Health Informatics: Where are are now, and what's next?
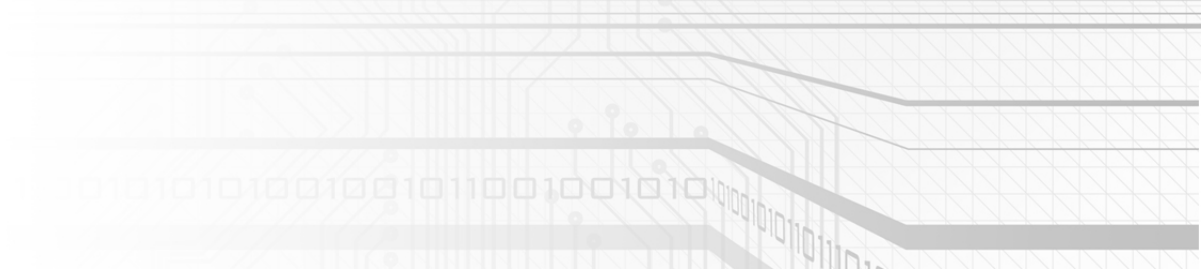
Douglas B Fridsma MD PhD FACP FACMI
President and CEO, AMIA

THE SCOPE OF INFORMATICS IN CHANGING

Biomedical Informatics in Perspective

Basic Research
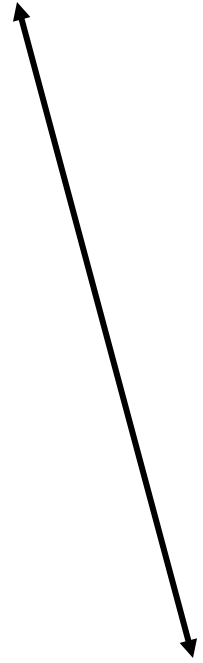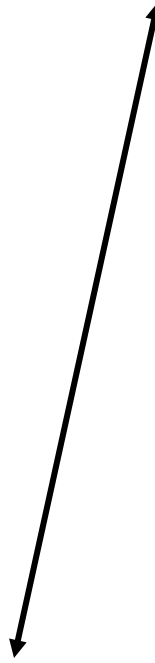
Biomedical Informatics Methods, Techniques, and Theories

Applied Research And Practice

Bioinformatics

Imaging Informatics

Clinical Informatics

Public Health Informatics

The Scope of Health Informatics

DNA

Small
Molecules

Diseases

Patient

Practice

Population

Scope of
Health Informatics

Public

10^9 Bioinformatics

10^6

10^3 Translational Research

10^0 Consumers

10^3 Clinical Applied

10^6 Population Health

10^9 Clinical Research

Public and Global Health
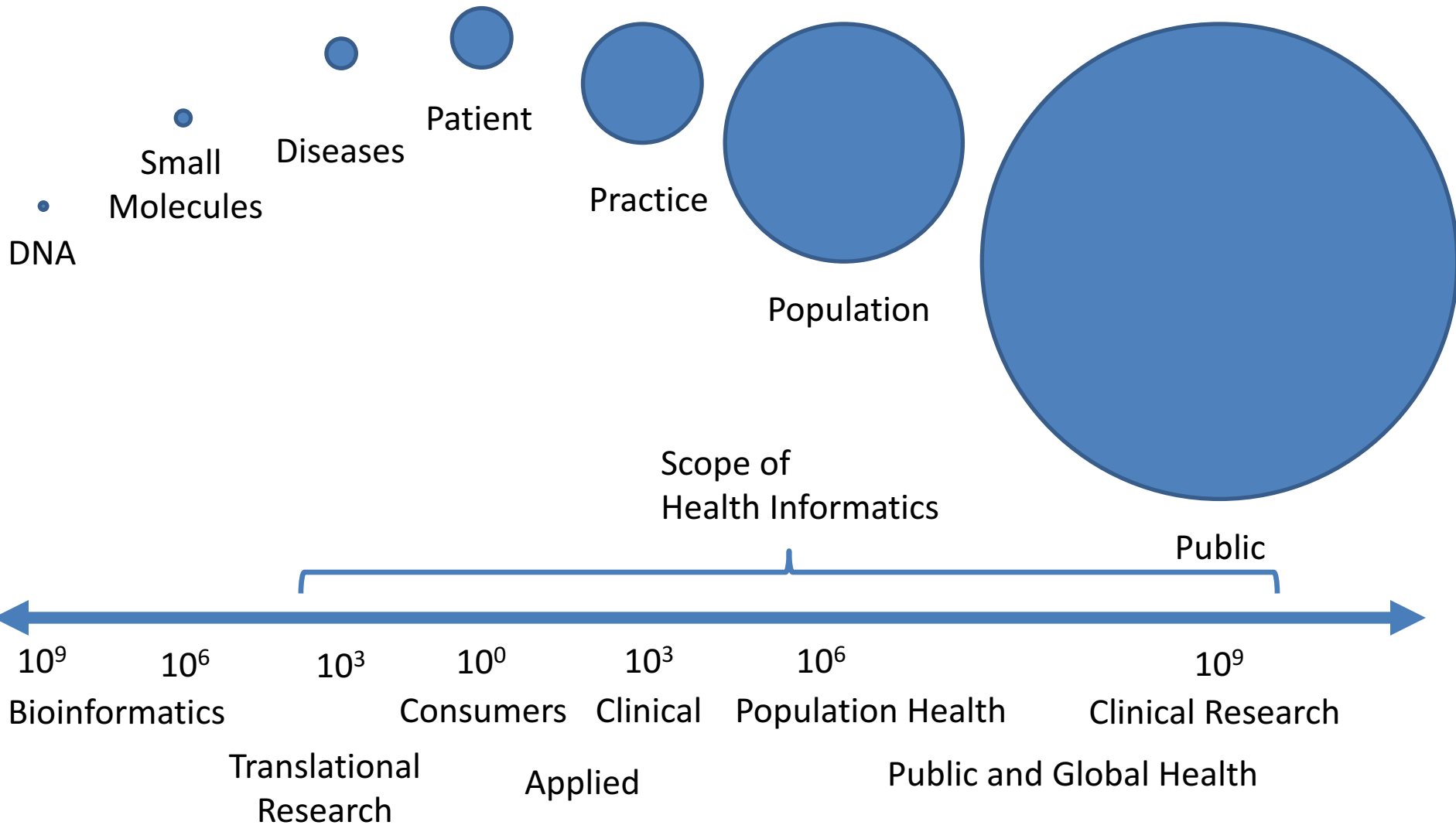
INFORMATICS IS MATURING AS A FIELD

