

The Power of Virtual Twins to Fight MAFLD

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ARTEMIS
The Power of Virtual Twins to Fight MAFLD



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ARTEMIS

Accelerating
the Translation
of virtual twins
towards a
personalized
Management of
fatty liver patients



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MEDEXPRIM

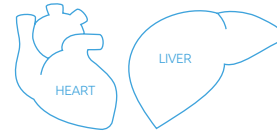


*ARTEMIS is destined to set bridges among key stakeholders involved in the fight against fatty liver diseases. In the dawning of the Personalized Medicine Era, ARTEMIS aims at gathering clinicians, modelers, patients, and regulators towards the development of a comprehensive therapeutic decision-aid tool. To do so, ARTEMIS is grounded upon three building blocks: **a multimodal and regulatory-grade cohort; liver-heart virtual twins and a user-friendly Smart Dashboard.***

We expect to achieve considerable societal impact, by offering clinicians and patients an interactive visualization tool wherein real-world data, as well as risk stratification and early diagnosis predictions are made easy. This is an ambitious project involving 9 countries, 21 partners and a cohort of 7500 patients but ambition is a fundamental ingredient when taking the challenge to improve MAFLD patients' healthcare journey!

Aligning Expertise: ARTEMIs Team's Shared Vision

2
ORGANS



7500

PATIENTS



10

MILLIONS



4

YEARS



9

WORK PAKAGES



4

CLINICAL CASES



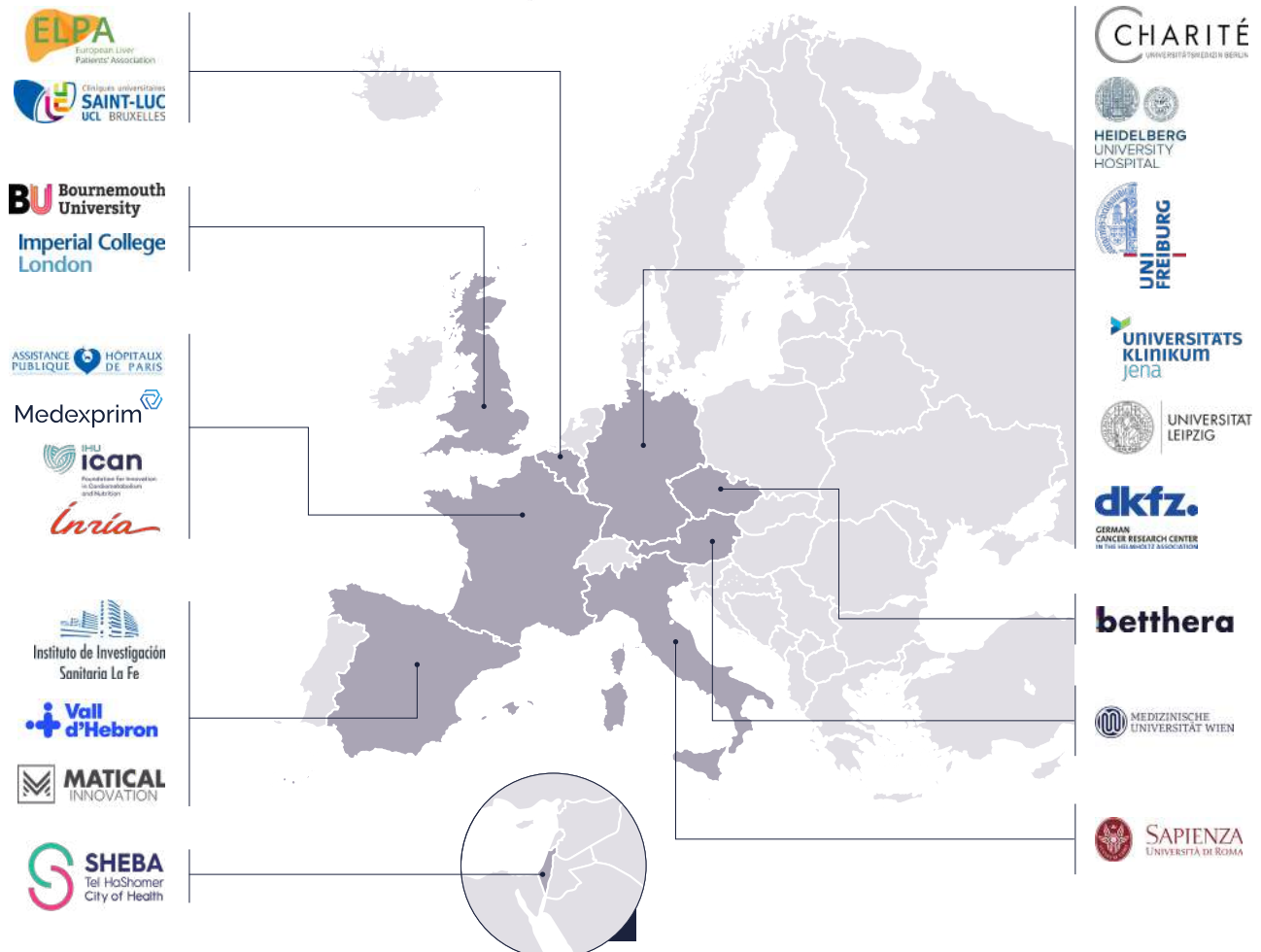
21

PARTNERS



9

COUNTRIES





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Understanding MAFLD Progression: A Gateway to Effective Management

