HIT in Action:
A Maryland Perspective

Richard Bendis
President & CEO
BioHealth Innovation, Inc.

February 6, 2014

HIMSS 2014 Legislative Talking Points

1. Expand the availability of telemedicine for patient care
2. Continue to support CRISP HIE services expansion
3. Ensure consumer privacy and security
   - Support harmonization of regulations between neighboring jurisdictions
   - Support efforts to develop a consistent nationwide patient data matching strategy

Maryland's Triple Aim Roadmap

Reduce Costs | Enhance Quality and Experience | Improve Health

- Limit hospital per capita spending to an annual growth cap of 3.58%
- Reduce total Medicare hospital spending by $330M over five years
- Limit total growth in Medicare spending per beneficiary to no more than national growth
- Reduce the readmissions rate to the national average within five years
- Reduce infections and other hospital-acquired conditions by 30 percent within five years

www.healthaffairs.org/blog/2014/01/28/marylands-triple-aim-roadmap/

State of Maryland: Federal & University Resources

- Population: 5.9 million people
- 59 Federal Laboratories, Centers, & Institutes in Maryland
- Maryland Federal R&D investment exceeding $12 billion annually

JHU and USM represent another $3.5 billion in annual R&D

JOHNS HOPKINS UNIVERSITY

UNIVERSITY SYSTEM OF MARYLAND

The Region — Central Maryland

- Unrivaled Research Assets -
- Unfulfilled Commercial Promise -

NIH National Institutes of Health

FDA

NIST

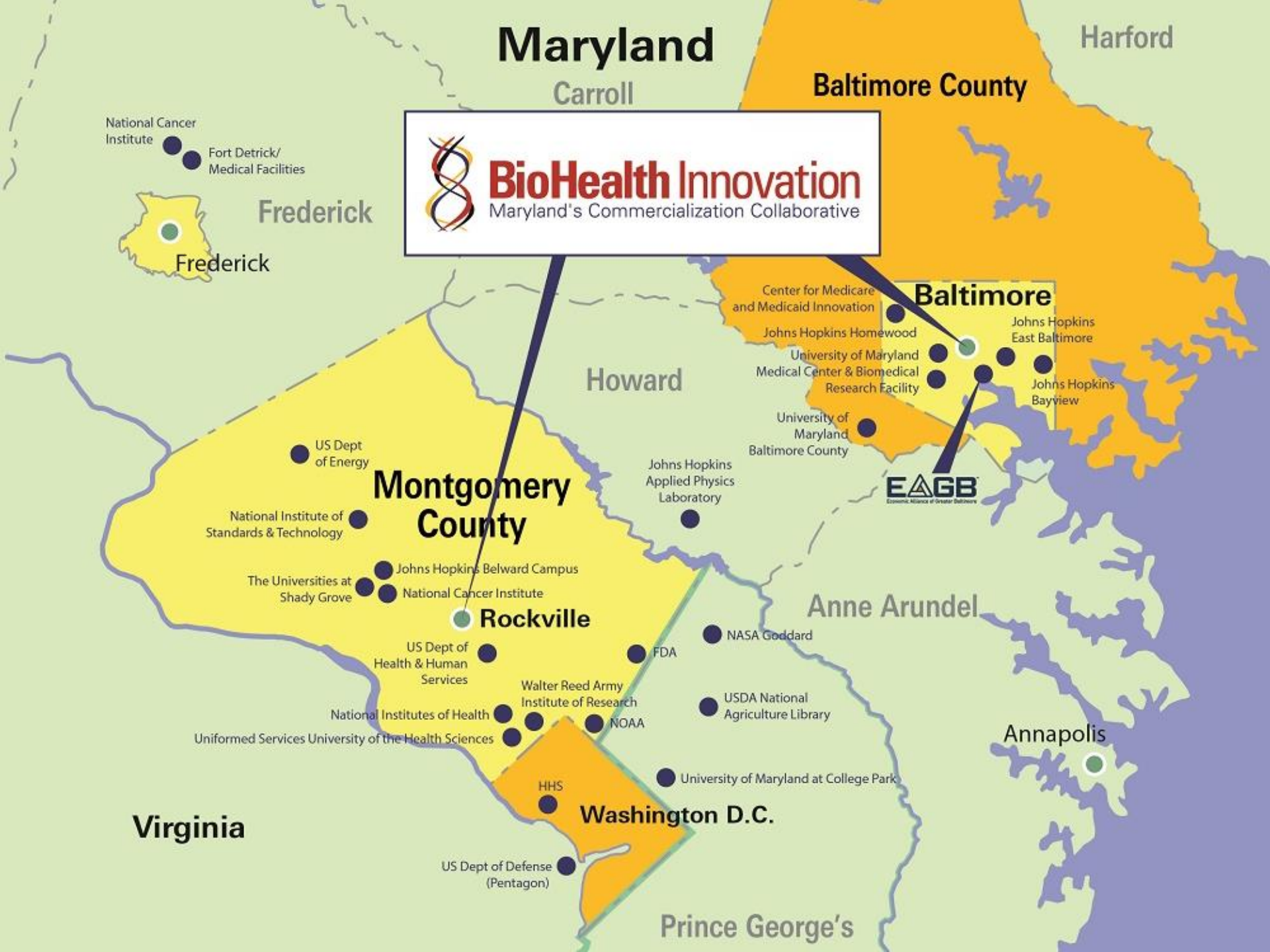
Center for Medicare & Medicaid INNOVATION

University System of Maryland

Johns Hopkins University

National Cancer Institute

NIH National Heart, Lung, and Blood Institute


Maryland
Harford
Carroll
Baltimore County
National Cancer Institute
Fort Detrick/ Medical Facilities
BioHealth Innovation
Maryland's Commercialization Collaborative
Frederick
Frederick
Center for Medicare and Medicaid Innovation
Baltimore
Johns Hopkins Homewood
Johns Hopkins East Baltimore
University of Maryland Medical Center & Biomedical Research Facility
Howard
Johns Hopkins Bayview
University of Maryland Baltimore County
US Dept of Energy
Johns Hopkins Applied Physics Laboratory
EAGB
Montgomery County
National Institute of Standards & Technology
Johns Hopkins Belward Campus
The Universities at Shady Grove
National Cancer Institute
Rockville
Anne Arundel
NASA Goddard
US Dept of Health & Human Services
FDA
Walter Reed Army Institute of Research
USDA National Agriculture Library
National Institutes of Health
NOAA
Uniformed Services University of the Health Sciences
Annapolis
University of Maryland at College Park
HHS
Washington D.C.
Virginia
US Dept of Defense (Pentagon)
Prince George's