Elements of a Mature Profession

- Professional societies
- Code of Ethics
- Initial professional education
- Skills development/apprenticeship
- Accreditation
- Certification
- Licensing (if applicable)
- Professional development (continuing education)

CLINICAL INFORMATICS SUBSPECIALTY

Clinical Informatics Diplomates
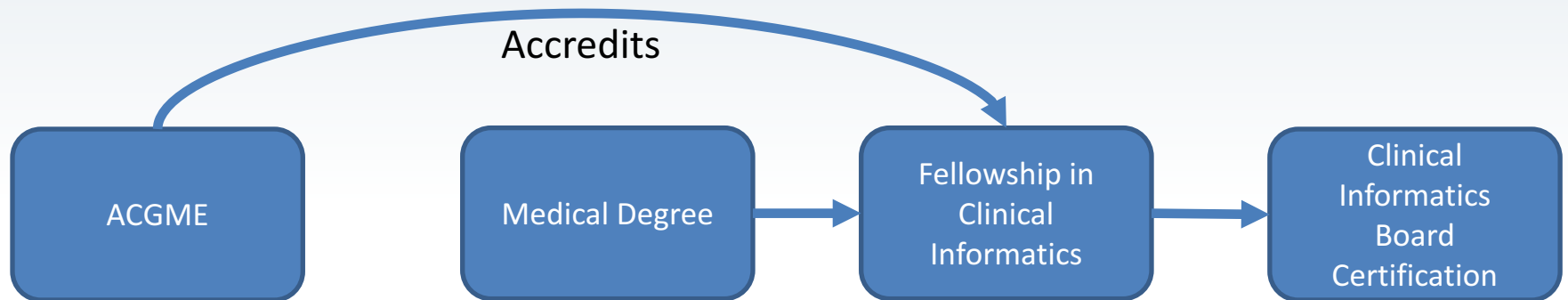
Accreditation   **Education**   **Experience**   **Certification**

Accredits

| ACGME | Medical Degree | Fellowship in Clinical Informatics | Clinical Informatics Board Certification |

ADVANCED HEALTH INFORMATICS CERTIFICATION

Advanced Health Informatics Certification

Accreditation   **Education**   **Experience**   **Certification**

Health Professional School Accreditation → Masters or Higher Degree in Primary Health Profession → Experiential training → Advanced Health Informatics Certification

CAHIIM Masters Informatics Accreditation → Masters or Higher Degree in Informatics → Experiential training

SO WHERE ARE WE?

Accreditation

Education

Experience

Certification

Advanced Professionals

| ACGME | Medical Degree | Fellowship in Clinical Informatics | Clinical Informatics Board Certification |

| Health Professional School Accreditation | Masters or Higher Degree in Primary Health Profession | Experiential training | Advanced Health Informatics Certification |

| CAHIIM Masters Informatics Accreditation | Masters or Higher Degree in Informatics | | |

WHAT'S NEXT? WHAT'S MISSING

Accreditation	Education	Experience	Certification

Advanced Professionals

ACGME	Medical Degree	Fellowship in Clinical Informatics	Clinical Informatics Board Certification
Health Professional School Accreditation	Masters or Higher Degree in Primary Health Profession	Experiential training	Advanced Health Informatics Certification
Masters Informatics Accreditation	Masters in Informatics	Experiential training	Professional Health Informatics Certification
Bachelors Informatics Accreditation	Bachelors in Informatics	Experiential training	Qualified Health Informatics Certification