Metabolic dysfunction-Associated Fatty Liver Disease (MAFLD) now dominates chronic liver disease (CLD) in Europe, surpassing viral hepatitis and alcohol-related causes, with a prevalence exceeding **25%**. This rise is linked to escalating risk factors from unhealthy lifestyles. MAFLD's diverse clinical trajectory, including **steatosis, NASH, cirrhosis and hepatocellular carcinoma**, stems from varied underlying mechanisms. In particular, the inflammatory facet - non-alcoholic steatohepatitis (**NASH**) - heightens **cardiovascular disease** (CVD) risk, a leading cause of death in MAFLD patients. Understanding MAFLD progression and the liver-heart axis is crucial for effective management. This consortium will develop **liver and heart computational models and virtual twins**, offering insights into heart-liver functions across different stages of the disease.

25%

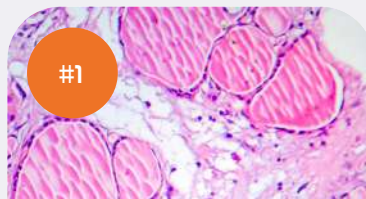
(MAFLD)



Empowering Precision Healthcare with ARTEMIS

ARTEMIS aims to co-design and develop a proof-of-concept (POC) of a Smart Dashboard—a cutting-edge clinical decision support system - offering an overview of patient multimodal data and therapeutic decision-aid, thanks to the integrated virtual twin models. From early diagnosis to predicting disease evolution, assessing cardiovascular outcomes, and guiding specific treatments or interventions, the Smart Dashboard provides dynamic, multilevel representations of tissues and organs. This approach empowers clinicians to implement personalized and responsive care strategies, marking a significant leap forward in MAFLD patient management.

The project will focus on 4 clinical cases,
each one addressing a stage of the MAFLD progression:



