



## The Opportunity to Leverage Electronic Health & Medical Records.

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# Agenda

**1** **ICON's mission**

**2** **Digital health opportunity**

**3** **Challenge with patient recruitment**

**4** **Targeted real world data collaborations**

**5** **Analytics collaborations**

**6** **Patient outcomes benchmarking**

**7** **Digital patient of the future**

## ICON's Mission



ICON's mission is to help our customers accelerate the development of drugs and devices that save lives and improve the quality of life.



MISSION

# Digital health opportunity

The health sector is now undergoing deep digital transformation:

- Rapid adoption of Electronic Health records by hospitals transforming Health Information Management
- Rise of apps and wearable devices – actigraphy health data
- Smart clinical devices

New models of healthcare e.g. remote monitoring, patient incentivisation

New models of reimbursement and population health management (PHM) > replace fee-for-service models.



40%

Fortune 50 companies pursued healthcare related partnerships in 2014



\$41b

Forecast size of medical grade wearables market in 2020 – up from just \$2B at the end of 2014 – larger than the 2019 forecast of \$33.9B for the entire pharma CRO market



3

**Major new data-gathering platforms:**

- Apple Inc's HealthKit
- Google's Google Fit
- Samsung's SAMI

# The challenge

# The challenge: patient recruitment



## Unsustainable cost model

- More than \$1.3B is spent on patient recruitment by drug developers each year



## Patient participation

- <1% US population participate in clinical trials
- < 5% of cancer patients participate in a clinical trial.
- Only 22% patients offered potential to take part in research



## Sites and trials

- Site's enrolment performance hard to predict
- 50% of all trials do not meet the initial recruitment goals
- Major cause of project delays



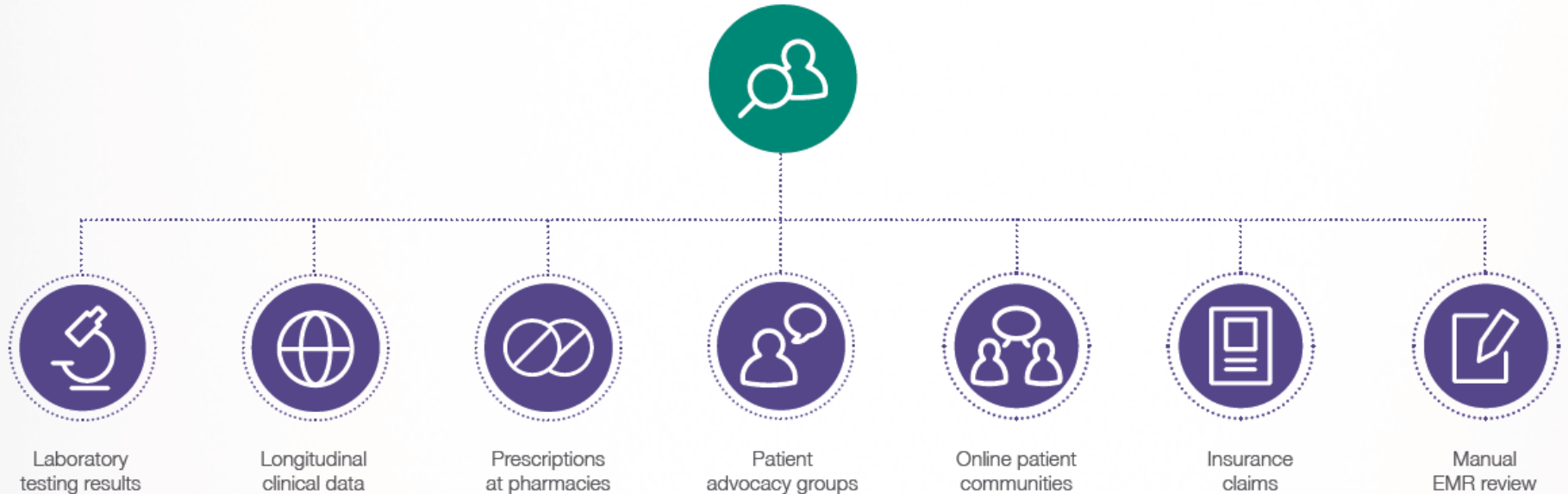
## Transforming trials

- Digital data has the potential to transform clinical trials, accelerating development of new drugs and providing more patients with an additional care option

# Patients and drug development

## 1 HOW CLINICAL TRIALS FIND PATIENTS

Site selection and recruitment plans based on indirect data sources that, due to regulations, cannot identify the actual patients



