Global Health Information Technology in the 21st Century

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# Overview of Global Health Information Technology

- What we've learned in the US

- Importance of international standards

- First world vs third world

- Workforce development

- Final thoughts

The United States has had rapid changes in Health IT

US Physician EHR Adoption

- In 2006, adoption of electronic health records was 17%

- In 8 years, it has increased to 74% of doctors, and 97% of hospitals

74% Physicians

97% Hospitals
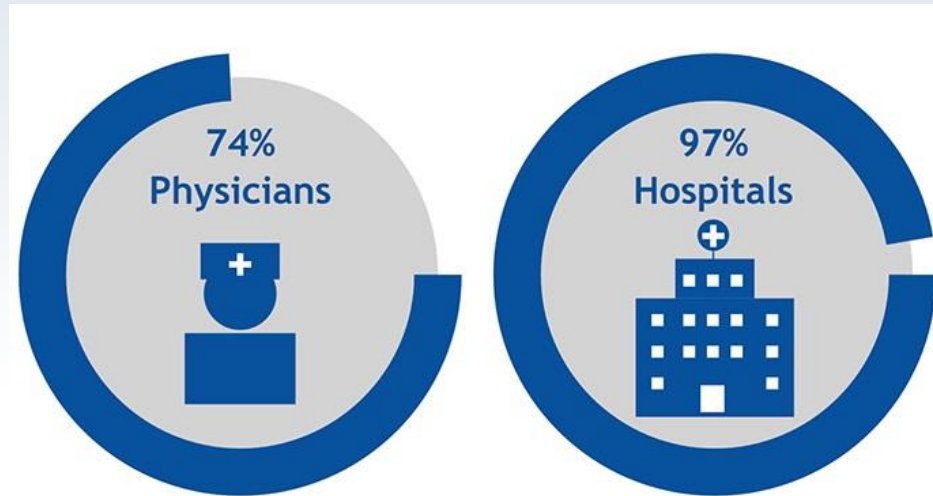
Source: ONC

AMIA

32 BILLION DOLLARS OF ADVICE

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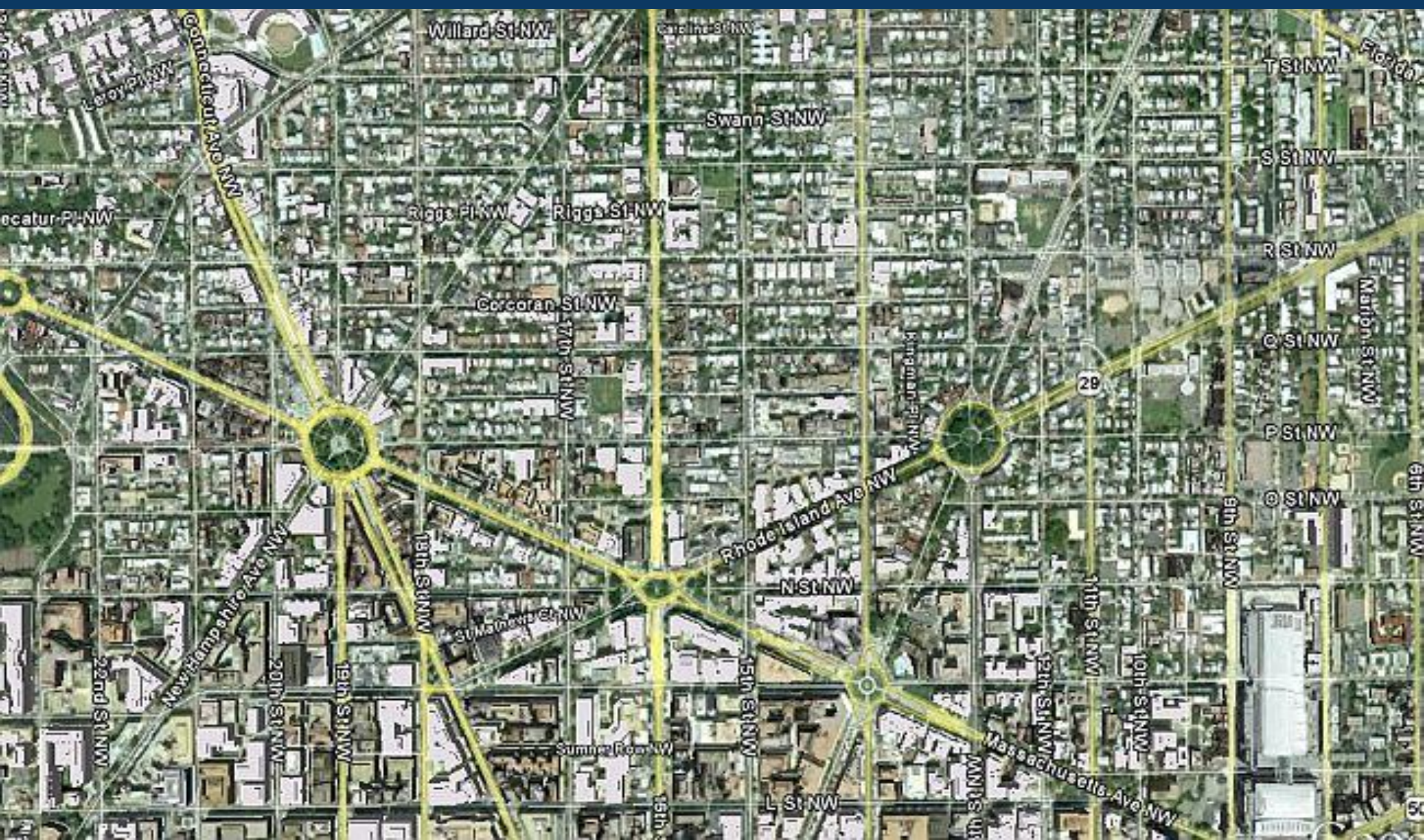
Google

