

Wireless capable medical devices with significant software and data integration are the future of OSEHRA

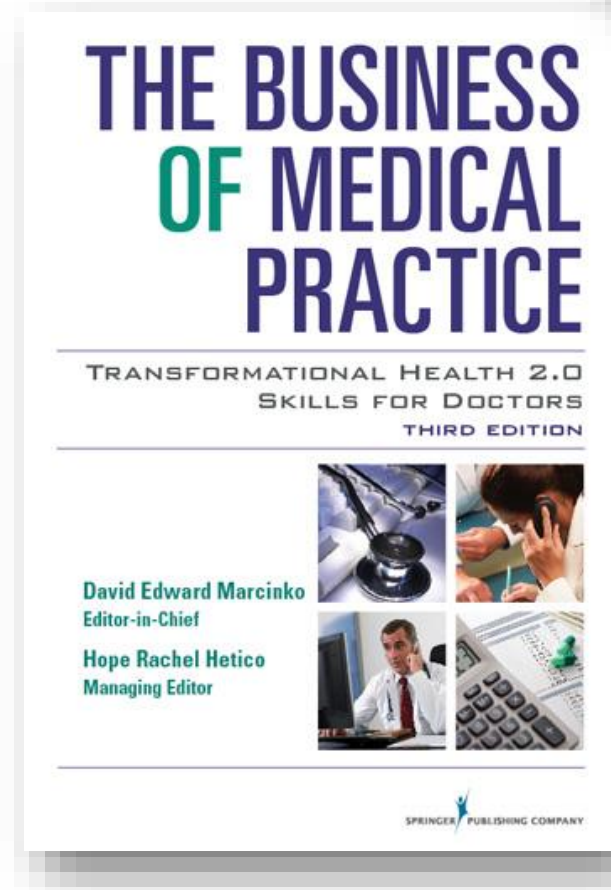
2nd Annual OSEHRA Summit

Shahid N. Shah
Chairman of OSEHRA Advisory Board

Who is Shahid?



- 20+ years of software engineering and multi-site healthcare system deployment experience
- 12+ years of healthcare IT and medical devices experience (blog at <http://healthcareguy.com>)
- 15+ years of technology management experience (government, non-profit, commercial)
- 10+ years as architect, engineer, and implementation manager on various EMR and EHR initiatives (commercial and non-profit)



Author of Chapter 13, "You're the CIO of your Own Office"

Healthcare needs are changing

The Macro Environment



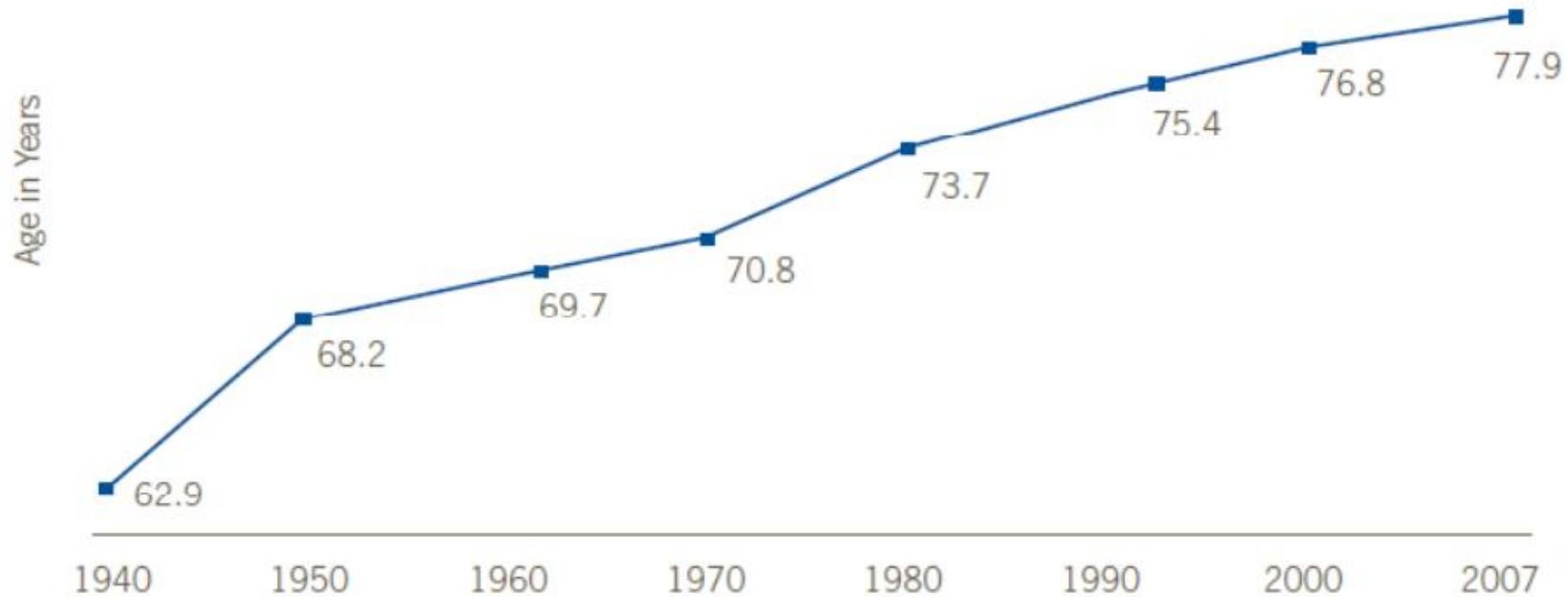
Netspective
EXTENDING THE ENTERPRISE



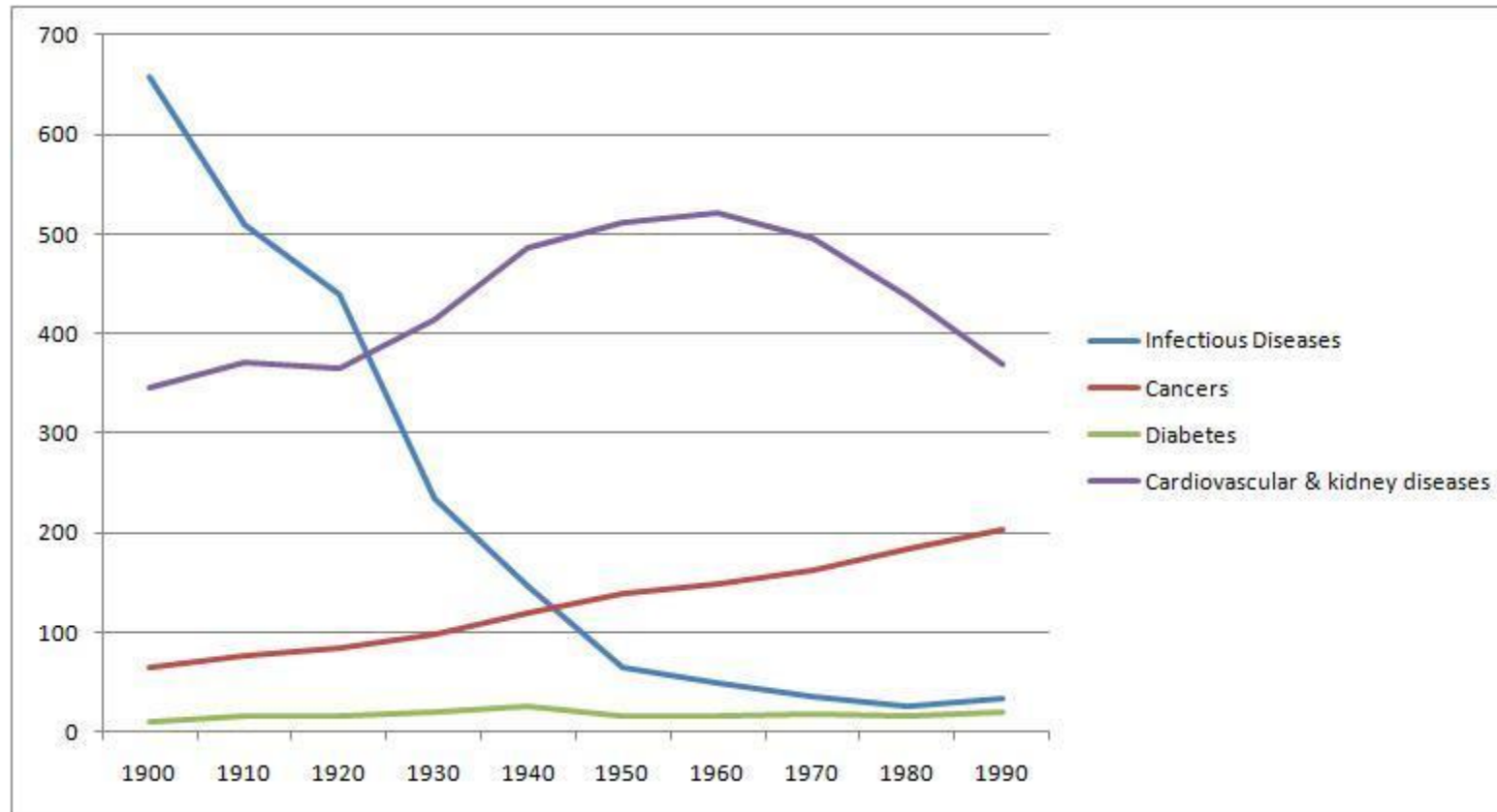
Life expectancy is increasing...

...but the rate of growth is slowing

U.S. life expectancy at birth, 1940-2007



Bacteria used to kill us the most...

