

Saving Lives with Big Data: Precision Medicine and Health Informatics

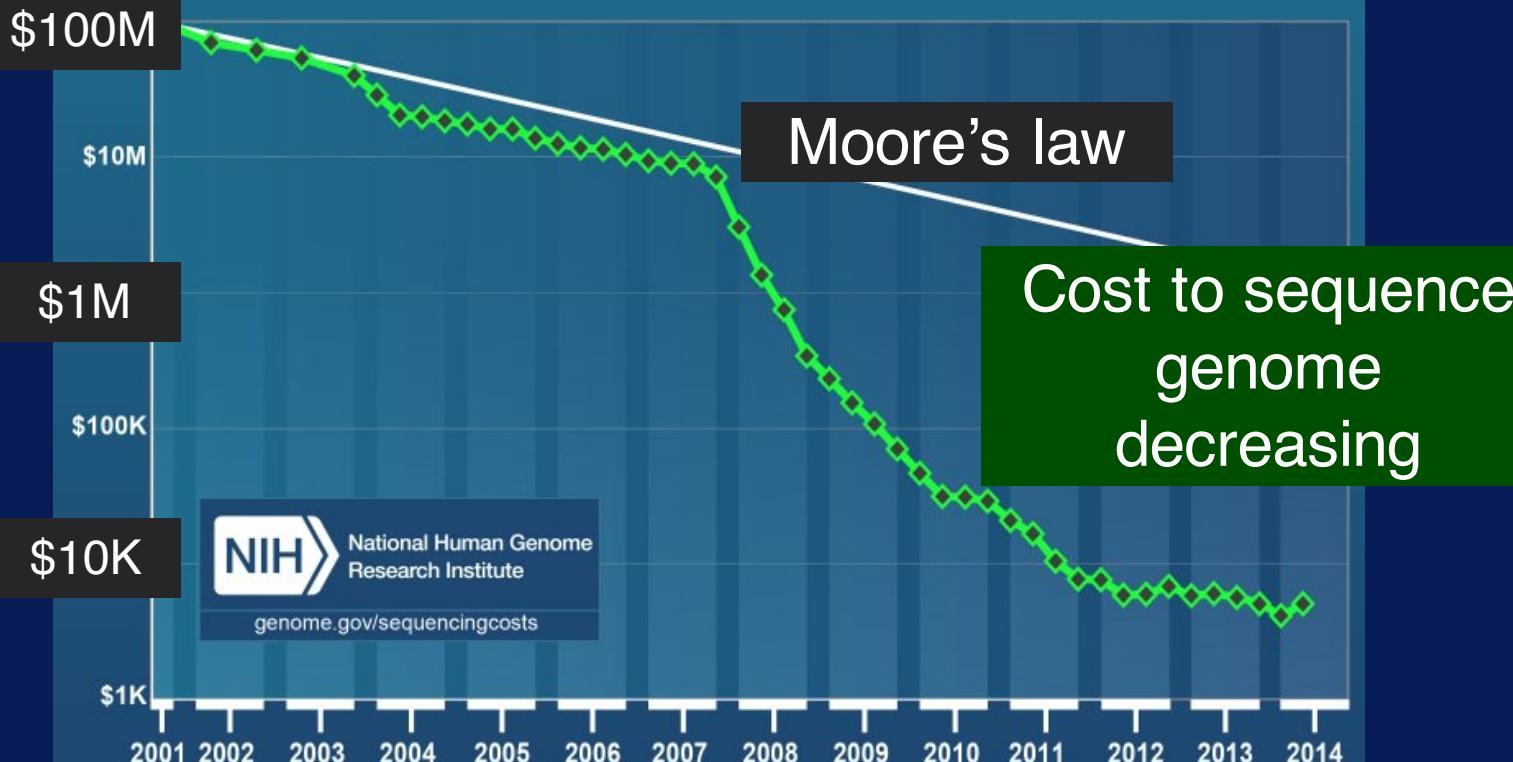


After this video you will be able to..

- Give examples of sensor, organizational, and people-generated data used in precision medicine
- Explain to a friend why the integration of different streams of data is critical to advancing healthcare

Why is this important now?