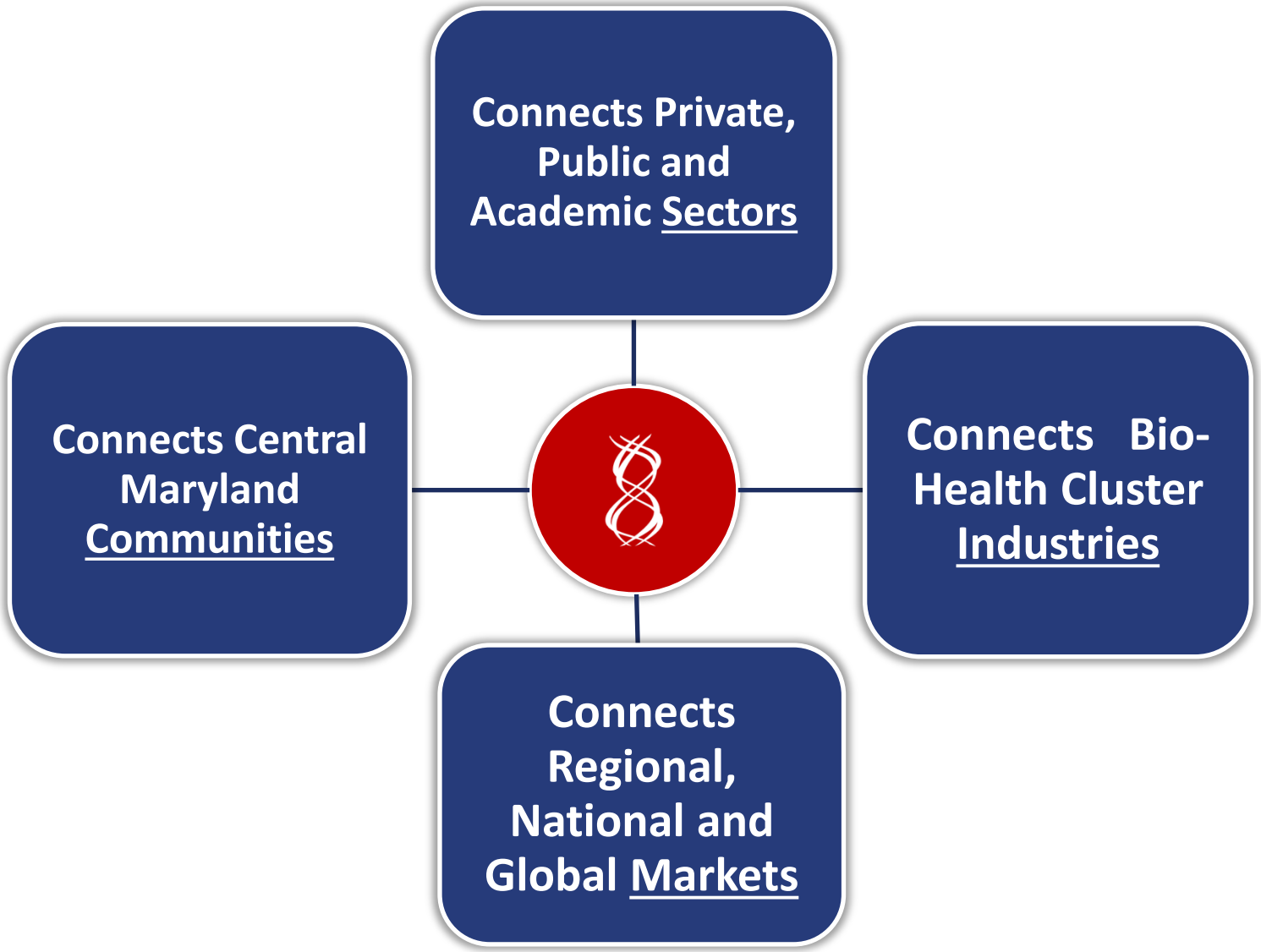
What is A Regional Innovation Intermediary?

An organization at the center of the Central Maryland region's efforts to:

- Align local technologies, assets and resources
- Advance Innovation

- Regionally-oriented
- Private-public partnership, 501(c)(3) nonprofit
- Market-driven, private sector-led
- Neither a government initiative, nor a membership organization

