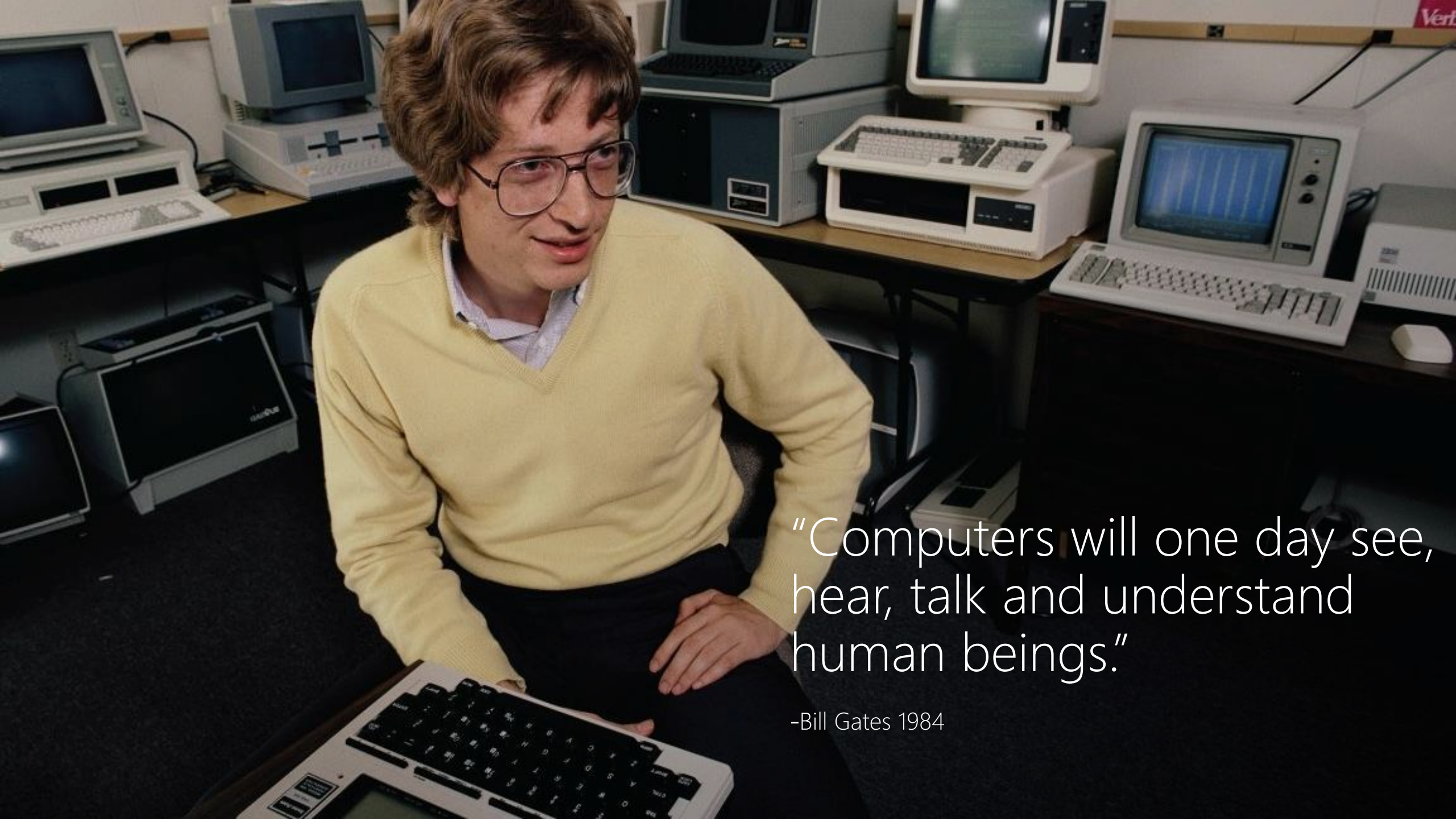


AI in Health:

The Future is Not
What it Used to Be

Tom Lawry,
Director Worldwide Health





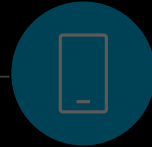
"Computers will one day see, hear, talk and understand human beings."

