Press contact:
Maximilien Seguin
Tel.: +33 (0)1 46 41 71 69
E-mail: maximilien.seguin@capgemini.com

Industry's First Machine Learning-based RAN Application Boosts Spectral Efficiency by 15%

- *Capgemini's Project Marconi on Intel Architecture delivers outstanding subscriber Quality of Experience*
- *Machine Learning inference enables real time analytics for faster insight and action*

Barcelona, June 30, 2021 – Capgemini announced today a breakthrough solution giving mobile operators a significant advantage to monetize 5G services faster. Entitled "Project Marconi", the solution conforms to O-RAN (Open Radio Access Network) guidelines to maximize spectrum efficiency. The solution intelligently boosts subscriber quality of experience (QoE) with real-time predictive analytics.

Project Marconi is the industry's first Artificial Intelligence / Machine Learning (AI/ML) based radio network application for 5G Medium Access Control (MAC) scheduler. Optimized with Intel AI Software and 3rd Gen Intel Xeon Scalable processors.

Network providers globally have invested heavily in spectrum and are looking for solutions to develop and gain 5G services faster. According to the Global Mobile Suppliers Association, the total value of spectrum auctions reached over $27 billion in 2020. Capgemini's solution on Intel Architecture increases the amount of traffic each cell can handle. It allows operators to serve more subscribers and deliver an outstanding experience, while launching new Industry 4.0 services such as enhanced Mobile Broadband (eMBB) and Ultra Reliable Low Latency Communications (URLLC) use cases.

Walid Negm, Chief Research and Innovation Officer at Capgemini Engineering said, "*Our teams worked closely with Intel to create a truly innovative solution that can really move the needle for operators. We gathered and utilized over one terabyte of data and conducted countless test runs with NetAnticipate5G to fine-tune the predictive analytics to meet diverse operator requirements. In short, machine learning can be deployed for intelligent decision-making on the RAN without any additional hardware requirement. This makes it cost efficient in the short run and future proof in the long run as we move into Cloud Native RAN implementations.*"

Cristina Rodriguez, VP of Wireless Access Network Division at Intel said, "*Our 3rd Gen Intel Xeon Scalable processors with built-in AI acceleration provide high performance for deep learning on the Net Anticipate 5G platform. Together, our collaboration delivered ultra-fast inference data to enhance the Open-Source ML libraries resulting in an intelligent RAN that can predict and quickly react to subscriber coverage requirements while reducing TCO.*"

Capgemini deployed its NetAnticipate5G and RATIO O-RAN platform to introduce advanced AI/ML techniques. The AI powered predictive analytical solution forecasts and assigns the appropriate MCS (modulation and coding scheme) values for signal transmission through forecasting of the user signal quality and mobility patterns accurately. In this way, the RAN can intelligently schedule MAC resources to achieve up to 40% more accurate MCS prediction and yield to 15% better spectrum efficiency in the case studies and testing. As a result, it delivers faster data speeds, better and more consistent QoE to subscribers and

robust coverage for use cases that rely on low latency connectivity such as robotics-based manufacturing and V2X (vehicle-to-everything).

Project Marconi will be demonstrated live at Intel virtual booth and O-RAN virtual booth during MWC 2021. More information can be found on our website.

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