BHI: An Innovation Intermediary that Connects



BHI Partners and Sponsors

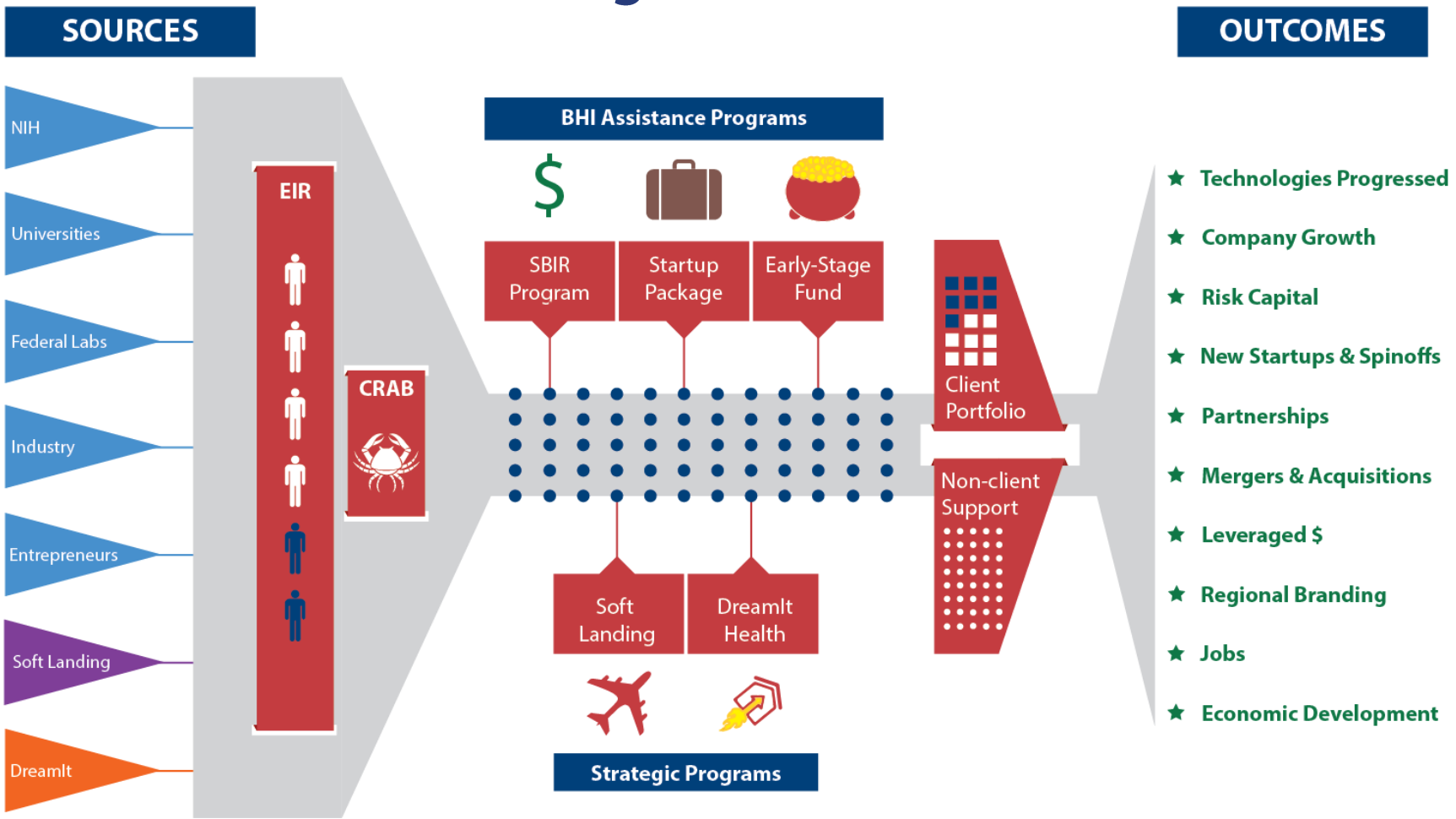
Private Sector

Government

Academia

Non-Governmental

BHI Program Structure



Financial Sponsors

QIAGEN · NEA · Adventist HealthCare · M&T Bank (Understanding what's important) · Kaiser Permanente · EAGB (Economic Alliance of Greater Baltimore) · University System of Maryland · Montgomery County Maryland · BD · 华夏幸福基业 (China Fortune Land Development) · Cfld · emergent biosolutions · NIH National Heart, Lung, and Blood Institute

MedImmune · Deloitte. · Northrop Grumman · GSK GlaxoSmithKline · SR-one · United Therapeutics Corporation · EDA U.S. Economic Development Administration · Johns Hopkins University · Percontee · aronson · DB Capital

Innovation Paradigm Shift

PROOF OF CONCEPT
(Technological Feasibility)
Laboratory Push
"It Works!"

PROOF OF COMMERICAL RELEVANCE
(Market Pull)
"It Works To Solve A Problem"
"I'll Buy It"

BHI Technology Focus

- Therapeutics
- Diagnostics
- Medical Devices
- Healthcare Services
- E-Health
- Mobile Health
- Electronic Medical Records
- Health Informatics
- BioHealth Cyber Security

Partnership Intermediary Agreements

PIA between BHI and NIH's Office of Technology Transfer (OTT) that supports the 27 NIH institutes' $3 billion intramural research and the Food and Drug Administration to promote and foster cooperative research and accelerate technology commercialization among NIH/FDA, businesses, and universities.

PIA between BHI and the Telemedicine & Advanced Technology Research Center (TATRC) to capture USAMRMC and TATRC research outcomes and promote further research, product development, commercialization, and economic development opportunities. TATRC has funded 241 MD based projects over the last 12 years.

BHI Entrepreneurs-in-Residence

Todd Chappell (NIH-OTT)

Todd assists the Office of Technology Transfer (OTT) in the evaluation of existing technologies, provide an entrepreneurial perspective on new licensing proposals from start-up companies, advise on opportunities for new ventures, assist with developmental strategies, and mentor scientists to help ensure their research becomes commercially valuable.

Ken Malone (UM Ventures)

Ken has built his career on creating economic value from science. Whether it was developing new business lines for global corporations or spinning out new ventures from universities, he has engaged in the commercialization of hundreds of new products in advanced materials and life sciences.

Ram Aiyar (NHLBI)

Ram assists the National Heart Lung and Blood Institute (NHLBI) in translating disruptive science into commercially viable technologies. He works with the relevant stakeholders within the NIH to develop commercial plans and/or develop licensing opportunities such that the NIH technologies can be translated into commercially viable entities that will solve unmet medical needs of patients.

