# Our Mission

- Our mission is to be the *professional development home* for the growing number of cardiovascular clinicians and trainees with career interests in healthcare innovation, focusing on entrepreneurship, data science and informatics, implementation of innovation, digital health, and emerging technologies.





# Deliverables Highlights



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# Activities

Career  
Development

Partnerships,  
networking,  
alignment,  
mentorship

Community  
Engagement

Meet Ups; Online  
community

ACC Annual Session  
Hands-on Activities

Education and  
Implementation

Webinars, Blogs,  
Statements, etc

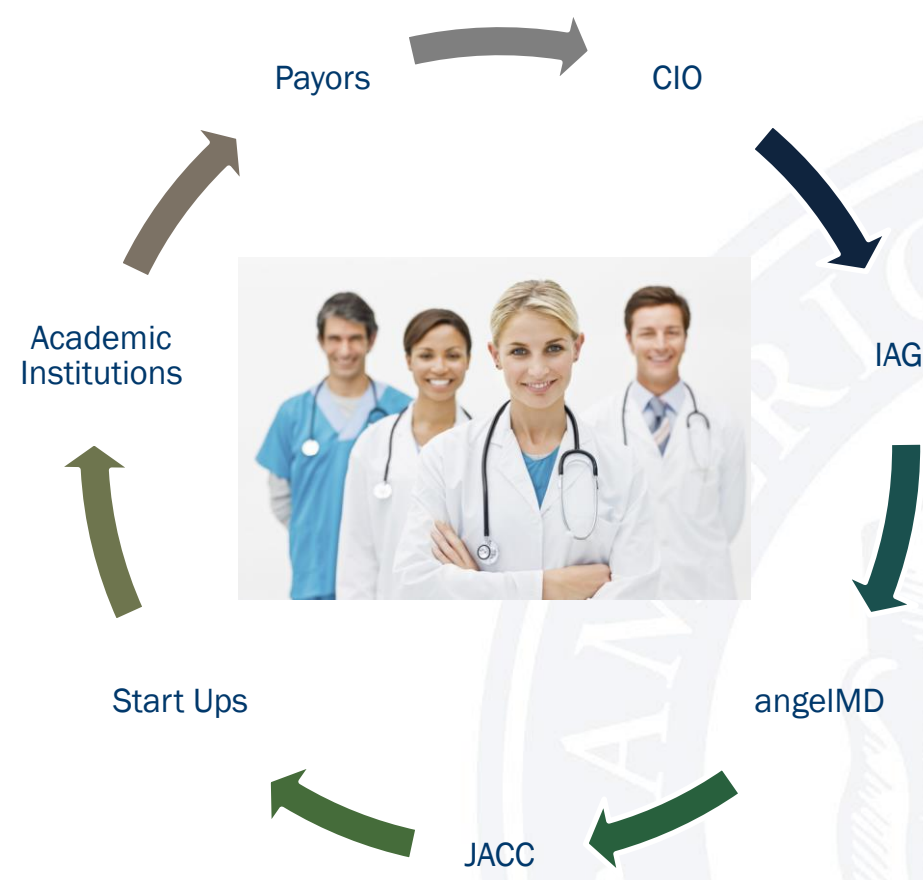
Pilots and ACC  
Projects

Dashboard;  
Platform



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# Strategic Relationships Build an Innovation Ecosystem



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# Interest very high (deep 'bench'...will continue to grow)

Entrepreneurs

Digital Health

Health Technology

Data Science

Precision Health

Care Delivery Innovation

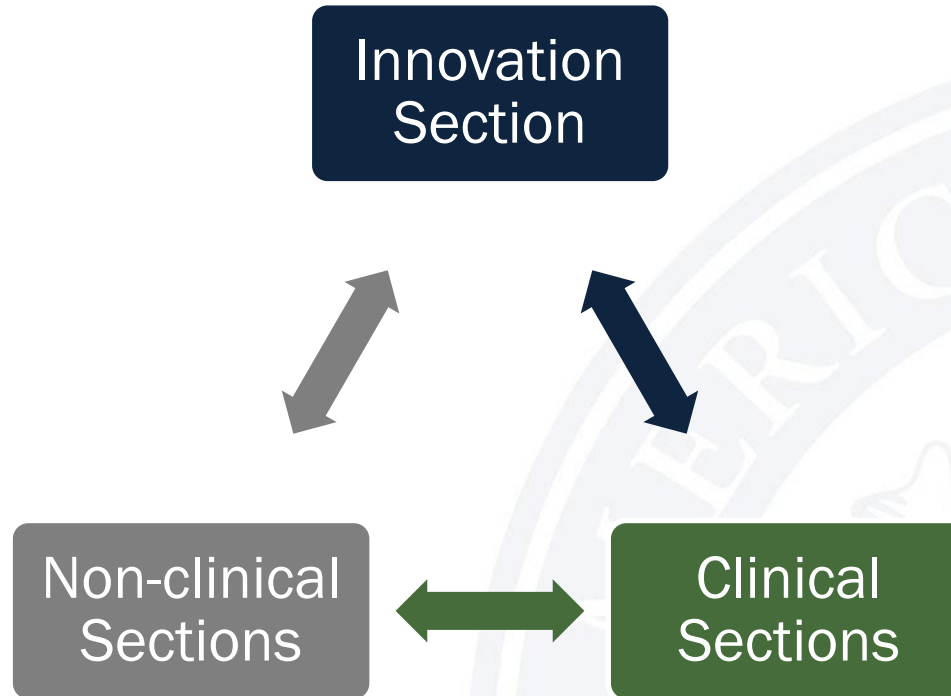
Potential reach: all 53k ACC members / international / all demographics... critical for future members and future of ACC

Hundreds of ACC members ready to join/engage



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# You are our Founders and Partners



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