

# Digitizing Clinical Trials in the Healthcare 4.0 Era

The Healthentia Case Study

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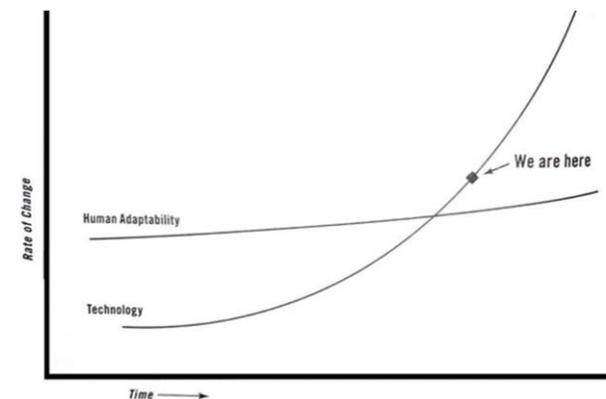
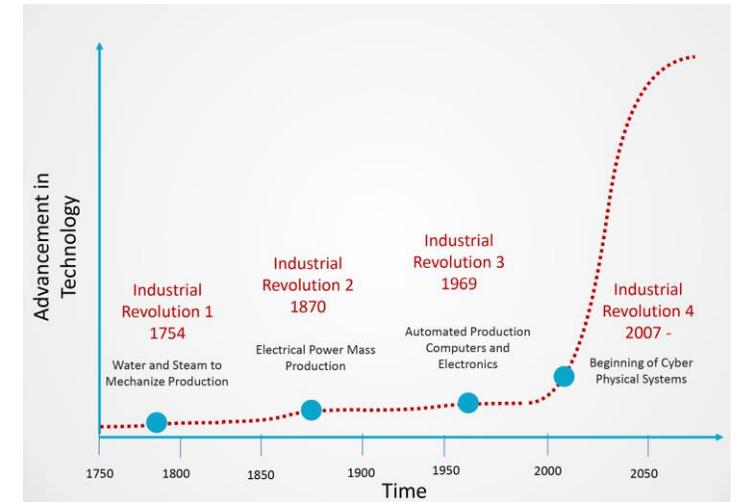
# We Live in Exponential Times – Technology Acceleration

Dramatic increase in the rate of technological change throughout history

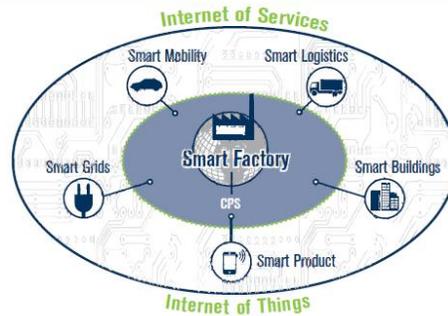
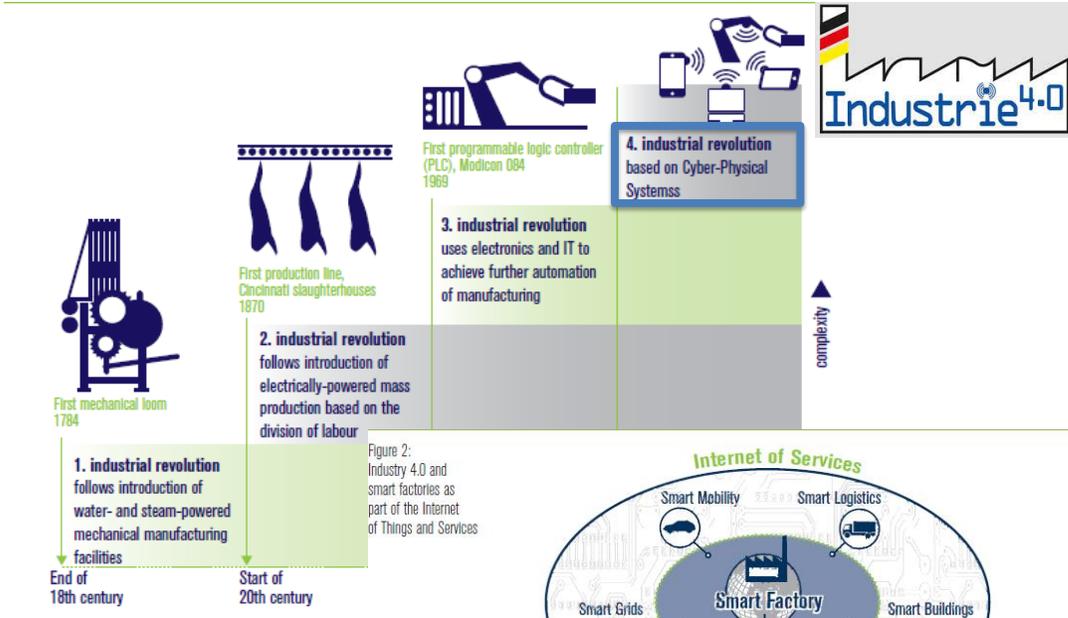
- Exponential increase
- Accelerated technological change is not new (e.g., Moore's Law), but rate of change is ever increasing to unprecedented levels (!)
- 2007 possible a milestone year (emergence of iPhone/SmartPhones, Hadoop/BigData, Github, Facebook/Social Networks)