Cost per Genome



Genome Data Storage

AGTTA



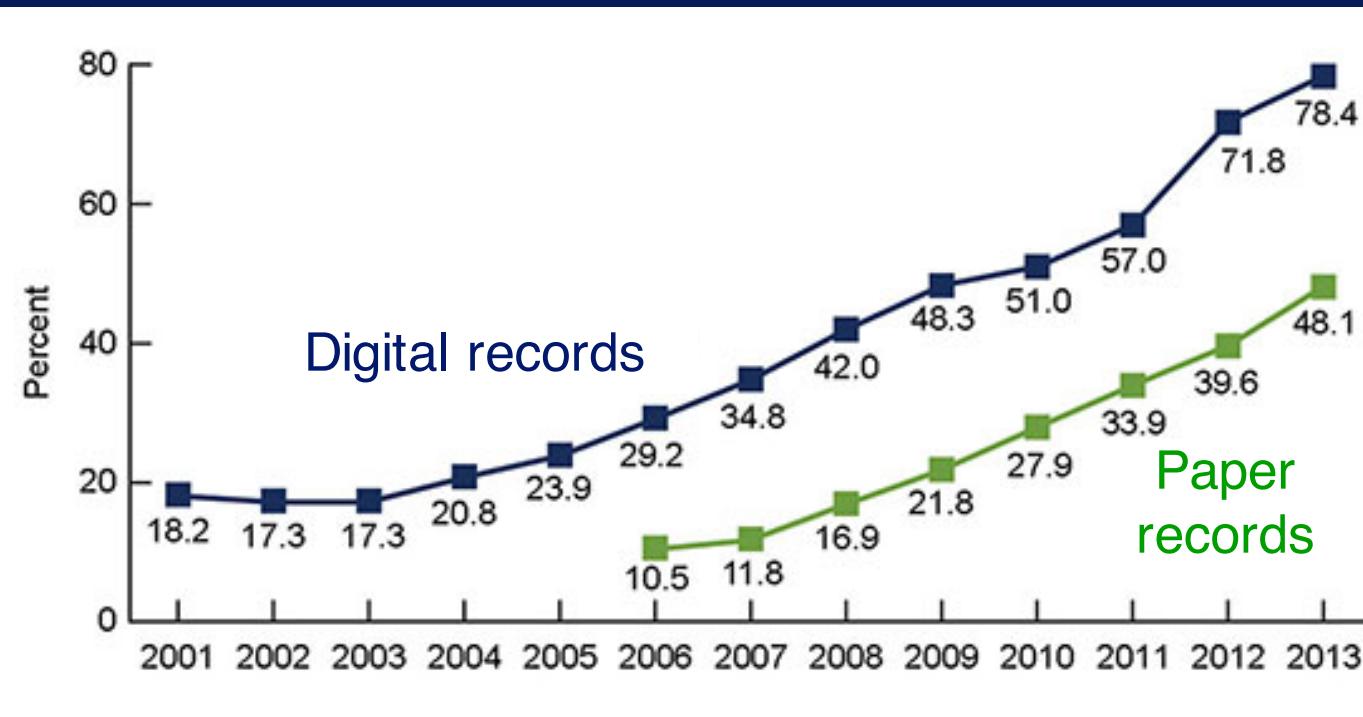
700MB



200GB

1 day

Health Records → Digital



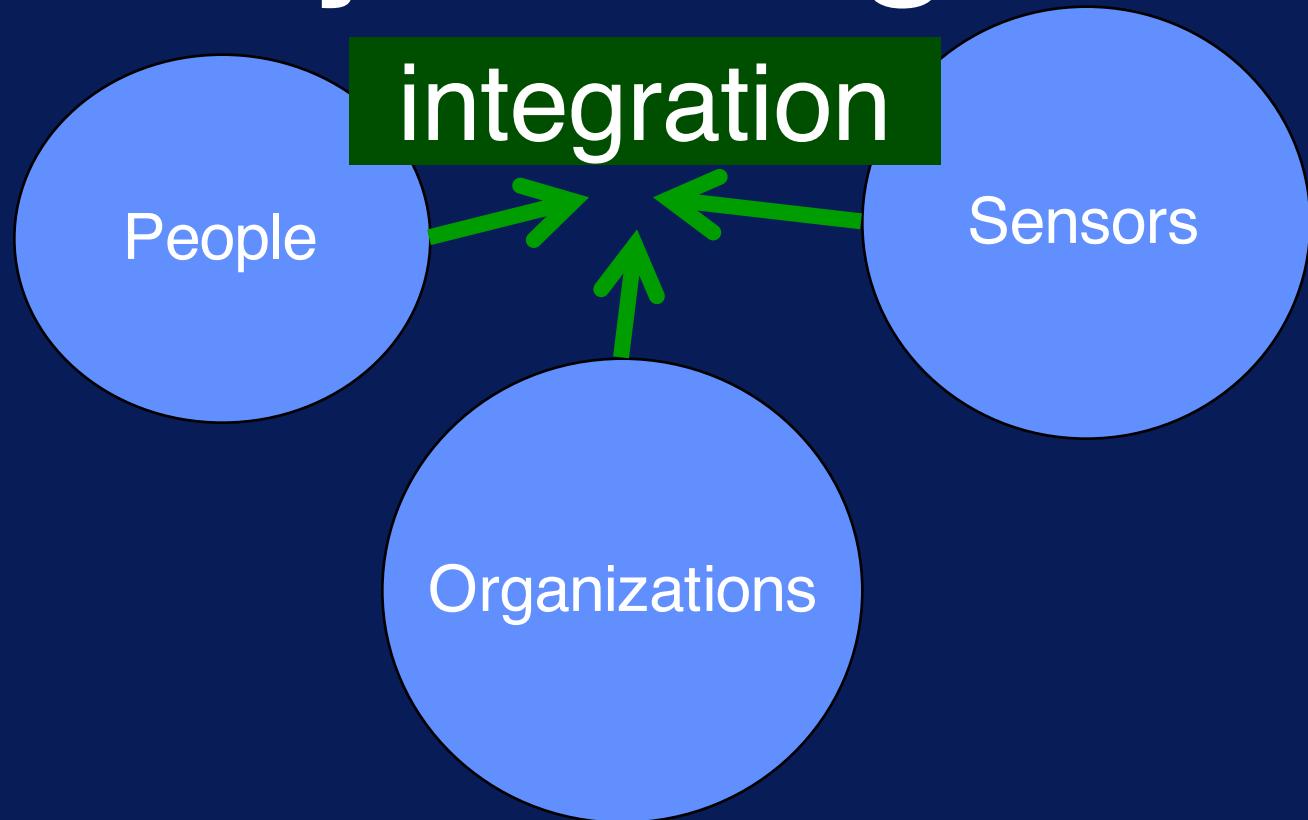
120 Terabytes in 2013
2X more than in 2011



