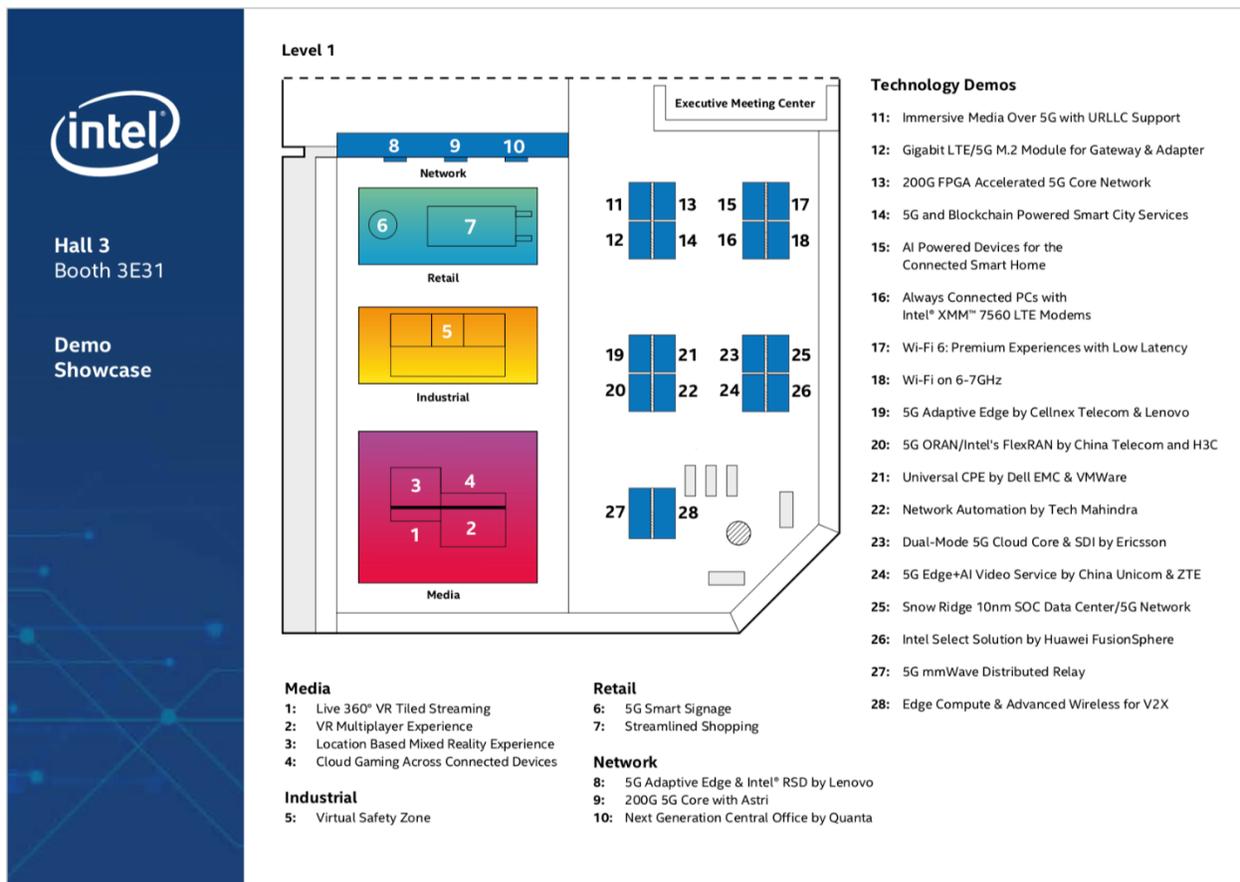**At Mobile World Congress 2019**, Intel is showcasing new 5G products, partnerships and innovative customer use cases that demonstrate how Intel is delivering the technology foundation to process, move and store data in the 5G era. Customers and ecosystem partners are choosing Intel as communications and computing converge with 5G, requiring network transformation and more computing at the network's edge. The following demonstrations are on display at the Intel booth (Hall 3, #3E31).