Technology Acceleration suggests faster and more profound change in the future

- Profound social and cultural implications



# Industry 4.0: The Fourth Industrial Revolution



A NEW YORK TIMES BESTSELLER

"A breathtaking new book on modern economics." –Forbes.com

MARTIN FORD

RISE OF

THE  
ROBOTS

TECHNOLOGY AND THE THREAT  
OF A JOBLESS FUTURE

BUSINESS  
BOOK OF THE  
YEAR 2015  
WINNER  
McKinsey & Company

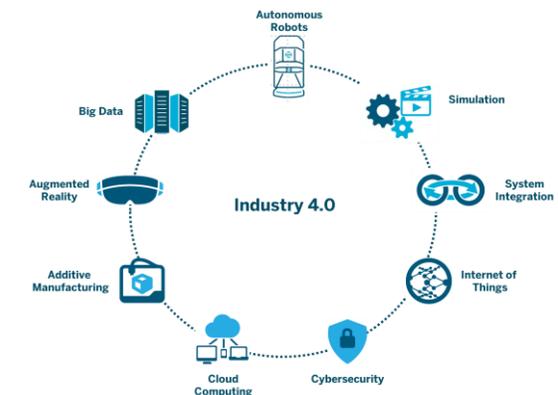
# Healthcare 4.0: An Industry 4.0 Derivative

## Healthcare 4.0:

- Transformation of healthcare based on interconnected cyber-physical systems
- Connected patients, institutions and other stakeholders through IoT/CPS devices including wearables
- Every data point of patients is getting recorded no matter where they are based on mobile technologies
- Combination of Artificial Intelligence, Internet of Things (IoT), Genomics and Big Data

Revolutionizing prognosis, diagnosis, management and treatment of diseases regardless of time & location

New Opportunities for Clinical Research





# healthentia

Data driven Clinical Research by Innovation Sprint

[www.Healthentia.com](http://www.Healthentia.com)



**MedTech Accelerator**  
by lifetech.brussels

## About Innovation Sprint

A **Belgian** company founded in 2016 from a **diverse team** of clinicians, statisticians, engineers and eHealth experts

> **20 years expertise** in eHealth applications and vast experience in the Life Sciences domain