-Bill Gates 1984

Systems of Engagement



CRM



Mobile



Chat

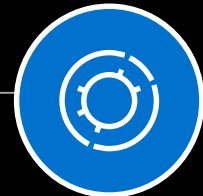
Systems of Intelligence



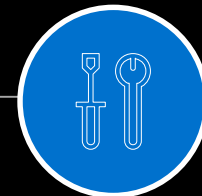
Transform clinical services



Engage patients & consumers



Optimize operations



Empower clinicians & employees

Systems of Record



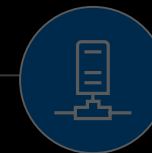
EMR



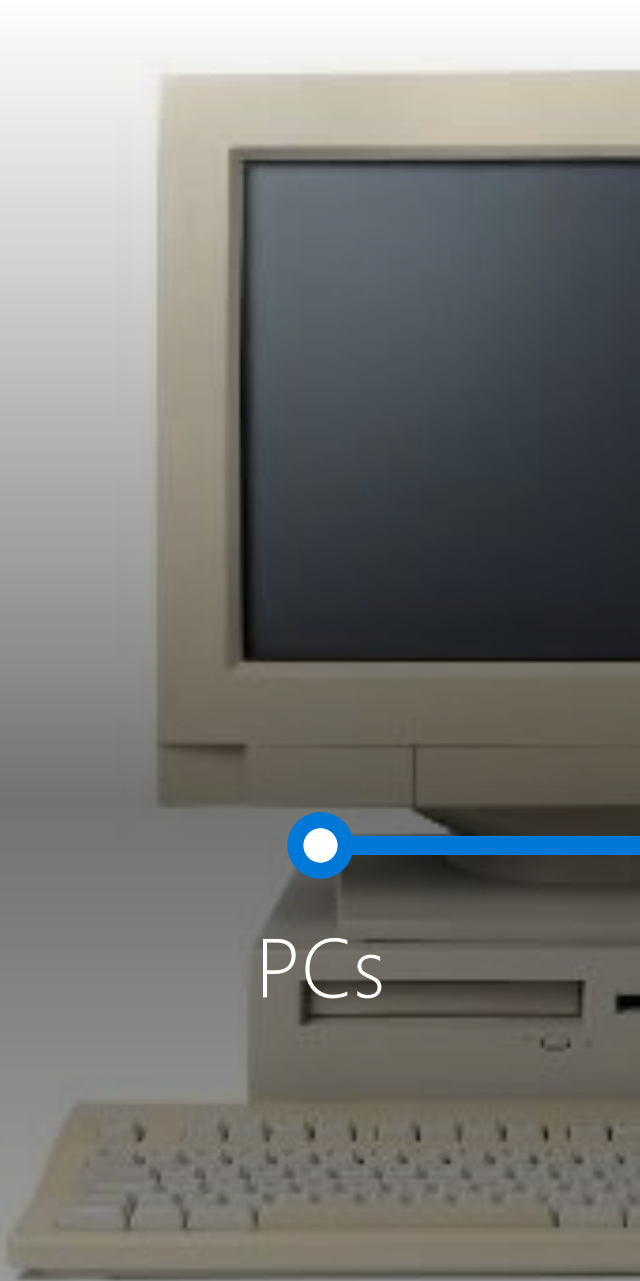
PAS



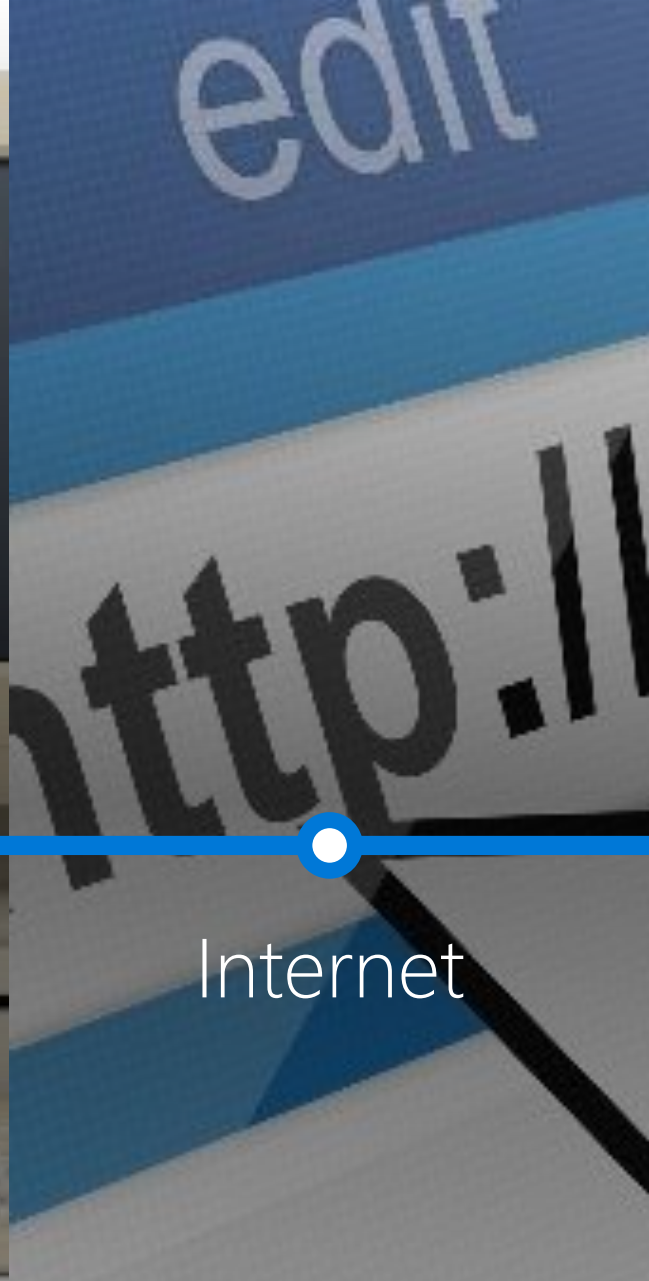
ERP



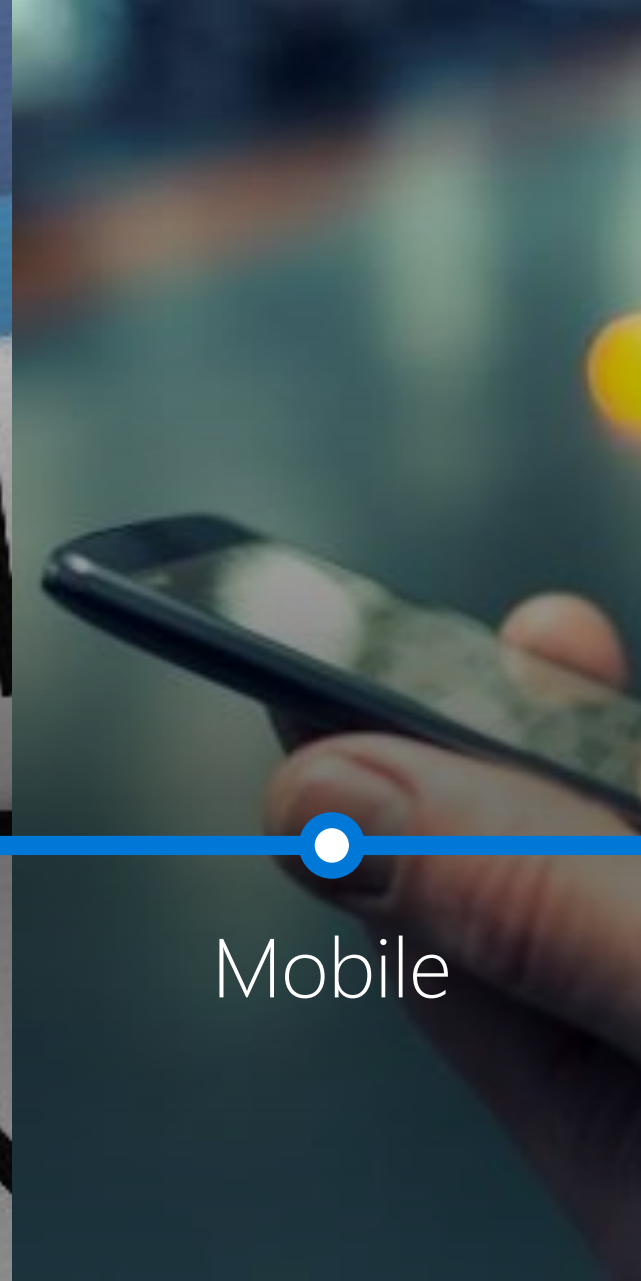
