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Private LTE & 5G Network Ecosystem Market Key Players, Demands, Technology, Strategies, Case Study and Forecasts to 2030

PUNE, MAHARASHTRA, INDIA, October 4, 2021 /EINPresswire.com/ -- With the standardization of features such as MCX (Mission-Critical PTT, Video & Data) services and URLCC (Ultra-Reliable Low-Latency Communications) by the 3GPP, LTE and 5G NR (New Radio) networks are rapidly gaining recognition as an all-inclusive critical communications platform for the delivery of both mission and business-critical applications.

By providing authority over wireless coverage and capacity, private LTE and 5G networks ensure guaranteed and secure connectivity, while supporting a wide range of applications – ranging from PTT group communications and real-time video delivery to wireless control and automation in industrial environments. Organizations across the critical communications and industrial IoT (Internet of Things) domains – including public safety agencies, militaries, utilities, oil & gas companies, mining groups, railway & port operators, manufacturers and industrial giants – are making sizeable investments in private LTE networks.

The very first private 5G networks are also beginning to be deployed to serve a diverse array of usage scenarios spanning from connected factory robotics and massive-scale sensor networking to the control of AVGs (Automated Guided Vehicles) and AR/VR (Augmented & Virtual Reality). For example, Daimler's Mercedes-Benz Cars division is establishing a local 5G network to support automobile production processes at its ""Factory 56"" in Sindelfingen, while the KMA (Korea Military Academy) is installing a dedicated 5G network in its northern Seoul campus to facilitate mixed reality-based military training programs – with a primary focus on shooting and tactical simulations.

Get a Free Sample Copy of The Private LTE & 5G Network Ecosystem Market Research Report at https://www.reportsnreports.com/contacts/requestsample.aspx?name=2640367

In addition, with the emergence of neutral-host small cells, multi-operator connectivity and unlicensed/shared spectrum access schemes, the use of private LTE and 5G networks in enterprise buildings, campuses and public venues is expected to grow significantly over the coming years. The practicality of spectrum sharing schemes such as the three-tiered CBRS (Citizens Broadband Radio Service) framework and Japan's unlicensed sXGP (Shared Extended Global Platform) has already been proven with initial rollouts in locations such as corporate campuses, golf courses, race tracks, stadiums, airports and warehouses.

A number of independent neutral-host and wholesale operators are also stepping up with pioneering business models to provide LTE and 5G connectivity services to both mobile operators and enterprises, particularly in indoor settings and locations where it is technically or economically not feasible for traditional operators to deliver substantial wireless coverage and capacity.

Expected to reach $4.7 Billion in annual spending by the end of 2020, private LTE and 5G networks are increasingly becoming the preferred approach to deliver wireless connectivity for critical communications, industrial IoT, enterprise & campus environments, and public venues. The market will further grow at a CAGR of 19% between 2020 and 2023, eventually accounting for nearly $8 Billion by the end of 2023.

The research estimates that as much as 30% of these investments – approximately $2.5 Billion – will be directed towards the build-out of private 5G networks which will become preferred wireless connectivity medium to support the ongoing Industry 4.0 revolution for the automation and digitization of factories, warehouses, ports and other industrial premises, in addition to serving other verticals.

The "Private LTE & 5G Network Ecosystem: 2020 – 2030 – Opportunities, Challenges, Strategies, Industry Verticals & Forecasts" report presents an in-depth assessment of the private LTE and 5G network ecosystem including market drivers, challenges, enabling technologies, vertical market opportunities, applications, key trends, standardization, spectrum availability/allocation, regulatory landscape, deployment case studies, opportunities, future roadmap, value chain, ecosystem player profiles and strategies. The report also presents forecasts for private LTE and 5G network infrastructure investments from 2020 till 2030. The forecasts cover three submarkets, two air interface technologies, 10 vertical markets and six regions.

The report comes with an associated Excel datasheet suite covering quantitative data from all numeric forecasts presented in the report.

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Topics Covered
The report covers the following topics:
•Private LTE and 5G network ecosystem
•Market drivers and barriers
•System architecture and key elements of private LTE and 5G networks
•Analysis of vertical markets and applications – ranging from mobile broadband and mission-critical voice to domain-specific applications such as CBTC (Communications-Based Train Control) and connected robotics for factory automation
•Operational models for private LTE and 5G networks including independent, managed, shared

core, hybrid commercial-private and private MVNO networks

• Mission-critical PTT/video/data services, deployable LTE/5G systems, cellular IoT, TSN (Time Sensitive Networking), URLLC (Ultra-Reliable Low-Latency Communications) techniques, quantum cryptography, unlicensed/shared spectrum, neutral-host/multi-operator small cells, network slicing, MEC (Multi-Access Edge Computing) and other enabling technologies

• Key trends including the adoption of local and shared spectrum licensing, commercial readiness of private 5G systems for Industry 4.0, nationwide and city-wide public safety broadband network build-outs, regional mission/business-critical LTE networks for utilities and energy companies, localized private LTE/5G networks for railway infrastructure, ports, airports, mines, factories, warehouses, buildings, campuses and public venues, and pioneering neutral-host business models for enterprise and public wireless connectivity.