Innovative **R&D** activities with EU partners on

- IoT Network Security
- Virtual Coaching
- Health Analytics
- Data Security

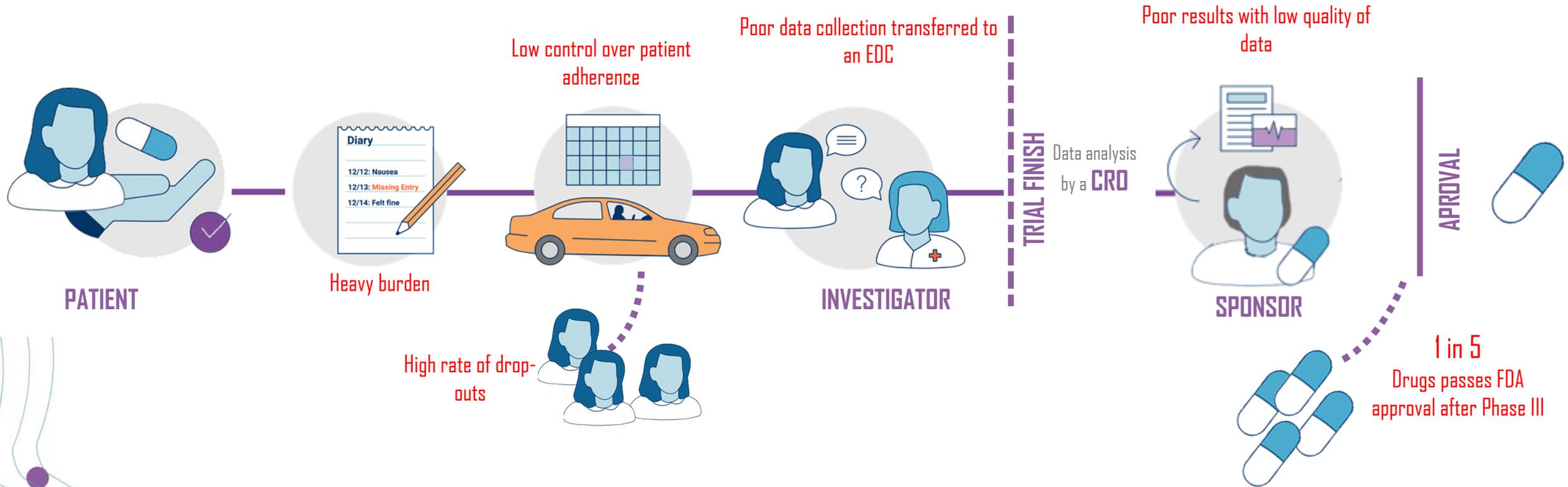
Entering the Clinical Market with two **Projects:**

- Trial with a Top5 Pharma for 150 patients
- Trial with a large hospital for 50 patients



# Clinical Trials – Status of Play

Phase I/II/III





# Numbers Behind Drug Development



**1 of 5**

Human tested Drugs gets approval

**~10y**

Average drug development period

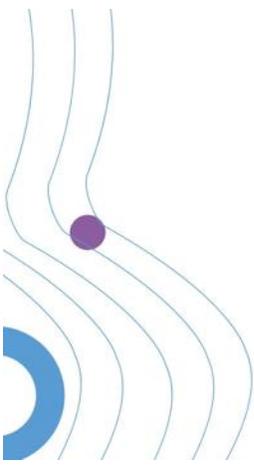
**\$1-2bn**

Total cost of drug development

**\$40m**

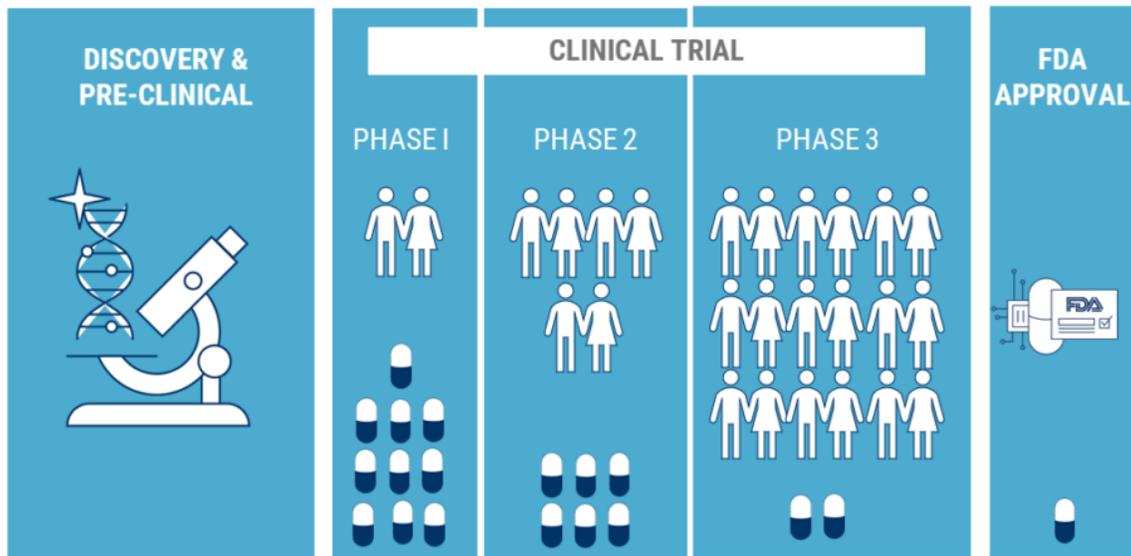
Average cost of a Phase II or III failure

Can we reduce the failure rate between Phases, accelerate the process and save money, while getting insights on drug efficacy?