ULS SEI

Google Search   I'm Feeling Lucky

Ultra-Large-Scale Systems
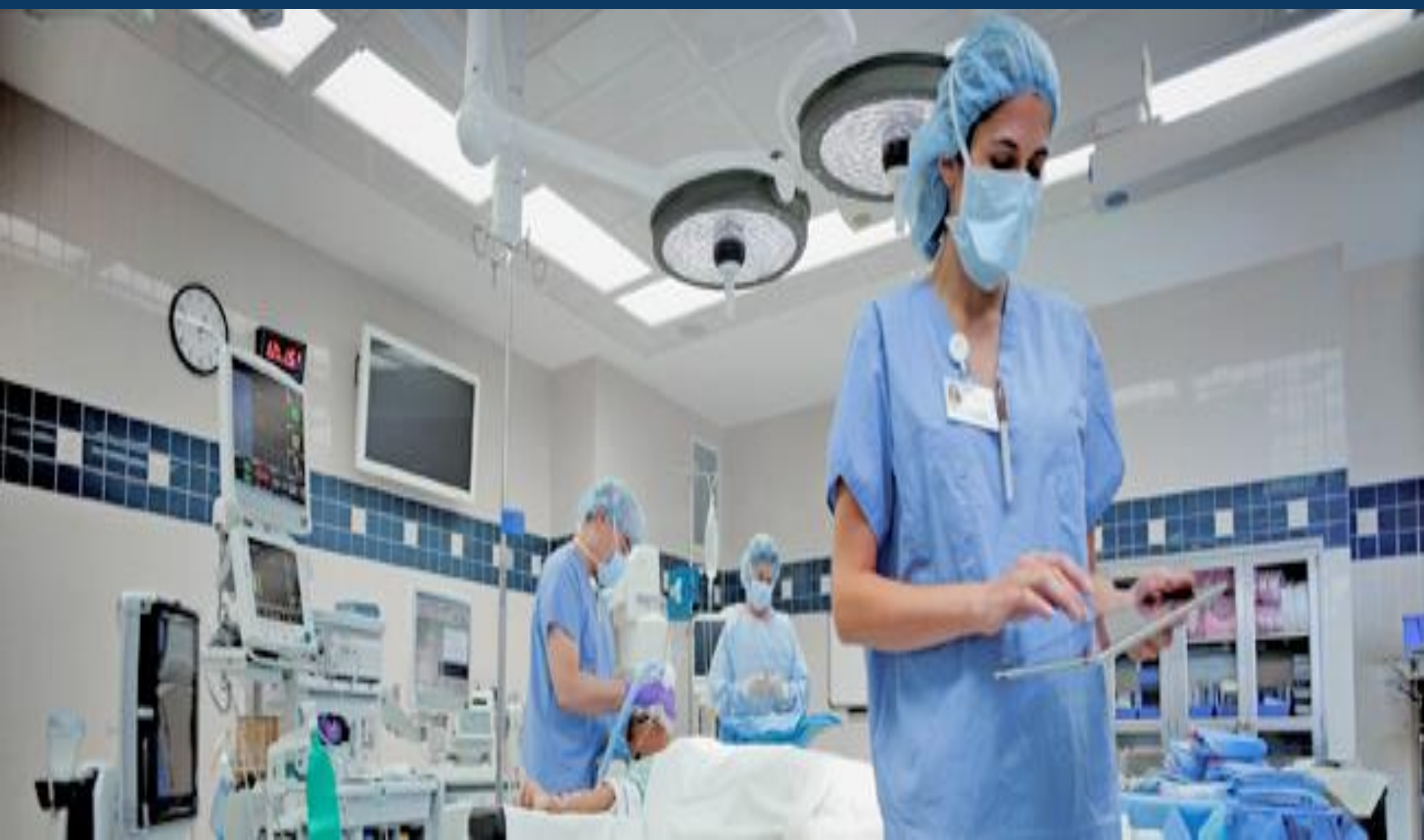
The Software Challenge of the Future