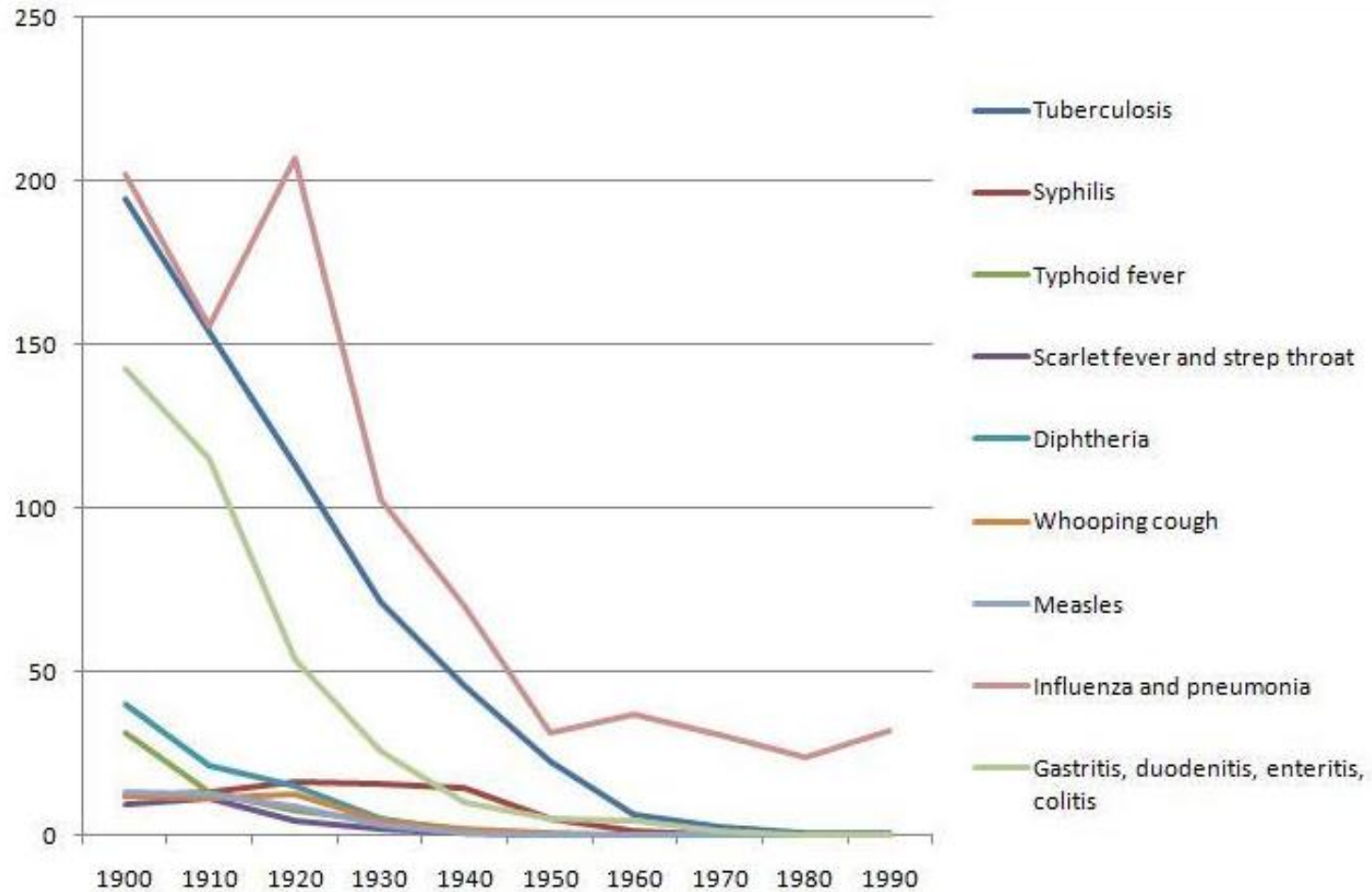


Per 100k population, Historical Statistics of the United States, Millennial Edition



We've got most infections beat...

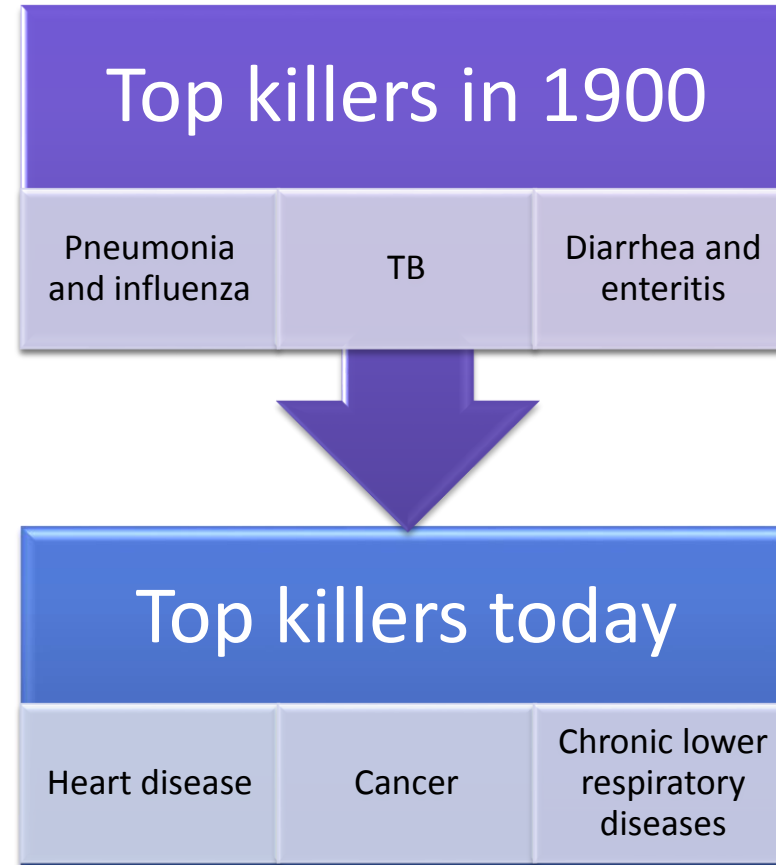
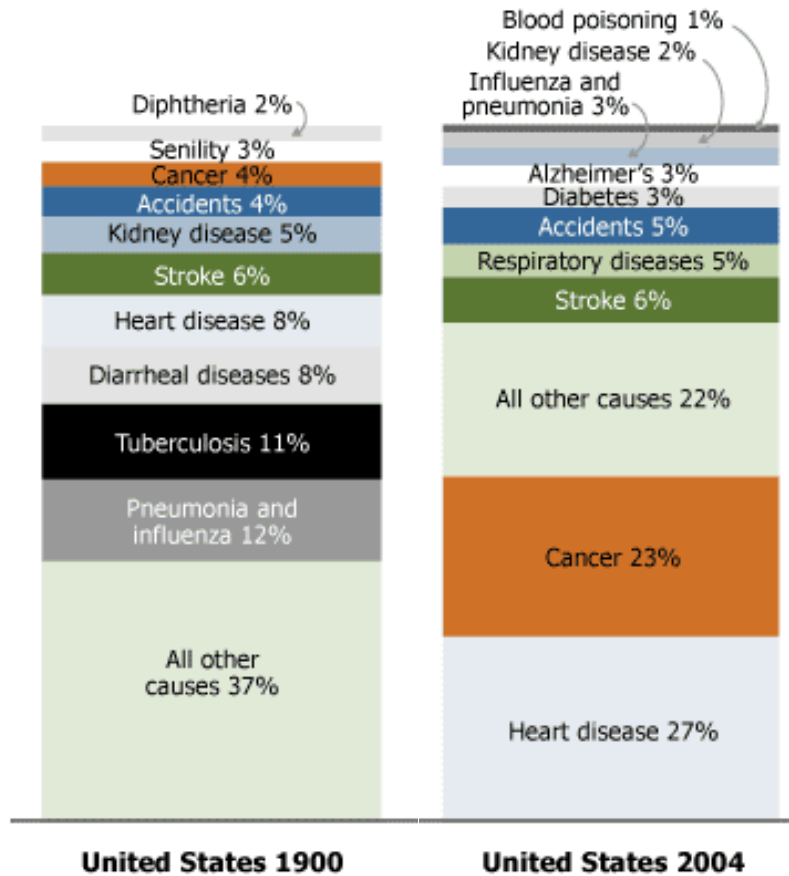
...except the flu and pneumonia



Per 100k population, Historical Statistics of the United States, Millennial Edition

Infectious diseases used to kill us...

...but what's left seem only to be "manageable" not easily "curable"



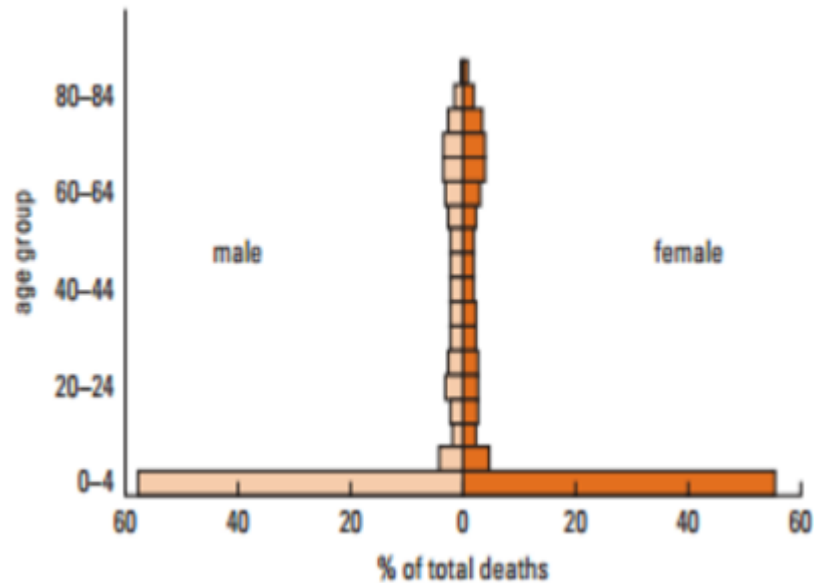
Per 100k population, Historical Statistics of the United States, Millennial Edition



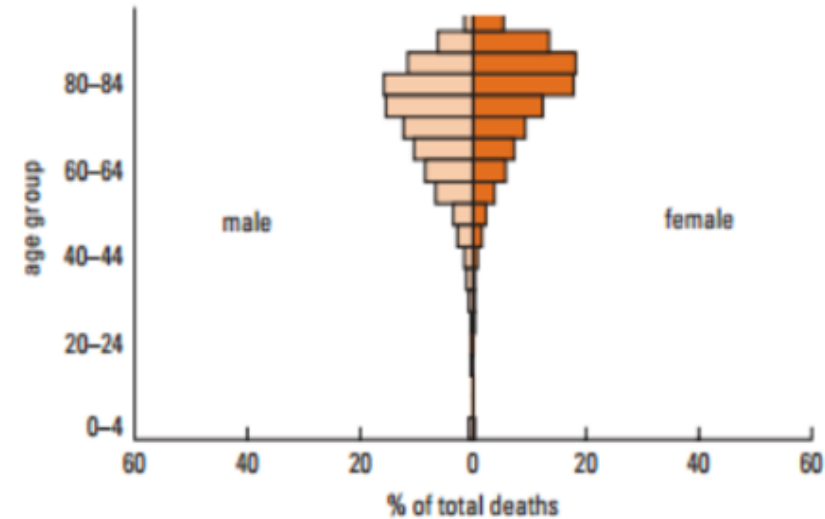
From cures to management...