Imaging



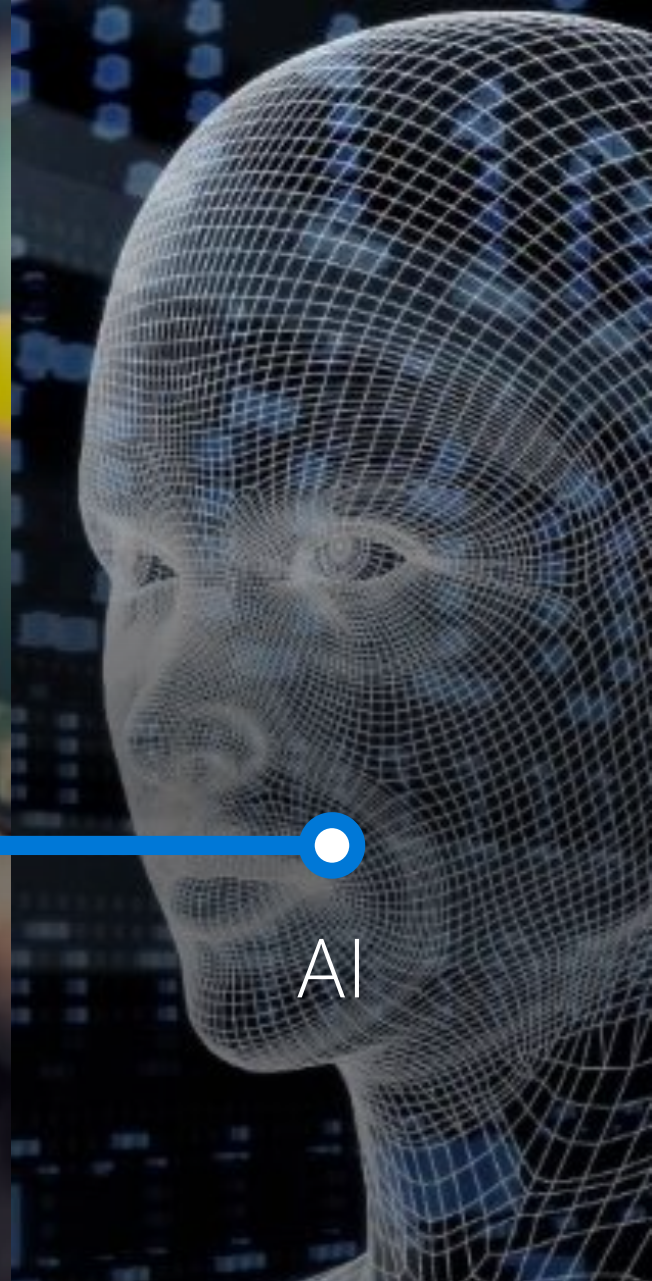
PCs



Internet



Mobile



AI

Five Rules for Strategic AI Leadership

Rule #1

The Data Explosion gives
health leaders superpowers

...Use them wisely

The Rice Equation

Byte	One grain of rice
Kilobyte	Cup of rice
Megabyte	8 bags of rice
Gigabyte	3 semi trucks
Terabyte	2 container ships
Petabyte	Blankets Manhattan
Exabyte	Blankets west coast states
Zettabyte	Fills the pacific ocean
Yottabyte	An earth size rice ball!



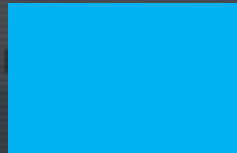