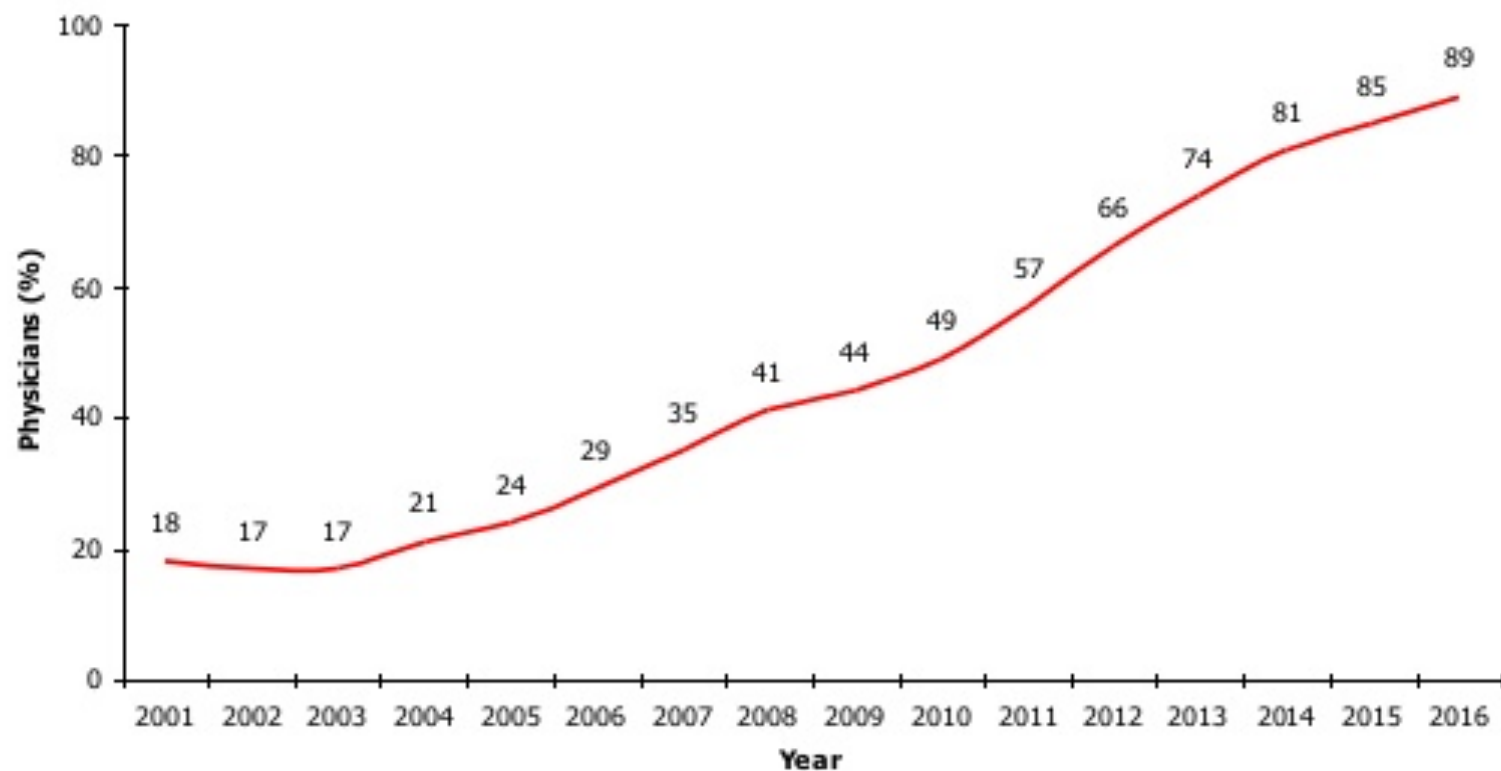# MEANINGFUL USE HAS HAD A PROFOUND IMPACT ON ELECTRONIC RECORDS

US Physician EHR Adoption

*EHR = any EHR with basic or advanced capabilities

WHAT WE LEARNED IN THE LAST 10 YEARS? (IN 5 EASY STEPS)