Recent changes → Big Data for Healthcare

Reduced Cost Analysis
Cheap, Large Data Storage
Digitization of Records

Why can Big Data help?



Sensor Data



101100010 →



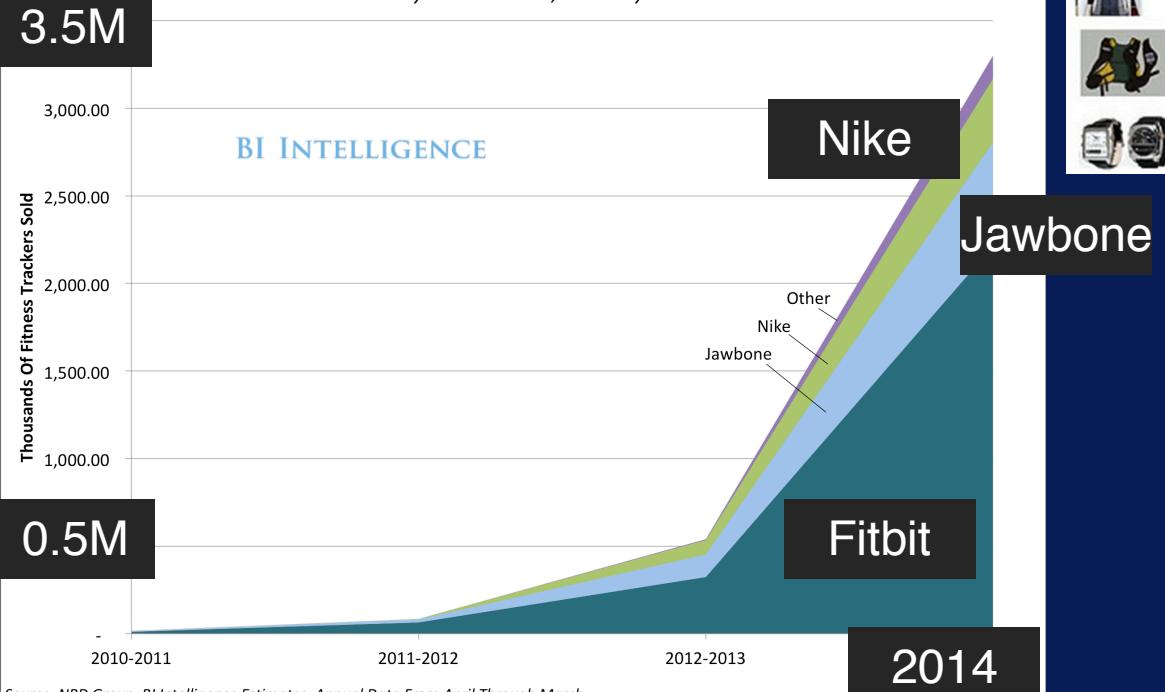
Sensor Data

More sensors, More places
Data → Storage & Analysis

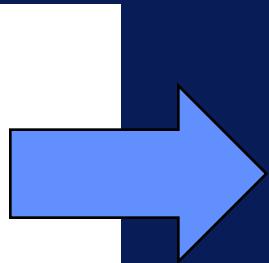
Fitness Device Industry

Fitness Tracker Hardware Annual Unit Sales

By Device Maker, U.S. Only



Data Generated?