Doubling Time of Medical Knowledge by Year

50 years



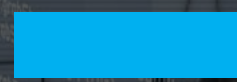
1950

7 years



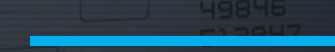
1980

3.5 years



2010

73 days



2020



STATE OF THE ART
Can Apple Think Outside the Device?



Facebook Offers Tools for Those Who Fear a Friend May Be Suicidal



Uber Sets Sights on Leveraged Loans for Even More Money



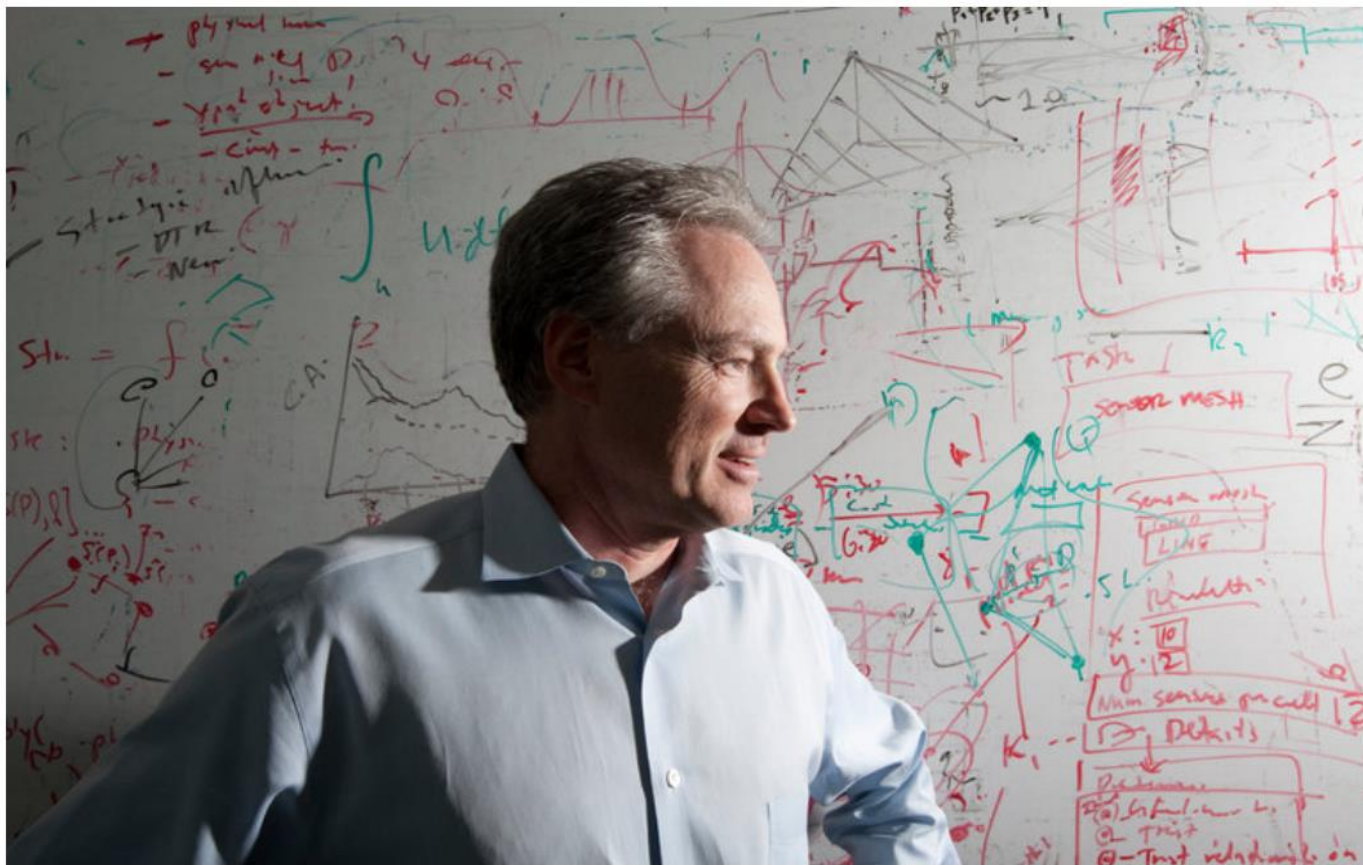
Twitter Invests \$70 Million in SoundCloud Music Service

