“From a marketing perspective, we will likely see 5G, 6G and beyond. However, from a network evolution perspective, I believe the largest immediate advancement will come via **Innovation** around network architectures, deployment models and network operations. To create a sustainable mobile infrastructure, more network resources will need to be distributed to the edge of the network to ensure coverage and capacity are brought closer to the end user.

**Distributed Network** architectures like **Distributed Antenna Systems (DAS)**, **Distributed RAN**, **Small Cells** and **Wi-Fi** are all faced with the same fundamental challenges related to site locations, connectivity, deployment methods and technology solutions.

ExteNet has more than 10 years experience in deploying and operating scalable and flexible distributed networks which have helped improve network quality, time to market, long term network economics and service reliability for our customers.”

– Tormod Larsen, ExteNet CTO
ExteNet is a leading owner and provider of Distributed Networks in North America. We design, own and operate multi-carrier, often referred to as “neutral-host”, and multi-technology Distributed Networks to ensure multiple wireless service providers (WSPs) can provide their 3G and 4G LTE wireless voice and data services in the most effective and efficient manner in both Outdoor and Indoor settings. ExteNet creates a scalable network design utilizing its high-bandwidth fiber network to meet the network densification needs of the WSPs. Our headquarters is located in Lisle, IL - in Greater Chicago - where we also host our sophisticated 24x7 Network Operating Center (NOC).

Distributed Networks

Network Densification is the primary driver for Distributed Networks, which in turn is necessary to accommodate the tremendous growth in the global demand for wireless broadband data services. Distributed Networks offload network service to specialized sites that each handles relatively small geographic areas and their users. The small target area per site limits interference and enables a greater frequency reuse factor, consequently leading to much greater network capacity.

Distributed networks bring wireless network elements like low-powered antennas and access points closer to the user to ensure a high quality network including, ubiquitous and high-capacity wireless broadband connectivity, for the WSPs and their customers.

Today’s mobile network traffic has become highly personalized, driven by the increase in broadband connectivity. Personalization alludes to the unicast nature of network traffic patterns - people viewing their preferred content anytime, anywhere, over any device. These evolving traffic patterns are best served with the provision of a high capacity and scalable Distributed Network.
Outdoor & Indoor Distributed Networks

Outdoor Distributed Network nodes are typically located on existing municipal infrastructure like utility/telephone poles, street lamps or traffic signal poles which provides a high density of potential site candidates. The ability to place distributed network nodes almost anywhere makes these systems perfect to reach areas that are otherwise difficult to serve and/or require significant capacity solutions.

Today, 80% of all mobile traffic originates indoors. Macro cellular coverage does not suffice in today’s data-intensive and multi-device per-user world. Indoor Distributed Network installations will transmit signals from the WSPs base station equipment nodes and antenna locations distributed throughout the facility. Areas that used to be dead coverage spots can benefit from new, reliable and carrier-class mobile connectivity.

Utilizing Distributed Antenna Systems (DAS), Remote Radio Heads (RRH), Small Cells, Wi-Fi and Distributed Core Soft-switching technologies, ExteNet enables WSPs, enterprises and venues to better serve their subscribers, customers, workers, residents, tenants and communities with advanced mobile connectivity.

Advanced Mobile Connectivity for Outdoor & Indoor

ExteNet enables mobile connectivity in Outdoor settings including Urban, Suburban & Rural and a host of Indoor venues including Commercial Real Estate (Class A), Healthcare, Sports & Entertainment and Hospitality. Primary concerns today for WSPs, venues and enterprises revolve around the need for coverage and capacity, optimal network performance and ultimately delivering a superior user experience.

Distributed networks utilizing DAS, RRH and Small Cell technology address this with cost-effective nodes or mini base-stations that plug network gaps, thereby enhancing mobile connectivity both for coverage and capacity. ExteNet has deployed its distributed networks to enable advanced mobile connectivity throughout North America in some highly prominent settings.
The Empire State Building, thought of as an American cultural icon, was the world’s tallest building for over 40 years. The building, completed in 1931, is a 102-story skyscraper with over 2.5 million square feet of space. **ExteNet’s distributed network** has been designed to support all 4 WSPs for their 2G, 3G and 4G LTE services across multiple frequencies. Today, the network utilizes 61 node locations, approximately 1,000 low-powered antennas and over 15 miles of cabling to ensure wireless coverage and broadband capacity throughout the Class A building.

“Throughout our portfolio, our mandate is to offer our tenants the best technological solutions in a state-of-the-art business environment,” says Anthony Malkin, president of Malkin Holdings, L.L.C., which supervises the Empire State Building. “Our portfolio’s hallmarks are redundant broadband, energy efficiency, and fully modernized building systems. Many employees and executives simply don’t use hard-wired phones, and we see the ExteNet offering as central to our building’s turn-key capabilities.”

Circuit of the Americas (COTA), a new Grand Prix racing and multi-purpose entertainment facility located in Austin, TX, is a 3.41 mile, 20-turn world class circuit track with a seating capacity of over 120,000 on its 900 acres. **ExteNet’s multi-carrier distributed network** at COTA is designed to support multiple frequencies and technologies of all 4 WSPs with, 2 WSPs on-net today. ExteNet is providing COTA with ubiquitous indoor and outdoor wireless coverage without any towers or obstructed views.

“Our world-class facility is designed for any class of racing from motor power to human power, as well as a variety of entertainment and business events.” Circuit President Steve Sexton explained. “ExteNet Systems will help us provide advanced wireless services for the cellular providers throughout our venue, while creatively maintaining the aesthetics we sought to achieve.”

The Barclays Center, a newly constructed multi-use arena, is home to the NBA’s Brooklyn Nets, hosting several concerts, conventions and sporting events. With approximately 715,000 square feet, The Barclays Center has a seating capacity of 19,000. **ExteNet’s distributed network**, which was constructed in about 12 weeks, supports all 4 major WSPs with 6 node locations, 6 sectors and 82 antennas.

Chip Foley, Director of Building Technology at Forest City Ratner Companies, a subsidiary of Forest City Enterprises, said, “We chose ExteNet Systems to help make Barclays Center the premier location for entertainment in New York by ensuring superior wireless capacity and coverage with proven DAS coverage. ExteNet’s experience in deploying large-scale communication networks coupled with a business model that supports a cost-effective entry for wireless carriers made the ExteNet decision smart on all fronts”