...young people don't die of diseases often now

Death by age group, 1900



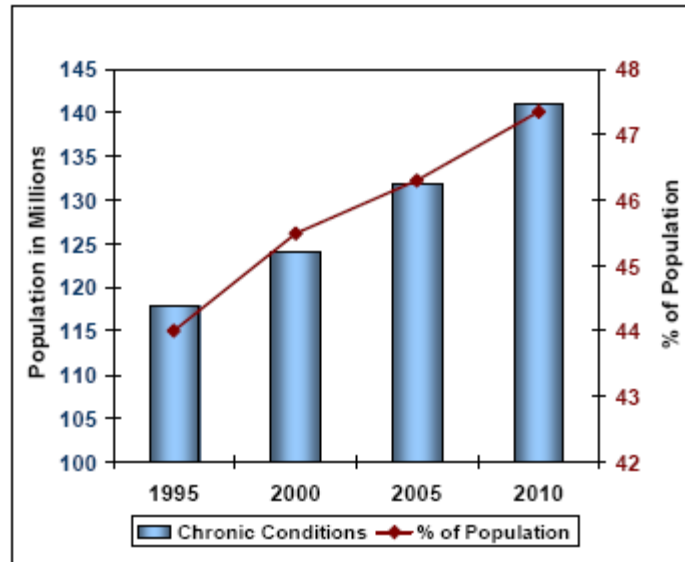
Death by age group, Today



Chronic Conditions

Almost half the U.S. population needs chronic disease management

More than 130 million Americans suffer from chronic conditions; that number will continue to rise



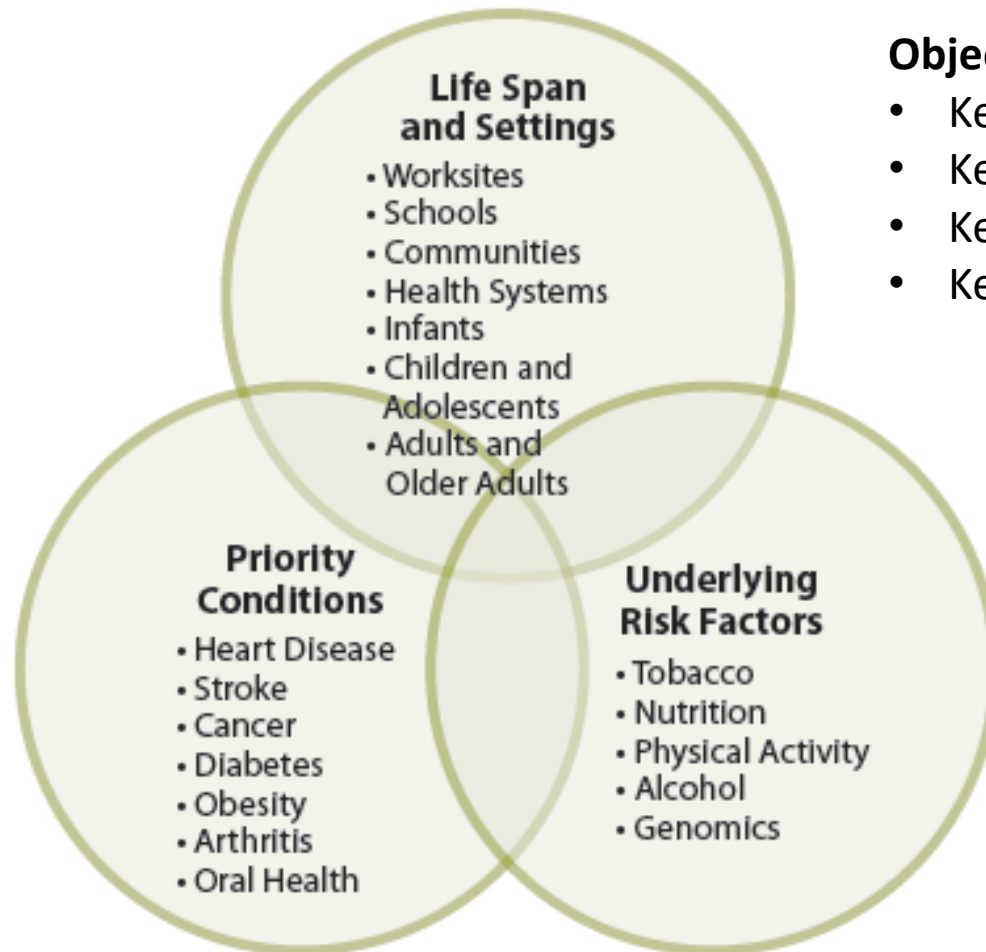
Chronic Condition	Prevalence U.S. Population	Annual Cost
Diabetes	20.8M	<ul style="list-style-type: none"> ▪ \$132B ▪ 11M lost work days
Heart Disease	60M	<ul style="list-style-type: none"> ▪ \$277B ▪ 5.9M lost work days
Asthma	30M	<ul style="list-style-type: none"> ▪ \$14B ▪ 6.3M lost work days ▪ 14M lost school days
Depression	21M	<ul style="list-style-type: none"> ▪ \$43B ▪ 13.2M lost work days ▪ \$30B in lost productivity

Source: NCQA State of Healthcare Quality Report 2007 & Wellpoint



Medicine has accepted lack of cures...

...we're now focused on prevention and wellness (below is CDC's framework)

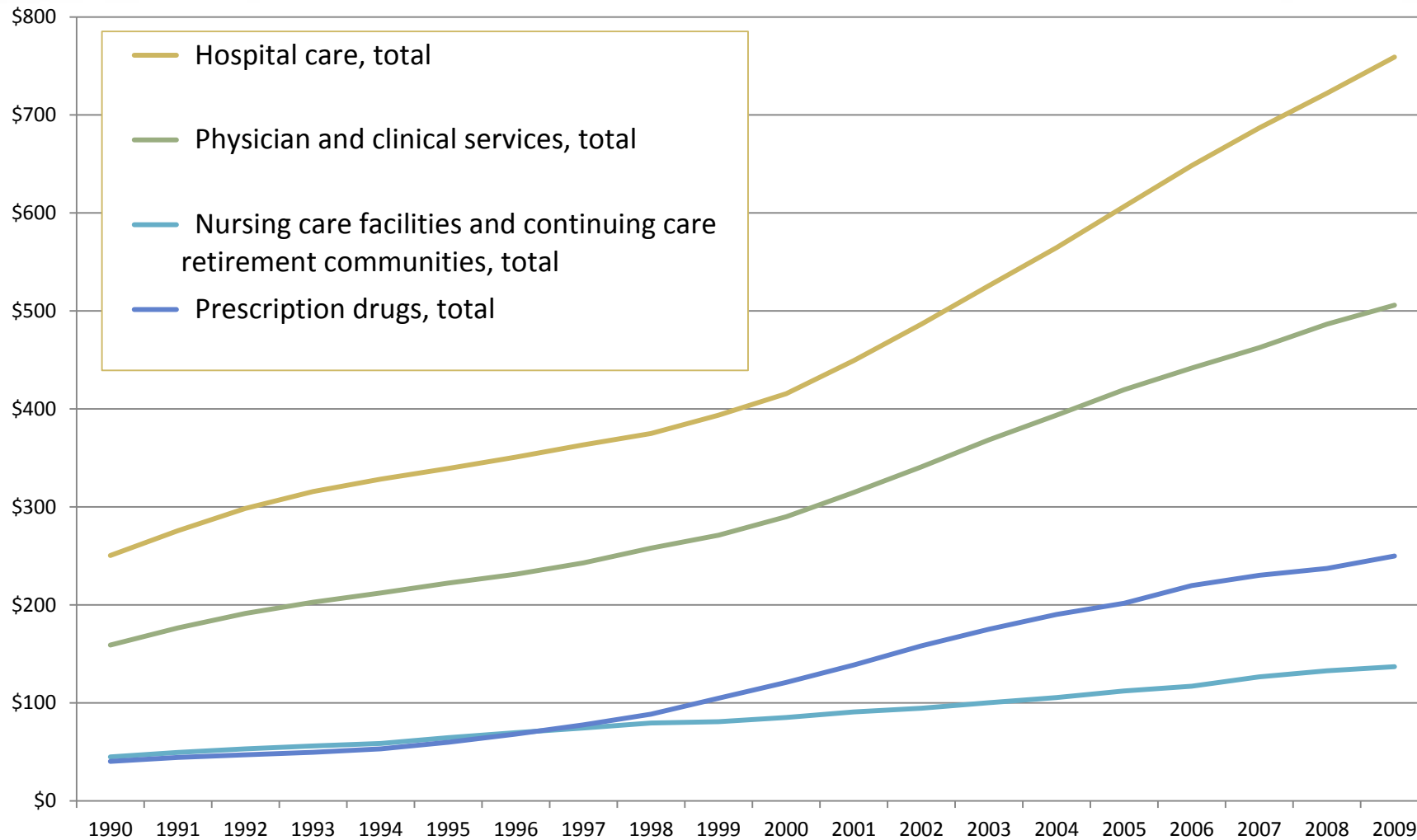


Objectives:

- Keep people out of the hospital (\$\$\$)
- Keep people from their docs (\$\$)
- Keep people off drugs (\$)
- Keep people at home

