

TECH TALK

## PRIVATE 5G NETWORKS AND TESTING

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TeckNexus

DIGITAL SERVICE PROVIDER ECOSYSTEM

TECH TALK

# Navigating this Tech Talk

Private 5G Top Industry Verticals

Private 5G Testing Considerations

#### CONTENT COMPASS:

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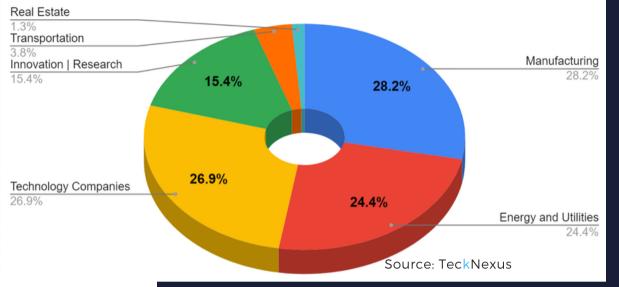
| 02 | 3GPP Releases and Features for Private 5G |
|----|---|
| 03 | Private 5G Deployment Modes               |
|    |   |

O5 Anritsu 5G Testing Solutions



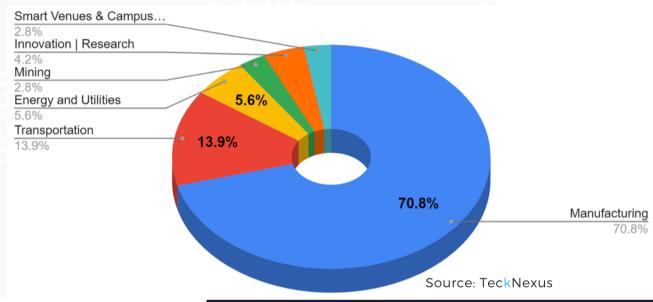
# Top Industry Verticals

FOR PRIVATE
5G NETWORKS



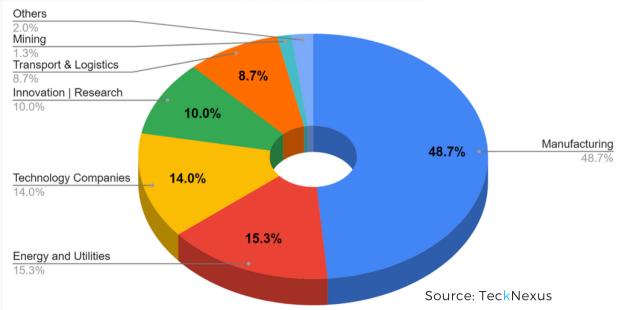
#### Manufacturing

Based on analysis of global private 5G enterprise use cases and spectrum winners



#### **Transportation**

Based on analysis of global private 5G enterprise use cases



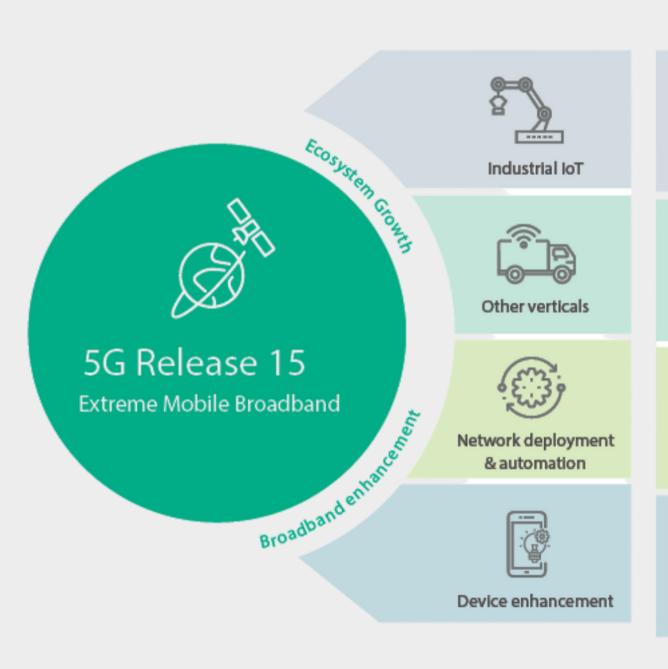
### **Energy & Utilities**

Based on analysis of global spectrum (midband & high-band) winners



## Features VERTICALS INDUSTRY 2 PRIVAT

### **Incitsu** envision: ensure

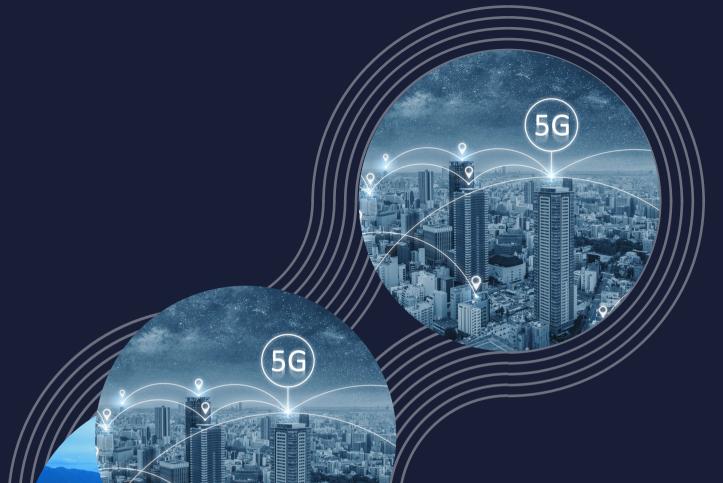


| Release 16  | Release 17  |
|---|---|
| NR in unlicensed spectrum Private networks Ultra-reliable low-latency communications (URLCC) Time-Sensitive Networking (TSN)  | » Time-Sensitive Communication (TSC)     » Neutral host     » "NR-light" for Industrial IoT     » High-accuracy positioning   |
