Digitalisation of the medicines lifecycle: challenges and opportunities

Anthony Rowe
Data & Knowledge Management SGG
Three trends in technology today

- Ubiquity of the Internet
Three trends in technology today

🌟 Ubiquity of the Internet

🌟 Rise of the Post-PC Era
Three trends in technology today

- Ubiquity of the Internet
- Rise of the Post-PC Era
- The volume of data
Using Digital Technology for Research

http://www.parkinsonsvoice.org/

* A voice based study for Parkinson's disease
* Create a database 10,000 recordings to build digital biomarkers of PD
* Accessible to 750,000,000 individuals

A test for Parkinson's with a phone call
Max Little, TEDGlobal 2012
HOW HAS THE IMI RESPONDED?
WEB-RADR: Mobile and Social Technology for Pharmacovigilance

- English, French and German or Spanish language analysed
- Consortium keen for global applicability
- What else can social media tell us
  - Abuse?
  - Misuse?
  - Counterfeit?
- Geo pharmacovigilance a possibility?
RADAR-CNS: Remote Assessment of Disease and Relapse – Central Nervous System

A collaborative research programme exploring the potential of wearable devices to help prevent and treat depression, multiple sclerosis and epilepsy

Read more about us
Use of Real World Data

- Electronic Health Records for Clinical Research
- European Medical Informatics Framework
- Big Data for Better Outcomes
The Big Data for Better Outcomes programme at a glance

"Big data for better outcomes"

Goal: Support the evolution towards outcomes-focused and sustainable healthcare systems, exploiting the opportunities offered by big and deep data sources

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<th>Coordination and operational topics</th>
<th>Themes / Enablers</th>
<th>Disease-specific topics</th>
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<td>1. Design sets of standard outcomes and demonstrate value</td>
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<td>2. Increase access to high quality outcomes data</td>
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<td>3. Use data to improve value of HC delivery</td>
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HEMATOLOGIC MALIGNANCIES - published in Oct 2015

CARDIOVASCULAR – published in Dec 2015

PATIENTS' MULTI-COMORBIDITIES

RARE CANCERS

PROSTATE CANCERS

MULTIPLE SCLEROSIS

Future topic proposals
Enabling Precision Medicine across the IMI

- 40 Supported Public Private Partnerships
- 9 Open Source tools for the analysis of Omics data
- 350 Researchers trained in eTRIKS technology
- 58 Publically available data sets
Is it a Game, Is it Healthcare
AI Breakthroughs: Jeopardy and Go…

- 1997 – IBM’s Deep Blue beats top ranked Chess Champion

- 2011 – IBM’s Watson wins Jeopardy

- 2016 – Google DeepMind’s AlphaGo Beats 9th Dan Go Champion

- AI & Machine Learning is having a renaissance – how can we safely and ethically use this in the future of medicine
Underlying Computing Trends

LINPACK SCORES

Sources: Wikipedia & Hacker News
Underlying Computing Trends

LINPACK SCORES

Deep Mind  Watson  AlphaGO

Sources: Wikipedia & Hacker News
Hyperconnected People, Things & Services

- What does healthcare look like in a world that has
  - 8 Billion Connected People*

- A Trillion Connected Sensors*

- Software as a Diagnostic SaaS DX

- Software as a Therapy SaaS RX

*2025 Predictions from http://peterdiamandis.tumblr.com/*