PAID POST: OPPENHEIMERFUNDS
Learn the Biology Behind How We Make Decisions



Microsoft Finds Cancer Clues in Search Queries

By JOHN MARKOFF JUNE 7, 2016



Dr. Eric Horvitz is one of the Microsoft researchers who conducted the study.
Kevin P. Casey for The New York Times

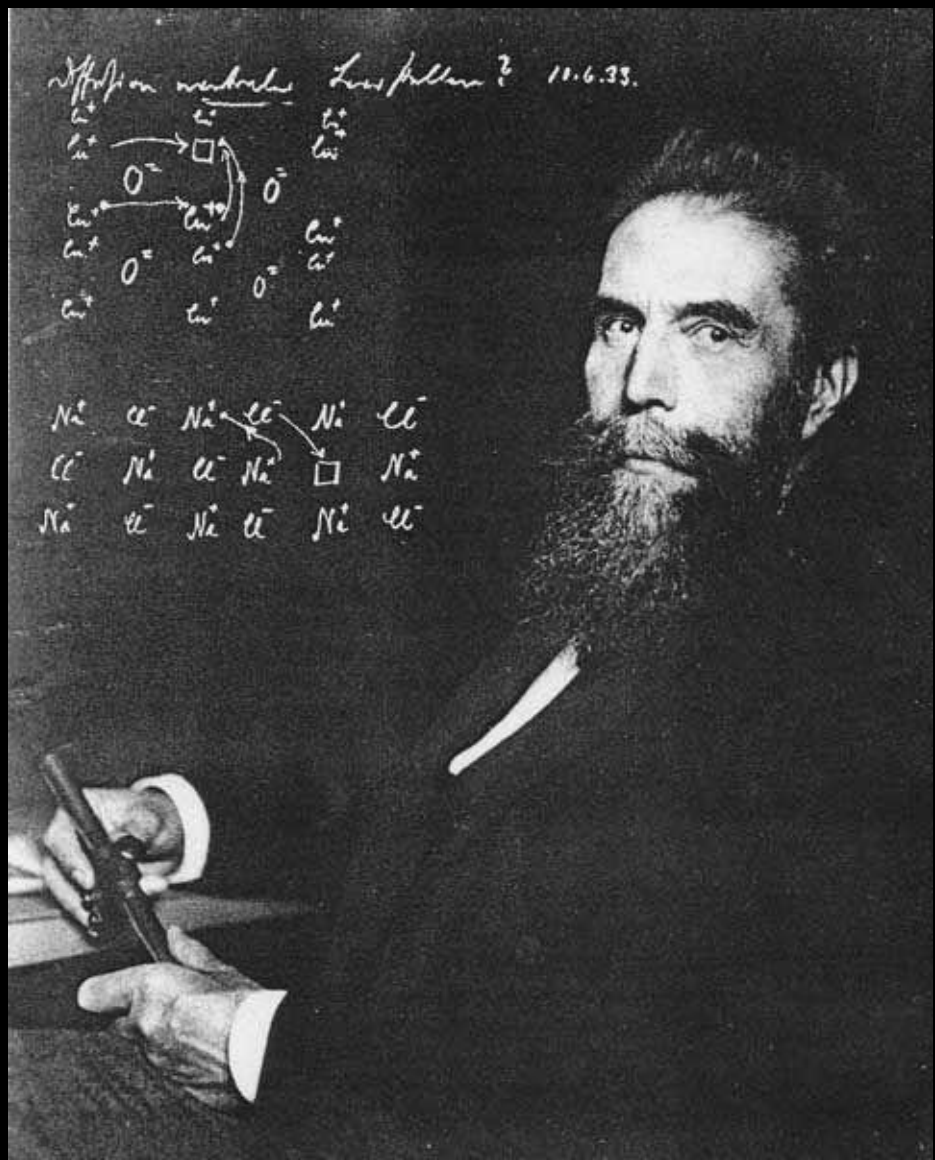
100%
OF HEALTHCARE COMPANIES
IN THE FORTUNE GLOBAL 500 RELY ON RED HAT

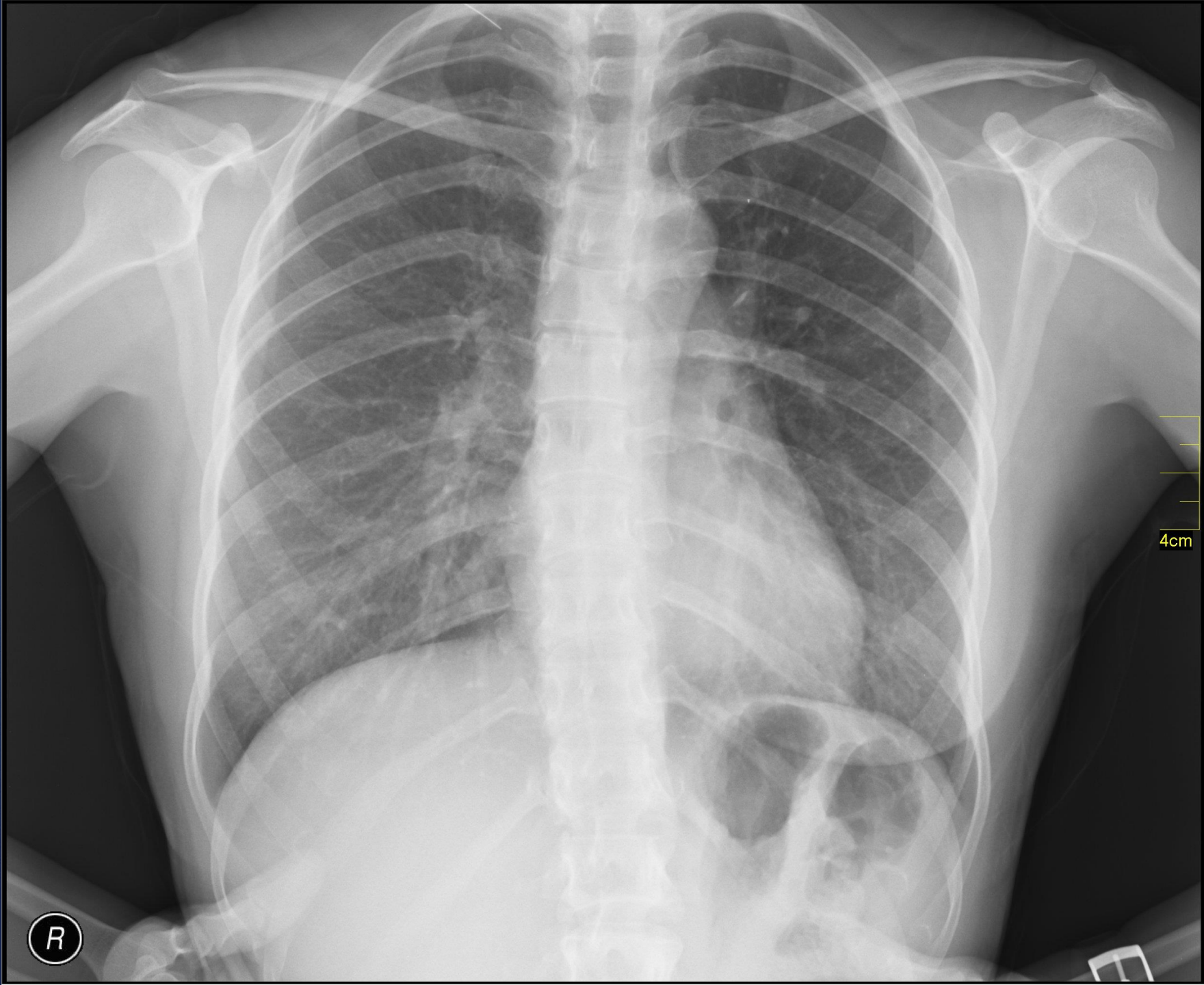
LEARN MORE

TRIED. TESTED. TRUSTED.

Rule #2

Recognize that AI is different than any tech trend we've ever seen.

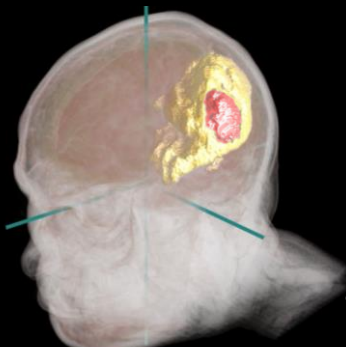






