

The Power of Data

The personalized medicine conference, June 2016

Presented by:
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Director, IBM Research
Healthcare Informatics

Outline

How medicine is changing?

Two Concrete examples: Combating AIDS and Fighting Cancer

IBM's perspective



Outline

Two Concrete examples: Combating AIDS and Fighting Cancer

HIV from a fatal to a chronic disease

35 M

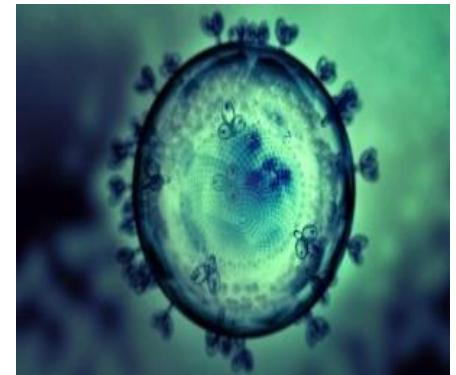
More than 35 million people are living with HIV nowadays

300

The PRO and RT proteins include more than 300 different amino acids relevant to a therapy design

90%

90% of the children living with HIV, live in Africa



HIV: EuResist

65,000

Data coming from 10 European centers covers medical records of 65,000 patients in the past 20 years

160,000

Information for 160K therapy regimens provided to the patients

50,000

X

400

Information of 200 million amino acids of the virus RT and PRO proteins

Personalized treatment



Integration of viral genomics with clinical data to predict response to anti-HIV therapy

[Euresist project](#) / [Contact](#) / [Disclaimer](#) / [English](#)

Disclaimer

The system provides an estimate of in vivo efficacy of commonly used antiretroviral drug combinations based on user-defined information of HIV genotype (mandatory) and additional patient information (recommended). The engine is not intended as a replacement for standard of care but can be used by HIV specialists as an additional treatment decision support tool. Although analysis of a large data set of medical records has shown a good performance of the system, there is no warranty that its use will improve patient health. HIV care must rely on a solid knowledge of the complex host-virus interaction and proper consideration of patient status and commitment.

[home](#) / [data analysis](#) / [documentation](#) / [links](#) / [database](#)

[HIV-1 Sequence](#) [Mutation List](#) [XML file](#)

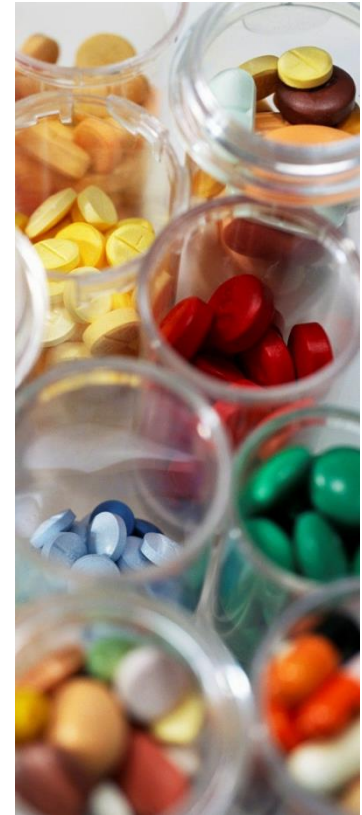
HIV-1 Sequence

Choose one of the two methods

Text/fasta input

Paste sequence text in the text below

[Insert sample sequence](#)



20+ drugs
100+ therapies

Cancer from a fatal to a chronic disease

... Prevention & Screening ... Omic based
Therapy Selection... Consistent Follow-ups ...
Immunotherapy... Better Medical Imaging
Technologies....

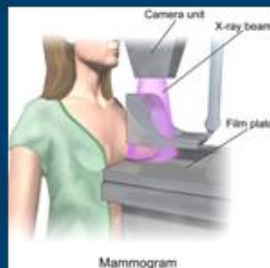
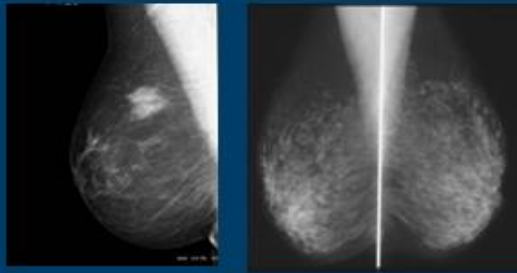
400 M 400 million medical imaging
procedures per year in the US alone

40 % More than 40% of clinical trials are
cancer clinical trials

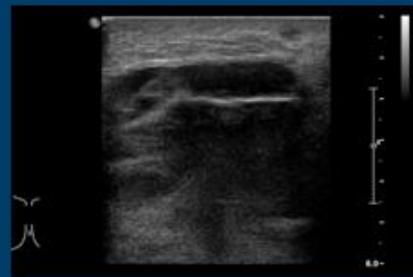
Cognitive Radiology Assistant

Provide important insights to clinicians, and bring the most patient-relevant information to clinicians' fingertips.