# Patients and drug development

## 2 HOW PATIENTS FIND CLINICAL TRIALS

Advertisements push patients to doctors





# Big data – the solution?

# Targeted data & analytics collaborations

## Data Sources

**TriNetx**

 **ICHOM**

 **explorys**  
An IBM Company

**EHR4CR**

## World Class Analytics



University College Dublin

**ICONIK**

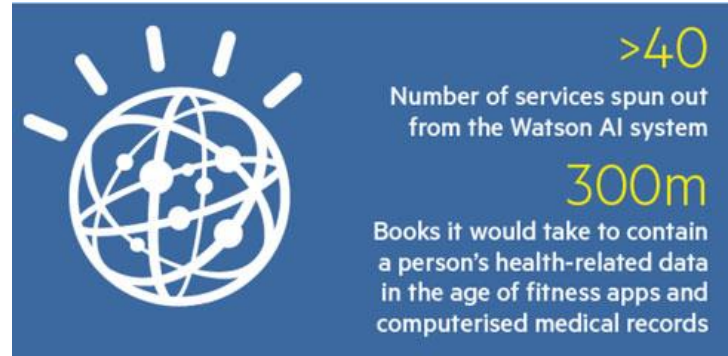
ICON Informatics Hub

**IBM Watson Health**

# Patient identification with cognitive computing

- Enable ICON to access to 100s of millions of de-identified patient lives (EHR) in both US and EU
- Leverage cognitive computing to better match patients into trials initially in breast, lung, colon rectal cancer.
- Potential to revolutionise clinical trial feasibility, patient recruitment and study start up timelines

IBM Watson Health



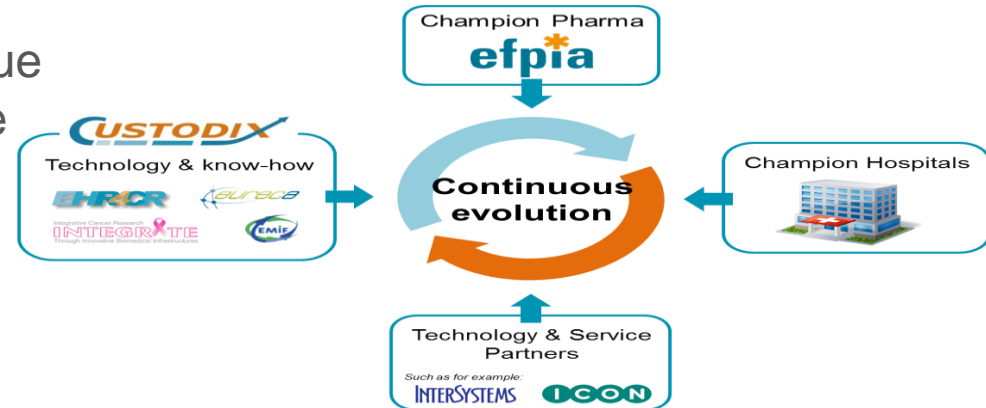
# Patient identification with cloud based EMR

- Global pharma/provider network to connect to sites with more suitable patients
- Access to patient data to inform clinical trial design: c17m patient lives
- Connect with sites that have more patients and stronger PI collaboration
- Re-identify patients faster at participating sites



# Patient recruitment via Real World Data - EHR4CR

- Electronic Health Records for Clinical Research - access to scalable cloud based platform of EHR data
- Leverage this Real World Data for optimising clinical trials
- Data used to show evidence of value and to assist better design of future trials

The logo for EHR4CR, with 'EHR' in blue and '4CR' in orange.

# Advanced analytics to enhance feasibility, site selection & planning

- Partnership with UCD Department of Business Analytics: Ranked #1 Globally (SciVal, 2014)
- Gives ICON access to advanced analytical expertise
- Applying expertise to analyse ICON & external data-sets enhance feasibility, site selection and clinical research planning



## Feasibility

### Rates (per country)

- Enrolment (subj/site/m)
- Non-enrolling sites (%)
- Screen failure (%)
- Withdrawal (%)`

## Site Selection

### Site Ranking

- Top enroller
- "Tier" classification
- Non-enroller

## Clinical Research Planning

### Enrolment Progress

- Enrolment curves (actual v plan)
- Confidence intervals



Advancing  
**value-based  
healthcare**  
with ICHOM

# Patient outcomes based on Real World Data - ICHOM

- Creating the world's first health outcomes benchmarking programme
- Risk-adjusted, international benchmarks on health outcomes by medical condition from treatment & care regimes
- Leverage knowledge with customers to advise on study design and effectiveness of treatments
- ICON core role in aggregating of outcomes data - leveraging the powerful analytics capabilities of ICONIK



