5G technology applied to improving safety in industrial and port traffic

- **The system is based on the application of connected car technology and industrial traffic safety. The information will be shared continuously and offer the position and trajectory of machinery, vehicles, and people in real time. Being able to coordinate traffic and warn drivers in the event of an accident risk**
- **The pilot project is part of the 5G Barcelona initiative with Telefónica, APM Terminals and Mobile World Capital Barcelona as partners**

Barcelona, March 9, 2021 -. This 5G Barcelona initiative together with Telefónica, APM Terminals, and Mobile World Capital Barcelona are working on a pilot project to improve security in ports due to the use of 5G networks to connect cranes, vehicles, and people by merging different advanced communication and location technologies. The main objective of the project is to minimize the potential risk of collisions between mobile machinery and fixed elements, vehicles, and people in the container terminal.

This pilot test, which is based on technology of the C-V2X connected car and the low latency of 5G communications and Edge Computing, aims to turn APM Terminals Barcelona into a safer space for workers, thanks to a system that allows the coordination of port traffic and the implementation of advanced algorithms for accident traffic prevention. Through an alarm system, both crane drivers and trucks or foot personnel will be warned about a potential collision against fixed and mobile elements, in addition it will send an instant notification to a control centre in case of collision.

The development of the project involves the deployment of Telefónica's 5G coverage at the APM Terminals in the Port of Barcelona, the provision of 5G connectivity to Straddle Carrier cranes, trucks and terminal personnel, as well as an acoustic warning system for possible collisions. The Straddle Carrier cranes will be equipped with an on-board unit capable of communicating via 5G and through C-V2X technology between them and with the rest of the actors. Trucks, truckers and terminal personnel will have a 5G smartphone on which a C-V2X application will be installed. This way, the smartphone, becomes another piece of the V2X environment, as well as the lever for an easy transition towards a fleet of natively connected vehicles and direct inclusion of people in the ecosystem. Fixed elements such as streetlights will also be signalled with C-V2X communications, thus communicating with the rest of the mobile actors in real time.

All the information communicated by the cranes, trucks and personnel on foot is sent securely to an application located geographically very close (Edge) to their place of consumption in order to offer immediate responses. This application, hosted on the Edge, has the intelligence to be able to coordinate this cooperative driving between the different actors, which is called **intelligent cooperative transport system (C-ITS)** and also offers a dashboard to APM Terminals so that they can visualize in a map the positions of each of the actors participating in the project. Obtaining a precise location is vital and for this reason a system has been developed to allow obtaining precise locations as close as centimetres.

This intelligent cooperative transport system is housed in the **Edge Computing node** of Telefónica's Virtual Data Centre (VDC) service, located in Barcelona, which consolidates the company's ability to offer very low latency services along with the possibility of processing large amounts of information in real time to be able to extract high value data.

"Projects like this are part of our way of working at APM Terminals, in search of innovation and continuous improvement, and for operations in our terminal to be increasingly safe, more sustainable and more competitive", declared Carlos Arias, Managing Director of APM Terminals Spanish Gateways.

Telefónica's Innovation Manager, Mercedes Fernández, affirms that this same technology can also be implemented in other ports, airports and all kinds of industrial sites with a similar traffic of elements". The goal is common: "to reduce the accident rate among workers, vehicles and goods".

The project, which will be a reality as of next summer, has different phases of development and will use the facilities of the APM Terminals Barcelona as a test bed. Depending on the results obtained, the system could be replicated and implemented in other ports to contribute the prevention of occupational accidents.

Eduard Martín, CEO of 5G Barcelona, CIO and director of Mobile World Capital Barcelona 5G Program, points out that "we are very satisfied to be able to contribute generating synergies between different actors in the industrial and technological sector, such as Mobile World Capital Barcelona, Telefónica and APM Terminals. We have a shared purpose for this pilot project to transcends and can be extended to other ports to improve the prevention of occupational accidents. "

The three promoters of the project are Telefónica, APM Terminals and Mobile World Capital Barcelona, as well as the collaboration of FICOSA for the integration of the onboard unit C-V2X in the cranes, the development of the intelligent cooperative transport system that resides in the MEC and the implementation of the solution that allows offering precise locations. Also with the participation of HARMAN for the development of the C-V2X application on smartphones.

5G BARCELONA

5G Barcelona is a public-private initiative that works to position Barcelona and Catalonia as an innovative and open environment for the validation and adoption of 5G technologies and applications in a real-life environment.

The initiative will create synergies within the 5G ecosystem and offer an experimental infrastructure to test, prototype and implement new digital solutions. 5G Barcelona wants to stimulate and consolidate existing innovation in Barcelona and Catalonia, help attract foreign investment, promote new technology companies and generate a complete industry around 5G technology.

The initiative is promoted by the Generalitat de Catalunya, the Barcelona City Council, Mobile World Capital Barcelona, the i2CAT Foundation, CTTC, Atos and the UPC.

APM TERMINALS BARCELONA

APM Terminals Barcelona is the concessionaire stevedore of the container terminal of the South Dock of the Port of Barcelona. It is part of one of the most comprehensive port networks in the world, positioned to help shoreline and shipping customers grow their business and achieve greater supply chain efficiency, flexibility and reliability. Its team, made up of 21,000

professionals in the sector, is focused on offering operational excellence and the solutions that companies need to reach their potential. The 75 terminals in our global network are operated exclusively by APM Terminals or in conjunction with a joint venture partner. This is equivalent to handling around 250 vessel calls per day and 40 million TEUs per year.
APM Terminals is part of A.P. Moller -Maersk.

TELEFONICA
Telefonica is one of the largest telecommunications service providers in the world. It offers fixed and mobile connectivity services and a wide range of digital services for individuals and companies. With 344 million customers, it operates in 14 countries in Europe and Latin America, where it has the largest fiber optic network. It offers its telecommunications services and digital solutions in more than 170 countries through strategic agreements with partners.