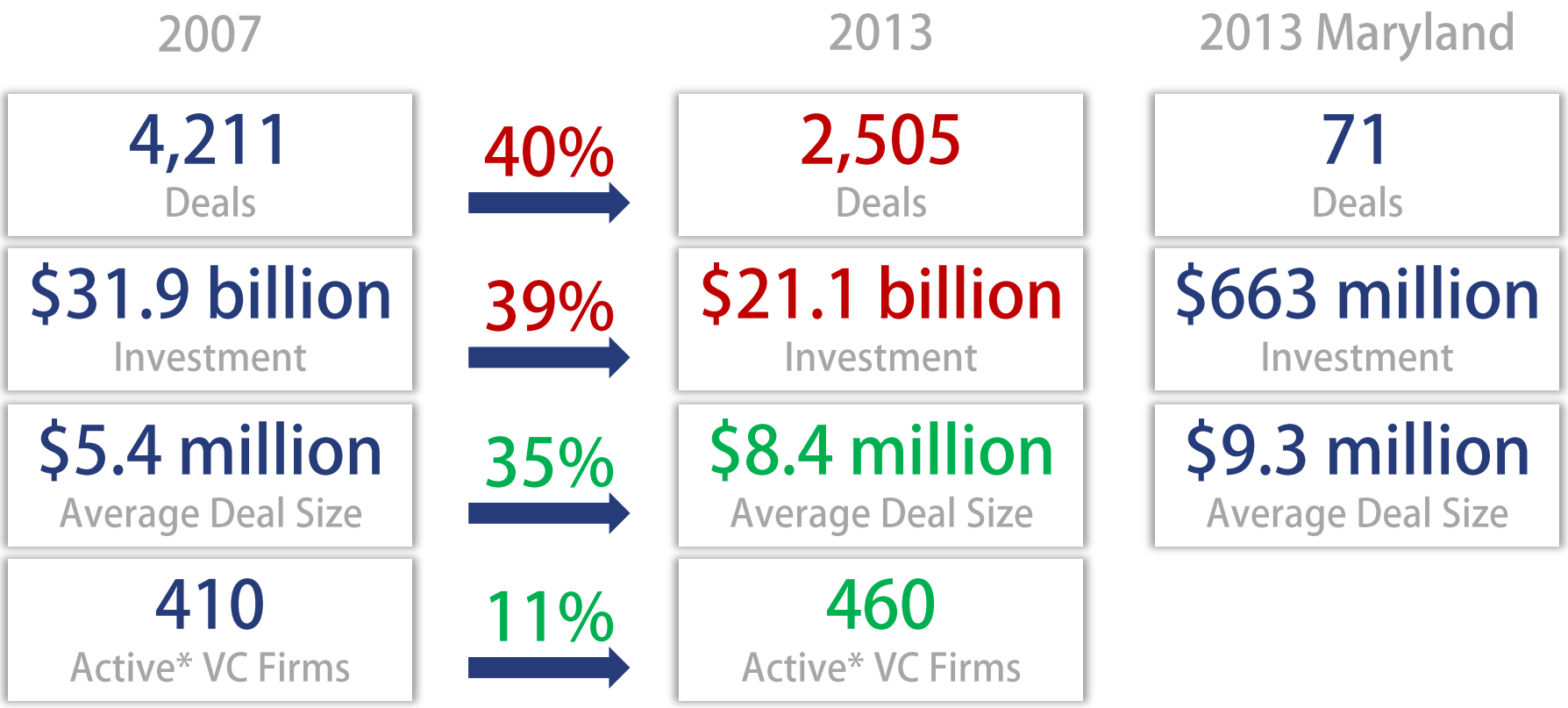
Rich Moore (NIH-OTT)

Dr. Moore previously served as the Chief Scientific Officer for OpGen, Inc. In that role, Dr. Moore provided leadership over multiple R&D functions, and led the company's Scientific and Clinical Advisory Boards. Prior to that, he spent 12 years at BD Diagnostics holding various positions, most recently as R&D Director, Systems Integration and Advanced Technology.

BHI Client Companies

BeneVir	Developing a therapeutic platform that can be adapted to target a wide variety of cancers.
Living Discoveries	Specializes in automatically diagnosing medical conditions in medical scans, tests, and sensors with minimal human support.
MIMETAS	Developing and marketing Organ-on-a-Chip solutions for the pharmaceutical industry.
Mehr Medical	Developing devices for cardiovascular procedures that will solve high unmet needs in the transcatheter valve replacement space.
MockV	Developing novel viral clearance kits to be utilized during process development bio therapeutics.
N5 Sensors, Inc. Smart Sensors for a Safer World	Developing sensors that can detect harmful chemicals mixed in air in very small quantities, such as industrial chemicals, and other pollutants.
PERCEPTIVE NAVIGATION	Developing medical devices related to image-guided, minimally-invasive niche markets.
VLP Therapeutics	Developing a platform vaccine like particle technology that has the potential to be used for various diseases including cancer.