Developed by 400 leading clinicians, registry leaders and patients worldwide



Addresses 13 health conditions

Covers 35% off global disease burden



Used by 70 healthcare provider systems and academic medical centres

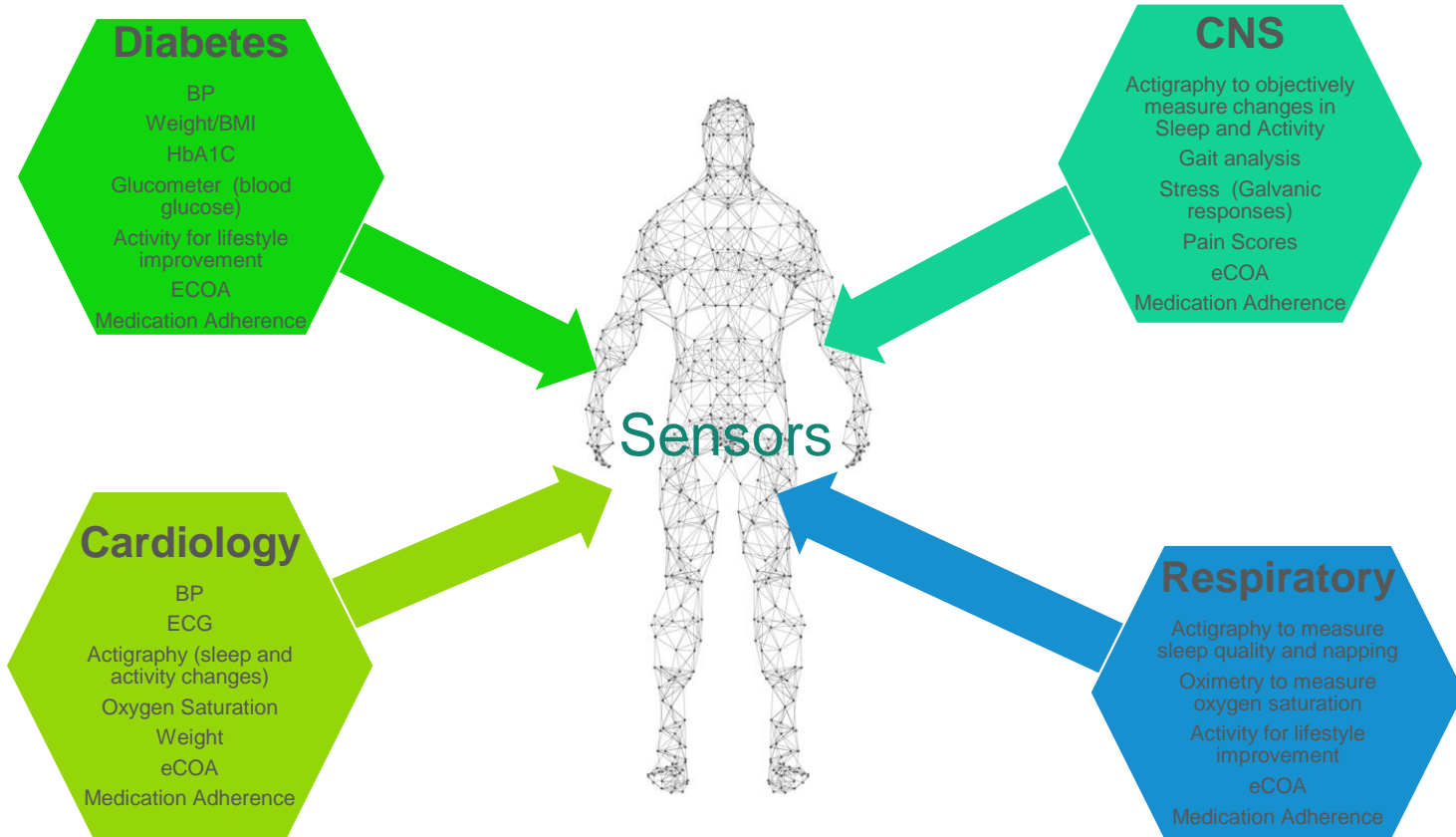


# Data direct from patients

- Sensor technology allow wearables to collect health and wellness data
- Data collection for outcomes research can be reported with minimal invasiveness
- Patient privacy more paramount as data reporting is continuous and real-time
- FDA approved wearable devices to measure physical movements in clinical trials



# Digital patient of the future



# Transforming trials: will benefit everyone

## Stakeholder Benefits



### Patients

- More access to better care management
- Decreased cost of care
- Increased engagement and satisfaction



### Industry

- Trials enroll faster = Faster time to market
- Fewer sites, more patients = scalability
- Regulatory risk mitigation-better data
- Predictability & Reproducibility of Success



### Providers

- Improved care at lower costs
- Higher patient and physician satisfaction
- Improved patient outcomes



**Thank you for  
attending today's  
session**

ICON plc is a global provider of drug development solutions and services to the pharmaceutical, biotechnology and medical device industries.

The company specialises in the strategic development, management and analysis of programs that support clinical development - from compound selection to Phase I-IV clinical studies.

**ICONplc.com**