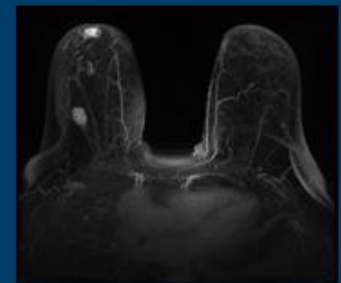
Mammography



Ultrasound



MRI

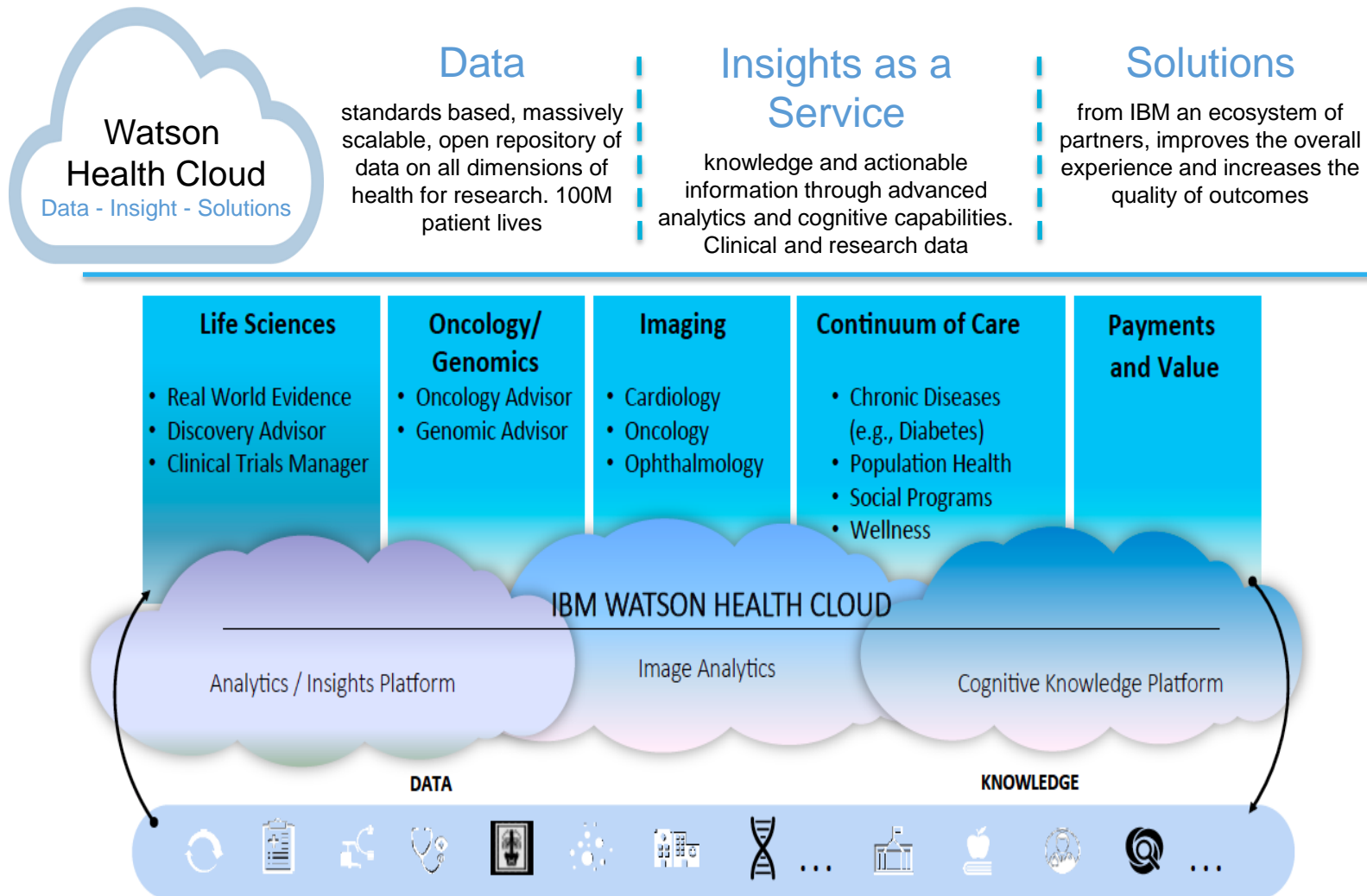


Outline

IBM's perspective



Watson Health Offerings – 5 Pillars



What is Healthcare IT

"Medicine begins with storytelling. Patients tell stories to describe illness; doctors tell stories to understand it. Science tells its own story to explain diseases"

Information Technology digests and analyzes these stories, and enables securely and reliably utilizing them in a service or an app.