The future is not about technology or enterprise architecture. It's about the strategic use of informatics or "city planning"
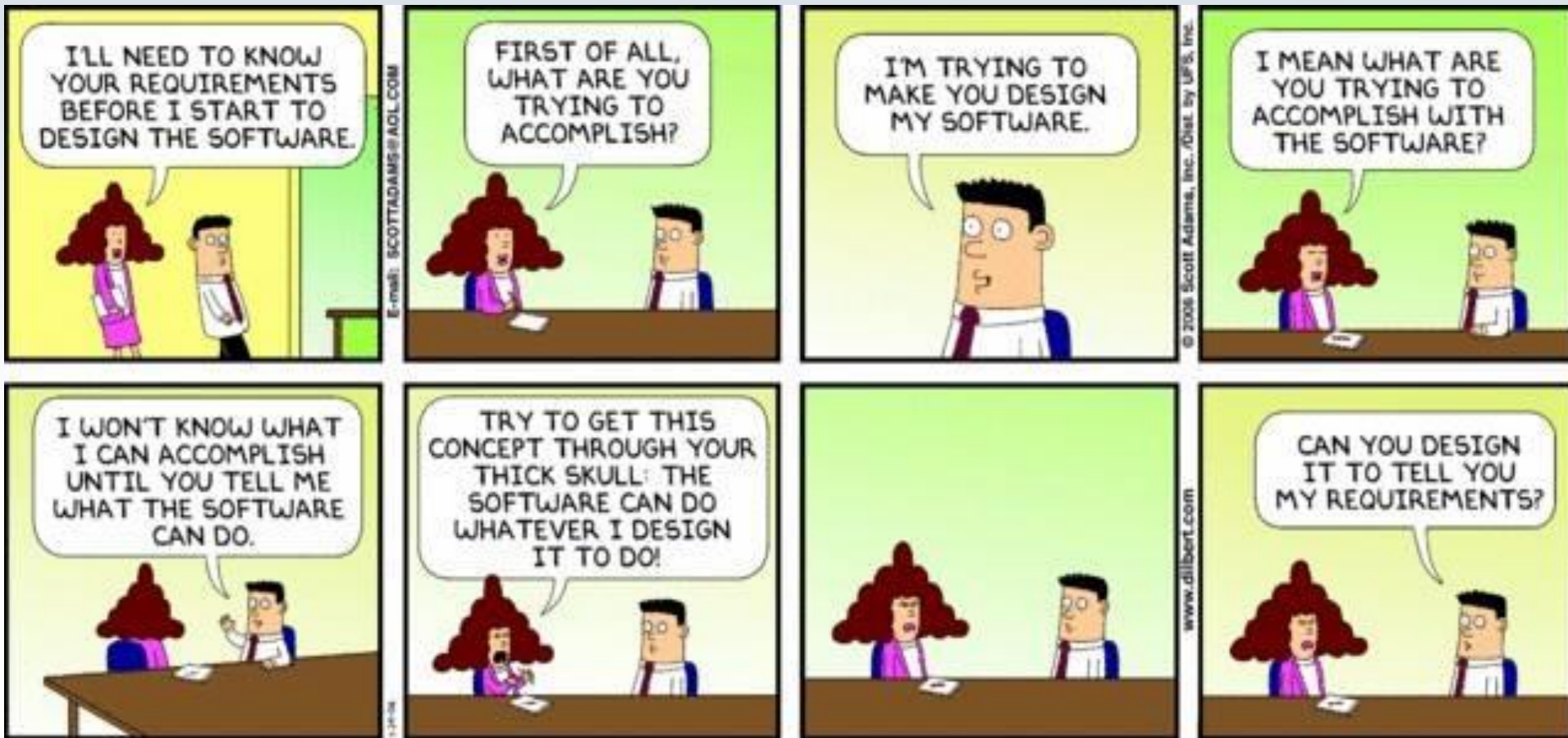
Decentralized control

