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

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

Source: ONC
32 BILLION DOLLARS OF ADVICE
FRAMING MATTERS:
HEALTH IT IS ONE ULTRA-LARGE SCALE SYSTEM
It's not architecture, it's city planning

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

I'll need to know your requirements before I start to design the software.

First of all, what are you trying to accomplish?

I'm trying to make you design my software.

I mean what are you trying to accomplish with the software?

I won't know what I can accomplish until you tell me what the software can do.

Try to get this concept through your thick skull: the software can do whatever I design it to do!

Can you design it to tell you my requirements?
Continuous evolution and deployment
Normal failures

Normal Accidents
Living with High-Risk Technologies

Charles Perrow
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
## 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
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
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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