Pathways for increased collaboration of the value chain

Enzo Fabiani Project Manager at Pi School

lessons learnt from co-leading the Sustainability pillar within the EDITH CSA

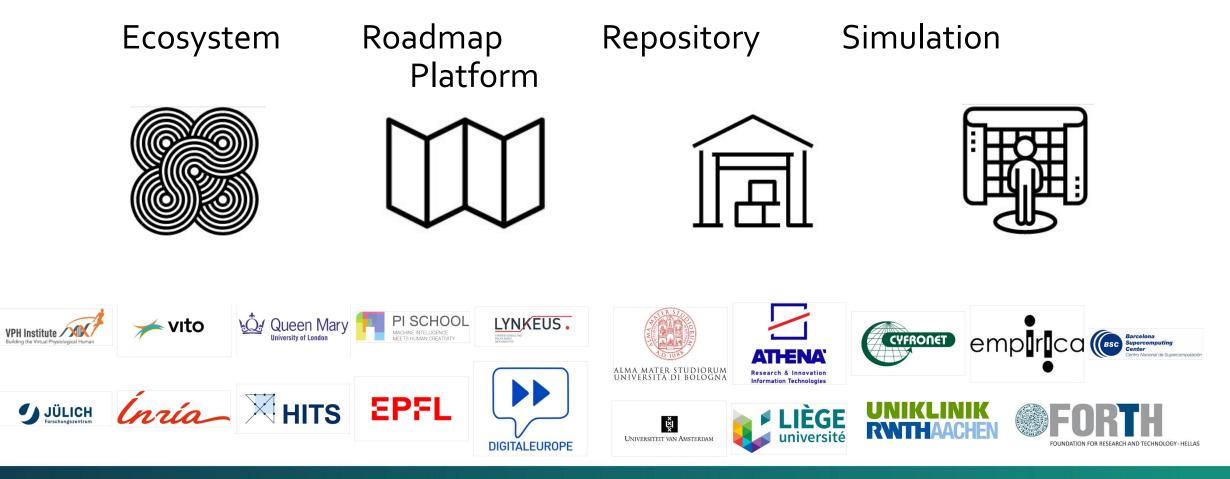




EDITH project has received funding from the EU H2020 Research and Innovation Programme, under Grant Agreement n. 101083771



EDITH-CSA objectives





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Ecosystem

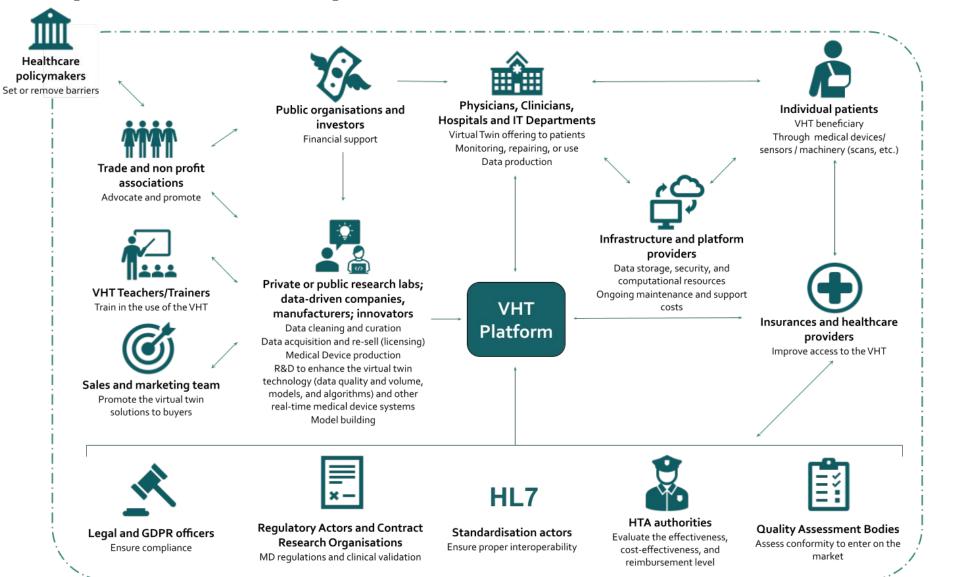


EDITH had the objective to frame an inclusive ecosystem of digital twins in healthcare within the EU Member States and associated countries.