FRAMING MATTERS:
HEALTH IT IS ONE ULTRA-LARGE SCALE SYSTEM

Google

ULS SEI

Google Search   I'm Feeling Lucky

It's not architecture. It's city planning

- **Decentralized control**
  - Federation and data sharing (via standards)
  - Patient will be the one common feature
- **It's a socio-technical system**
  - People don't just interact with the systems. They are PART of the system.
- **Unknowable and diverse requirements**
  - Iterative, incremental development, since we will learn as we go
- **Continuous evolution and deployment**
  - Tolerate differences in semantics, syntax, and sophistication
  - Path of least regret
- **Normal failures**
  - Security is important, recovery and restoration even more so
- **Orchestration rather than command and control**
  Health IT and Informatics is not about architecture and engineering.
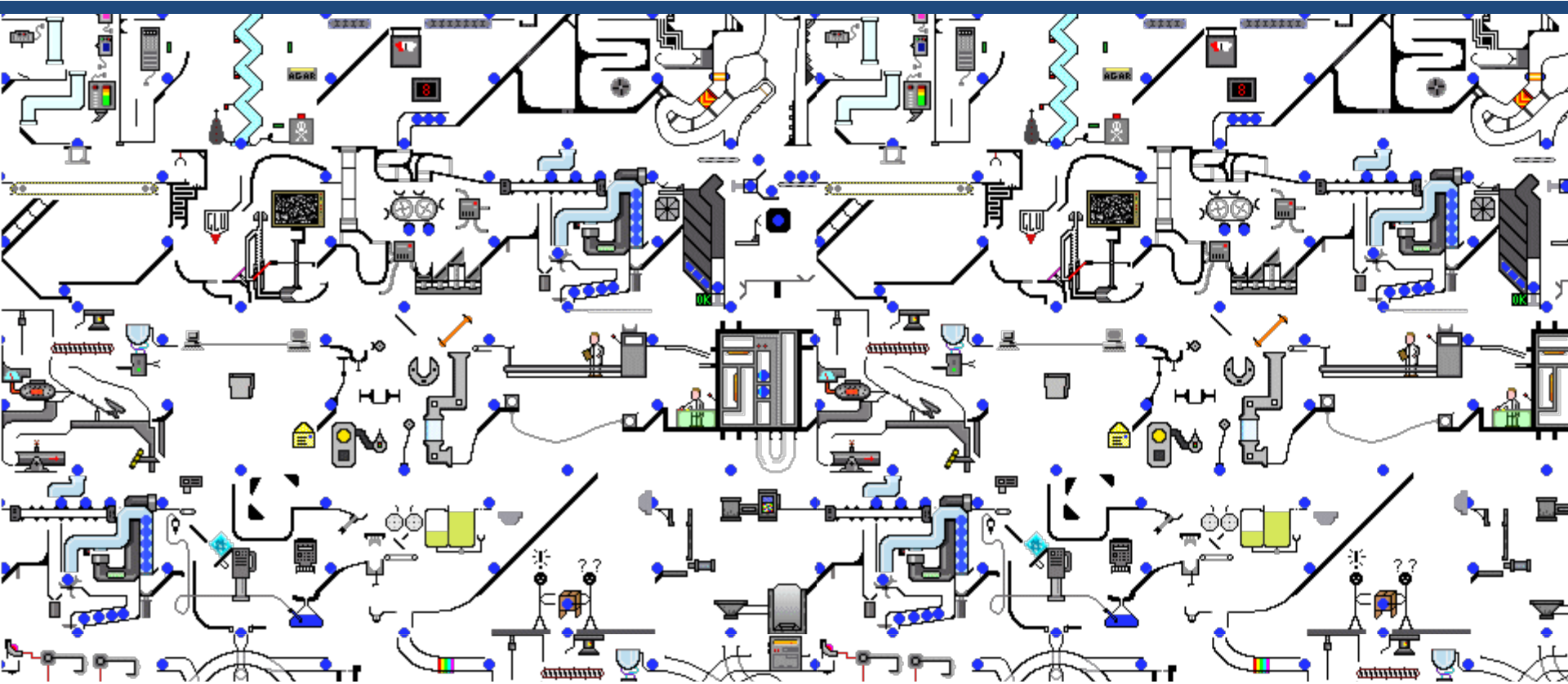 *It's about city planning.*

STANDARDS AND INTEROPERABILITY: HARD IN THE CONCRETE, IMPOSSIBLE IN THE ABSTRACT

Interoperability only makes sense in the context of what you want to DO

Interoperability (IEEE)

- Ability of two or more systems to **exchange** information
- Ability of those systems to **use** the information that has been exchanged
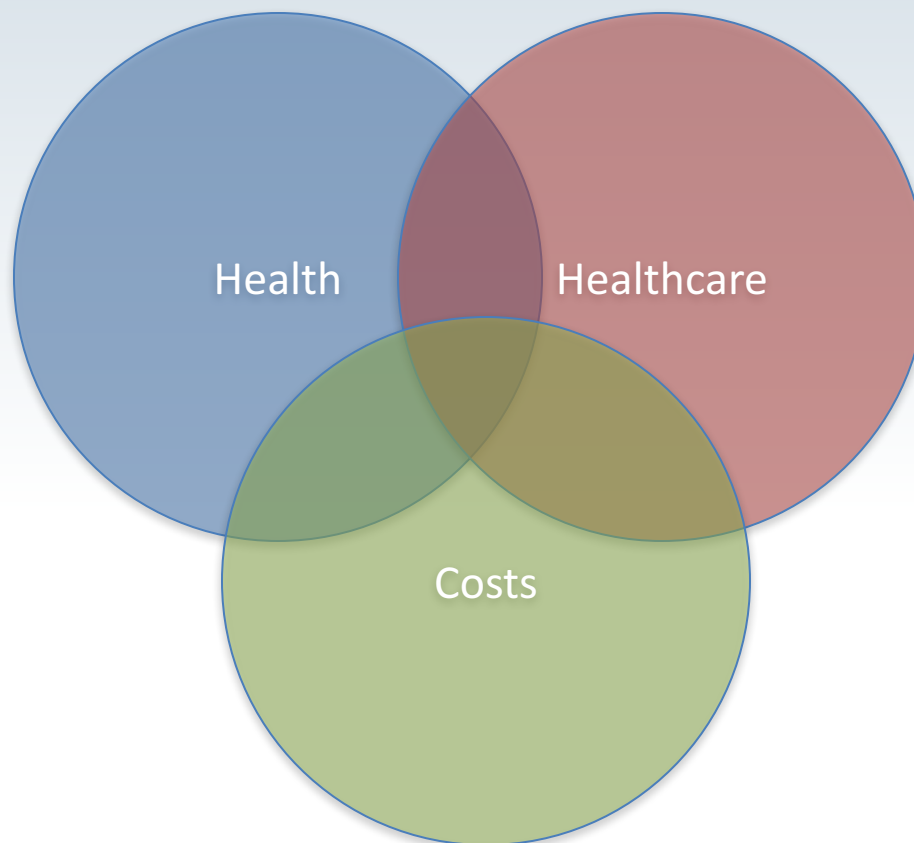
FRAME THE SOLUTION IN TERMS OF THINGS THAT MATTER TO PEOPLE