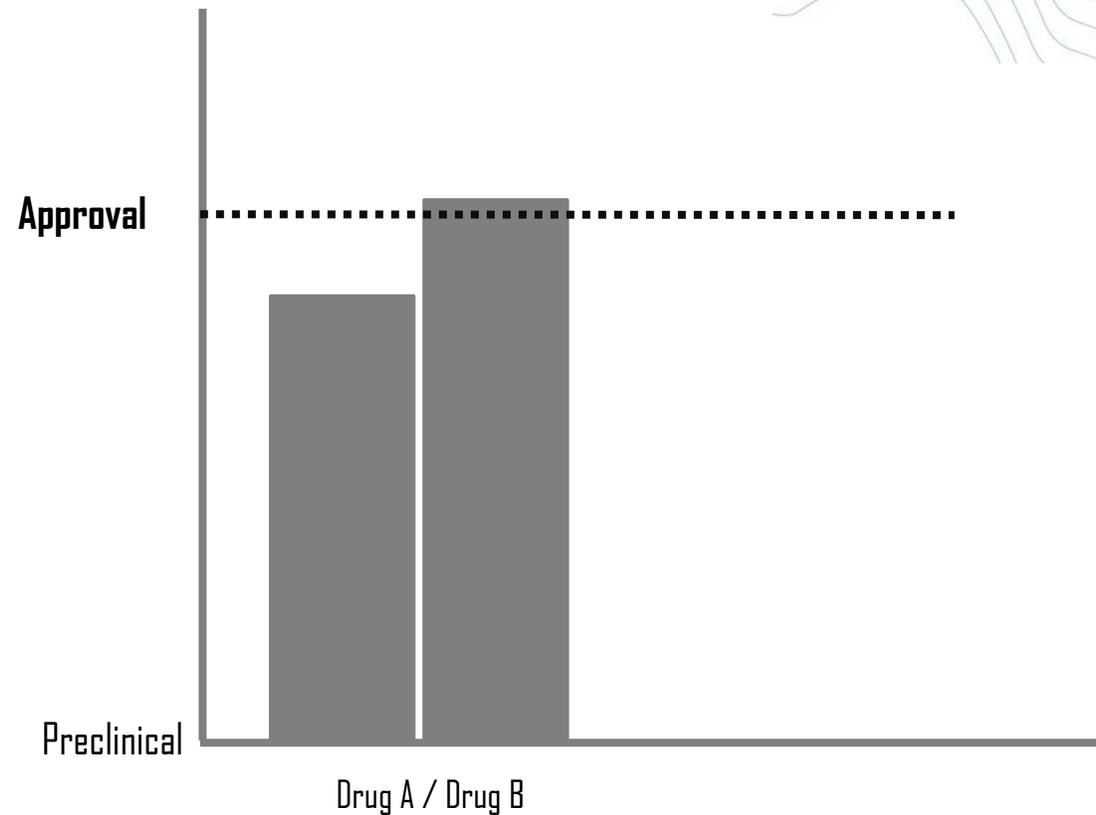


# Drug Approval Challenges



Source: cbinsights.com

CBINSIGHTS



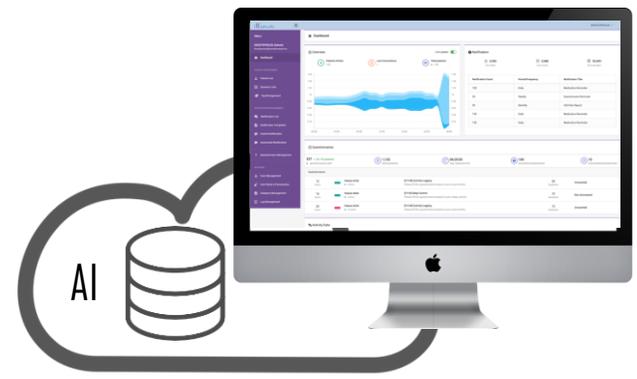
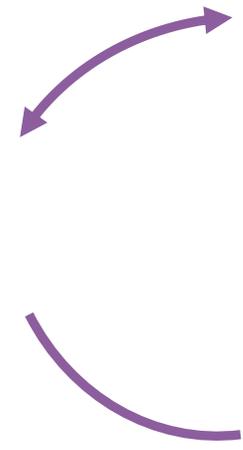
# The Innovation Sprint Approach: Digitization & AI