Intel Demonstration Showcase Map

Technology Demos

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12: Gigabit LTE/5G M.2 Module for Gateway & Adapter
13: 200G FPGA Accelerated 5G Core Network
14: 5G and Blockchain Powered Smart City Services
15: AI Powered Devices for the Connected Smart Home
16: Always Connected PCs with Intel® XMM™ 7560 LTE Modems
17: Wi-Fi 6: Premium Experiences with Low Latency
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20: 5G ORAN/Intel's FlexRAN by China Telecom and H3C
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22: Network Automation by Tech Mahindra
23: Dual-Mode 5G Cloud Core & SDI by Ericsson
24: 5G Edge+AI Video Service by China Unicom & ZTE
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Media
1: Live 360° VR Tiled Streaming
2: VR Multiplayer Experience
3: Location Based Mixed Reality Experience
4: Cloud Gaming Across Connected Devices

Industrial
5: Virtual Safety Zone

Retail
6: 5G Smart Signage
7: Streamlined Shopping

Network
8: 5G Adaptive Edge & Intel® RSD by Lenovo
9: 200G 5G Core with Astri
10: Next Generation Central Office by Quanta

Media (#1-4)
5G's gigabit speeds and ultra-reliable low-latency communications (URLLC) combined with virtualized networks and edge computing will enable new revenue-generating, immersive media experiences spanning virtual reality/augmented reality, cloud gaming and high-resolution 360-degrees video. Consumers in any location will be able to enjoy these immersive experiences without being tethered to a wired network. Try it for yourself – with a mixed reality experience that immerses fans wearing virtual reality headsets in the world of DC Comics* tech-savvy Super Hero Batman* as he takes on Super-Villain The Scarecrow*; or experience "Spider-Man: Far From Home", brought to life with the world's first multiplayer virtual reality (VR) environment over 5G.

Industrial (#5)

The Smart Industrial demo illustrates how many workplace accidents can become a thing of the past. Computer vision, artificial intelligence (AI) and 5G connectivity technologies combine to create a virtual safety cage around robotic arms. If a person enters the "danger zone," the robot arms are designed to shut down, eliminating potential injuries. This demo showcases OpenVINO™, AI detections, network edge intelligence and 5G FlexRAN technologies working together.

Retail (#6-7)

Experience how AI, edge computing and computer vision can deliver cutting-edge retail experiences anywhere. 5G allows pop-up autonomous stores to operate anywhere a retailer needs them to be, such as music festivals or other remote events – any location without traditional wired or unreliable, low-bandwidth wireless infrastructure. Smart signage augmented with computer vision and AI helps bridge online and brick and mortar retail while offering an enhanced consumer experience.

Network (#8-10)

Take a peek at the network infrastructure (cloud to edge) that powers exciting 5G user experiences, such as cloud gaming, AI and interactive retail, and see how it is managed for maximum efficiency. Get a glimpse at how large amounts of 5G data are processed using Intel processors on standard servers. Employing virtualization, this flexible 5G-core configuration handles traffic without packet loss and can scale to multi-terabit configuration.

Technology Demos

Immersive Media over 5G with URLLC Support (#11)

Intel is demonstrating a proof-of-concept for virtual reality 3 degrees of freedom plus (3DoF+) immersive media over low-latency 5G. This demonstration showcases the next level of immersive media experiences possible based on ongoing 5G and MPEG standards development.

Gigabit LTE/5G M.2 Module for Gateway and Adapter (#12)

See an M.2 module prototype using the Intel® XMM™ 8160 modem designed to enable scaling of 5G connectivity beyond phones. 5G-ready CPE gateways show gigabit LTE connectivity using the Intel XMM 7560 in an M.2 module. A Thunderbolt™ 3 LTE adapter enables Windows*-based devices with Thunderbolt 3 ports to have easy cellular connectivity on the go. Designed initially with 4G, the adapter can be upgraded to 5G.

200G FPGA Accelerated 5G Core Network (#13)

5G technology promises higher bandwidth availability, low latency and massive connectivity over wireless infrastructure. Intel, Dell* and Affirmed Networks* present a state-of-the-art solution for 5GC/EPC that pushes boundaries and presents the first true 100G/CPU socket solution using 100 GE NIC interface and Intel® Xeon® servers. This supports 100GbE interfaces and includes increasing software efficiency with Intel® FPGA acceleration, allowing for one of the lowest consumption-of-power per bit.

5G and Blockchain-Powered Smart City Services (#14)

Resolve the challenges that large-scale smart city deployments face, such as data ownership controls and service reputation, end-to-end security, privacy and confidentiality and proposes using de-centralized services on-demand such as blockchain.

AI-Powered Devices for the Connected Smart Home (#15)

Witness a showcase of AI-based consumer products demonstrating new smart applications for consumers. Thanks to the Intel® Movidius™ Myriad™ family of vision processing units (VPUs), AI workloads can run directly on the device helping to ensure greater privacy, lower latency and improved battery life.