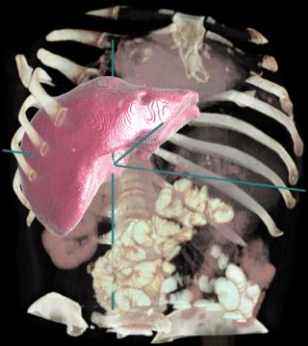
Quantitative Radiology & Radiation Oncology

Modality: MR (T1gad, Flair)
Structs: oedema, necrosis, high/low grade gliomas



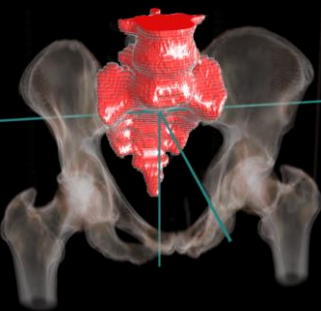
Radiation Oncology

Modality: CT
Structs: liver, masses



Quantitative Radiology & Surgery

Modality: CT
Structs: spine



Microsoft Azure

InnerEye segmentation services

BrainML.Glioblastoma

BrainML.LowGradeGlioma

HeadNeckML

ThoraxML.Lungs

AbdomenML.Liver

AbdomenML.Kidneys

PelvisML.Spine

PelvisML.Prostate

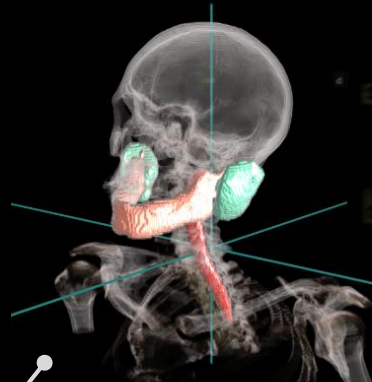
...