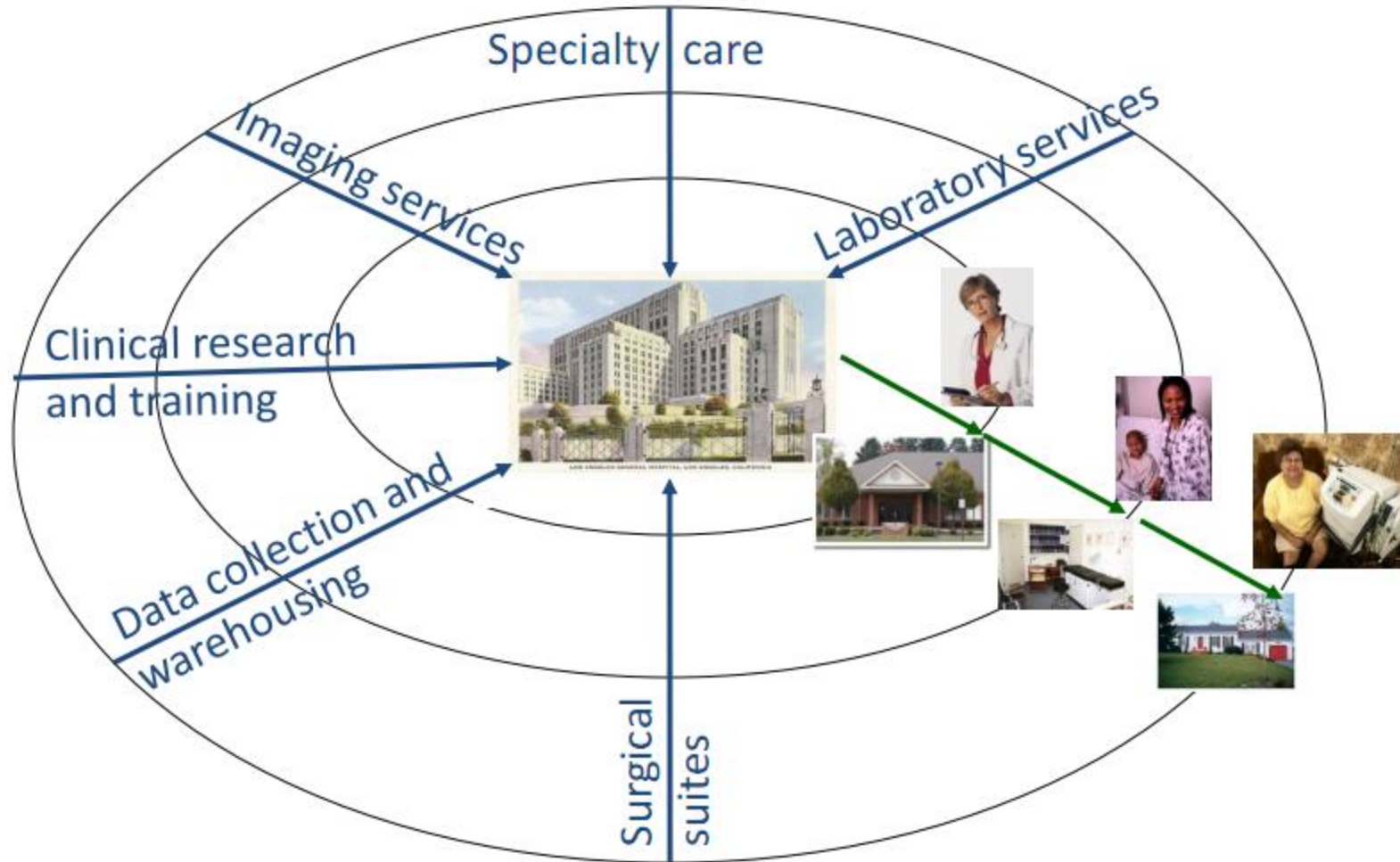
Keep patients away from hospitals

Hospitalization, physician and clinical services total more than \$1.2 Trillion today



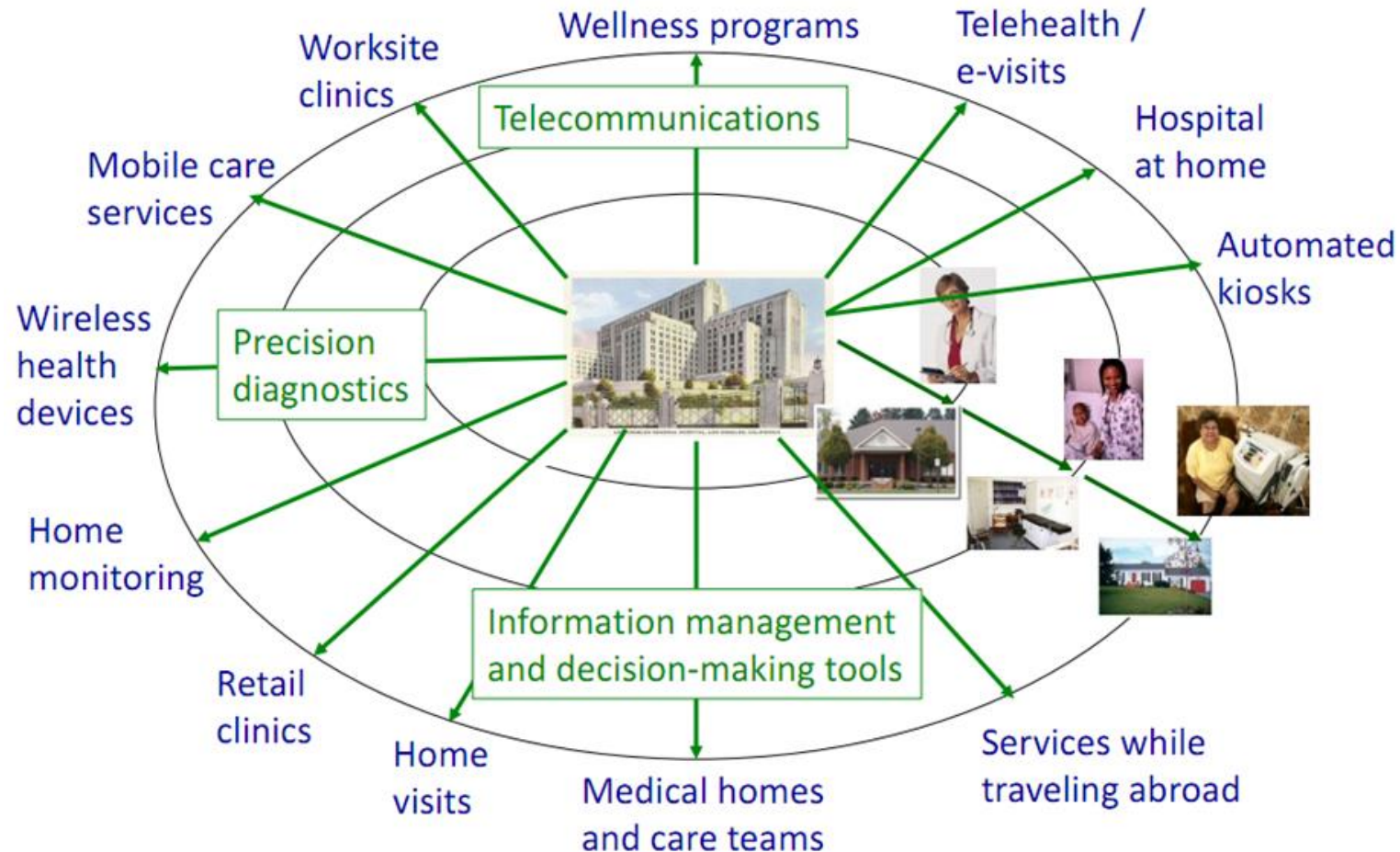
http://www.census.gov/compendia/statab/cats/health_nutrition/health_expenditures.html

Health services centralization tried



Source: Jason Hwang, Innosight, via Jeff Selberg of IHI

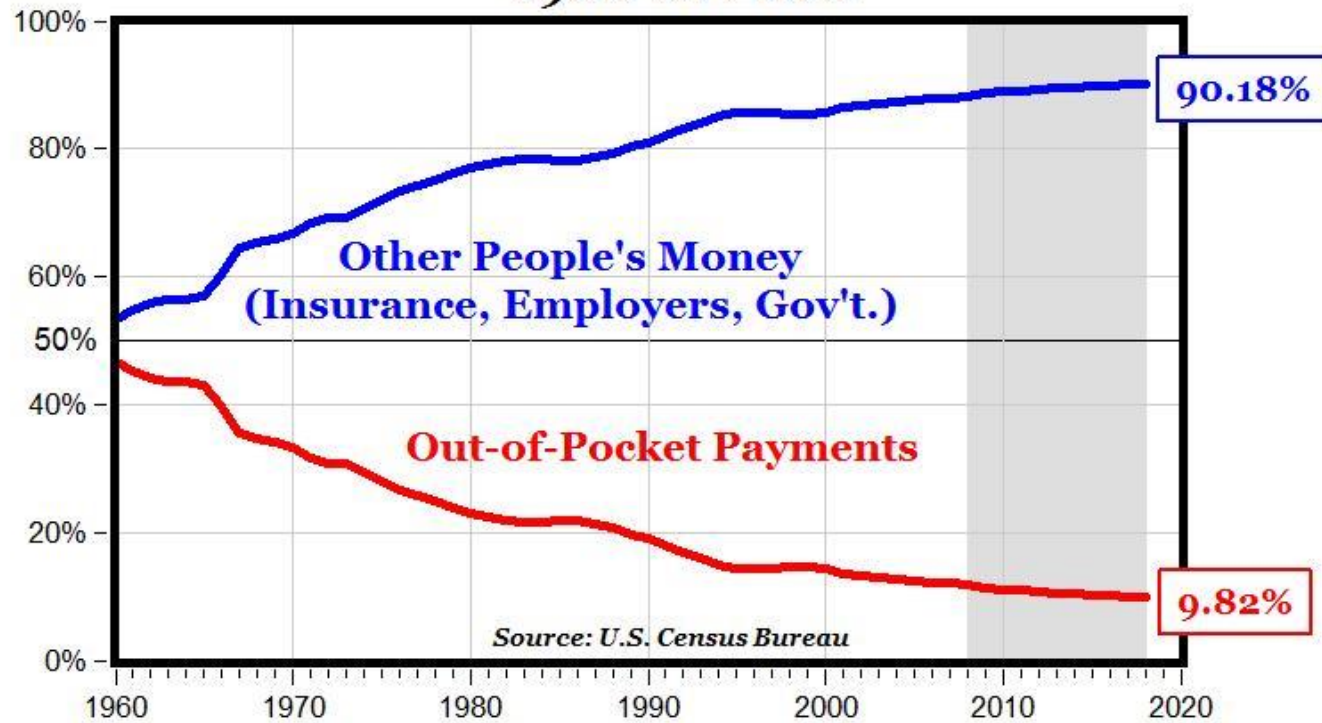
...now comes decentralization and innovation



Source: Jason Hwang, Innosight, via Jeff Selberg of IHI

Consumers will need do/pay more...

**Share of Total Health Care Expenditures:
Other People's Money vs. Out-of-Pocket Payments
1960 to 2018**



What are some of the new requirements?