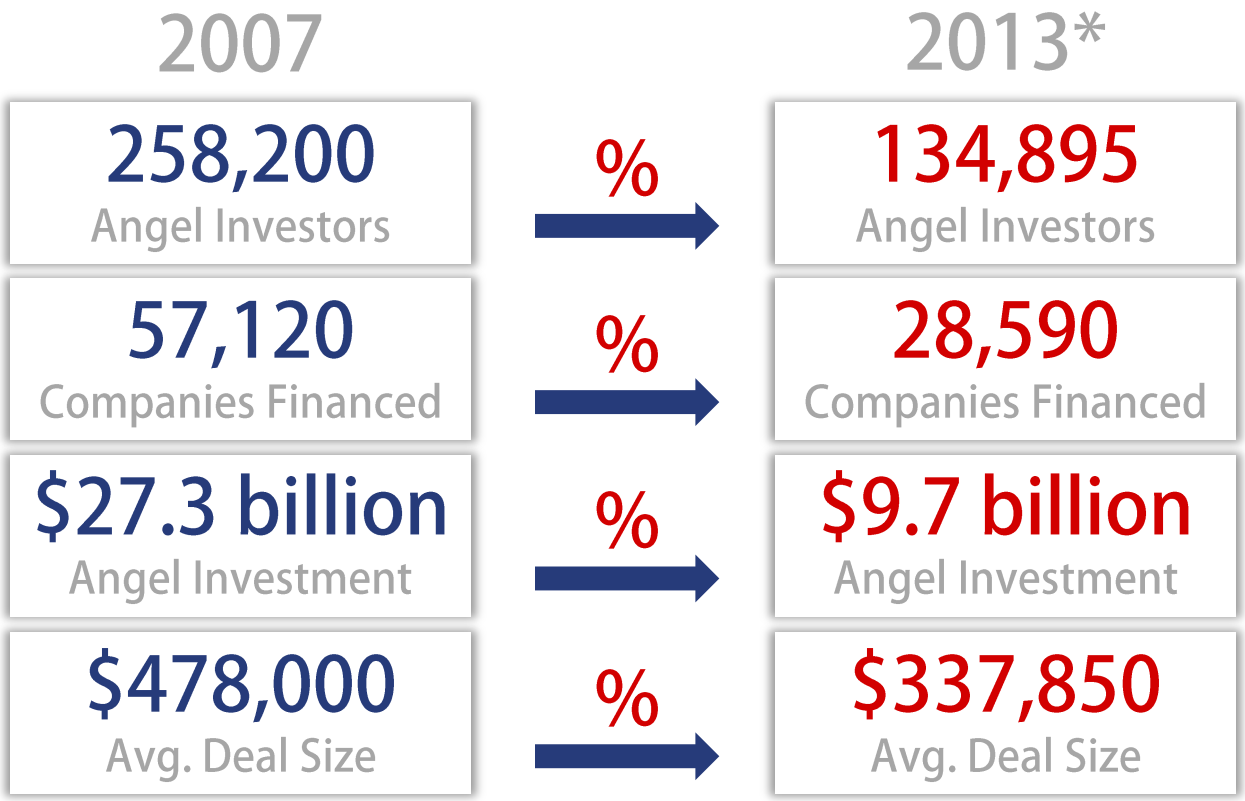
US Venture Capital Investment



*VC firms completing 4 or more deals per year

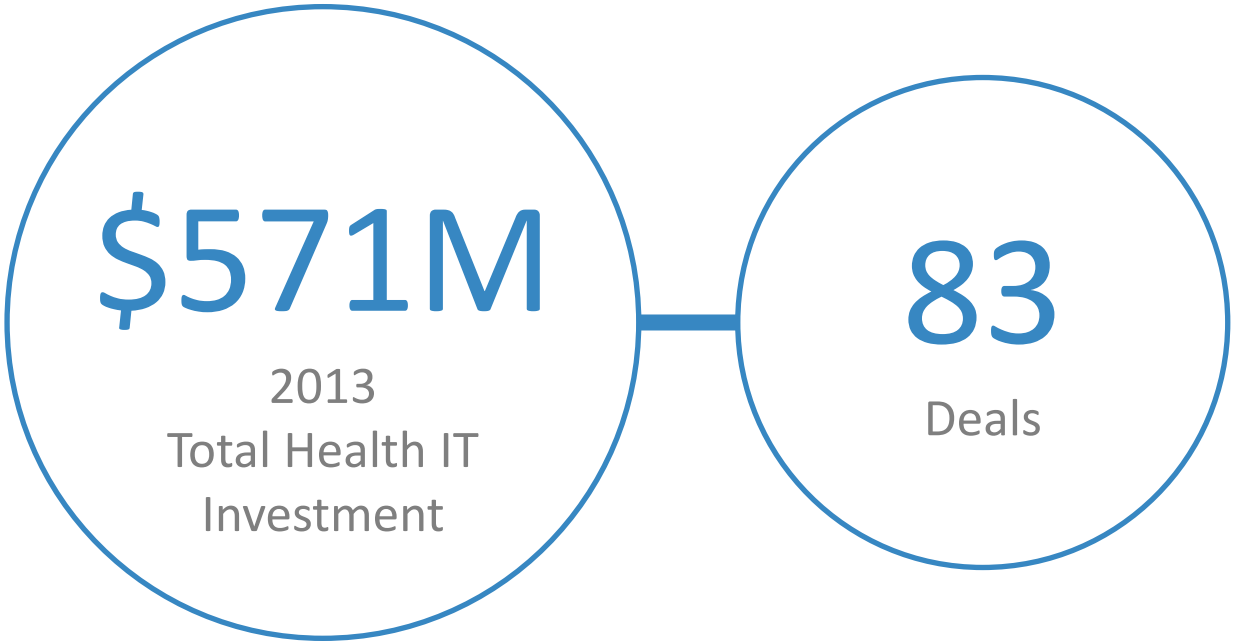
PriceWaterHouseCoopers | CB Insights | Funding Post