Medical components, paid services

ML scalability: a single, flexible and general meta-model allows us to build multiple services.

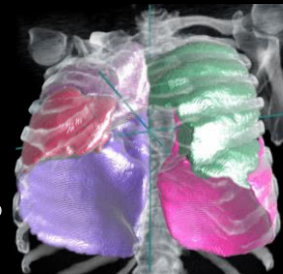
Radiation Oncology

Input: CT
Structs: parotid glands, spinal cord, mandible



Surgery

Input: CT
Structs: lung lobes, masses



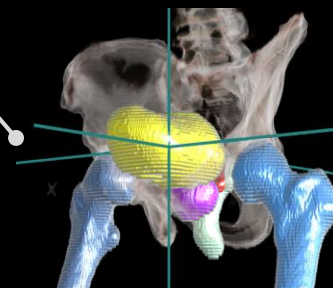
Surgery

Input: CT angiograms
Structs: collecting systems, left/right parenchymas, arteries, veins, masses



Radiation Oncology

Input: CT
Structs: prostate, rectum, sem. vesicles, bladder, left/right femurs





Artificial Intelligence:

IT systems that sense, comprehend, act, and learn.

"Intelligence" demonstrated by software with the ability to depict or mimic human brain functions.

Rule #3

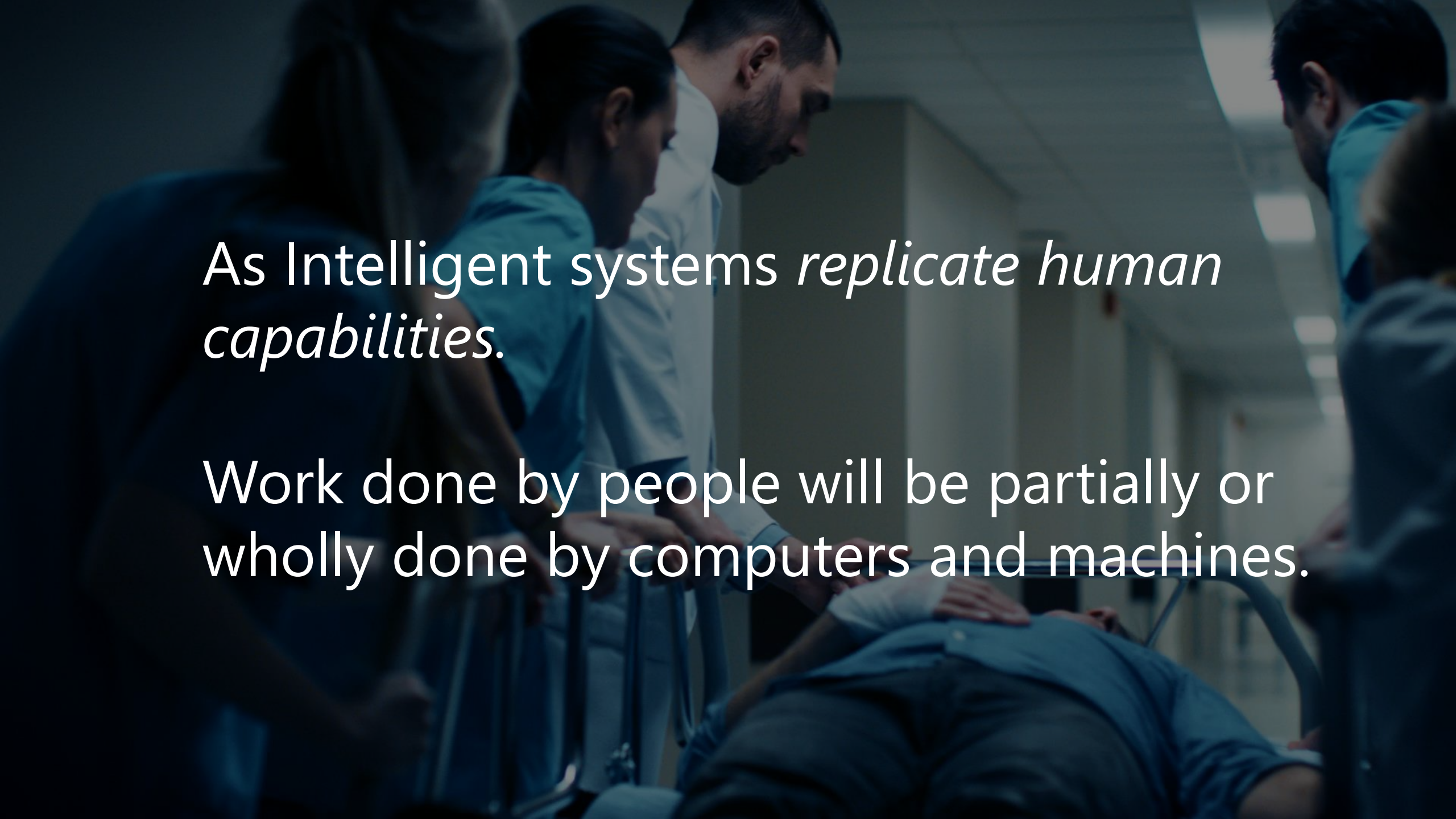
AI requires leaders to think and act differently

I'm all for change...