The Triple Aim

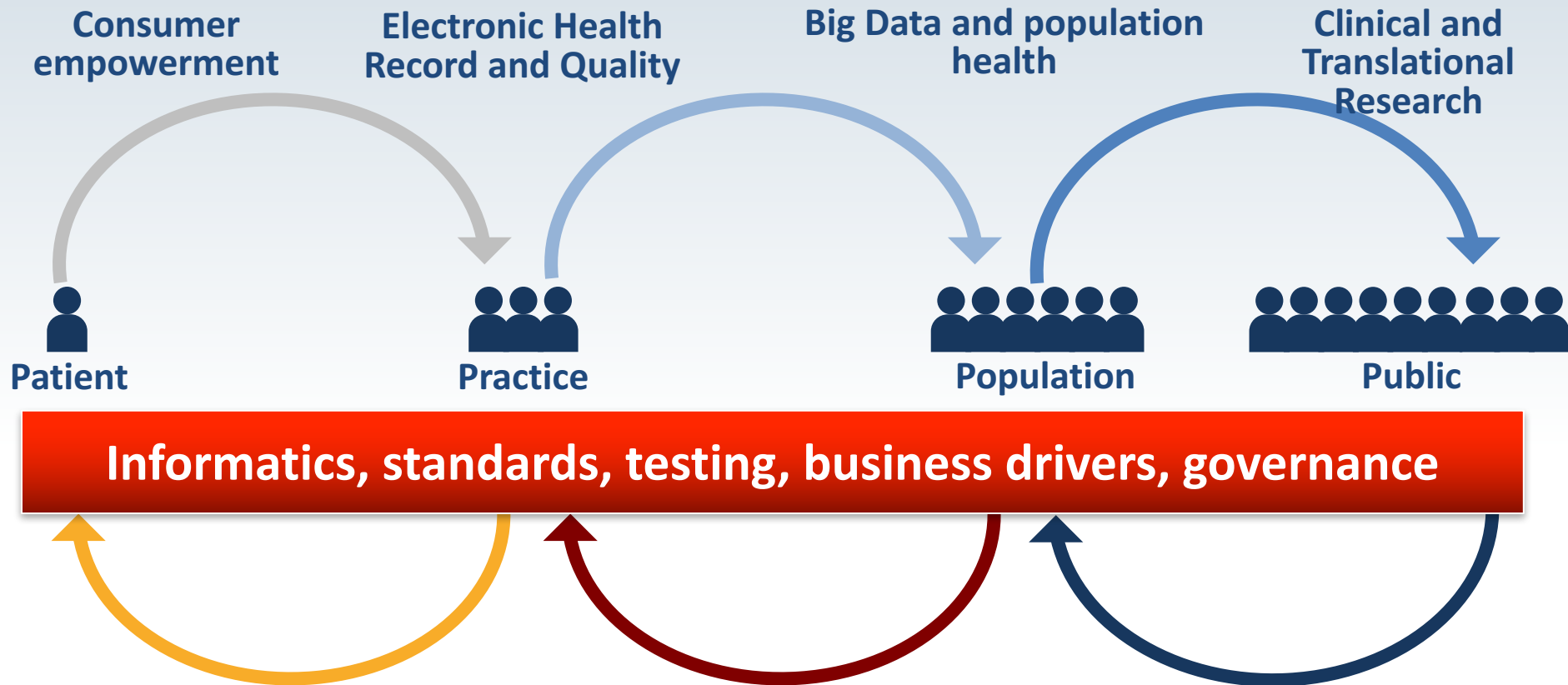# WE NEED TO THINK ACROSS 4 SCALES OF ENGAGEMENT

The learning health system

Consumer empowerment

Electronic Health Record and Quality

Big Data and population health

Clinical and Translational Research

Patient

Practice

Population

Public

Informatics, standards, testing, business drivers, governance

FIVE TECHNICAL THINGS TO STANDARDIZE

Technical stack

Meaning	How should well-defined values be coded so that they are universally understood?
Content Structure	How should the message be formatted so that it is computable?
Transport	How does the message move from A to B?
Security	How do we ensure that messages are secure and private?
Services	Purpose-specific APIs and services that leverage the 4 other building blocks

THE FUTURE OF INFORMATICS

EHRS WILL NOT BE THE MOST IMPORTANT HEALTH IT

The Physician's Automobile

Its Advantages and Disadvantages.

A DISCUSSION OF CARS, TIRES, MOTORS, ROADS, CHAUFFEURS, AND REPAIRS.

PROFITING BY THE OTHER MAN'S EXPERIENCE.

ROLANDUS G. WALKER, M.D.

DENVER.

BUY a car proved good by others' experiences. Do not buy a machine that was worn out by a previous owner, or one that was built to sell cheaper than a good, substantial automobile can be sold. My car has proved a great satisfaction to me. It is a well-made, four-cylinder runabout (102*), 20 h. p., easy access to all working parts, plenty of space for satchels, rides easily and is operated economically.

Advantages of Automobiles.