Always-Connected PCs with Intel® XMM™ 7560 LTE Modems (#16)

Get hands-on experience with latest-generation always-connected PCs (ACPCs) from leading OEMs, powered by 8th Gen Intel® Core™ processors, and delivering best-in-class performance, battery life and connectivity.

Wi-Fi 6: Premium Experiences with Low Latency (#17)

As part of Intel's continued investment in Wi-Fi innovations, experience the difference in connection quality between Wi-Fi 6 and Wi-Fi 5. Learn about Intel's end-to-end Wi-Fi 6 connectivity solutions, including both client and access point Wi-Fi chipsets.

Wi-Fi on 6-7GHz (#18)

Wi-Fi is an essential radio access technology in the 5G ecosystem. The next generation of Wi-Fi (Wi-Fi 6) is based on the 802.11ax standard and is a revolutionary step forward in wireless connectivity. Intel Is bringing to market Wi-Fi 6 solutions for both clients and home routers/gateways to deliver the next generation of Gigabit+ Wi-Fi and provide a strong connectivity fabric in the home.

5G Adaptive Edge by Cellnex* and Lenovo* (#19)

Accelerate the adoption of 5G and the implementation of use cases in the mobile edge, solving the critical problem of end-to-end orchestration and provisioning from the edge to the cloud to the end device. There is now a new way of implementing radio access networks (RANs) based on virtualized and containerized network workloads that can be deployed in an open standard architecture.

5G ORAN/Intel's FlexRAN by China Telecom* and H3C* (#20)

Indoor coverage is very important for 5G and distributed small cell is the preferred solution. OpenRAN is an operator alliance to promote intelligent, open software-defined networks and virtualization elements. Intel is working with one of its partners H3C to adopt FlexRAN architecture in its 5G indoor commercial solutions.

Universal CPE by VMWare* and Dell EMC* (#21)

Enable off-premise data center and enterprise network function virtualization (NFV) in low-cost, commercially available platforms. This solution showcases orchestration and manageability bringing a multifunction office-in-a-box solution to life. High-performance Intel Xeon cores drive the solution and Intel accelerators like QAT* and Engine-X* enable significant scalability and flexibility.

Network Automation by Tech Mahindra* (#22)

This solution demonstrates how an operator can now automate the creation of network slices, the onboarding of virtual network functions (VNFs) and closed loop control of a 4K UHD service. This enables a faster 5G roll-out and dynamic creation, management and monitoring of 5G Network services for operators.

Dual-Mode 5G Cloud Core SDI by Ericsson* (#23)

Intel and Ericsson are providing technology for infrastructure, software capabilities and integration services for next-generation networks. This demo supports the recent announcement between Intel and Ericsson for collaboration on software-defined infrastructure (SDI) for core and edge.

5G+AI Video Service by China Unicom* and ZTE* (#24)

Showcase of ZTE's 5G-ready, end-to-end network equipment highlighting the edge server. Running on this edge system, the MEC* platform hosts multiple applications, including real-time collection and distribution of 8K video streaming.

Snow Ridge 10nm SoC for Data Center/5G Networks (#25)

Snow Ridge is a 10nm SoC targeted for data center and 5G networking use cases, including base stations and edge computing applications. Snow Ridge has up to 24 cores with integrated acceleration that allows networking workloads to be processed without loading the CPU cores.

Intel Select Solution by Huawei* FusionSphere* (#26)

Learn about accelerating adoption of Intel technology in the data center, network transformation, hybrid cloud, data analytics and AI. This demonstration showcases an Intel® Select Solution for network function virtualization based on Huawei FusionSphere and Huawei RH2288* server as a certified solution.

5G mmWave Distributed Relay (#27)

Witness a mmWave distributed relay (mDR) mechanism to enhance signal-to-noise ratio (SNR) and to counter interference or blockage of signal due to buildings, walls or other obstacles of the mmWave signal. In this demo, two-way amplify-and-forward mmWave relay is implemented using Intel's 60GHz RF chipset. The demo showcases coverage enhancement for users by being able to pass the signal without obstruction, guaranteeing strong connections outside and inside building and structures.

Edge Compute and Advanced Wireless for V2X (#28)

A proof-of-concept demonstration for direct communication in various vehicle-to-everything (V2X) use cases. This demo highlights road side units (RSUs) with edge computing capabilities as well as 5GNR-compatible radio communication between vehicles and RSUs to provide useful services in smart city contexts.

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