US Angel Investment



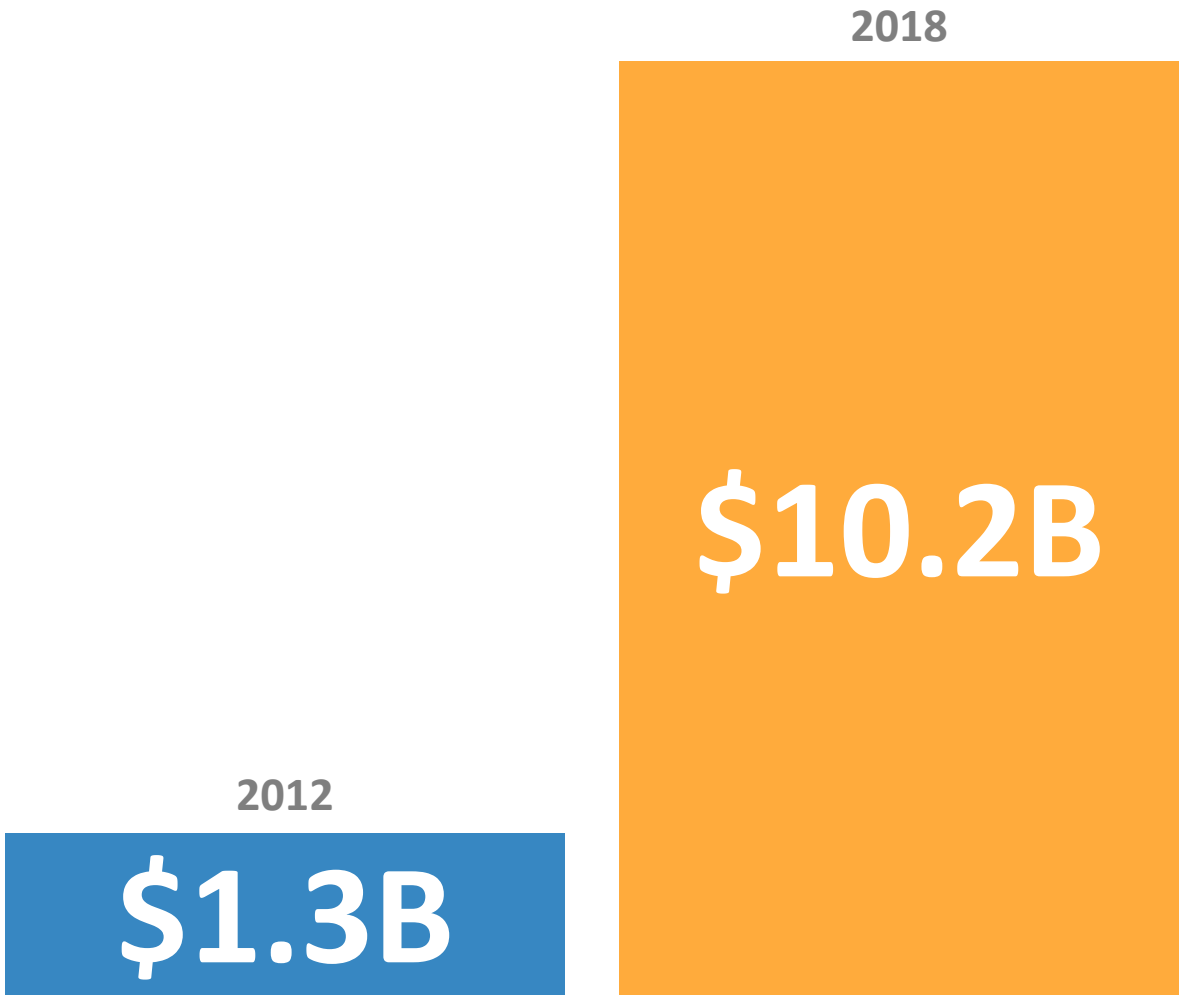
*For Q1&Q2

2013 US VC Health IT Investment



www.alleywatch.com/2013/11/the-2013-healthtech-venture-capital-and-angel-funding-report/

Global mHealth Market Growth



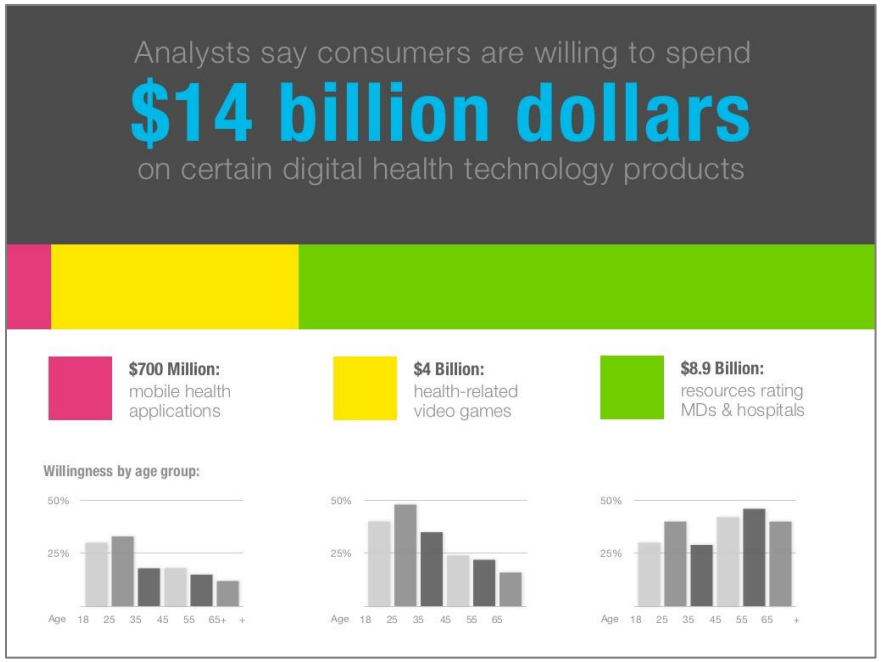
41.5%

compounded annual growth rate

www.fiercemobilehealthcare.com/story/global-mhealth-market-reach-102-billion-2018/2013-01-09

US Health IT Statistics

- 88% of physicians want patients to be able to monitor their health at home
- Analysts say Consumers are willing to spend $14B on digital health



- # of adults using mobile phones for health info grew from 61M to 75M
- 90% of patients want to self-manage their healthcare

www.hitconsultant.net/2012/12/04/45-mind-blowing-digital-health-statistics-and-trends

Startup Statistics

- New business owners in 2012: 514,000
- Average founding team age: 35-44
- Avg. Funding per company: $1.5M
- 75% of startups fail
- 90% of products fail
- 18% of entrepreneurs succeed in their first venture

www.slideshare.net/mashable/startup-success-by-the-numbers

DreamIt Health Accelerator

- Help 9 companies achieve critical business milestones in 4 months
- Provide guidance from successful entrepreneurs
- Give companies the chance to tap into the region's wealth of federal healthcare institutions

DreamIt Health Baltimore

- A Health IT Accelerator is an intensive 16 week program that admits top-recruited companies and entrepreneurs, provides a curriculum and network of experienced mentors in business, marketing and product development in the Health IT arena to “accelerate” top companies.
- Retain promising high growth HIT entrepreneurs in MD
- **Partners:**
  - BioHealth Innovation, Inc.
  - Johns Hopkins University
  - DreamIt Ventures
  - Economic Alliance of Greater Baltimore
  - Northrop Grumman
  - Kaiser Permanente
  - DBED

BioHealth Innovation
Maryland's Commercialization Collaborative

NORTHROP GRUMMAN

JOHNS HOPKINS UNIVERSITY

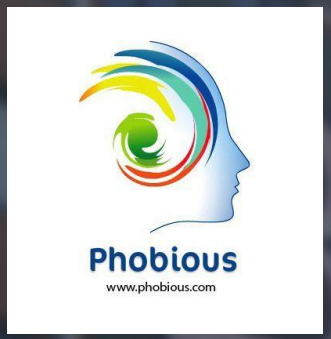
KAISER PERMANENTE

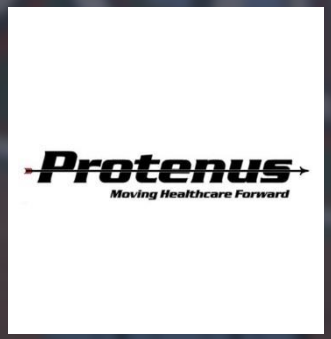
DreamIt Ventures

MARYLAND OF OPPORTUNITY.