The advantages of automobiles as compared with all other vehicles are, in brief, their speed, absence of fatigue, ease of control in not running away, in not starting unbidden, in being safely left untended, in excellence of brakes, economy in requiring less stable room, less immediate attention on return from a journey, and less lengthy attention before starting on one, the access they give to beautiful scenery, the access to a large circle of friends when living in the country, and the access to the country when in town, the health they bring with fresh air, all united with an absorbing pursuit, distraction from work, ease of traveling, and perfect harmlessness in the streets.

The horse and buggy can not be compared with an automobile for genuine pleasure, health and excitement. For the

broadening, we commend an auto trip Not a cut-and-dried affair, where the details have been arranged in advance, but a go-as-you-please, with no definite route in view. Just go when and where the spirit moves you. Don't hurry. Take things easy, and if you come to a broken bridge, don't swear, just consider it one of the experiences, back up and find another way around. It is these unexpected things that bring the best recreation. Let down the top and give the sun and air a chance to get at you. They are both great gifts and ought not to be shut out. Stop at every town, talk with its people, compliment them if you see anything worthy, and carry home with you added knowledge of human nature and a sense of satisfaction that will do you good.

The Auto a Time Saver.

The automobile is a great time saver, which is an item of great importance to the physician. The auto enables the physician to spend more time in his office, which can be profitably employed in reading and studying or recreation, the value of which can not be computed in dollars and cents. The saving of time, the fresh air, the forgetting of little annoyances, the absorption in the car in motion, and the possessing of a hobby which one enjoys while actually doing his work, bring the doctor home at night fresh and ready for his reading.

Study Your Car.

