MWCapital and BSC showcase a prototype of a 'digital twin' to research and test personalized treatments

- **The prototype allows gamified presentation of the potential of supercomputing applied to medicine.**
- **The activity is part of 'Remember the future', MWCapital's proposal at MWC Barcelona, which this year addresses reindustrialisation to demonstrate how technology and innovation are shaping the future of key industries.**

From left to right: the CEO of Mobile World Capital Barcelona, Francesc Fajula, and the associate director of the Barcelona Supercomputing Center, Josep Maria Martorell.

Barcelona, February 27th 2024.- Mobile World Capital Barcelona and Barcelona Supercomputing Center - National Supercomputing Center (BSC-CNS) present, during MWC Barcelona, a prototype of a digital twin, which seeks to generate virtual models of the human body through the power of BSC's supercomputing to research in health and to promote awareness about the personalization of medicine.

The experience presented at MWCapital's stand, in collaboration with the BSC spin-off ELEM Biotech, involves the recreation of a laboratory where basic data is captured, and the pulse of each visitor is taken through an electronic device that, like a fictional scanner, generates a heart based on each user's profile. After these steps, the simulator generates a 3D recreation of the heart that will gradually start beating in sync with the visitor's pulse. This is a simplified version of what would be the process to create a 'digital twin' of this organ, which ELEM Biotech, using BSC's Alya Red technology, is currently developing and commercializing. It aims to improve the detection and treatment of heart diseases.

The project was presented this morning with the presence of MWCapital's CEO, **Francesc Fajula**; BSC-CNS's Deputy Director, **Josep Maria Martorell**; ICREA researcher and Director of the Life Sciences Department at BSC, **Alfonso Valencia**; BSC researcher, CTO/CSO and co-founder of

ELEM Biotech, **Mariano Vázquez**, and ICREA researcher and group leader at the Institute of Bioengineering of Catalonia, **Núria Montserrat.**

According **to Francesc Fajula**, "with this experience, MWCapital and BSC aim to exemplify how supercomputing is transforming medical research to improve health and the various applications in this field".

For his part, **Josep Maria Martorell**, states: "BSC, through the unique capabilities of the MareNostrum 5 supercomputer for massive data analysis and the use of Artificial Intelligence, represents a cornerstone in the health revolution we are experiencing. In this new era of data, thanks to supercomputing, we can advance as never before in personalized medicine to prevent and cure diseases in a much more effective and efficient way".

The challenge of achieving Data Donors

During the presentation, a roundtable was organized to address one of the challenges facing this technology: access to information. To create computational models behind digital twins, quality data is needed, always ensuring its security and anonymity. Therefore, experts advocate building trust among citizens regarding the use of their data, including the possibility of monitoring and controlling the use of personal data and the concept of 'data donors,' along with the creation of Trusted Research Environments, which are the guidelines for the development of digital twins in medicine.

Supercomputing in Medicine

The generation of 'virtual humans' through the combination of simulations and AI is one of the most promising applications of supercomputing in the health field. Modern supercomputers, such as the recently launched BSC's MareNostrum 5, can manage and analyse vast amounts of data on genetics, medical images, health records and social environments of thousands of people, and, with them, extract patterns and advance research on the molecular and physiological foundations of diseases, drug adaptation and the application of new technologies.

In the medical field, the use of digital twin technology opens the door to creating virtual models of the human body that integrate into medical decision support environments, assisting in the diagnosis and treatment of diseases in personalized medicine settings.

A time travel to the Barcelona of the future through industry

This experience is part of 'Remember the future', MWCapital's proposal that covers the past, present and future of the sectors that have transformed industry and the economy, placing Barcelona as a global benchmark. At MWCapital's stand at MWC Barcelona, attendees can view originals of some of the iconic inventions that have transformed the industry over the last century, undergo an immersive sensory journey through the four great industrial revolutions (from mechanics to electricity, digital to AI), and participate in four gamified experiences to understand how technology and innovation are shaping the future of cutting-edge sectors such as health, mobility, fashion and energy. All of this, with a focus on a more sustainable, resilient, and human-centered technology.

About Mobile World Capital Barcelona

Mobile World Capital Barcelona is a public-private foundation that promotes the digital development of society to build a more inclusive, equitable and sustainable future through the humanistic use of

technology. MWCapital contributes to the positioning of Barcelona as a global benchmark in the digital field and consolidating MWC's legacy throughout the year by promoting initiatives in the field of technology transfer, the promotion of digital talent, the development of innovative technological projects with social impact and the generation of knowledge. MWCapital hosts MWC in Barcelona, is the founder of 4YFN and connects citizens with the latest digital trends through Jump2Digital and Tech&Play.

About the Barcelona Supercomputing Center

The Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS) is the largest supercomputing center in Europe. Its specialty is high-performance computing (HPC), with a dual function: providing infrastructure and services in supercomputing to Spanish and European scientists and generating knowledge and technology to transfer to society. The BSC Consortium is composed of the Ministry of Science, Innovation and Universities of the Government of Spain (60%), the Department of Research and Universities of the Generalitat de Catalunya (30%), and the Universitat Politècnica de Catalunya (10%).

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