EAGB

Participant Overview



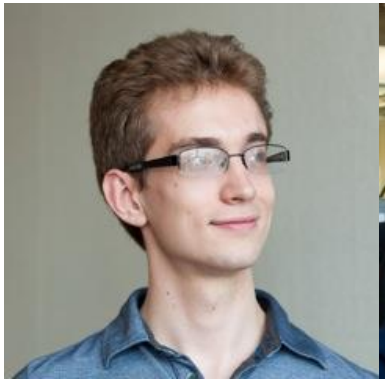


Aegle

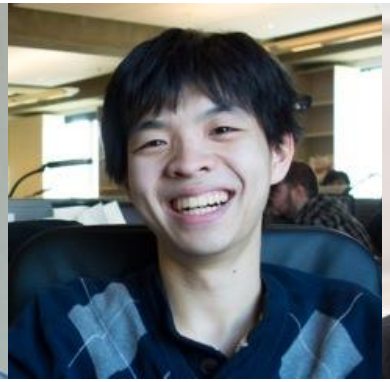
Location
Baltimore, Maryland

Website
www.aegle.co

Wearable Biometric Devices



Krzysztof Sitko



George Chen

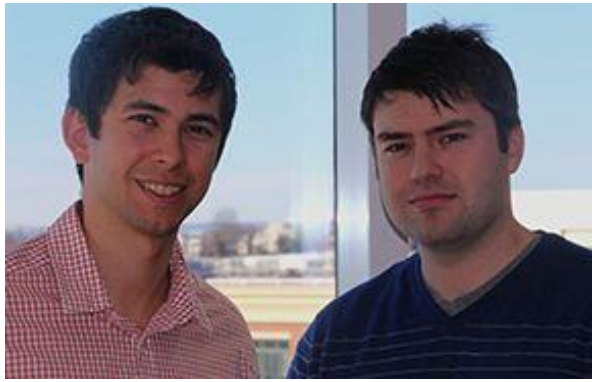
Justin Rubin

Aegle seeks to solve the problems of collection, analysis, and presentation of biometric information. Currently Aegle is focused on consumer wearable devices and is developing a fitness monitor that helps athletes track their fitness and push their limits with actionable metrics.

Location
Baltimore, Maryland

Avhana

Clinical Decision Support



Noah Weiner Nate Weiner

Avhana hopes to create a marketplace to facilitate the exchange of clinical decision guidelines so physicians have access to thousands of these guidelines with one click.

Location

Tallinn, Estonia/San Diego, CA

Website

www.cognuse.com

COGNUSE
NEUROSCIENCE

Mobile Cognitive Rehabilitation

Andres Mellik

Daniil Harik

Cognuse is developing solutions for the mental healthcare industry. Our core product platform CognuseManager is an evidence-based patient-centric tool for cognitive rehabilitation in the executive functions domain.

Location
Baltimore, Maryland

Mobile Information Platform

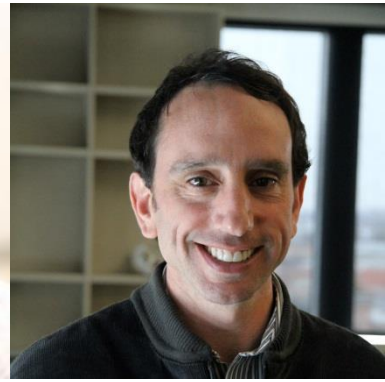
emocha


Sebastian Seiguer


Yao Huang


Sharon Kong


Morad Elmi


Jeff Daley

Emocha is a mobile health platform that improves medication adherence in clinical trials and disease management. It provides the mobile tools to engage and manage the patient and their health.

Location
Pittsburgh/NYC

patient feed
saving time. saving lives.

Inpatient Care Collaboration



Azam Qureshi Nadeem Kolia Khalid Harun

Inpatient physicians have complex workflows and information coordination needs. Gaps in these processes lead to slower and worse patient care. PatientFeed is a team of physicians and engineers integrating mobile and collaborative technologies so that physician-teams are always in-sync and enabled to deliver the best care possible.

Phobious

www.phobious.com

Location

Barcelona, Spain

Website

www.phobious.com

Augmented Reality Treatment

Daniel Roig-Canelles

Xavier Palomer-Ripoll

Xavier Hernandez-Oromi

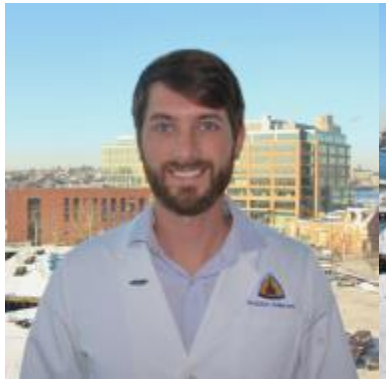
Antonio Amau- Blasco

Phobious develops a mobile technology that creates hyper-realistic environments to treat anxiety disorders by means of systematic desensitization by virtual exposure. Phobious has created a set of tools for professionals and will be developing a self-treatment app for phobias and other pathologies.

Location
Baltimore, Maryland

Protenus
Moving Healthcare Forward

Smart Administrative Workflows



Nick Culbertson

Robert Lord

Protenus aims to develop smarter, integrated healthcare administrative workflows that prevent wasted clinical time, improve patient satisfaction, and painlessly improve regulatory compliance.


respi

THE SMARTPHONE PHYSICAL

Location
Baltimore, Maryland

Website
www.smartphonephysical.com

Digital Workflow Management

Michael Hoaglin

Shiv Gaglani

Mike Batista

Smartphone Physical is the first e-commerce platform for medical-grade smartphone and tablet devices. SP is integrating these tools so that they can be incorporated into the workflow of clinicians, home health care workers, and other providers.

US Company: Fitbit

- Provides activity trackers and activity tracking software to promote wellness and a healthy lifestyle.

Fitbit Trackers
The Tracker measures steps taken and calculates distance walked, calories burned, floors climbed, and activity duration and intensity.