• Review of private LTE and 5G network engagements worldwide, including case studies of more than 40 live networks

• Spectrum availability, allocation and usage for private LTE and 5G networks across the global, regional and national regulatory domains

• Standardization, regulatory and collaborative initiatives

• Future roadmap and value chain

• Profiles and strategies of over 600 ecosystem players including LTE/5G network infrastructure suppliers and vertical-domain specialists

• Strategic recommendations for end-users, LTE/5G network infrastructure suppliers, system integrators and commercial/private mobile operators

• Market analysis and forecasts from 2020 till 2030

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Forecast Segmentation
Market forecasts are provided for each of the following submarkets and their subcategories:
Submarkets
RAN (Radio Access Network)
• Mobile Core
• Backhaul & Transport

Air Interface Technologies
• LTE
• 5G
Spectrum Types
• Licensed Spectrum
• Unlicensed/Shared Spectrum
Unlicensed/Shared Spectrum Frequency Bands
• 1.9 GHz sXGP/DECT
• 2.4 GHz
• 3.5 GHz CBRS

- 6 GHz
- Other Bands

Vertical Markets
- Critical Communications & Industrial IoT
  o Public Safety
  o Military
  o Energy
  o Utilities
  o Mining
  o Transportation
  o Factories & Warehouses
  o Others
- Enterprise & Campus Environments
- Public Venues & Other Neutral Hosts

Regional Markets
- Asia Pacific
- Eastern Europe
- Middle East & Africa
- Latin & Central America
- North America
- Western Europe

Key Questions Answered
The report provides answers to the following key questions:
- How big is the private LTE and 5G network opportunity?
- What trends, drivers and barriers are influencing its growth?
- How is the ecosystem evolving by segment and region?
- What will the market size be in 2023, and at what rate will it grow?
- Which vertical markets and regions will see the highest percentage of growth?
- What is the status of private LTE and 5G network adoption worldwide, and what are the primary usage scenarios of these networks?
- What are the practical applications of private 5G networks – based on early commercial rollouts and pilot deployments?
- How are private LTE and 5G networks delivering broadband and IoT connectivity for smart cities in areas such as public safety, transportation, utilities, waste management and environmental monitoring?
- What are the existing and candidate licensed, unlicensed and shared spectrum bands for the operation of private LTE and 5G networks?
- How will CBRS, sXGP, MulteFire and other unlicensed/shared spectrum access schemes and technologies accelerate the adoption of private LTE and 5G networks in the coming years?
- How does standardization impact the adoption of LTE and 5G networks for critical

communications and industrial IoT?

• When will mission-critical PTT/video/data, 3GPP-LMR interworking, URLLC for industrial IoT, railway/maritime communications and other 3GPP-specified vertical-domain capabilities become commercially mature for implementation?

• How will the integration of TSN (Time Sensitive Networking) enable private 5G networks to deliver reliable, low-latency connectivity across a broad range of time-critical industrial applications?

• Do IEEE 802.16s, AeroMACS, WiGRID and other technologies pose a threat to private LTE and 5G networks?

• What opportunities exist for commercial mobile operators in the private LTE and 5G network ecosystem?

• Will FirstNet, Safe-Net, ESN and other nationwide public safety broadband networks eventually replace existing digital LMR networks?

• When will private LTE and 5G networks supersede GSM-R as the predominant radio bearer for railway communications?

• What are the future prospects of rapidly deployable LTE and 5G systems?

• Who are the key ecosystem players, and what are their strategies?

• What strategies should LTE/5G infrastructure suppliers, system integrators, vertical-domain specialists and mobile operators adopt to remain competitive?

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Key Findings
The report has the following key findings:

• Expected to reach $4.7 Billion in annual spending by the end of 2020, private LTE and 5G networks are increasingly becoming the preferred approach to deliver wireless connectivity for critical communications, industrial IoT, enterprise & campus environments, and public venues. The market will further grow at a CAGR of 19% between 2020 and 2023, eventually accounting for nearly $8 Billion by the end of 2023.

• SNS Telecom & IT estimates that as much as 30% of these investments – approximately $2.5 Billion – will be directed towards the build-out of private 5G networks which will become preferred wireless connectivity medium to support the ongoing Industry 4.0 revolution for the automation of factories, warehouses, ports and other industrial premises, besides serving additional verticals.

• Favorable spectrum licensing regimes – such as the German Government's decision to reserve frequencies in the 3.7 – 3.8 GHz range for localized 5G networks – will be central to the successful adoption of private 5G networks.

• A number of other countries – including Sweden, United Kingdom, Japan, Hong Kong and Australia – are also moving forward with their plans to identify and allocate spectrum for localized, private 5G networks with a primary focus on the 3.7 GHz, 26 GHz and 28 GHz frequency bands.

• The very first private 5G networks are also beginning to be deployed to serve a diverse array of

usage scenarios spanning from connected factory robotics and massive-scale sensor networking to the control of AVGs (Automated Guided Vehicles) and AR/VR (Augmented & Virtual Reality).

