Smart Supply Chains with 5G and MEC

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Modern supply chain environments are dynamic and complex.

Consumers could be anywhere in the world ordering and returning products in varied quantities. Suppliers have to cater to such an unpredictable demand, though there are some predictable demand patterns based on different holidays. However, current supply chain challenges stem from multiple reasons including misplaced containers, shortage of raw materials and components, shipping and geo-political issues across different regions of the globe. Both consumers and product sellers like to track & trace shipments in real time. Products move from production facility to distribution center. And from the distribution centers to reach customer delivery points via different transport mechanisms. The same logistics should be able to handle the returning of the shipments from the delivery point to the distribution center. Having robust, cost efficient logistics in place could be a differentiator for businesses. The diagram below depicts, at a high-level, the flow of goods from one place to another.

Predictive analytics

Production   Distribution   Transportation   Delivery
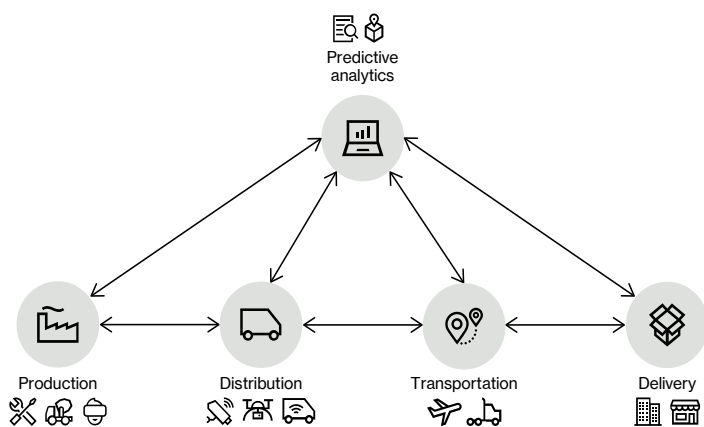
Multiple access technologies along the value chain

It is a multi-technology, multi-connectivity environment for the shipment from order to delivery. At a production facility or distribution center, the IoT environment may use cellular (4G LTE/5G) and non-cellular (Wi-Fi, Bluetooth) connectivity, public or private. Cellular networks such as 4G LTE/5G can deliver connectivity with predictable performance, reliability and a secure data path. Together with MEC, these networks can deliver location based, low latency high end services. During transport and delivery they use GPS technology to locate the product.

Agile supply chain infrastructure with 5G and MEC.

Technologies will transform the existing supply chain infrastructure to become more agile and efficient. Supply Chain can incorporate technology like sensors, mobility, 5G, analytics and artificial intelligence (AI), which integrate with applications that can run in the cloud, or at the edge. Multi-access edge computing (MEC) enables local processing for high-density devices. Such technologies can give a near-real time view of material movement at the production line.

Transform your current supply chain.

On site logistics automation can improve productivity and safety in the movement of materials between manufacturing lines and buildings using Automated Guided Vehicles (AGVs). This improves package movement efficiency using near real-time guidance by optimizing unloading, loading and staging sequences on a package-by-package basis. It can further improve labor and equipment readiness to receive goods and help minimize unforeseen delays or unavailability of trucks and/or containers at the right time, at the right place. We need early detection and dispatch of alternative supply for new or damaged goods.

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There is a lot of data generated during the delivery and shipping process, order information, location of the goods, shipping, etc. This data can be used for building digital twin solutions that can give contextual insights in real time. Use cases such as route optimization, tracking the fulfillment status of business processes, monitor process milestones and drive events and exceptions to action in connected systems.

OEMs can connect their existing fleet management system to 5G-enabled MEC and deliver logistics services to commercial vehicles through this platform. Such a platform can create a recurring revenue stream for OEMs and they can offer logistics and tracking support for commercial vehicles.

Verizon Supply Chain Solutions

Verizon 5G can enable massive IoT solutions. Combining the power of edge computing and use of AI/ML models, customers will be able to see alerts from tracking, as well as any interruptions. Together with its partners, Verizon provides end to end supply chain solutions such as Verizon Fleet Management Software and Solutions, Verizon's IoT Asset Tracking and Management portfolio of services, as well as solutions for connected commerce, and others. Verizon also offers the ThingSpace platform to effectively manage IoT connectivity solutions on a global scale.

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