Technological Implications for OSEHRA Community



Netspective
EXTENDING THE ENTERPRISE

The realities of patient populations

Prevention

Well Patient

- Education
- Health Promotions
- Healthy Lifestyle Choices
- Health Risk Assessment

26 % of Population

4 % of Medical Costs

At Risk

- Obesity Management
- Wellness Management
- Assessment – HRA
- Stratification
- Dietary
- Physical Activity
- Physician Coordination
- Social Network
- Behavior Modification

35 % of Population

22 % of Medical Costs

Management

Chronic Care

- Diabetes
- COPD
- CHF
- Stratification & Enrollment
- Disease Management
- Care Coordination
- MD Pay-for-Performance
- Patient Coaching

35 % of Population

37 % of Medical Costs

Acute Treatment

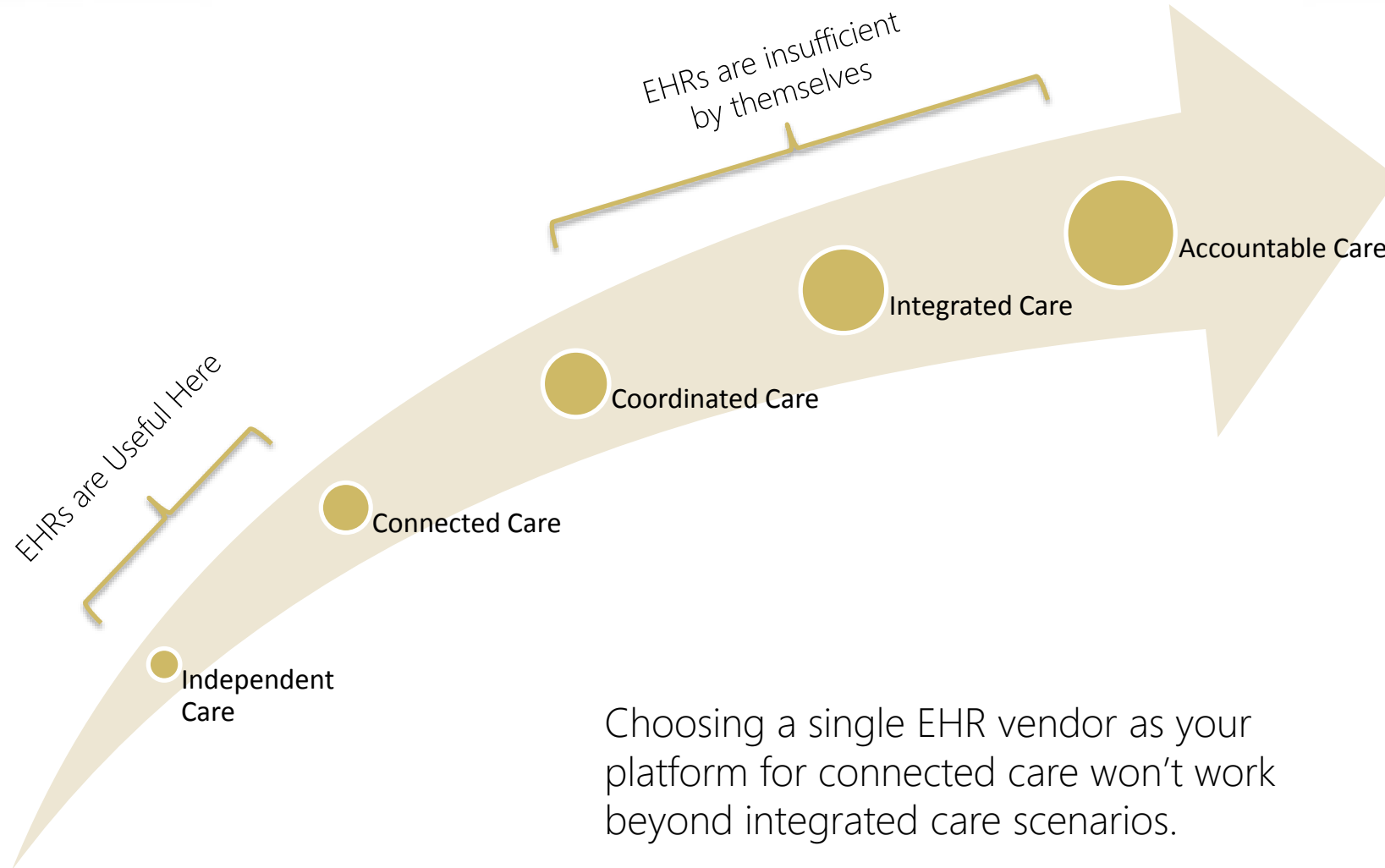
- Physicians Office
- Hospital
- Other sites
- Pharmacology
- Catastrophic Case Management
- Utilization Management
- Care Coordination
- Co-morbidities

4% of Population

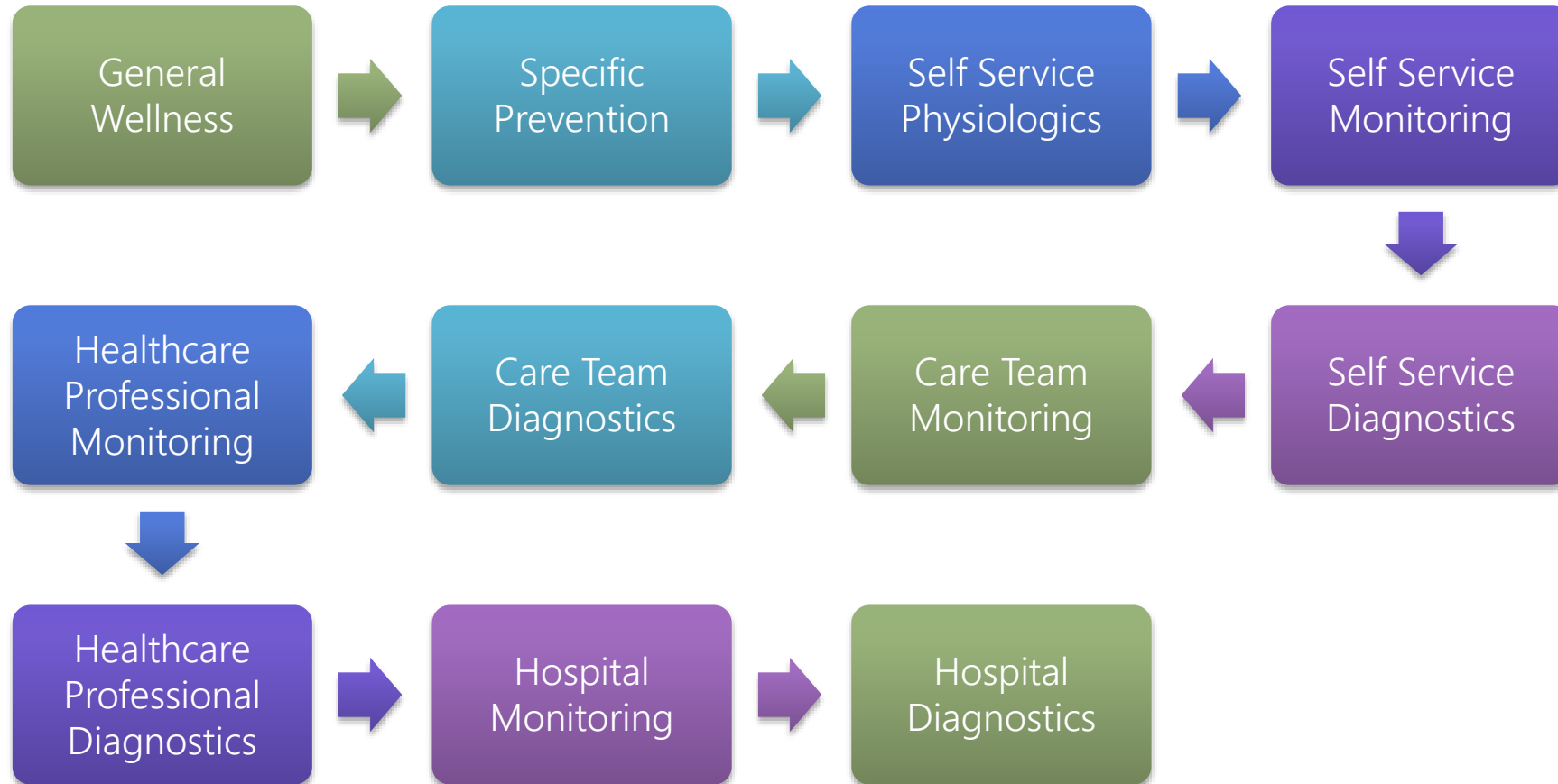
36 % of Medical Costs

Source: Amir Jafri, PrescribeWell

Patient Collaboration Maturity Model



The new world order





Is OSEHRA / VistA ready?

Improve speed of
response to new
patient/HCP needs

Reduce
permission-
oriented culture

React faster to
regulatory and
market changes

Reduce number of
Shadow IT systems

Reduce
compliance-focus
in favor of
customer focus



NEJM believes doctors are trapped

It is a widely accepted myth that medicine requires complex, highly specialized information-technology (IT) systems.

This myth continues to justify soaring IT costs, burdensome physician workloads, and stagnation in innovation — while doctors become increasingly bound to documentation and communication products that are functionally decades behind those they use in their "civilian" life.



We're digitizing biology

Last and past decades

Digitize
mathematics

Digitize
literature

Digitize social
behavior

Predict human
behavior

Gigabytes and petabytes

This and future decades

Digitize biology

Digitize
chemistry

Digitize physics

Predict
fundamental
behaviors

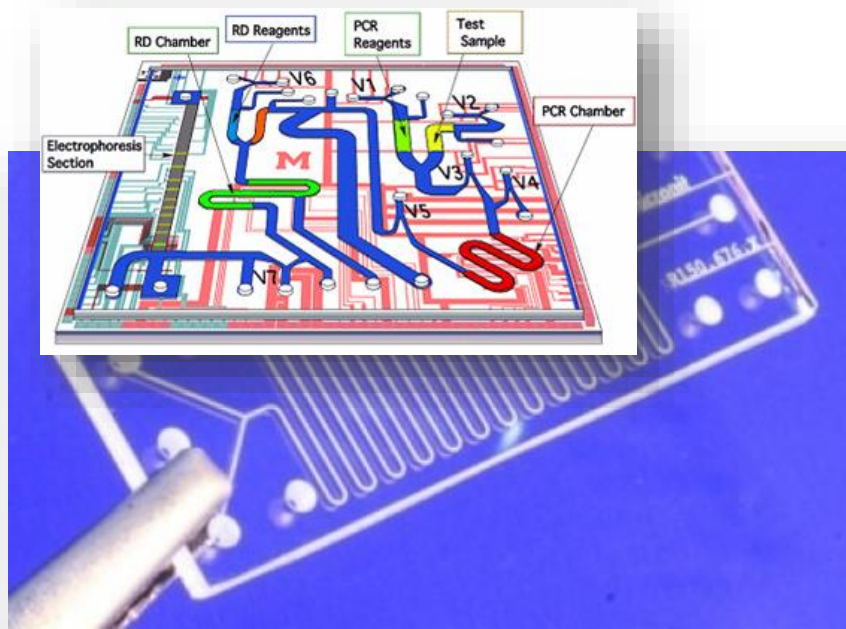
Petabytes and exabytes

Consumerization of physiologics....