• For example, Daimler's Mercedes-Benz Cars division is establishing a local 5G network to support automobile production processes at its ""Factory 56"" in Sindelfingen, while the KMA (Korea Military Academy) is installing a dedicated 5G network in its northern Seoul campus to facilitate mixed reality-based military training programs – with a primary focus on shooting and tactical simulations.

• The private LTE network submarket is well-established with operational deployments across multiple segments of the critical communications and industrial IoT (Internet of Things) industry, as well as enterprise buildings, campuses and public venues. China alone has hundreds of small to medium scale private LTE networks, extending from single site systems through to city-wide networks – predominantly to support police forces, local authorities, power utilities, railways, metro systems, airports and maritime ports.

• Private LTE networks are expected to continue their upward trajectory beyond 2020, with a spate of ongoing and planned network rollouts – from nationwide public safety broadband networks to usage scenarios as diverse as putting LTE-based communications infrastructure on the Moon.

• In addition to the high-profile FirstNet, South Korea's Safe-Net, Britain's ESN (Emergency Services Network) nationwide public safety LTE network projects, a number of other national-level engagements have recently come to light – most notably, the Royal Thai Police's LTE network which is already operational in the greater Bangkok region, Finland's VIRVE 2.0 mission-critical mobile broadband service, France's PCSTORM critical communications broadband project, and Russia's planned secure 450 MHz LTE network for police forces, emergency services and the national guard.

• Other segments within the critical communications industry have also seen growth in the adoption of private LTE networks – with recent investments focused on mining, port and factory automation, deployable broadband systems for military communications, mission-critical voice, broadband and train control applications for railways and metro systems, ATG (Air-to-Ground) and airport surface wireless connectivity for aviation, field area networks for utilities, and maritime LTE platforms for vessels and offshore energy assets.

• In the coming months and years, we expect to see significant activity in the 1.9 GHz sXGP, 3.5 GHz CBRS, 5 GHz and other unlicensed/shared spectrum bands to support the operation of private LTE and 5G networks across a range of environments, particularly enterprise buildings, campuses, public venues, factories and warehouses.

• Leveraging their extensive spectrum assets and mobile networking expertise combined with a growing focus on vertical industries, mobile operators are continuing to retain a strong foothold in the wider private LTE and 5G network ecosystem – with active involvement in projects ranging from large-scale nationwide public safety LTE networks to highly localized 5G networks for industrial environments.

• A number of independent neutral-host and wholesale operators are also stepping up with pioneering business models to provide LTE and 5G connectivity services to both mobile operators and enterprises. For example, using strategically acquired 2.6 GHz and 3.6 GHz spectrum licenses, Airspan's operating company Dense Air plans to provide wholesale wireless

connectivity in Ireland, Belgium, Portugal, New Zealand and Australia.
•Cross-industry partnerships are becoming more commonplace as LTE/5G network equipment suppliers wrestle to gain ground in key vertical domains. For example, Nokia has partnered with Komatsu, Sandvik, Konecranes and Kalmar to develop tailored private LTE and 5G network solutions for the mining and transportation industries.

List of Companies Mentioned
•3GPP (Third Generation Partnership Project)
•450 MHz Alliance
•450connect
•4K Solutions
•5G PPP (5G Infrastructure Public Private Partnership)
•5GAA (5G Automotive Association)
•5G-ACIA (5G Alliance for Connected Industries and Automation)
•5G-IA (5G Infrastructure Association)
•7Layers
•A1 Telekom Austria Group
•Aaeon Technology
•AAR (American Association of Railroad)
•ABB
•Abu Dhabi Police
•Accelleran
•Accenture
•ACCF (Australasian Critical Communications Forum)
•Accton Technology Corporation
•Accuver
•Ace Technologies Corporation
•AceAxis
•ACMA (Australian Communications and Media Authority)
•Adax
•Addis Ababa Light Rail
•ADF (Australian Defence Force)
•ADLINK Technology
•ADNOC (Abu Dhabi National Oil Company)
•ADR (Aeroporti di Roma)
•ADRF (Advanced RF Technologies)
•ADTRAN
•ADVA Optical Networking
•Advantech
•Advantech Wireless
•Aegex Technologies
•AEP Renewables
•AeroMobile Communications

- AeroVironment
- Affarii Technologies
- Affirmed Networks
- Agnico Eagle
- AGURRE (Association of Major Users of Operational Radio Networks, France)
- Air France
- Airbus
- Airgain
- Air-Lynx
- Airrays
- Airspan Networks
- Airwavz Solutions
- Ajman Police
- AKOS (Agency for Communication Networks and Services of the Republic of Slovenia)
- Alcobendas City Council
- Alcom (Alands Telecommunications)
- Alea/Talkway
- Alepo
- Alga Microwave
- Alliander
- Allied Telesis
- Alpha Networks
- Alpha Technologies
- Alphabet
- Alstom
- Altaeros
- Altair Semiconductor
- ALTÁN Redes
- Altice France
- Altice USA
- Altiostar Networks
- Altran

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