...You go first

Rule #4

Digital Transformation *only* happens
through workforce transformation



As Intelligent systems *replicate human capabilities.*

Work done by people will be partially or wholly done by computers and machines.

Everyone's talking Artificial Intelligence...

...No one is talking Artificial Wisdom

TECHNOLOGY

Paul Allen Wants to Teach Machines Common Sense

By CADE METZ FEB. 28, 2018



"To make real progress in A.I., we have to overcome the big challenges in the area of common sense," said Paul Allen, who founded Microsoft in the 1970s with Bill Gates. Béatrice de Géa for The New York Times

SAN FRANCISCO — Microsoft's co-founder Paul Allen said Wednesday that he was pumping an additional \$125 million into his nonprofit computer research lab for an ambitious new effort to teach machines "common sense."

Reasoning

Judgement

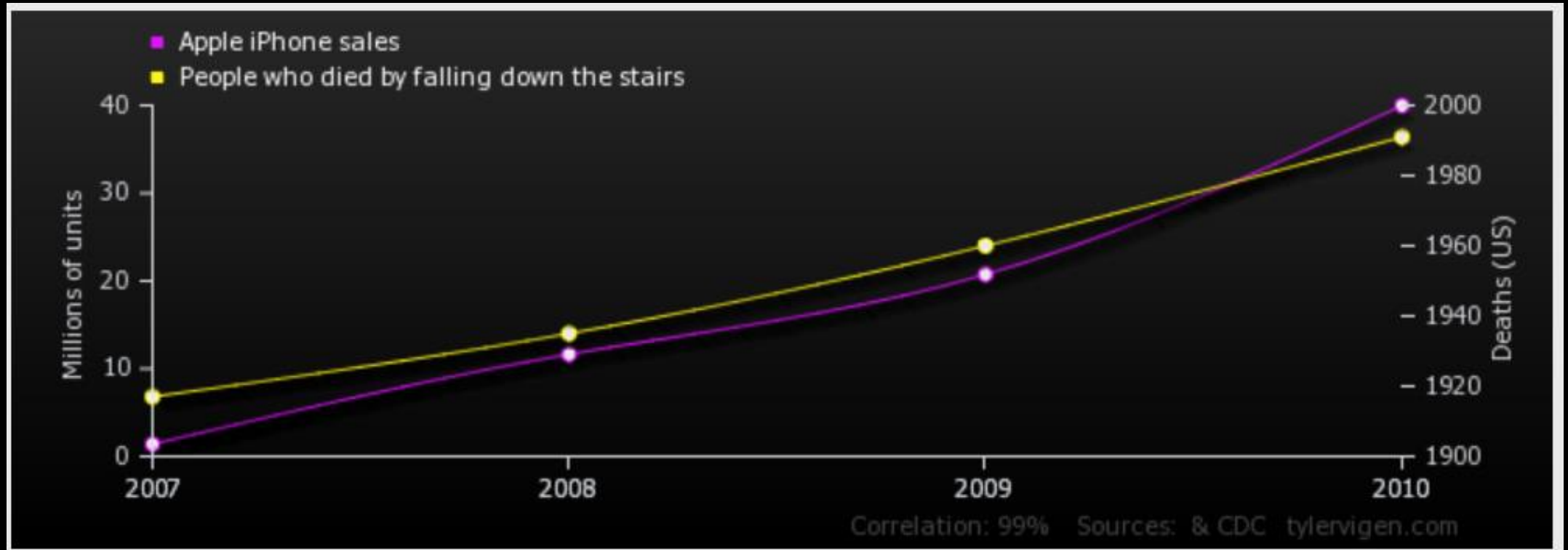
Imagination

Empathy

Problem-solving skills

A Silent Killer is Among Us

Correlation vs. Causation



Correlation: 99%

Rule #5

AI will be a force for good for all or
for some.

...You decide



AI Goal: Reduce Adverse Events Outside of ICU

Proof of Concept: 60% Reduction

White males: 95% Reduction

Hispanic females: 25% Reduction



Microsoft AI Principles

Fair | Accountable | Transparent | Ethical

- 1 AI must maximize efficiencies without destroying the dignity of people
- 2 AI must guard against bias
- 3 AI needs accountability so humans can undo unintended harm
- 4 AI must be transparent
- 5 AI must be designed for intelligent privacy
- 6 AI must be designed to assist humanity

Why ?

Why







AI: Delivering on the Promises We Make:

Keeping people healthy

Caring for them when they are not

Being good stewards of resources

"We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten."

-Bill Gates





Tom Lawry
Director Worldwide Health

tomlawry@Microsoft.com



Microsoft

© 2015 Microsoft Corporation. All rights reserved. Microsoft, Windows, and other product names are or may be registered trademarks and/or trademarks in the U.S. and/or other countries.
The information herein is for informational purposes only and represents the current view of Microsoft Corporation as of the date of this presentation. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information provided after the date of this presentation. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.