MWCapital and Barcelona Supercomputing Center anticipate the impact of digital twins for designing more livable and sustainable cities

- **An interactive screen shows, through real use cases applied to Barcelona's digital twin, the potential of supercomputing for improving city management and decision-making based on evidence-based information.**

- **This experience is part of 'Living in Tech', the proposal that MWCapital is presenting this year at the MWC, positioning Barcelona as a large living lab of technological solutions with a humanistic perspective, enabling the balance between social well-being, environmental sustainability, and economic growth.**

- **BSC announces new applications for Barcelona's digital twin, featuring unprecedented simulations on pedestrian mobility or the bicycle network based on social, economic, or citizen routine aspects.**

BSC researcher and vCity coordinator, Fernando Cucchietti; MWCapital CEO Francesc Fajula, and BSC-CNS Director Mateo Valero.

Barcelona, March 5, 2025.- Mobile World Capital Barcelona (MWCapital) and Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS) present, during MWC Barcelona, a demonstration of Barcelona's urban digital twin, a pioneering

technology that combines simulations and data from different areas of the city and its population's behaviour, such as mobility and access to and use of facilities and services.

The immersive experience offered by MWCapital and BSC reveals the use cases being developed to display key city indicators, such as metro network coverage, the availability and location of electric chargers, the distribution and accessibility of the library network, and the identification of climate shelters.

Visitors to MWCapital's stand can interact with Barcelona's digital twin and witness the potential of a technology that takes the pulse of the city in real time through data collection, analysis, and visualisation. With these tools, administrations, businesses, and citizens gain access to information that allows them to simulate different scenarios and understand their implications, enabling planning and decision-making based on evidence, with the goal of creating cities that are more environmentally friendly and focused on the well-being of their inhabitants.

Additionally, during MWC Barcelona, BSC is showcasing pilot versions of new applications for Barcelona's urban digital twin, which will be available in the coming weeks. These pilots will present never-before-seen simulations on the city's mobility and bicycle network, developed in collaboration with local governments, businesses, researchers, and citizens. The mobility application will visualise pedestrian flow across all city streets, as well as the influence of services and points of interest on the movement of different types of pedestrians, including residents, students, workers, and tourists. Meanwhile, the bicycle network application will facilitate the design of expansions and modifications to cycling routes, taking into account social, economic, and proximity factors based on citizen routines.

Barcelona's digital twin could help answer questions such as: How has metro network coverage changed over the past 20 years? What impact would the expansion of the bicycle network have on reducing CO_2 emissions over the next 10 years? Which neighbourhoods lack access to a public library within a 10-minute walking distance? Or which areas of the city will be most vulnerable to extreme heat events in 2040?

These research initiatives are being developed within the framework of the vCity project, led by BSC and funded through public funds from Spain and the EU. A platform of this nature requires a large-scale computational infrastructure to handle the volume and complexity of the data involved, making it crucial to develop it at one of Europe's leading high-performance computing (HPC) centres: the Barcelona Supercomputing Center (BSC), which hosts and manages the MareNostrum 5 supercomputer, one of the most powerful in the world.

The experience showcased at MWC was presented this morning with the attendance of MWCapital CEO **Francesc Fajula**; BSC-CNS Director **Mateo Valero**; and BSC researcher and vCity coordinator, **Fernando Cucchietti**.

Francesc Fajula highlighted that "thanks to the Urban Digital Twin, we can analyse the past, monitor the present, and foresee future scenarios to build a better city for

everyone." He exemplified how this tool is key to realising the concept of the proximity city, a model that promotes self-sufficient neighbourhoods with essential services within close reach to reduce travel and improve quality of life.

For his part, **Mateo Valero** has stated that "we have increasingly powerful computers, and in the future, they will enable the development of more complex digital twins, such as that of the human body, which would allow us to predict its behaviour in response to different treatments, providing great benefits to science and society".

'Living in Tech' – How technology is redefining everyday life

Mobile World Capital Barcelona presents 'Living in Tech' at MWC25, an immersive exhibition to explore the technologies that are transforming daily life and shaping new urban environments. The MWCapital stand becomes a large digital agora where visitors can interact with innovations that drive social well-being, sustainability, and economic growth, discovering the technologies of Society 5.0, a new paradigm in which humanoid robots, supercomputers, and virtual assistants, among others, coexist naturally with humans to enhance their quality of life.

Through five interactive experiences, MWCapital demonstrates how technology serves as a tool to address major contemporary social challenges, particularly in urban environments, such as reducing the carbon footprint, improving public services, and assisting an increasingly ageing population.

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 positioning Barcelona as a global benchmark in the digital field and to consolidating MWC's legacy throughout the year by promoting initiatives in the field of technology transfer, the promotion of digital talent and the development of innovative technological projects with a social impact. MWCapital hosts the MWC in Barcelona, is the founder of 4YFN and connects the international community of developers with the Talent Arena project.

About the Barcelona Supercomputing Center

The Barcelona Supercomputing Center (BSC-CNS) is the largest supercomputing center in Europe. Its speciality is High Performance Computing and the advancement of artificial intelligence (AI) with a dual function: to offer supercomputing and AI infrastructures and services to Spanish and European scientists, and to generate knowledge and technology to transfer them to society. The BSC Consortium is made up 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 Polytechnic University of Catalonia (10%).

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