It's a socio-technical system

Unknowable and diverse requirements

Continuous evolution and deployment
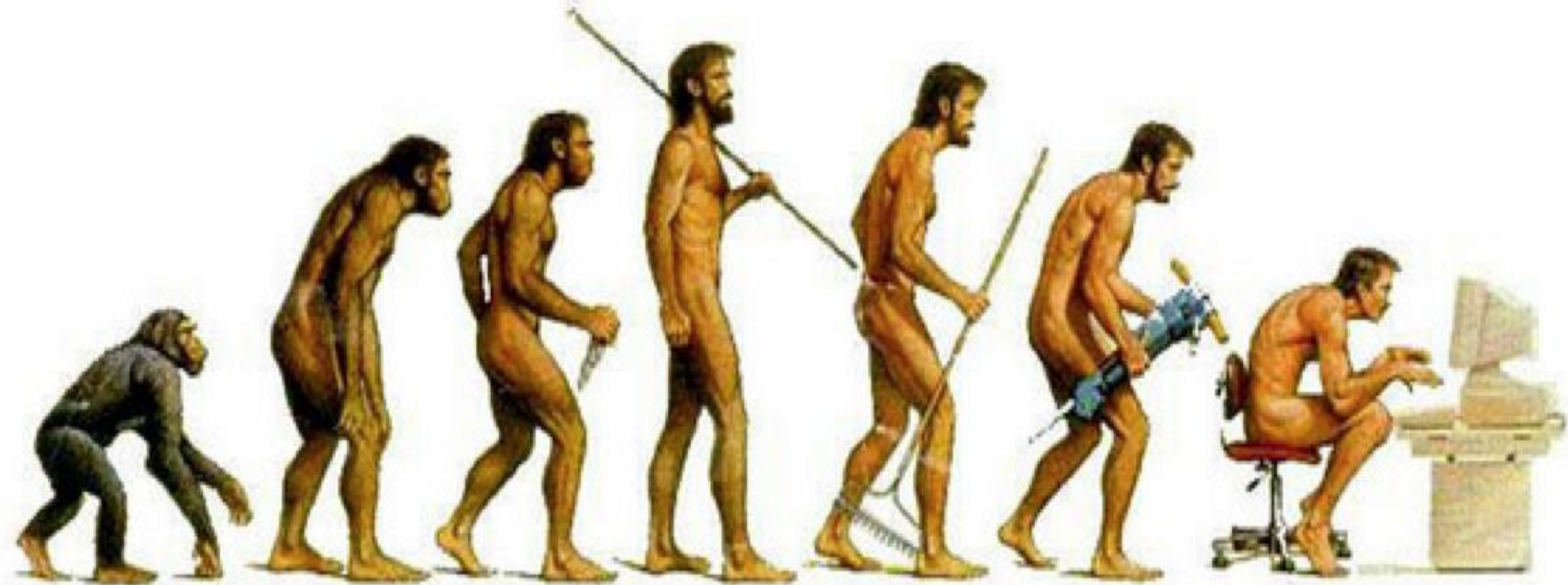
Normal failures
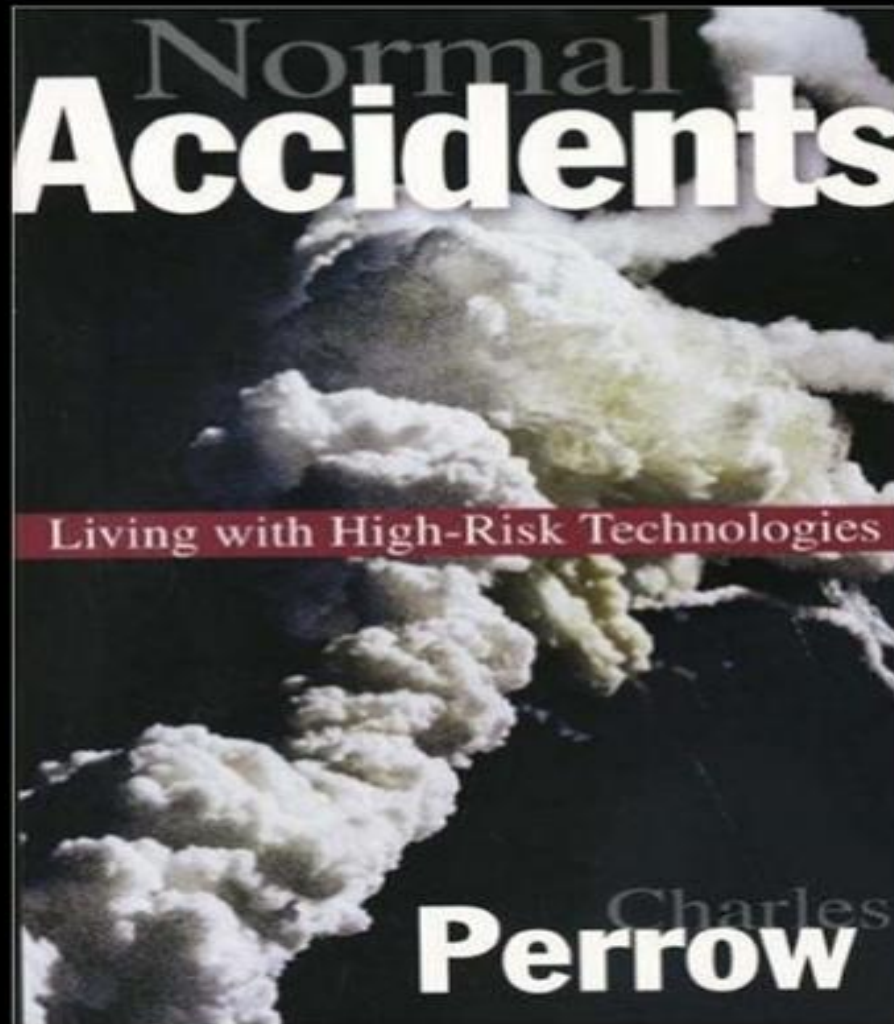
Orchestration rather than command and control