**Fibrosis progression in
MAFLD patients**



**Fibrosis-associated
heart failure patients**

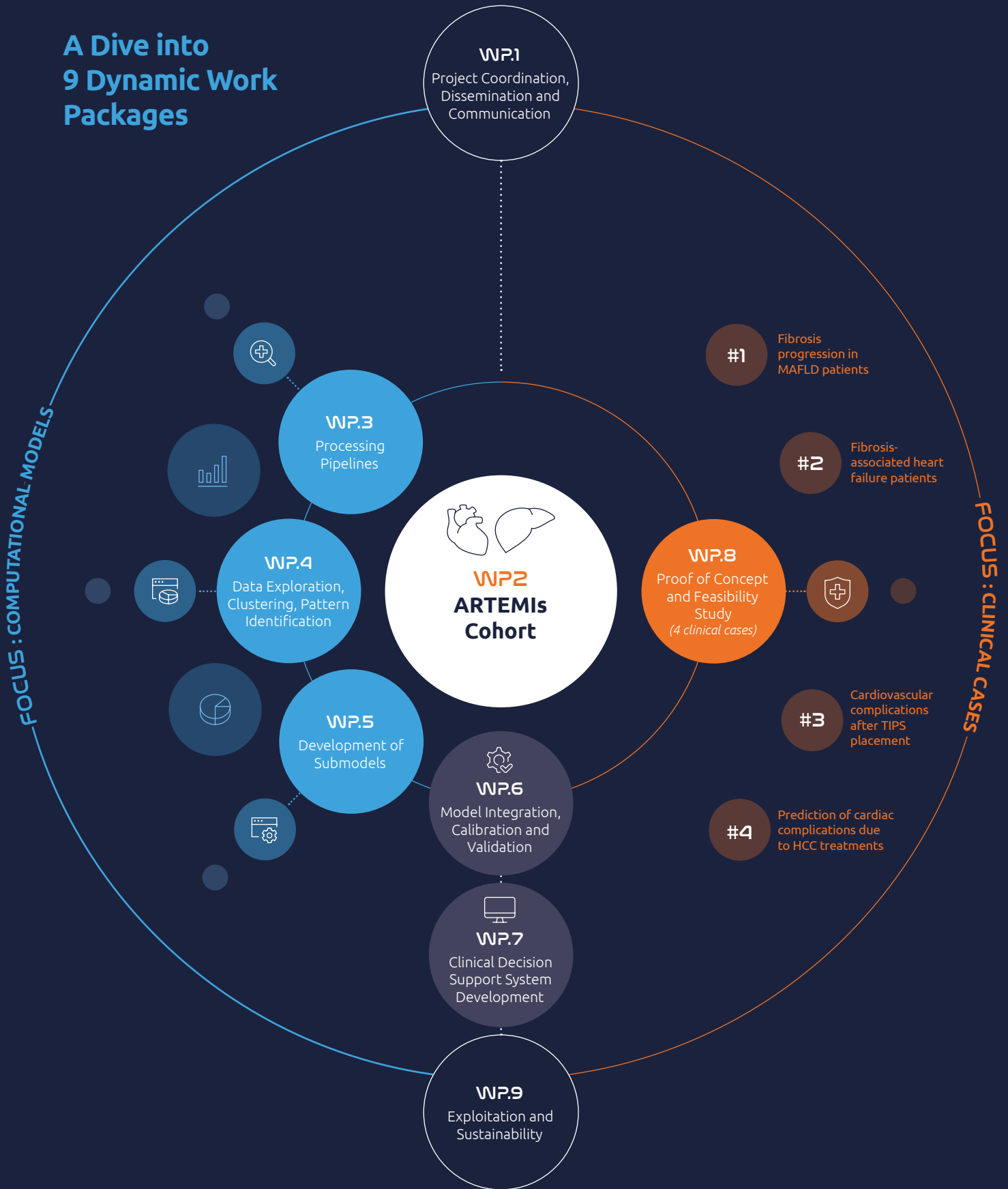


**Cardiovascular
complications after
TIPS placement
(Portal Hypertension)**




**Prediction of cardiac
complications due
to HCC treatments**

A Dive into 9 Dynamic Work Packages



Charting Success: Essential Milestones for the Next Four Years





Showcasing **5** Transformative Deliverables from a Suite of Project Outcomes

ARTEMIS envisages filling in the gaps of virtual twins' state-of-the-art and, at to offer clinicians a friendly-user, therapeutic decision-aid device to improve MAFLD healthcare pathway. Here are some transformative deliverables that ARTEMIS will bring about:

- **Integrated model** (virtual twin) demonstrator per use case
- **POC Feasibility Study** design for each use case
- **Clinical Decision Support System** (CDSS) final version
- **POC Feasibility Study results** for each use case
- **Societal impact** assessment

Discover all project deliverables on the ARTEMIS's official website



COMING
APRIL 2024



Scaling the ARTEMIS Model for Transformative Impact

The ARTEMIS model is designed for scalable deployment with the goal of extending its impact to **enhance healthcare across various organs and therapeutic interventions, fostering improved decision-making**. As radiogenomics unveils mechanistic pathways in cancer cells, ARTEMIS' Clinical Decision Support System (CDSS) will evolve to offer an interactive, user-friendly presentation of patients' multimodal data.

We envision furthering integration and development of state-of-the-art computational models within new European Consortia in the near future.

30 MONTH

MS4
VT submodels developed

36 MONTH

MS5
CDSS version with integrated liver-heart VT

42 MONTH

MS6
Final evaluation ready to start

48 MONTH

MS7
Fully functional CDSS, steps towards regulatory approval & commercial exploitation defined

Fostering Collaboration through Thoughtful Governance

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Website to come