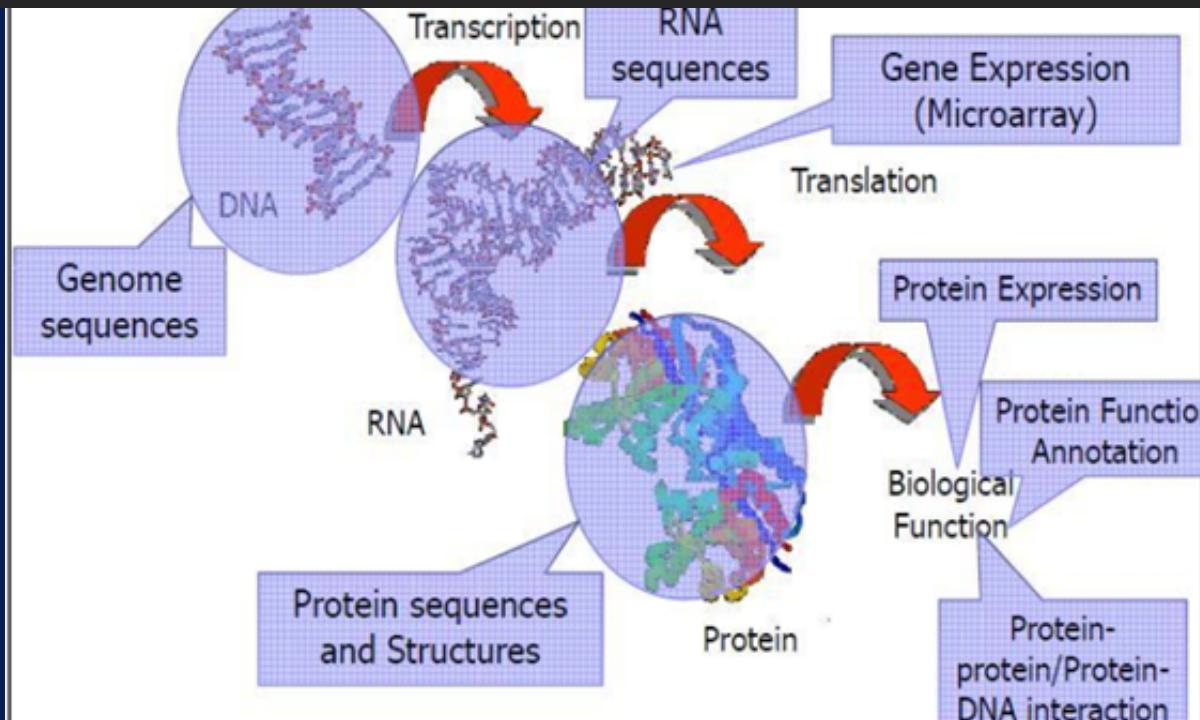
2-5 GB / day

Save health care costs?



Organization Data

Scientific Data and Knowledge-bases



Experimental Data



Computed Data

Scientific Data and Knowledge-bases



GENEONTOLOGY
Unifying Biology



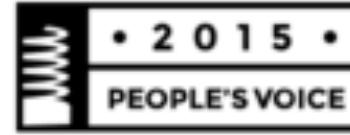
Unified Medical
Language System *

People Data

Mobile Health Apps

Webby

STOP,
BREATHE
& THINK APP
stopbreathethink.org



>100,000 health apps
(iTunes & Google Play)

By 2017 →
\$26 billion market?

A story: The impact of novel people-generated data

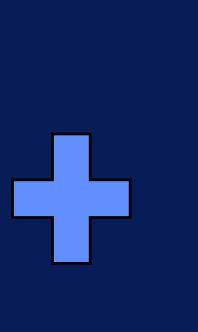
Have you had
any reactions to
your medications?

It's been a month...
Was that a reaction?



Today → Self-Reported Data Social Media





Integration →
Personalization →
Precision



integration

The diagram illustrates the concept of integration. Three blue circles represent "People", "Sensors", and "Organizations". They are interconnected by green arrows forming a triangle. A green box labeled "integration" is positioned above the circles, with a bracket underneath it pointing to the central area where the arrows meet.

People

Sensors

Organizations

Integration →
Personalization →
Precision