Wearables & HealthentiaPRO

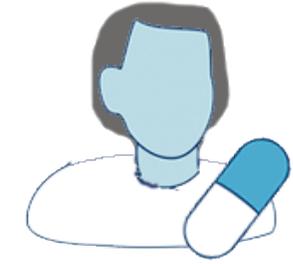
## PATIENT

- ✓ Treatment reminders
- ✓ QoL & vital signs monitoring
- ✓ Interaction with investigator



## INVESTIGATOR

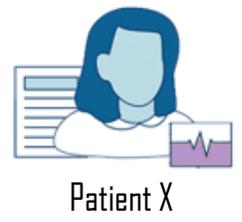
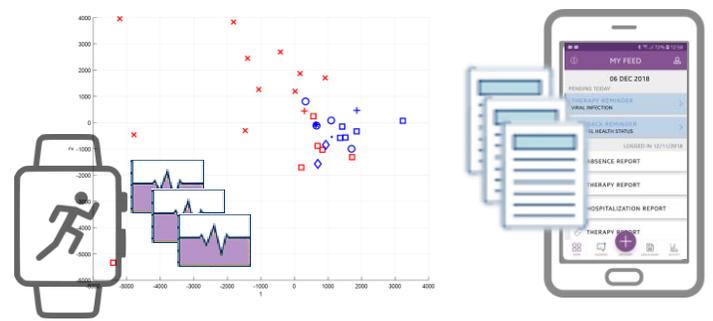
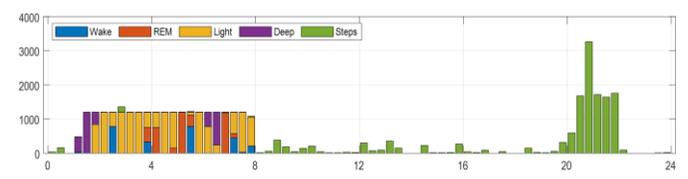
- ✓ Trial management
- ✓ Customized dashboard
- ✓ Real time patient adherence overlook



## SPONSORS

- ✓ BI & reporting
- ✓ Drug efficacy on patient phenotypes

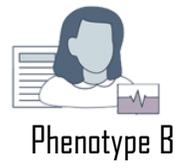
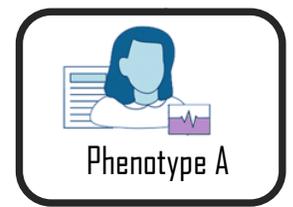
# Artificial Intelligence: "Deep Learning" of Patients



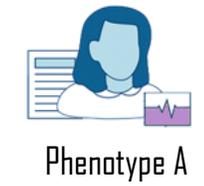
**1 Structure & visualize real-time patient data**



