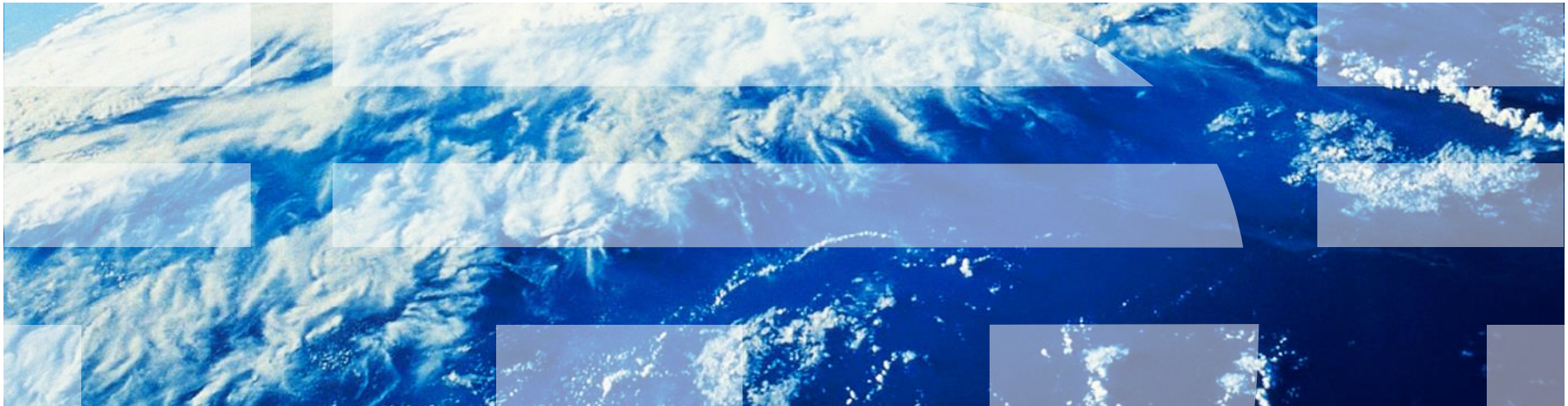


IBM Watson

Using Data, Analytics and Evidence to Improve Healthcare

John Crawford, Healthcare Industry Leader, IBM Europe
Royal College of Physicians, London, 21st October 2014



Big Data embodies new data characteristics created by today's increasingly digitised world

Characteristics of Big Data

Volume




Data at scale
Terabytes to petabytes of data

Variety



Data in many forms
Structured, unstructured, text, multimedia

Velocity



Data in motion
Analysis of streaming data to enable decisions within fractions of a second

Veracity



Data uncertainty
Managing the reliability and predictability of inherently imprecise data types

Source: IBM Institute for Business Value, 2012

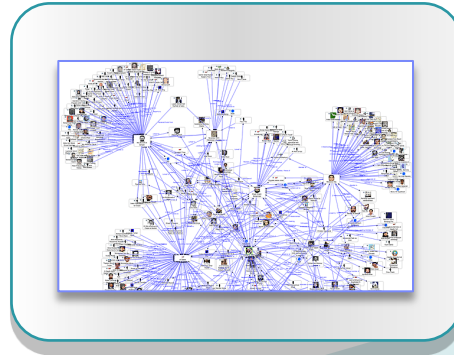
Analytics is moving us towards prediction and optimisation of outcomes

Foundational



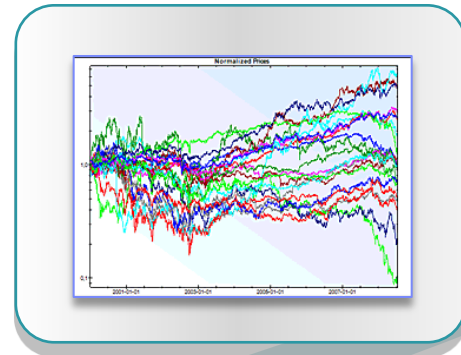
- 'Rear-mirror' view
- Basic reporting
- Spreadsheets

Advanced, Predictive



- Real-time (or nearly)
- Dashboards
- Clinical data repositories
- Predictive models
- Outcomes analytics
- Natural language
- Machine learning

Prescriptive



- Personalised healthcare
- Population risk models
- Optimising care systems
- Cognitive computing

EuResist project uses Big Data to predict response of HIV patients to treatment based on viral genomics

Need

- Predicting best treatment strategy for HIV sufferers from a cocktail of drugs, comparing new cases with a database of over 61,000 previous cases, over 150,000 therapy options and nearly 700,000 viral loads

Benefits

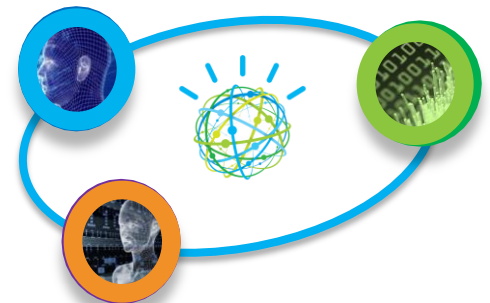
- Using decision support delivers 78% accuracy in treatment plans
- EuResist prediction engine outperformed 9 out of 10 human experts in predicting outcome



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

IBM Watson – cognitive computing transforming healthcare

- 1 Understands **natural language** and doctor / patient communication
- 2 Generates and evaluates **evidence-based hypothesis** to improve quality of patient care
- 3 **Adapts and learns** from user selections and responses



IBM Watson – Your future health advisor?