Study and understand your car as you do the human body. Learn to diagnose your trouble when it arises, under-
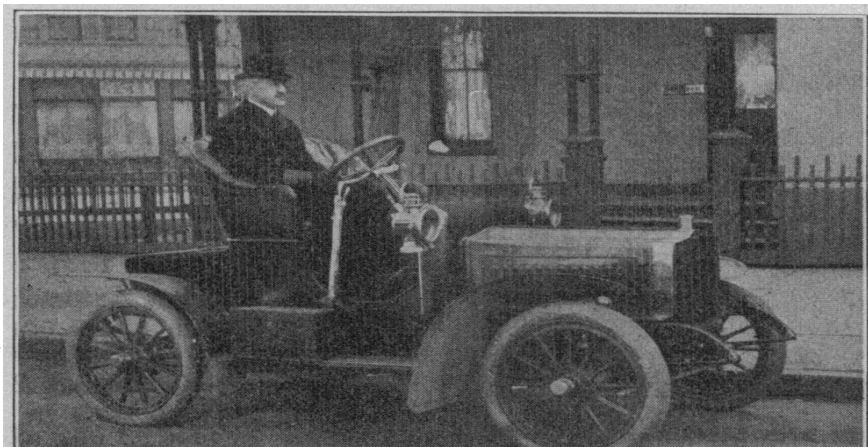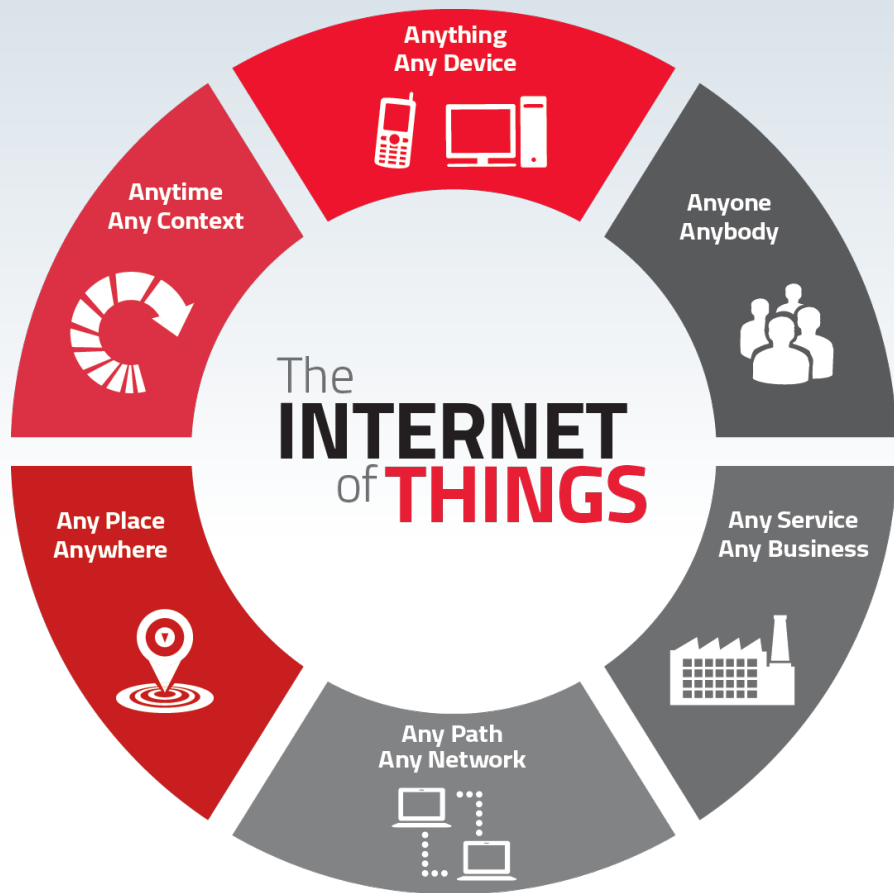
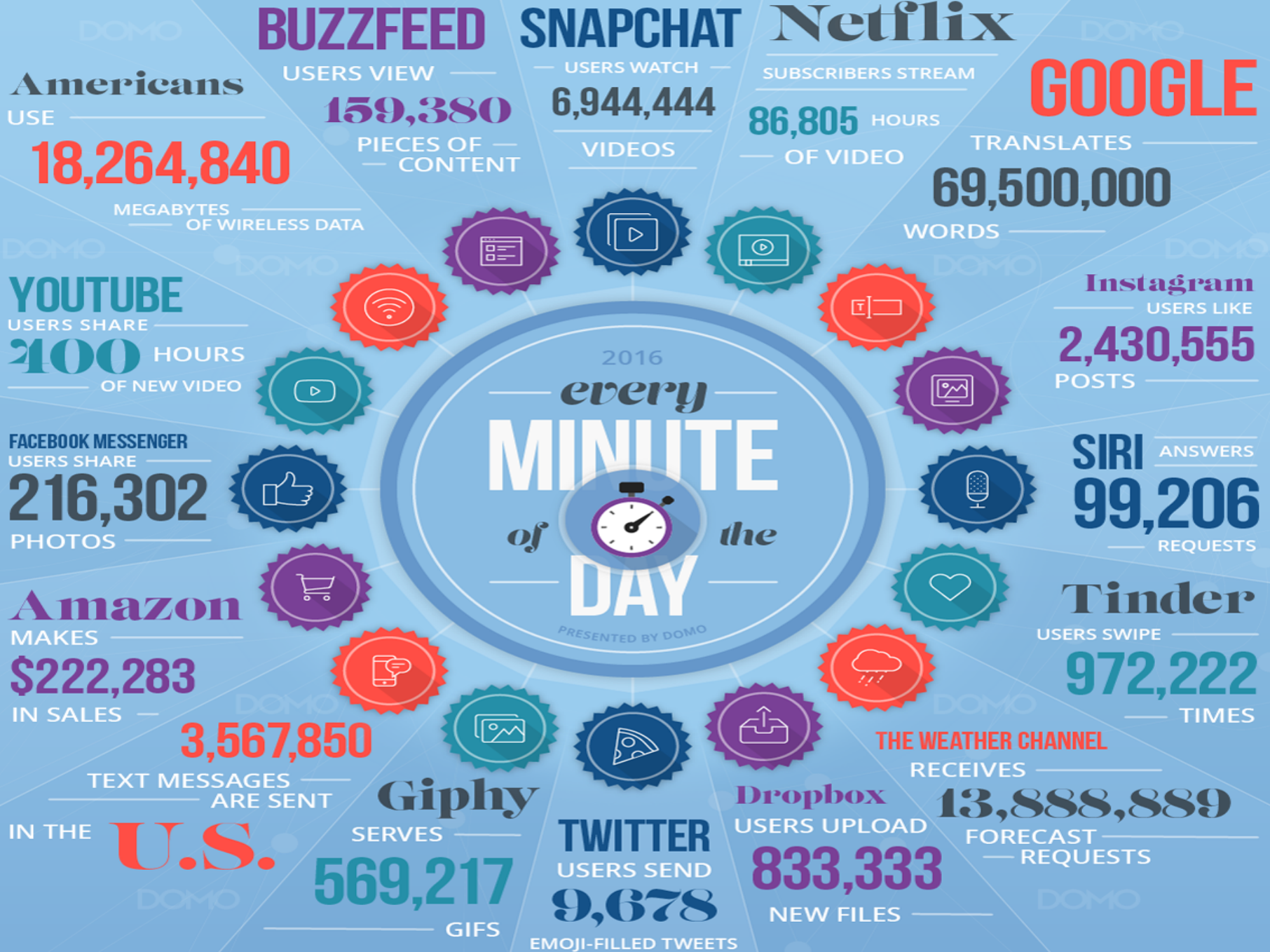# Patients will be first order participants in health, healthcare and research

- PCORI

- Precision Medicine

- Consumer devices

- Information-empowered Patients

Non-health data will become bigger than health data

- Anything Device
- Anytime, any context
- Any play, anywhere
- Any network
- Any service any business
- Anyone anybody

2016 — every MINUTE of the DAY

PRESENTED BY DOMO

Americans USE
18,264,840
MEGABYTES OF WIRELESS DATA

BUZZFEED USERS VIEW
159,380
PIECES OF CONTENT

SNAPCHAT USERS WATCH
6,944,444
VIDEOS

Netflix SUBSCRIBERS STREAM
86,805 HOURS OF VIDEO

GOOGLE TRANSLATES
69,500,000
WORDS

YOUTUBE USERS SHARE
400 HOURS OF NEW VIDEO

FACEBOOK MESSENGER USERS SHARE
216,302 PHOTOS

Amazon MAKES
$222,283 IN SALES

3,567,850
TEXT MESSAGES ARE SENT IN THE U.S.