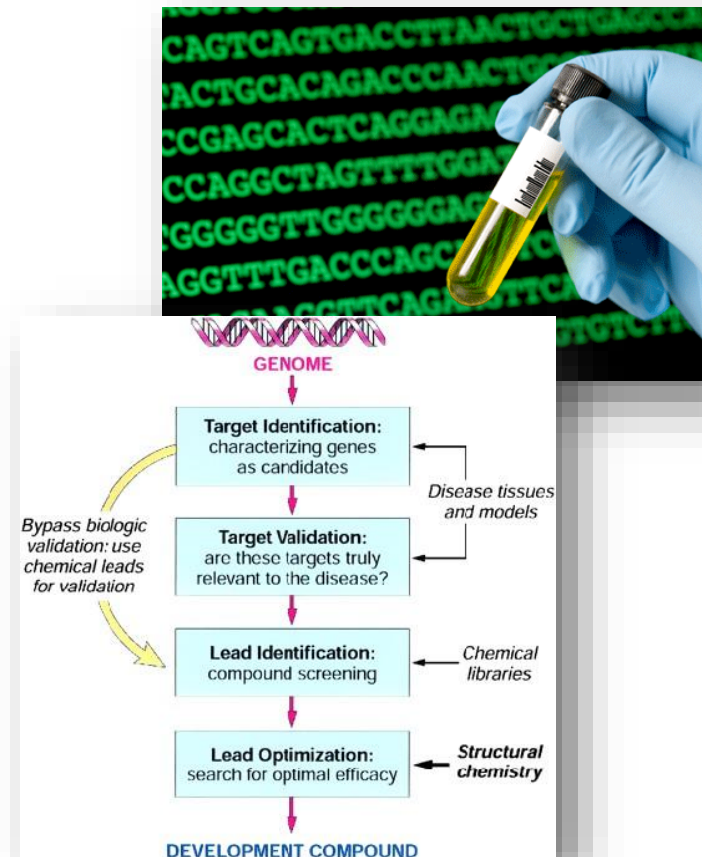


Consumerization of labs / genes

Labs on chips



Personal Genomics



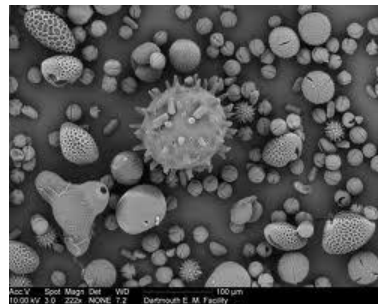
Consumerization of monitoring



Data changes the questions we ask



Simple visual facts



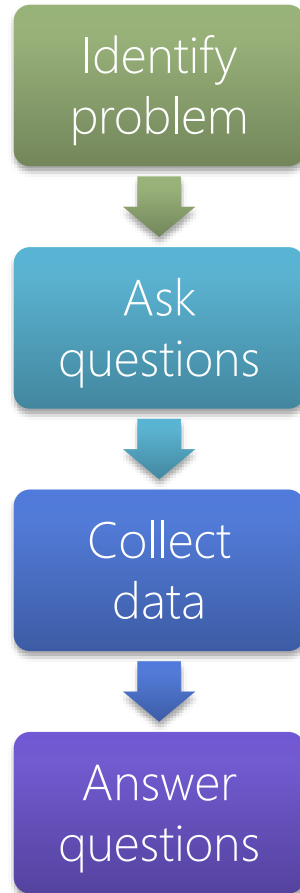
Complex visual facts



Complex computable facts

Implications for scientific discovery

The old way

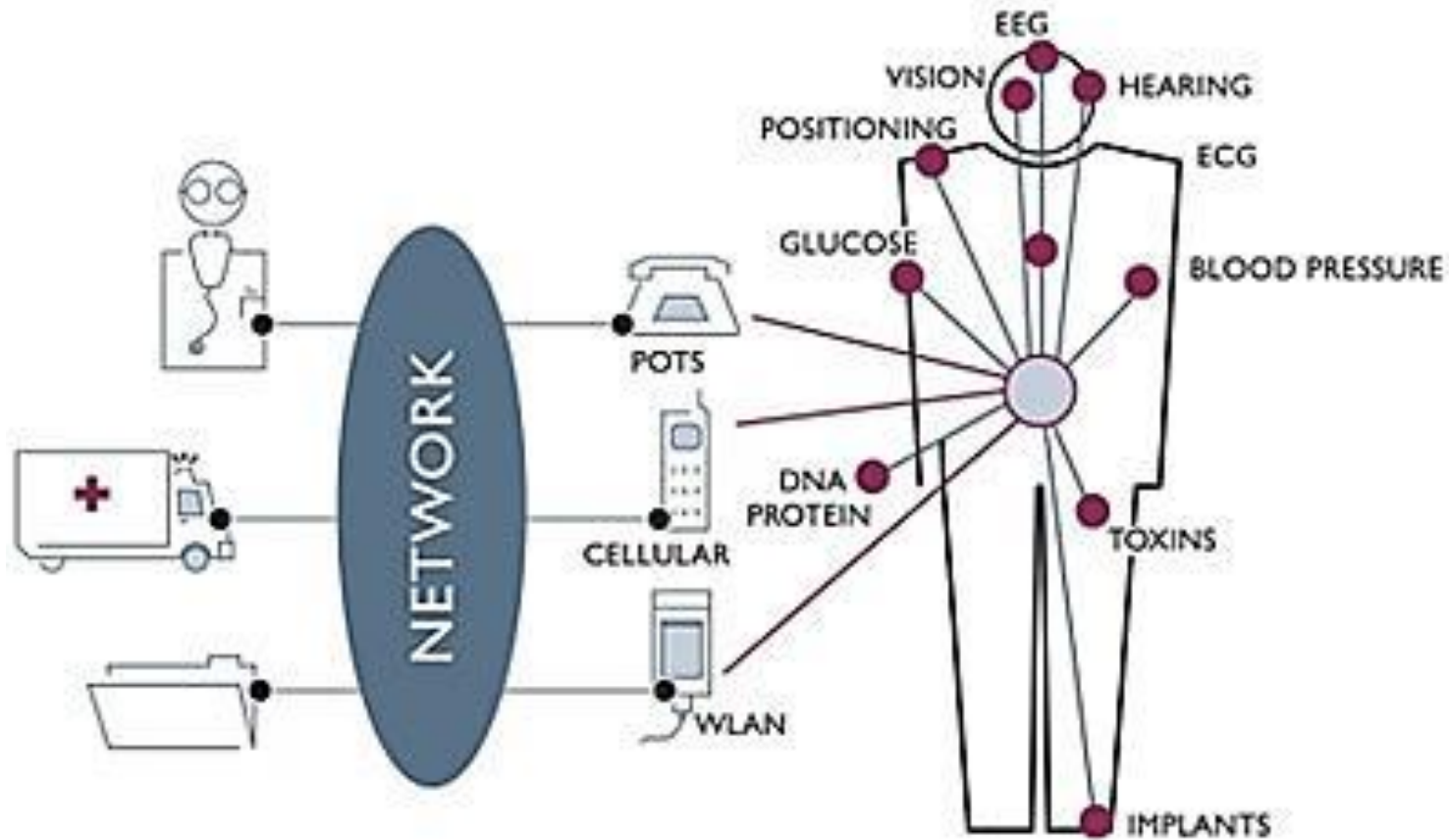


The new way

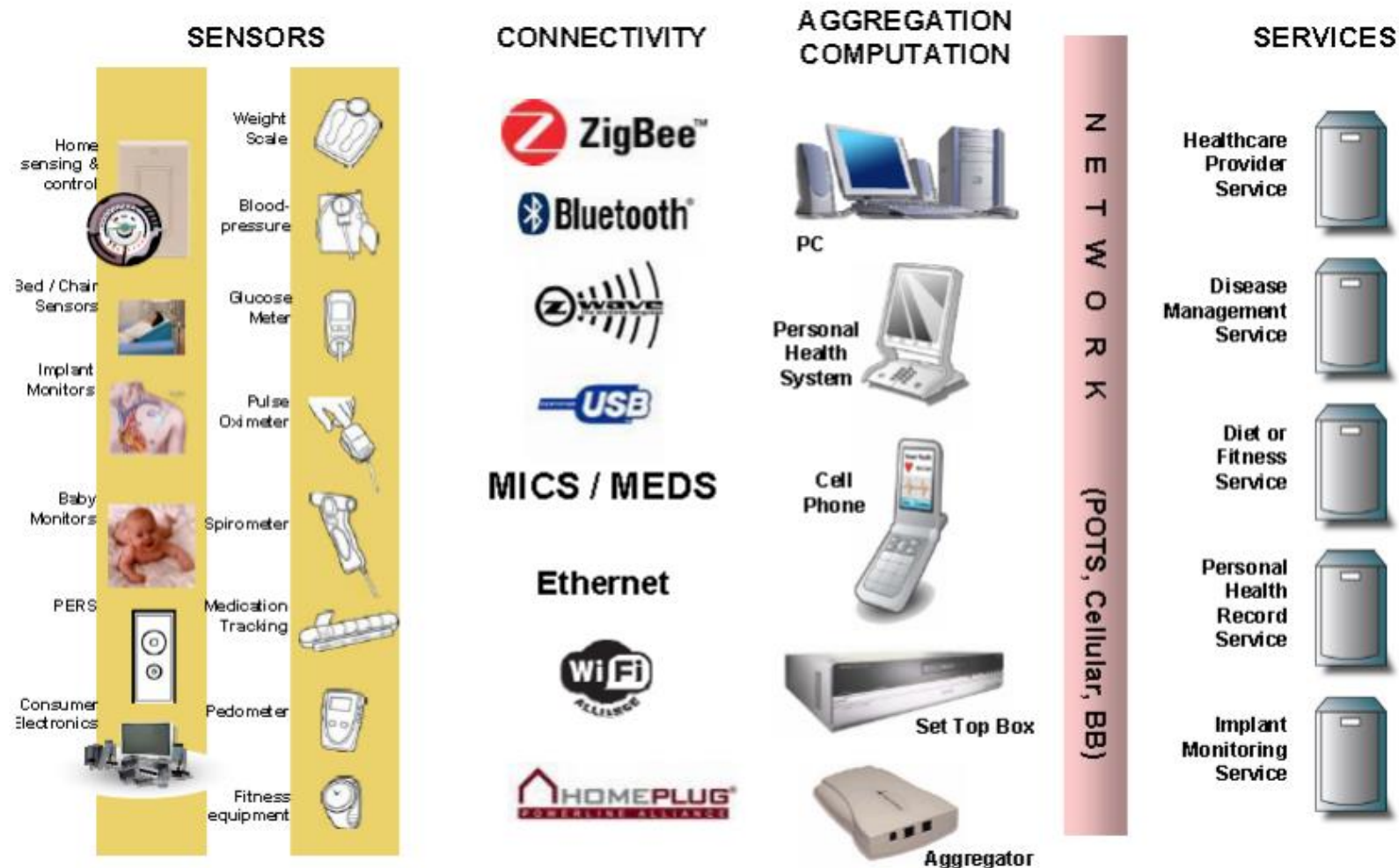


Wireless Body Area Network (BAN)