**2 Clustering & matching of patients to phenotypes**



**3 Training with observation sequences**



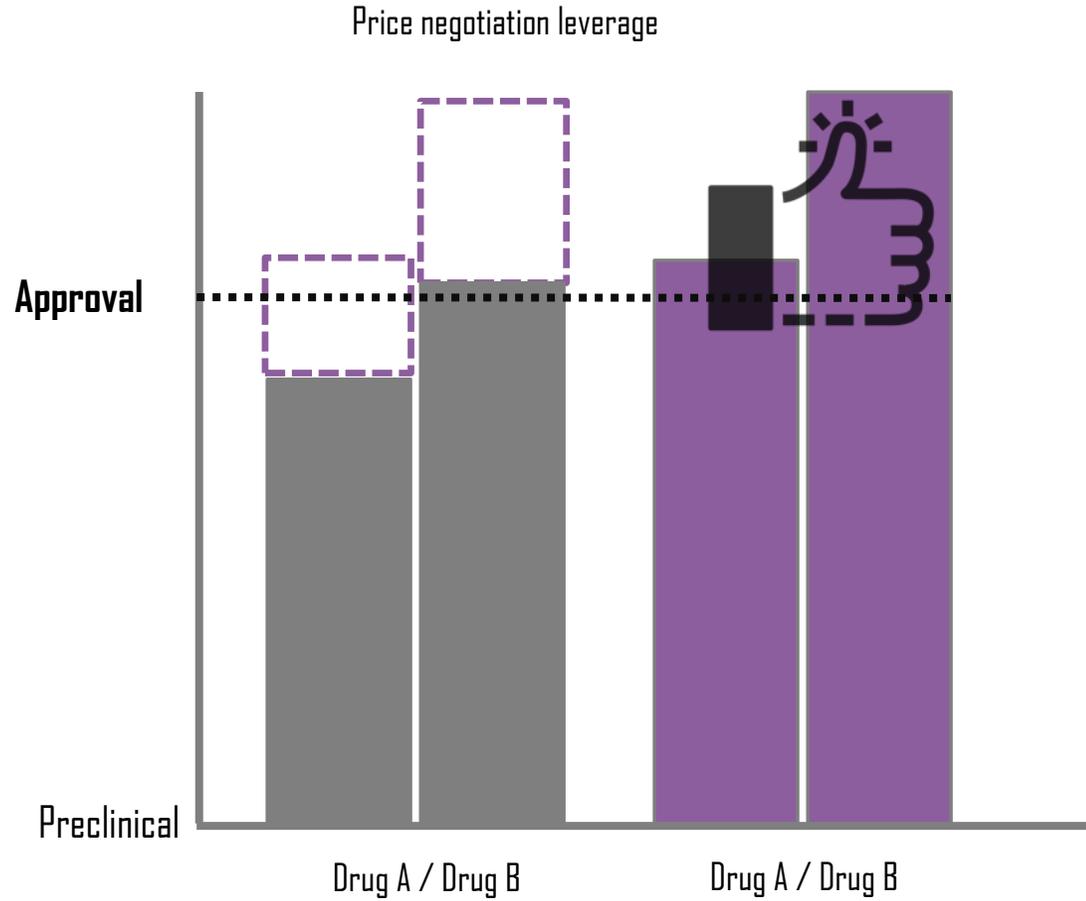
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**4 Smart Services**

- ✓ Prediction of Clinical Outcomes
- ✓ Correlating Behavioral phenotypes with drug efficacy
- ✓ Alerting of Adverse Events
- ✓ Support of adaptive clinical trials



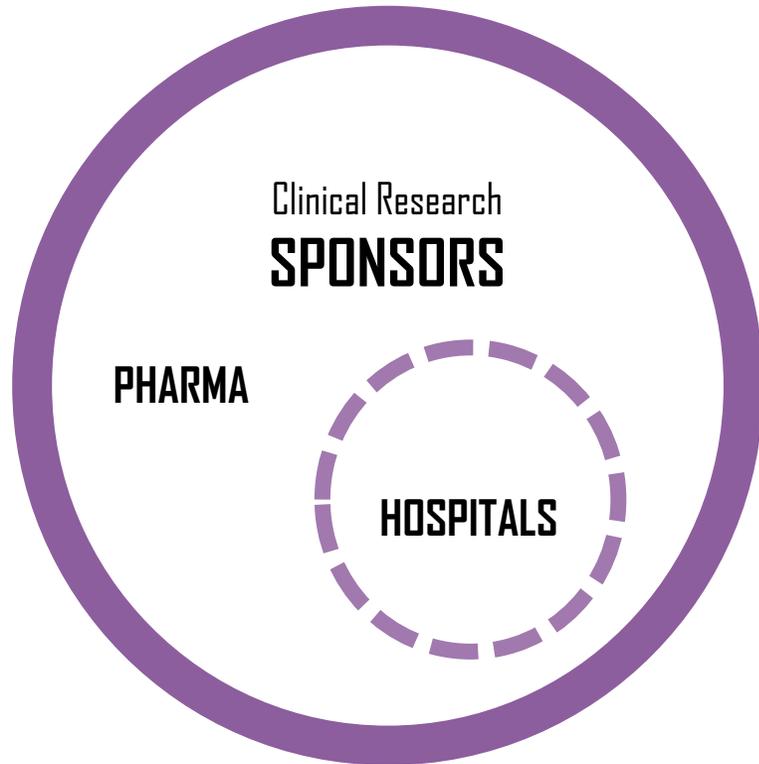
# DRUG APPROVAL CHALLENGES



Give the missing potential of Efficacy proof with RWE insights



## Main Value Proposition



### Healthentia is an eClinical solution that

- ✓ Optimizes clinical trial processes
- ✓ Reduces clinical study failure rates
- ✓ Accelerates the drug approval process
- ✓ Improves patient adherence
- ✓ Reduces patients' drop-outs
- ✓ Achieves cost savings





Join our Vision for Real-Life Clinical Research &  
Care

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