Giphy SERVES
569,217 GIFS

TWITTER USERS SEND
9,678 EMOJI-FILLED TWEETS

Dropbox USERS UPLOAD
833,333 NEW FILES

THE WEATHER CHANNEL RECEIVES
13,888,889 FORECAST REQUESTS

Tinder USERS SWIPE
972,222 TIMES

SIRI ANSWERS
99,206 REQUESTS

Instagram USERS LIKE
2,430,555 POSTS

Payment reform will increase the need for informatics skills and data analytics

A PATH OF LEAST REGRET: THREE THINGS WE NEED

BUILD DOCUMENTS FROM DATA, NOT THE OTHER WAY AROUND

What is needed: A common format for granular data

- Quality Measures
- Clinical Decision Support
- Registries
- Common data formats for
  - Text data
  - Categorical data
  - Numerical data
  - More…

FULL EXPORT OF THE PATIENT RECORD (AND NARRATIVE)

Restore the importance of the narrative and unstructured text

- Move patient between vendor "ecosystems"

- Precision medicine

- Restore the balance of power for access to data

- Maintain the importance of the narrative in the medical record

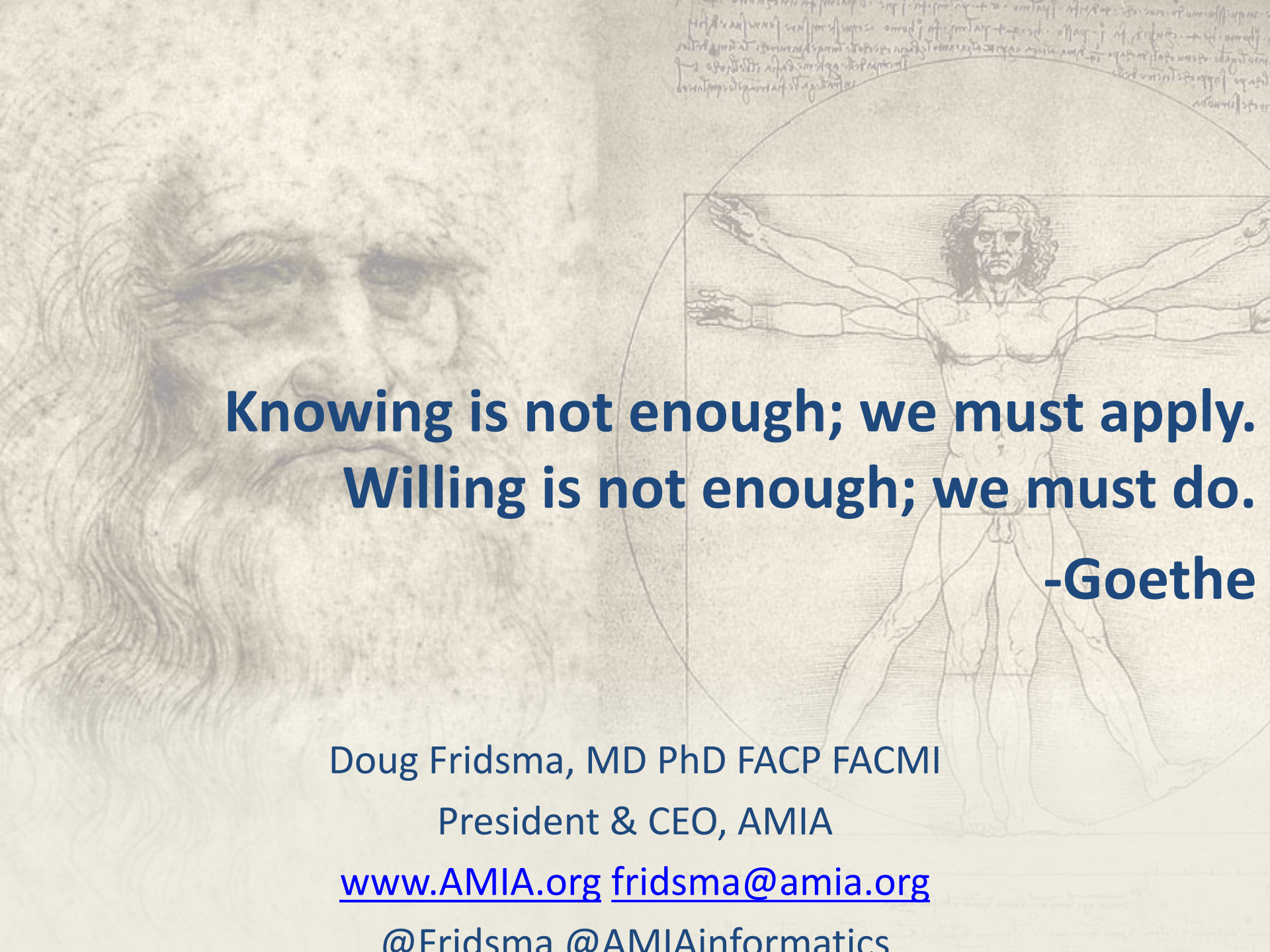# TEST BOTH SIDES OF EXCHANGE

Postel's principle

- When you send, conform to the standard
  - Pick a set of options and make sure it conforms to a valid instance of the standard
- When you receive, accept ANY version that conforms to the standard
  - Any variation that is valid
- Create the conditions of interoperability when you create the standard, rather than when you implement it

WE NEED TO TELL OUR STORY: IT ISN'T JUST WHAT WE KNOW. IT'S WHAT WE DO.

Knowing is not enough; we must apply. Willing is not enough; we must do.

-Goethe

Doug Fridsma, MD PhD FACP FACMI

President & CEO, AMIA

www.AMIA.org fridsma@amia.org

@Fridsma @AMIAinformatics