***The interplay between viral infection, host response, development of (hyper)inflammation and cardiovascular injury in COVID-19 is currently poorly understood which makes it difficult to predict which patients remain with mild symptoms only and which patients rapidly develop multi organ failure. The EU project DIGIPREDICT tackles this challenge by developing the first of its kind digital twin that can detect serious complications in Covid-19 patients and cardiovascular dysfunctions, employing breakthrough technology in the fields of artificial intelligence, smart patches and organs-on-chips.***

**Digital twins: the future of technology**

DIGIPREDICT aims at creating a Digital Twin, designed, developed and calibrated on i) patient measurements of various Digital Biomarkers and their interaction, ii) Organ-On-Chips (OoCs) as physical counterpart using patient blood for personalized screening and iii) integration of those physiological readouts using AI at Edge technologies. Using and improving state-of-the-art OoCs and Digital Biomarkers DIGIPREDICT will allow the measurement of detailed response to viral infection. By closely monitoring the response with wearable multi-modal Edge AI patches, the project aims to predict in near real-time the progression of the disease, support early clinical decision and to propose patient-specific therapy using existing drugs.

**The future exploitation and applications**

The final goal is to develop a prototype ready within 2023 to identify and validate patient-specific dynamic digital fingerprints of complex disease state and prediction of the progression.  This new generation of assistive tools for medical doctors and patients will pave the way to more personalized, preventive and participative treatment options that support a shift from reactive to proactive healthcare

DIGIPREDICT strives to setup an interdisciplinary network across Europe centered on Digital Twins in strict compliance with the European legislation and ethics requirement.

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| DIGIPREDICT is a pan-European research program bringing together scientific and technical excellence in multiple disciplines including informatics (machine learning), engineering (embedded systems, sensors and wearables), medical science (organ-on-chip systems, digital medicine), translational science (clinical studies and research), ethical and regulatory frameworks. The consortium consists of three members from academia (EPFL, UTWENTE & ETHZ), two large R&D institutes (IMEC-BE & IMEC-NL), two hospitals (Charité & UBERN), two high-tech SMEs (Ascilion and EPOS) and a management and communication SME (SCIPROM) from five European countries.  *The DIGIPREDICT, funded by the European Union's Horizon 2020 research and innovation programme, started on 1 January 2021 and will run until 31 December 2024* |