HEALTH 2.0: PUTTING THE POWER OF OPEN SCIENCE TO THE TASK OF IMPROVING THE NATION’S HEALTH

Bradford W. Hesse, PhD

Saturday, June 12, 2010
Question:

What transformative event was destined to change the way we do science in the new millennium?
Answer:

Douglas Engelbart’s Vision for “Augmented Human Intellect”

Early “Mouse,” circa 1962

AUGMENTING HUMAN INTELLECT: A CONCEPTUAL FRAMEWORK

Prepared for
DIRECTOR OF INFORMATION SCIENCES
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
WASHINGTON 25, D.C.

CONTRACT AF49(638)-1024

By: D.C. Engelbart
SRI Project No. 3378

Answer:

Augmenting Human Intellect

☑ Intuitive Interface
☐ Connected Nodes of Knowledge
☐ Connected People

Computer Aided Design


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Augmenting Human Intellect

- Intuitive Interface
- Connected Nodes of Knowledge
- Connected People

World Wide Web

Augmenting Human Intellect

☑ Intuitive Interface
☑ Connected Nodes of Knowledge
☑ Connected People

Connected People: E.g., Physical Oceanography

Data Collected from Multiple, Remote Sources

Differential Benefits for Being Online


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Collaboratory

From Wikipedia, the free encyclopedia

A collaboratory, as defined by William Wulf in 1989, is a “center without walls, in which the nation’s researchers can perform their research without regard to physical location, interacting with colleagues, accessing instrumentation, sharing data and computational resources, [and] accessing information in digital libraries” (Wulf, 1989).

Reference:

Two Connotations

“Co-Laboratory” = Shared laboratory in virtual space
“Collaborate - ory” = Collaborating together in the “invisible college”

Reference:
Connected People: Prime Example in Health

Massive example of “Team Science” as laboratories in private and public sector work in a coordinated fashion to sequence the 3 billion + base pairs of the Human Genome.

Work continues with online collaboratory tools facilitated by bioinformatics.
Connected People: Marshaling Collective Science in Cancer

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The Institute for the Future’s Health Horizons Program has developed a new paradigm for disruptive innovation in the global health economy—we call it “Open Health.” This paradigm leverages the concepts and successes of open innovation and open-source software, and applies them to the world of health. Open Health strategies will redefine the research and development process and will require a radically new way of thinking about innovation systems, the institutional culture of firms, partnerships, and collaborations, and the very meaning of health itself. The implications of Open Health are relevant to all stakeholders in the global health economy, be they beauty, food, consumer electronics, biopharma, health care, or medical technology companies. As it diffuses across industries, Open Health will inspire new approaches to meeting significant global health problems, and it will provide a framework for generating and sustaining new business models of tomorrow.

We have identified ten core principles that serve as a foundation for implementing Open Health strategies. This map presents these principles in the context of emerging trends and innovation leaders. It describes the external forces that are driving Open Health and emphasizes the networks and culture, the ethos and skills, the business models and strategies, and the tools and platforms that will shape innovation systems in the global health economy over the next decade.

The Open Health Map of Disruptive Innovation (SR-1117A) is your guide to putting Open Health into practice. Use it, along with its companion piece, the Open Health Toolkit: A Framework for Innovation (SR-1117B), to build the capacity to innovate to solve health’s pressing problems.

*Source: Institute for the Future*
Connected People: The National Health Information Infrastructure*

Connected People: Personal, Provider, Population
Connected People: **Personal, Provider, Population**

- **Personal Engagement**
- **Personal Use of Data**

**Source:** Goetz T. The decision tree: taking control of your health in the new era of personalized medicine. New York, NY: Rodale; Distributed to the trade by Macmillan.
Connected People: Personal, Provider, Population

Self Determination Theory

1. Autonomy in Decision Making

Connected People: **Personal, Provider, Population**

**Self Determination Theory**

2. Mastery

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**Wired Magazine;**

“The Nike Experiment: How the Shoe Giant Unleashed the Power of Personal Metrics”

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Connected People: Personal, Provider, Population

3. Connectedness

http://www.patientslikeme.com/

Connected People: **Personal, Provider, Population**

**Healthcare Provider Dimension**
- Provider notes
- Clinical orders
- Practice guidelines
- Decision-support programs

**Personal Health Dimension**
- Patient ID
- Health history
- Health insurance
- Consent forms
- Medication alerts

**De-identified information**
- Mandatory reporting
- Community directories
- Public health services
- Survey data

**Population Health Dimension**
- Vital statistics
- Population health risks
- Communicable diseases
- Socioeconomic conditions
- Registries

**Inspection reports**
- Public education materials
- Neighborhood environmental hazards

**Infrastructure data**
- Planning and policy documents
- Surveillance systems
- Health disparities data
Connected People: Personal, Provider, Population

Connected People: Personal, Provider, Population

Human System Integration

- Situational Awareness
- Persistent Conversation
- Team-based Intelligence
- Coordination Costs
- Error Reduction

Connected People: Personal, Provider, Population

Transparency in Quality
• Consumer-generated
• Regulatory
Connected People: Personal, Provider, Population

Accelerating Translation
- Professional communities
- Community support
Connected People: Personal, Provider, Population

Healthcare Provider Dimension
- Provider notes
- Clinical orders
- Practice guidelines
- Decision-support programs
- Patient ID
- Health history
- Health insurance
- Consent forms
- Medication alerts

Personal Health Dimension
- Nonshared personal information
- Self-care trackers
- Audit logs
- Personal library
- De-identified information
- Mandatory reporting
- Community directories
- Public health services
- Survey data

Population Health Dimension
- Vital statistics
- Populations health risks
- Communicable diseases
- Socioeconomic conditions
- Registries
- Inspection reports
- Public education materials
- Neighborhood environmental hazards
- Infrastructure data
- Planning and policy documents
- Surveillance systems
- Health disparities data
Connected People: Personal, Provider, Population

Population Health Dimension
- Infrastructure data
- Planning and policy documents
- Surveillance systems
- Health disparities data

Behavioral Data
- Vital statistics
- Population health risks
- Communicable diseases
- Socioeconomic conditions
- Registries
- De-identified information
- Mandatory reporting
- Community directories
- Public health services
- Survey data
- Inspection reports
- Public education materials
- Neighborhood environmental hazards

Mortality Data

Data “Mash Ups”

Connected People: Personal, Provider, Population

Population Health Dimension
- Infrastructure data
- Planning and policy documents
- Surveillance systems
- Health disparities data

The Power of Collective Action
The Power of Collective Action