Interoperability only makes sense in the context of what you want to DO (link medical goals with technology)
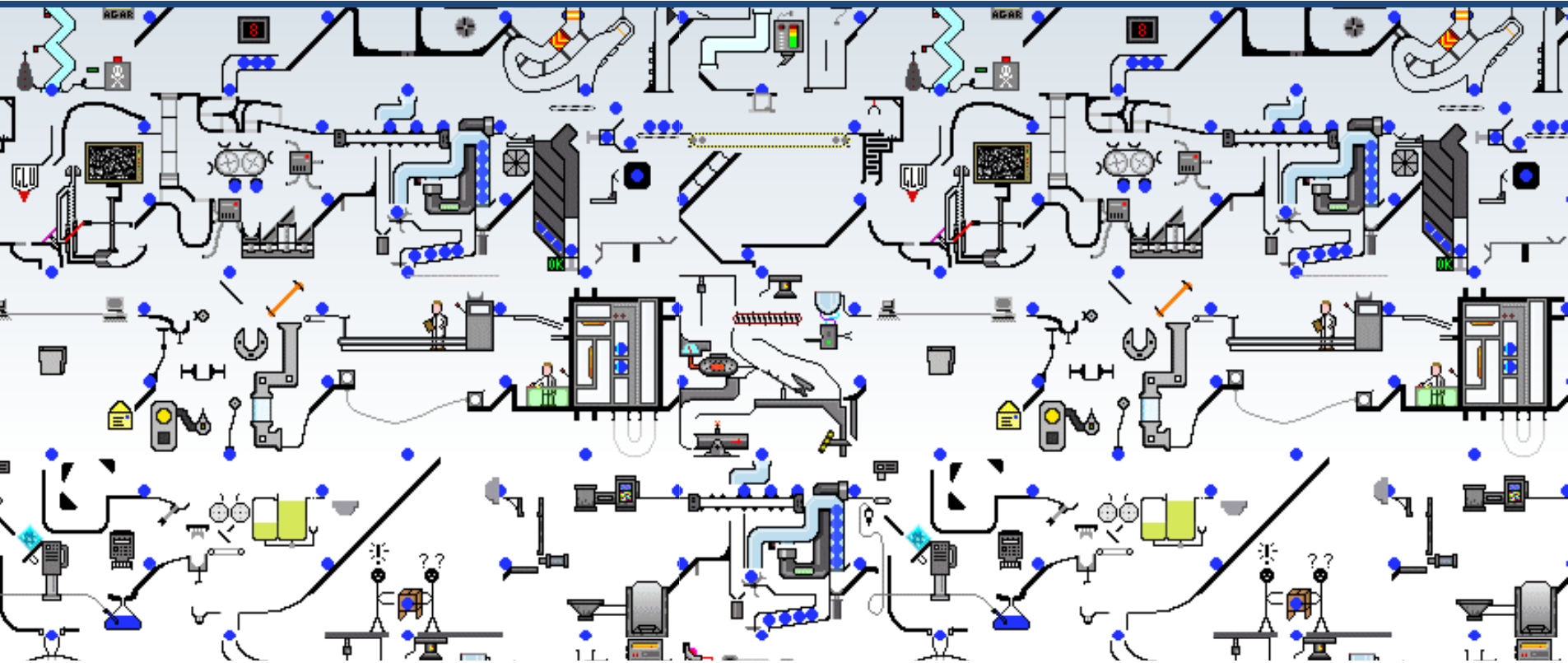
Interoperability (IEEE)
- Ability of two or more systems to **exchange** information
- Ability of those systems to **use** the information that has been exchanged

Frame things in terms of things that matter to people
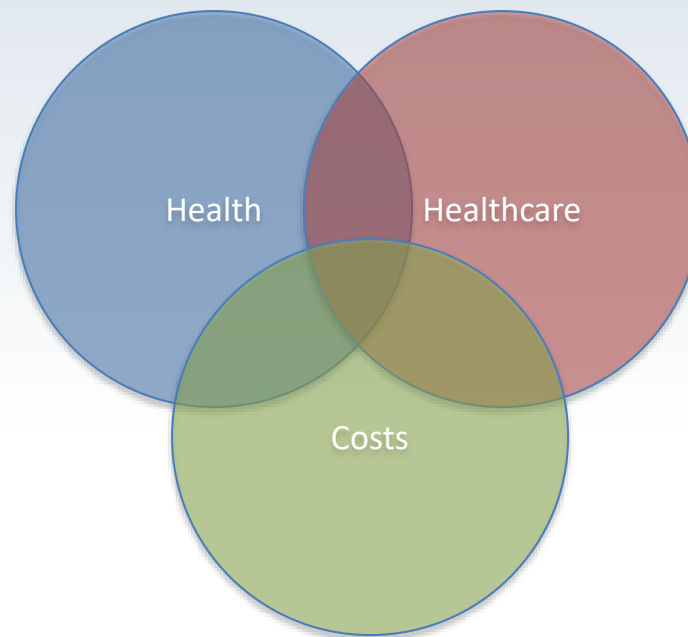
Think HORIZONTALLY rather than vertically