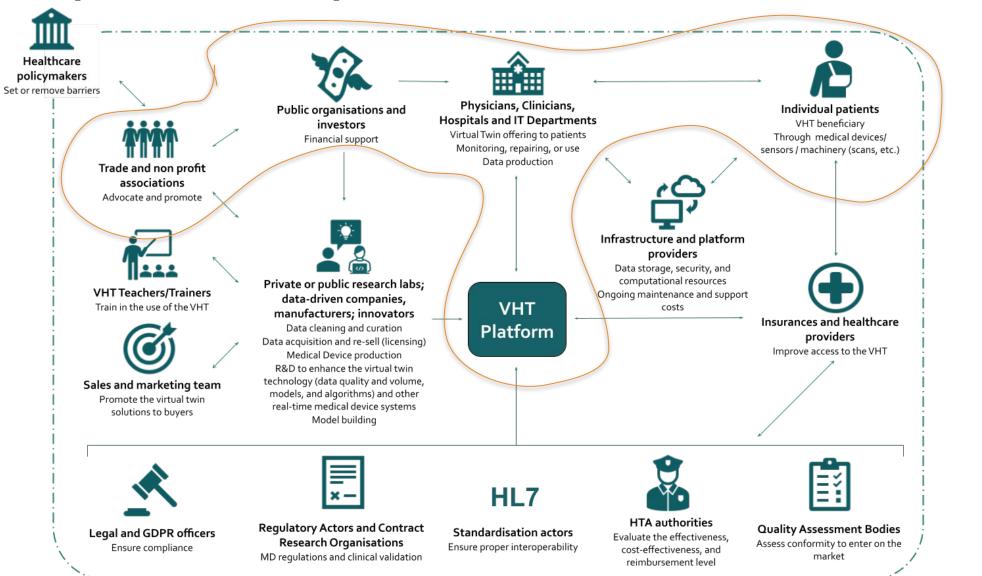
- Show comprehensive mapping of the existing relevant actors, initiatives, resources (i.e., models, data sets, methods, good practices, infrastructures, solutions, services), and barriers in the digital twin development.
- Leverage clinical representation
- Foster collaboration







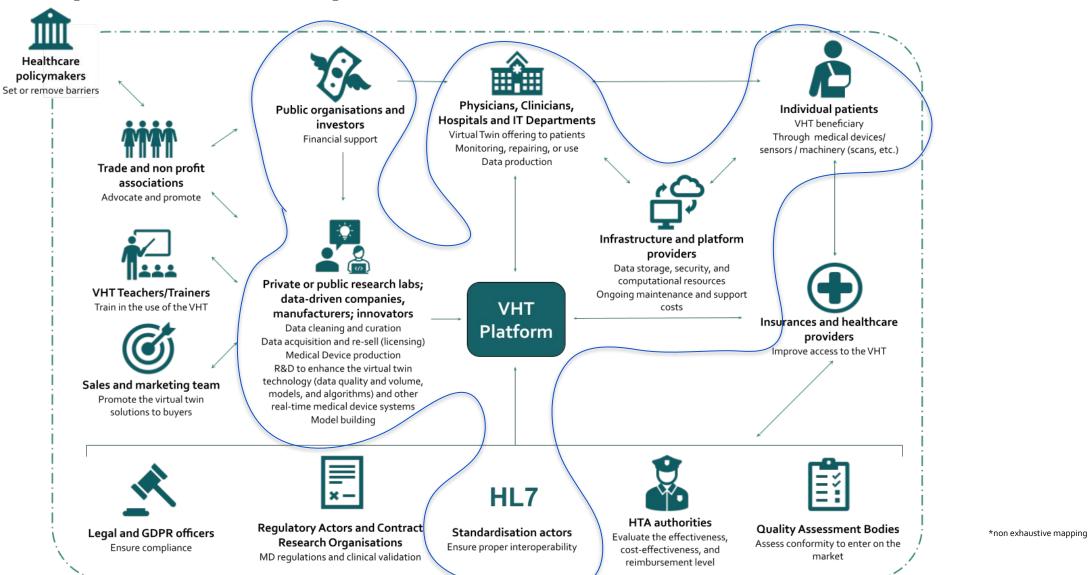
Ecosystem for Digital Twins in Healthcare *non exhaustive mapping