The cornerstone of mHealth



Wireless BAN Ecosystem



Source: Qualcomm

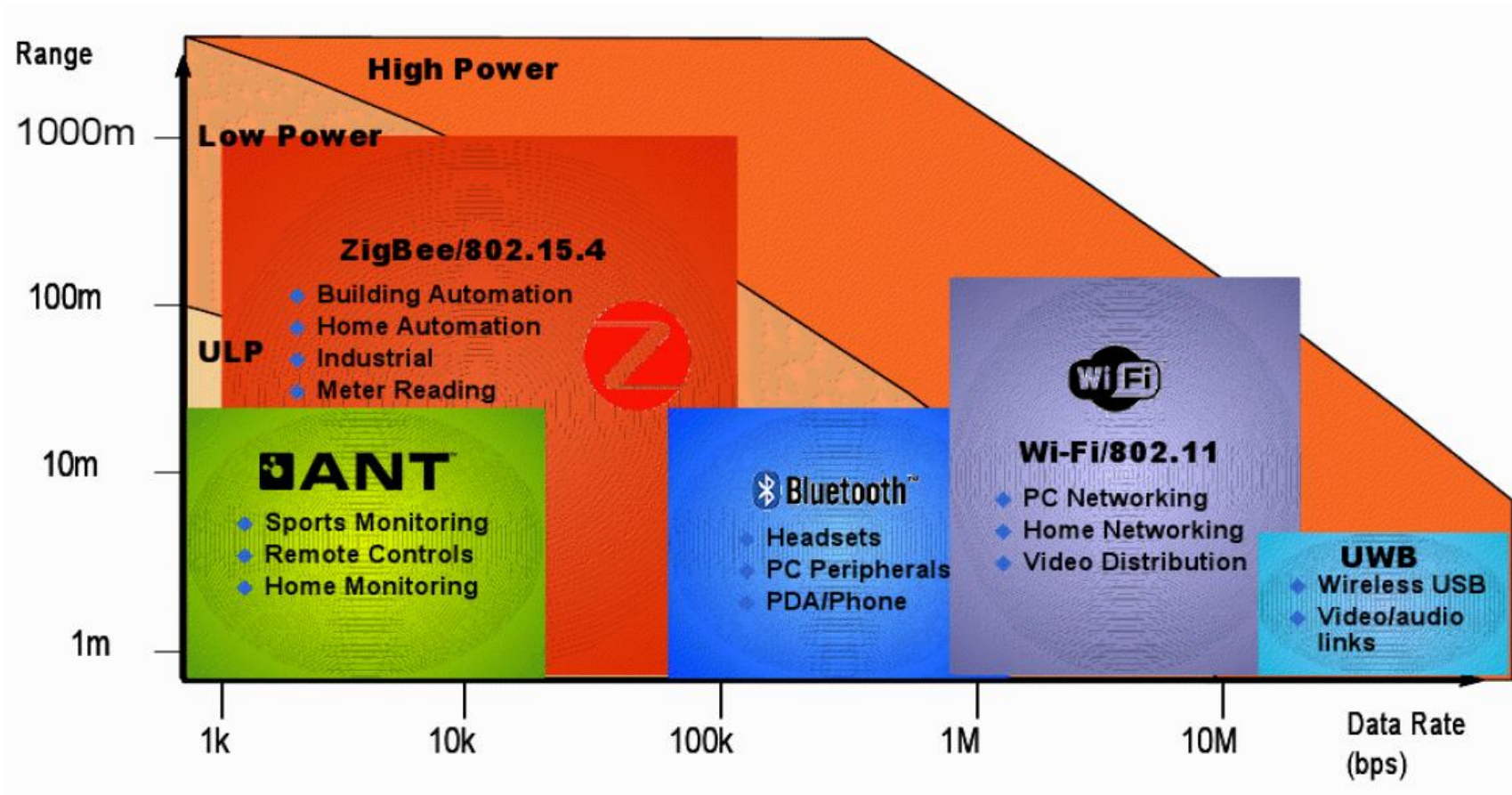
Wireless Protocols Comparison



Item	EM	Bluetooth	Zigbee	ANT
Stack Size (k)	< 1	250	100	4
Max Rate (bps)	8	360,000	80,000	20,000
Range (m)	1.5	10	30 – 1000	10 – 500
Coin Cell Battery Life (months) ⁽¹⁾	N/A	0.25	4	36
Networks supported	p2p	p2p, star	p2p, star, tree, mesh	p2p, star, tree, mesh

⁽¹⁾ 8 byte data message, 2 second interval, 24 hrs/day, 7 days/week

ANT+ is winning ULP protocol battle



How the OSEHRA Community Should Respond



Netspective
EXTENDING THE ENTERPRISE

VA, VHA, VistA, and OSEHRA

Top-notch pedigree and a well funded buyer of innovation



VA

FY2012 IT Spend: \$3.1 B



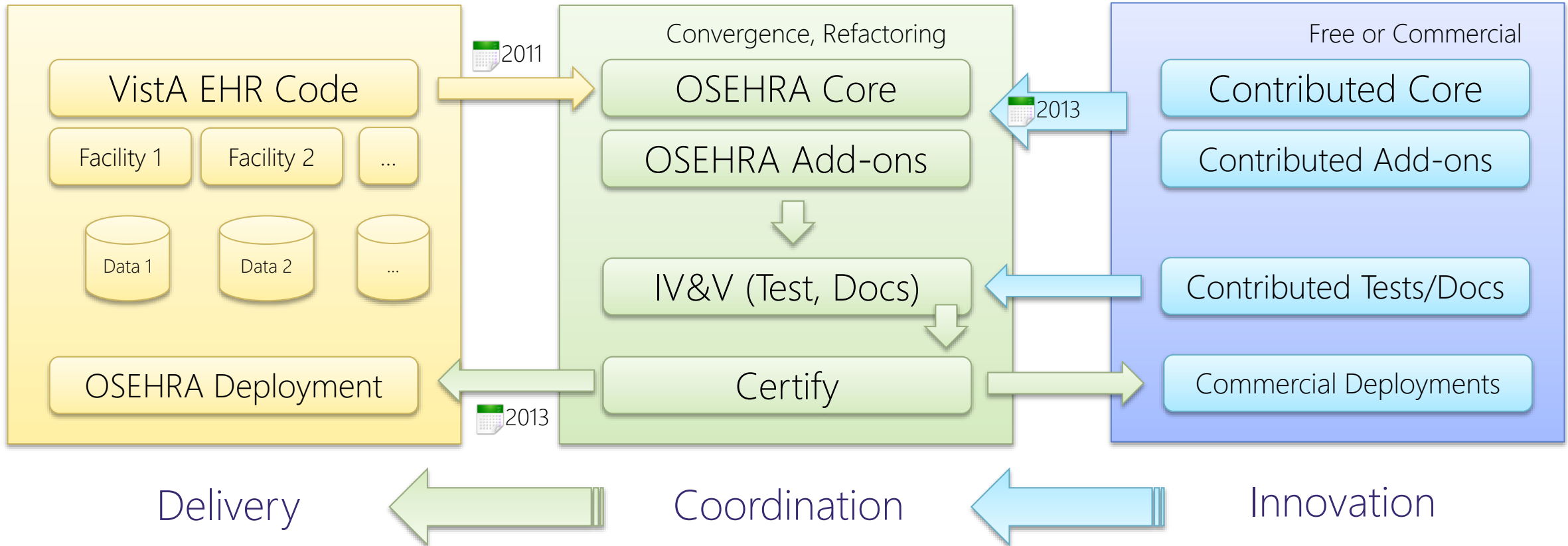
VHA



OSEHRA



Community





Needed from OSEHRA: Reimagined User Interactions

Data visualization requires integration and aggregation

What's being offered to users

VistA CPRS in use by: (VISTASERVER)

File Edit View Tools Help

TEST CPRSPatient 000-005436 May 21, 1956 (43) Visit Not Selected Primary Care Team Unassigned DPN Data Postings A

Active Problems: Psychogenic Headache, Calculus of Kidney (1cd-9-Cm 592.0), *Agitation, Cytomegalic Inclusion Disease, Hypomagnesemia, Emphysema Nec, Rlat Bile

Allergies / Adverse Reactions: Furosemide, Penicillin, Bee Sting, Penicillins, Sulfonamide/Related Antimicrobials

Postings: Allergies, Allergies

Active Medications: Sulfamethoxazole 800/Trimeth 160mg Tab Active, Vancomycin 125mg Cap Active

Clinical Problems: Alcohol Abuse, Diabetes, Diabetes, Diabetes, Diabetes, Diabetes, Dementia, Hep C-C, ACE Inhibitor, Inhaler

Recent Lab Results: Anc Bleeding Time, Blood Lc Lb #325448, Feb 25, 00

Vitals: T 98.6 F, P 60, R 18, BP 120/80, HT 51 in, WT 180 lb, PN 4, Mar 0

Reminder Resolution: Pneumococcal vaccine (pneumovax)

ORDER PNEUMOCOCCAL IMMUNIZATION:

- ☐ Order for pneumococcal vaccine placed.
- ☐ Order for influenza vaccine entered.

PRIOR IMMUNIZATION:

- ☒ Patient indicated that the pneumococcal vaccine was received previously.