MD Company: WellDoc

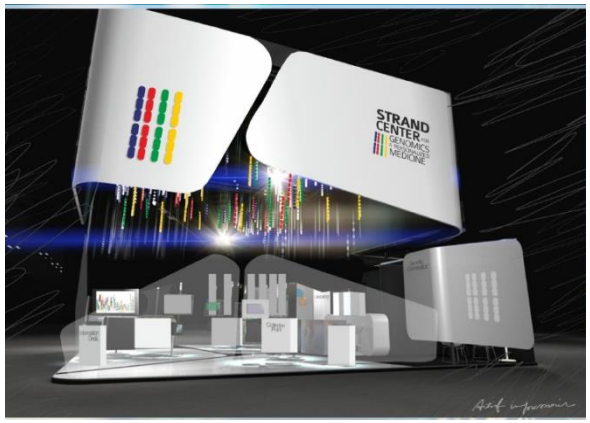
- Focused on developing solutions to support diabetes management
- Will hit $50M funding mark with latest funding round

DiabetesManager®
A system for health care providers to coordinate diabetes care, propel self-management and achieve long-term adherence.

MD Company: Strand Life Sciences

- Focused on providing an end-to-end service that offers NGS Diagnostics to hospitals

Strand Life Sciences
Algorithms for Life



Molecular Biology Lab Services
Strand uses second generation sequencing instruments, compute clusters, and human brains to sequence, analyze and interpret genome data from a variety of organisms.

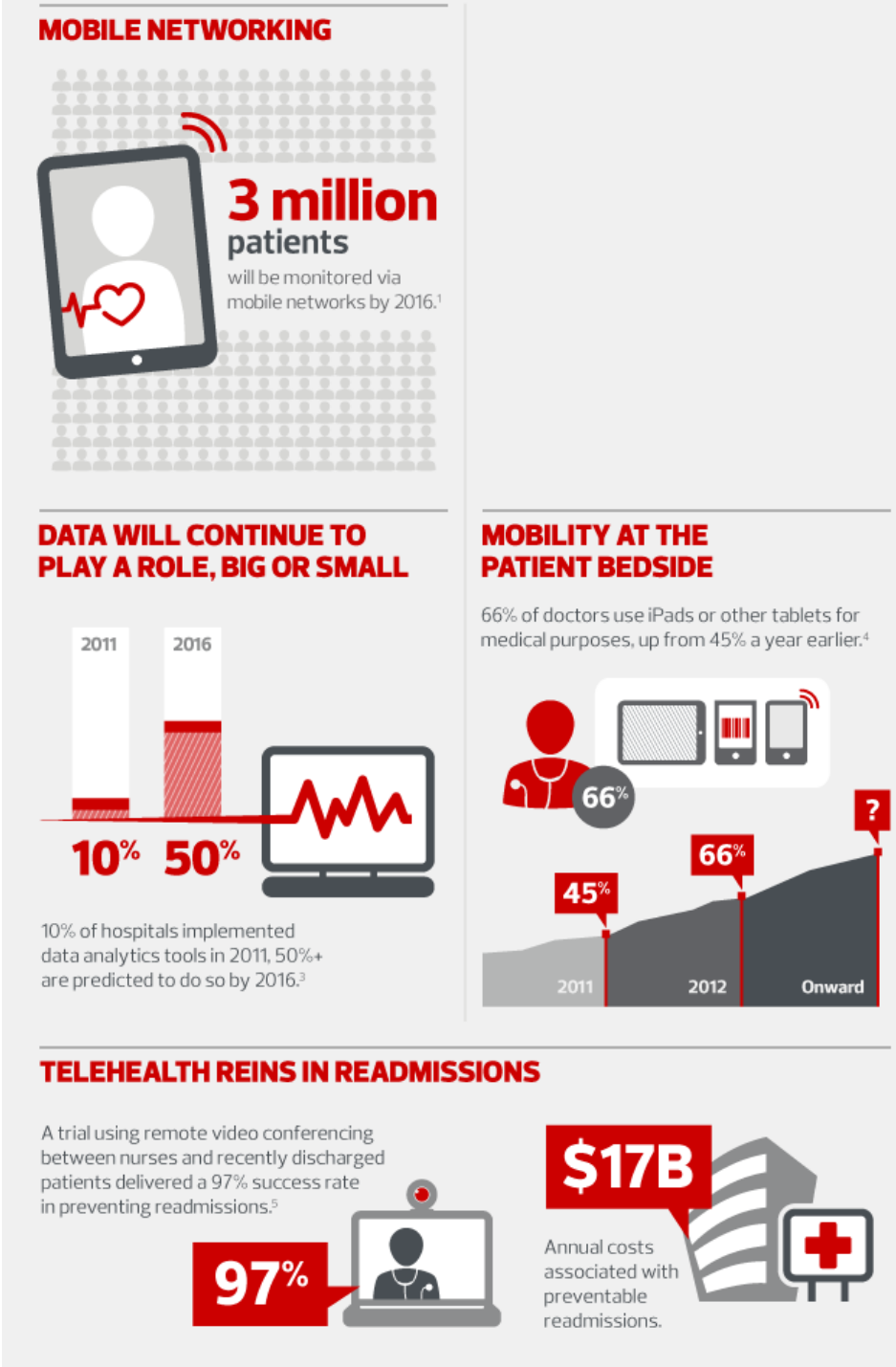
MD Company: Vasoptic Medical, Inc.

- An early stage start-up company with a mission to advance healthcare through innovation in medical diagnostics.

VASOPTIC MEDICAL INC.

XyCAM™ Retinal Imager
A solution for the early diagnosis of Diabetic Retinopathy & other conditions which is designed for primary care & telehealth settings.

Healthcare IT Trends



www.hitconsultant.net/2013/04/10/infographic-healthcare-it-trends-transforming-healthcare/

10 Challenges for Health IT

1. First-generation EHR is failing
2. Healthcare industrialization is accelerating
3. Healthcare cloud adoption will flourish
4. The criticality of analytics will grow
5. Personalized clinical decision support
6. Provider consolidation
7. Revenue cycle management
8. Underinvestment in business continuity
9. Security and privacy issues
10. Compliance is expensive

www.healthcareitnews.com/news/new-do-lists-loom-post-ehr-era