



A Vodafone, Intel, University of Valencia and Altran (Capgemini) project

5G Connects a Robot to help with COVID prevention

- The connected Robot moves in open spaces together with people and is able to analyze whether visitors are following the security guidelines, like wearing masks correctly and respecting body temperature restrictions
- The project is a collaboration among Vodafone, providing the 5G connectivity, Intel, providing its Xeon SP and Core processors and its OpenVINO toolkit, Fivecomm that has developed the vehicle, and Altran, global leader in engineering and R&D services and part of the Capgemini Group, for the integration of the face recognition and temperature measurement applications

Madrid, January 27 2021- Vodafone, Intel, Fivecomm and Altran have developed the Project 5G COVID Robot or “Sentinel Robot”. The project is based on an Autonomous Guided Vehicle (AGV) with on-board video and thermal cameras, that enables monitoring and control task very useful for the current pandemic. The objective of the project is to demonstrate how 5G can be leveraged to enable an intelligent autonomous robot with a thermographic camera.

5G is key in data processing

The Sentinel Robot can identify people that is not wearing masks and detect people with body temperatures above normal. Using 5G the data is sent to a centralized intelligence, running at the network Edge, a technology known as Edge computing.

The data is processed to generate alarms that are managed from a remote command center. The remote operator can manage those alarms and take appropriate actions, like interacting with the identified person using the devices in the robot (tablet & speakers). The low latency and high performance of Vodafone’s 5G technology, enables the remote driving of the robot to approach the person that the operator wants to interact with.

This project has been developed as a demonstration of how 5G enables new businesses. The project is a joint development of several companies, each of them providing their expert know-how in their field: **Vodafone**, providing the 5G connectivity infrastructure, **Fivecomm**, that has developed the vehicle, **Altran**, that has integrated the facial recognition and temperature measure in real time, and **Intel**, providing its Xeon SP and Core processors to run the artificial vision algorithms and its OpenVINO toolkit to develop them. Microsoft has provided the Cloud infrastructure with its Azure Stack Edge solution.

A project on 5G “Stand Alone” network

The environment used to develop the pilot is 100% 5G with Stand Alone architecture, that is, a completely independent 5G network that benefits from the best latency and speed performances of 5G.

Additionally, this project leverages the network Edge Computing technology, which allows to significantly decrease the latency in the communications. This is key in this type of service, since the processing of the information is performed very close to the location of service delivery.

“This is, no doubt, a real scenario where the Vodafone 5G network is a key differentiation, allowing to meet the latency and speed requirements. In the coming months, we will continue developing new use cases to demonstrate the social and economic benefits that the 5G technology delivers provides”, commented Daniel Jimenez, Managing Director of Vodafone Business.

“The key element that makes this robot possible is the 5G network. The low latency enabled by 5G makes these pilots possible with all assurances, by streaming images in real time. Additionally, Edge computing enables much faster image transmission which is key in these type of projects”, commented Ismael Asenjo, Chief Technology Officer Vodafone Spain.

“The close collaboration with our partners in 5G, Edge and Artificial Intelligence enables innovative Use Cases, like this Robot, with a clear social and economic impact. Intel Xeon SP technology is optimized to run these new applications, and Intel’s OpenVINO toolkit facilitates the development accelerating their time to market”, commented Norberto Mateos Carrascal Spain Country Manager.

“Together, 5G and Edge Computing will take the Internet of Things to the next step. Thus, the low latency and high bandwidth of 5G make it possible to increase the versatility of the machines to face increasingly complex tasks in real time. It also reduces your cost and energy consumption by being freed from the most demanding functions in processing capacity, which are now performed by specialized servers installed at the Edge. “The sentinel robot is a great example of this new paradigm by demonstrating how it is possible to provide a robot with capabilities not present in its initial design at an extremely low cost”, Daniel Iglesias, COO Altran Spain.

About Vodafone Group

Vodafone is a leading telecommunications company in Europe and Africa. Our purpose is to “connect for a better future” and our expertise and scale gives us a unique opportunity to drive positive change for society. Our networks keep family, friends, businesses and governments connected and – as COVID-19 has clearly demonstrated – we play a vital role in keeping economies running and the functioning of critical sectors like education and healthcare.

Vodafone is the largest mobile and fixed network operator in Europe and a leading global IoT connectivity provider. Our M-Pesa technology platform in Africa enables over 45m people to benefit from access to mobile payments and financial services. We operate mobile and fixed networks in 21 countries and partner with mobile networks in 48 more. As of 30 September 2020, we had over 300m mobile customers, more than 27m fixed broadband customers, over 22m TV customers and we connected more than 112m IoT devices.

We support diversity and inclusion through our maternity and parental leave policies, empowering women through connectivity and improving access to education and digital skills for women, girls, and society at large. We are respectful of all individuals, irrespective of race, ethnicity, disability, age, sexual orientation, gender identity, belief, culture or religion.

Vodafone is also taking significant steps to reduce our impact on our planet by reducing our greenhouse gas emissions by 50% by 2025 and becoming net zero by 2040, purchasing 100% of our electricity from renewable sources by 2025, and reusing, reselling or recycling 100% of our redundant network equipment.

For more information, please visit www.vodafone.com, follow us on Twitter at @VodafoneGroup or connect with us on [LinkedIn](#)

About Altran

Altran is the world leader in engineering and R&D services. Altran offers its clients a unique value proposition to meet their transformation and innovation challenges. Altran supports its clients, from concept through industrialization, to develop the products and services of tomorrow and has been working for more than 35 years with major players in many sectors: Automotive, Aeronautics, Space, Defense & Naval, Rail, Infrastructure & Transport, Energy, Industrial & Consumer, Life Sciences, Communications, Semiconductor & Electronics, Software & Internet, Finance & Public Sector. Altran has more than 50,000 employees operating in over 30 countries.

Altran is an integral part of Capgemini, a global leader in consulting, digital transformation, technology, and engineering services. The Group is at the forefront of innovation to address the entire breadth of clients’ opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep

Industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. A responsible and multicultural company of 265,000 people in nearly 50 countries, Capgemini's purpose is to unleash human energy through technology for an inclusive and sustainable future. With Altran, the Group reported 2019 combined global revenues of €17 billion.