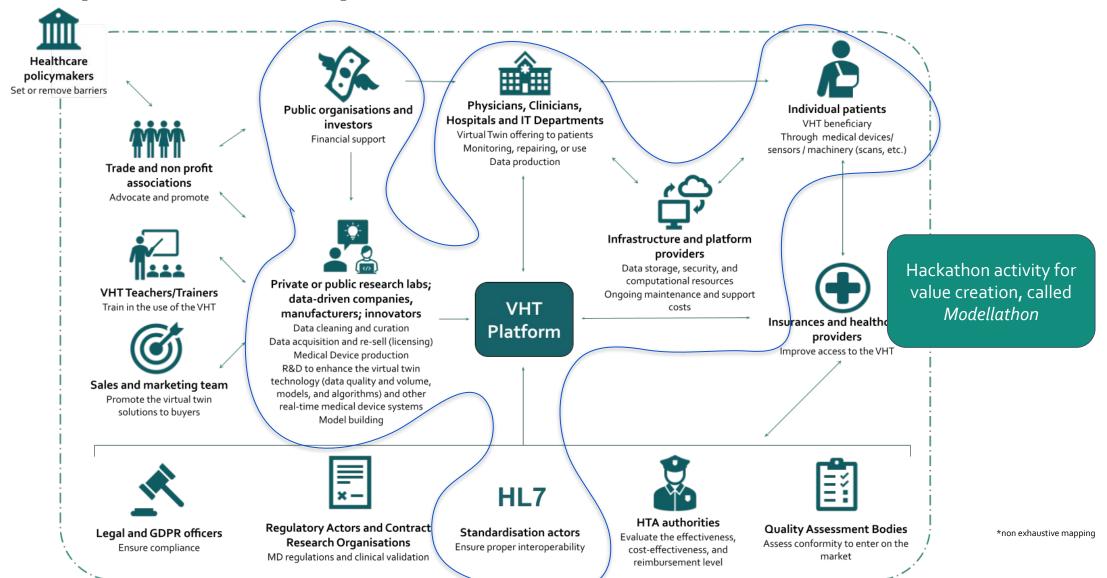


VHT/DT: A key tool for new patterns for prediction and prevention, 22/10/2024

*non exhaustive mapping





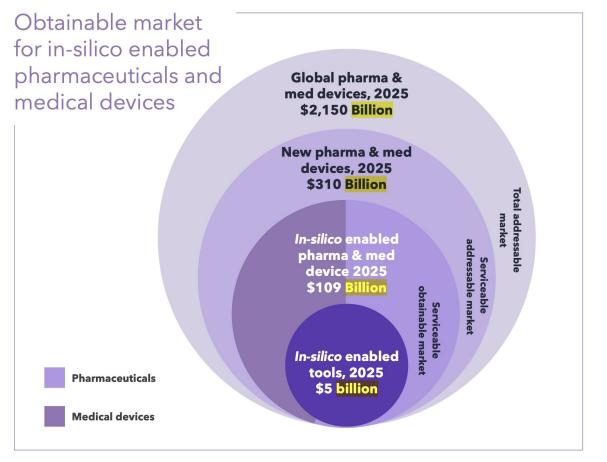




From Use Cases to Value Creation

Creating Sustainable Value from Virtual Human Twin

- Actual Virtual Twin use cases are seeds for scalable innovations: such as clinical decision support systems; personalised medical products; real time data acquisition for emergency care management; etc.
- VHT brings significant key value propositions: enables predictive healthcare, reducing medical errors, streamlining drug development, supporting personalised therapies, precision medicine, early detection
- Social & Economic Impact: Citizens benefit through personalised health screening and forecasting, impacting global markets
- **Costs & Risks**: clinical trials, computing costs, certification costs (and complex validation processes), and data privacy (GDPR) remain key barriers



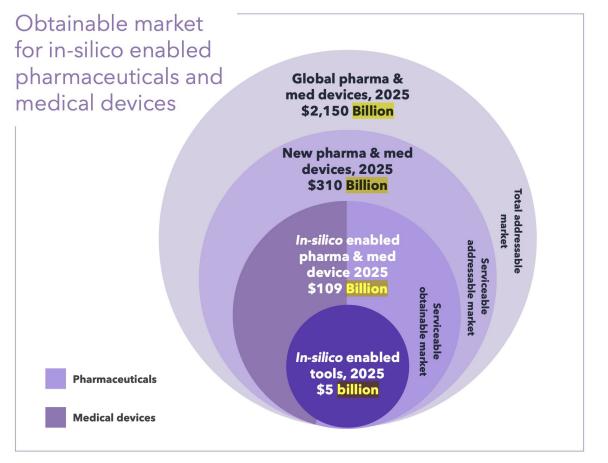
Source: The Economic Impact of In-Silico Technology on the UK and its Lifesciences Sector



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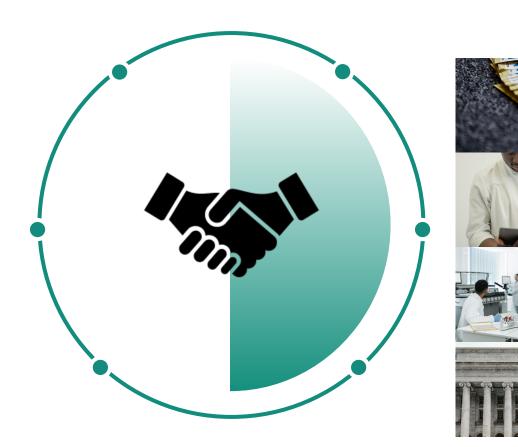


Source: The Economic Impact of In-Silico Technology on the UK and its Lifesciences Sector



further

Benefits and Costs



Ecosystem-Wide Impacts and Incentives for VHT Adoption

For Public Organisations & Investors: outcomes are improved healthcare and a huge potential for public health cost savings ; VHT can boost Europe's leadership in digital health and bring innovation opportunities

For Hospitals & IT Departments: VHT streamlines diagnostics, resource allocation, and patient care. Investing in IT systems is crucial for better integration and effective monitoring

Research Labs & Innovators: New R&D pathways; opportunities for advanced medical products

Regulatory & Legal Stakeholders: Challenges around GDPR, intellectual property, and standardisation.

New challenges bring new markets, and new markets increases the number of partnerships



Key partnerships, to name a few

Healthcare institutions, universities, and research organisations to gain access to patient data and validate the virtual twin models.

Technology providers for secure data storage, cloud computing, and data analytics.

Advisors from different fields: healthcare industries, hospitals, and clinics, engineering experts (e.g., bioengineering, computational engineering, AI) Startups with expertise in deployment, integration, and UX/UI design

Technology Transfer and Innovation Centres: to ensure regulatory compliance and adherence to healthcare industry standards with the help of external Intellectual Property experts

Pharmaceutical companies and medical device manufacturers to integrate virtual twin technology into their research and development processes.