Consumer empowerment

Electronic Health Record and Quality

Big Data and population health

Clinical and Translational Research

Patient   Practice   Population   Public

Informatics, standards, testing, ethics, business drivers, governance

Socio-Technical Stack

Agreed-upon constraints	Public Policy	Legal Responsibilities (e.g. HIPAA, 42 CFR Part 2)
	Intellectual Property	Contractual Decisions (e.g. Epic App Orchard)
	Business Drivers	Market-based Motivations (e.g. ACOs)
	Ethics	Foundational to social constructs
Data use constraints	Workflow (dynamic)	When to apply the data (e.g. lab test results)
	Context (static)	How to apply the data (e.g. Admission v. Discharge Summary)
Traditional technology stack	Services	Purpose-specific APIs and services that leverage the other four layers
	Semantic	Terminologies, Structured data, coded (e.g. ICD-10, SNOMED)
	Syntactic	Message formatting (e.g. CCDA v2)
	Transport	How the message move from A to B
	Security	How we ensure that messages are secure and private

IMPORTANCE OF INTERNATIONAL STANDARDS

We all have something to learn

INFORMATICS WORKFORCE DEVELOPMENT IS THE KEY TO UNLOCKING THE POTENTIAL OF HIT

We will need to train health care providers to understand informatics, not just technology

Health informatics is a unique skill set

Health Information Technology ⊘ Health Informatics ⊘ Health Information Management

HEALTH INFORMATICS WORKFORCE TRAINING

Information Technology Interoperability and Use for Better Care and Evidence
A Vital Direction for Health and Health Care

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About the Vital Directions for Health and Health Care Series

This publication is part of the National Academy of Medicine's **Vital Directions for Health and Health Care Initiative,** which called on more than 150 leading researchers, scientists, and policy makers from across the United States to assess and provide expert guidance on 19 priority issues for U.S. health policy. The views presented in this publication and others in the series are those of the authors and do not represent formal consensus positions of the NAM, the National Academies of Sciences, Engineering, and Medicine, or the authors' organizations. Learn more: nam.edu/VitalDirections.

Introduction

Health information technology (HIT) has been seen as a vehicle for improving the quality and safety of health care, for gaining more accountability and value in purchasing, for advancing the role and engagement of consumers in prevention and health decisions, for accelerating discovery and dissemination of new treatments, and for sharpening public health monitoring and surveillance. HIT has had high priority in the health care system under two presidential administrations, and it continues to enjoy strong bipartisan support at the state and federal levels.

When the federal HIT effort was launched in 2004 (The White House, 2004), four overriding national priorities were articulated: providing information tools, such as electronic health records (EHRs), to clinicians for use in patient care; connecting health information so that it follows patients throughout care and can be aggregated to advance health care delivery; supporting consumers with information to help them to manage their care; and advancing public health, clinical trials, and other data-intensive activities. The 2004 HIT plan has been updated three times (in 2009, 2011, and 2015), but the core priorities remain similar.

The first national goal for HIT has been largely realized. Nearly all hospitals use EHRs to manage patient care (ONC, 2015a), as do growing numbers of physician practices, ancillary care facilities, and other

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Three kinds of education and training will be needed

- **Basic "informatics literacy" for all health professionals that goes beyond computer or HIT literacy.**
  - Literacy in informatics should become part of medical education, biomedical research, and public health training to give clinicians the skills needed to collect and analyze information and apply it in their practice.

- **Intensive applied informatics training to improve leadership and expertise in applying informatics principles**
  - This level of training will ensure a supply of qualified professionals for the emerging roles of chief medical information officers, chief nursing information officers, chief clinical informatics officers, chief research officers, and similar roles.

- **• Support for education professionals who will advance the science and train the next generation of informatics professionals**

amia.org

Advancing Professional Growth for Our Members

Creating Impact in Health and Healthcare

Enhancing Leadership for the Profession

FINAL THOUGHTS

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

- Patients are more than a collection of discrete data
  - Disease vs. illness
  - The importance of the narrative to understanding patients
- The unstructured data is where discoveries are made
  - Precision medicine
- Restore the balance of power for access to data
  - Empower patients, researchers, public health officers

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

-Goethe

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