Date/Time: 1997 Location: East Orange, NJ

Comment:

REFUSAL/CONTRAINDICATION:

- ☐ Patient indicates a history of contraindication to pneumococcal vaccination.
- ☐ Pt. has an acute illness. Vaccinations will be delayed until recovery from this illness.
- ☐ Patient has a life expectancy of less than 3 months. Evaluation and treatment may not be useful at this time.
- ☐ Patient refuses pneumococcal immunization.
- ☐ Patient refuses all immunizations at this time.

Clear < Back Next > Finish Cancel

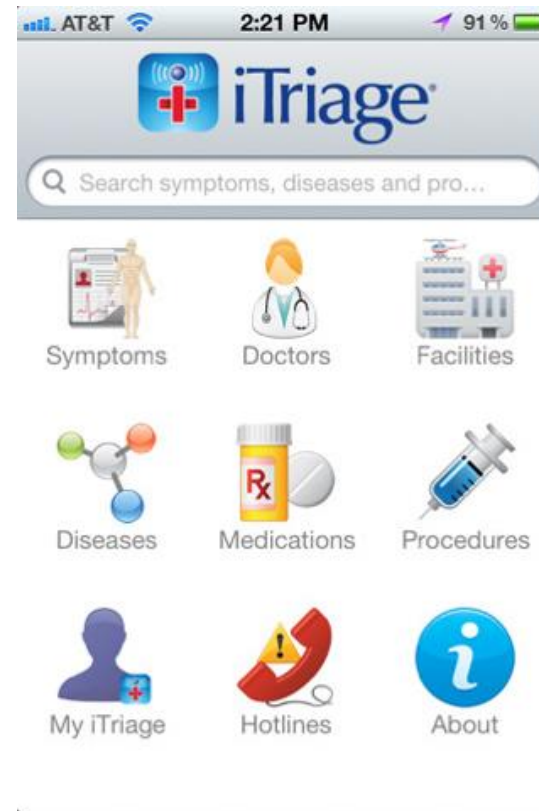
Pneumococcal vaccine (pneumovax):
Patient indicated that the pneumococcal vaccine was received previously.
Location: East Orange, NJ

Immunizations: PNEUMO-VAC (Historical)

What users really want



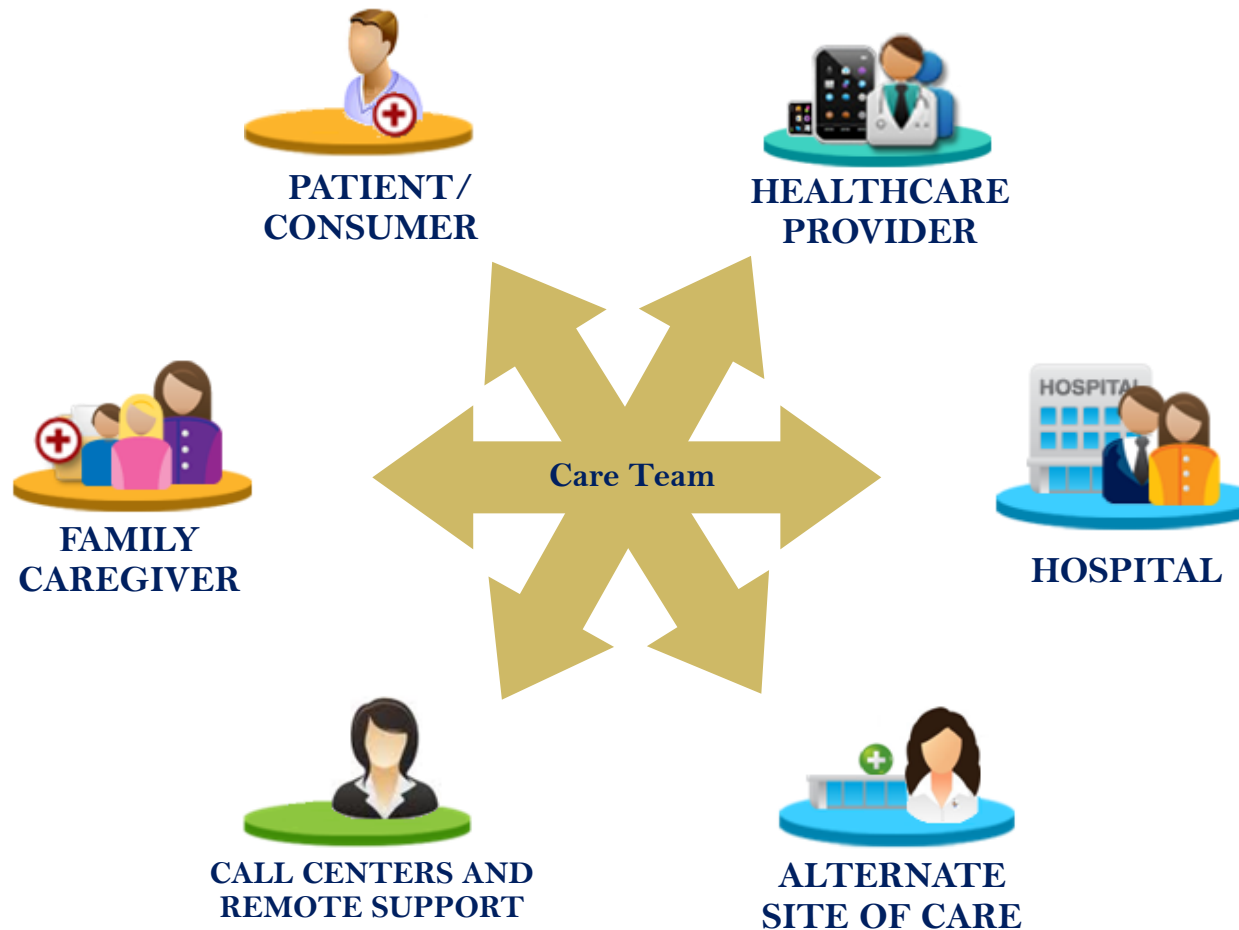
Needed from OSEHRA: diagnostic quality mHealth



Needed from OSEHRA: sophisticated analytics



Needed from OSEHRA: care team involvement





Needed: Self-service applications

Patient Scheduling
for Services

Secure Social Patient
Relationship
Management (PRM)

Patient
Communications,
SMS, IM, E-mail,
Voice, and Telehealth

Patient Education,
Calculators, Widgets,
Content
Management

Blue Button, HL7,
X.12, HIEs, EHR, and
HealthVault
Integration

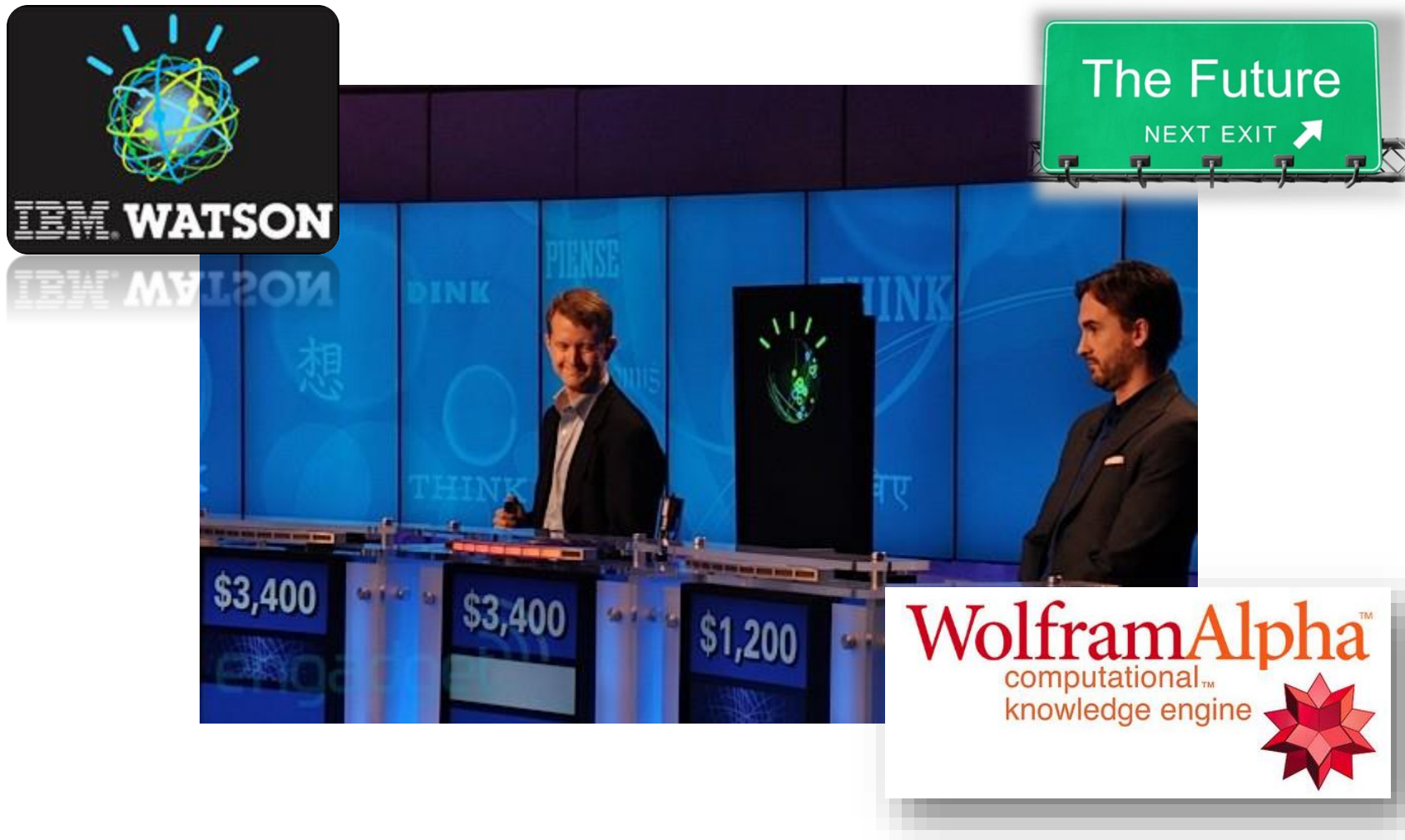
E-commerce, Ads,
Subscriptions, and
Activity-based Billing

Accountable Care,
Patient Care
Continuity and
Coordination

Patient Family and
Community
Engagement

Patient Consent,
Permissions, and
Disclosure
Management

Needed from OSEHRA: automated diagnostics



<http://healthcareguy.com>
@ShahidNShah
Shahid.Shah@netspective.com

Questions?

Thank you



Netspective
EXTENDING THE ENTERPRISE