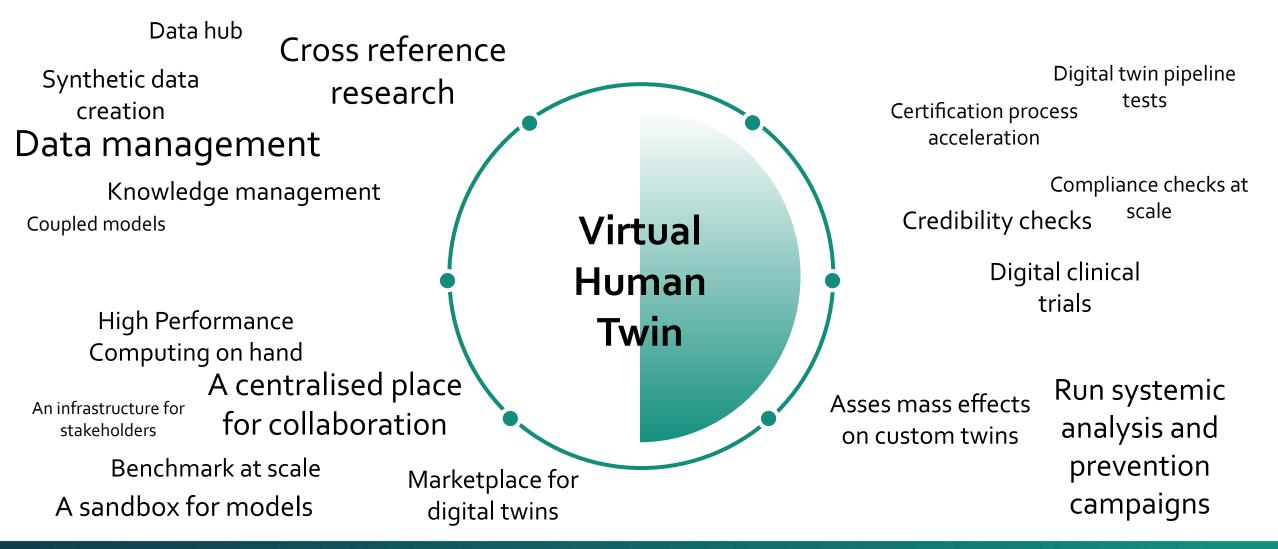
Barriers and opportunities for collaboration

- Data Silos and Interoperability Issues
 - Fragmented data across different institutions, countries, and healthcare systems.
 - Different data governance and standards
- Lack of Multidisciplinary Collaboration
 - Insufficient interaction between clinicians and innovation providers creation silos between innovation projects and implementation in clinical practice.
- Regulatory and Ethical Concerns
 - Variability in regulatory frameworks across regions, leading to slow adoption.
 - Ethical issues in data sharing, privacy, and the responsibility of AI predictions.

- Facilitate data use
 - Implementing international standards for healthcare data
 - Open-access platforms and collaborative repositories for sharing non-sensitive patient data.
- Provide Public-Private Partnerships (PPP)
- **Co-Create Models:** co-designing digital twin solutions for more personalized healthcare applications
- Align regulations
 - Harmonizing regulations at national and regional levels to facilitate smoother market entry.
 - Encouraging alignment on data ethics and privacy laws (e.g., GDPR compliance).



VHT, more than isolated Digital Twins





Hurdles & Opportunities in a Digital Health Ecosystem

Technical Challenges

Data Interoperability, Storage and Integration, coupling multiscale virtual twin models, Credibility, IP and Licensing

Economic Barriers

High development costs (infrastructure, data processing cost, certification (Risk-management + Technical Documentation + Clinical trials), computing costs, personnel and experts); challenges in market scaling and access.

Regulatory & Policy Issues

Respecting cross-country regulations and diverse HTA frameworks for reimbursements.

Opportunities

Collaboration among EU Member States to streamline regulations and support interoperability could reduce these barriers. Maintain innovation growth.





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