| <ul><li>» Vehicular communication<br/>(Cellular V2X)</li></ul>  | Sidelink enhancement for public safety and pedestrians     Multi-cast     Non-terrestrial networks     (satellite and HAPS)     Railway (application layer)           |
| <ul> <li>Full 5G system resilience</li> <li>Wireless-wireline convergence</li> <li>Network slicing Phase 2</li> <li>Network automation Phase 2</li> <li>Integrated Access and Backhaul</li> </ul> | Network slicing Phase 3 Network automation Phase 3 Extension to 71 GHz  |
| » Device power saving     » Enhanced MIMO     » Mobility enhancement  | <ul> <li>Further device power saving</li> <li>Further enhanced MIMO</li> <li>Multiple USIMs</li> <li>Cloud gaming QoS</li> <li>"NR-Light" for Consumer IoT</li> </ul> |





Private 5G Deployment Modes



Public 5G

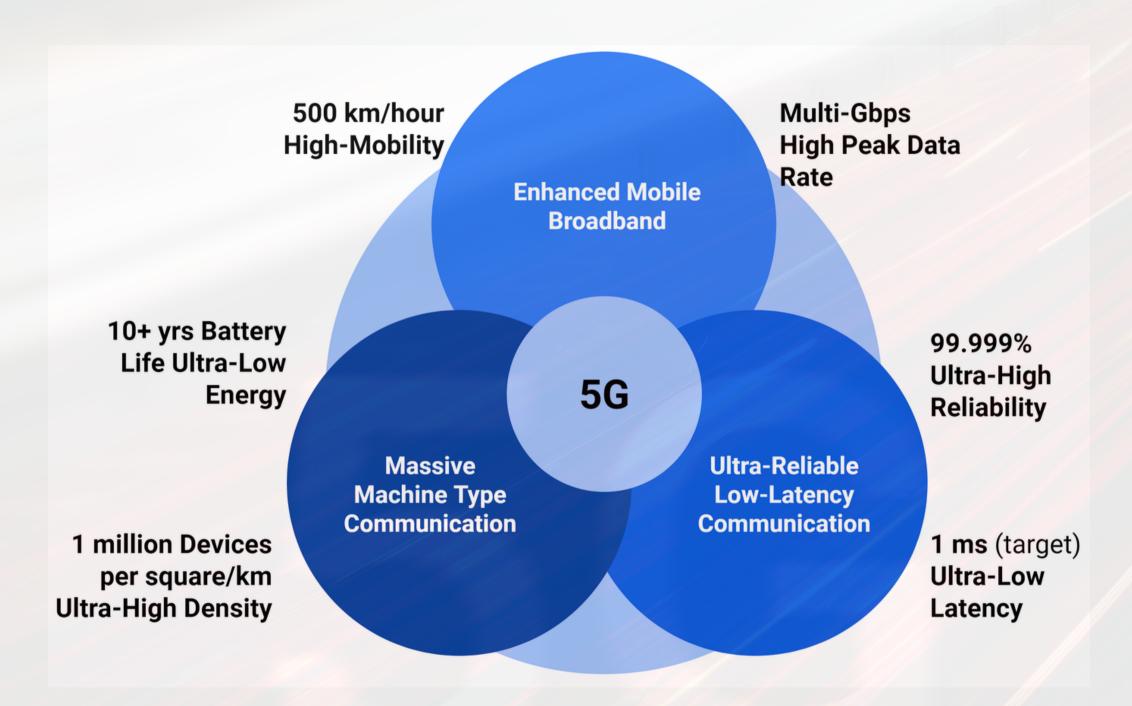
Hybrid 5G

Private 5G





## Public 5G



### **Network Slicing**

For service differentiation and meeting SLAs

### New Radio Unlicensed Spectrum (NR-U)

For improved coverage capacity and mobility

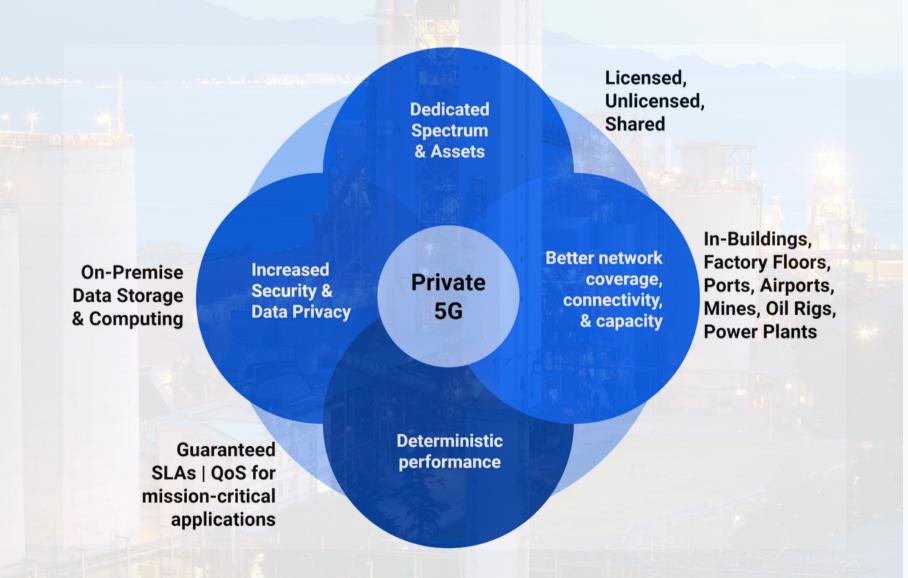
### Multi-Access Edge Computing (MEC)

For high bandwidth and low-latency applications

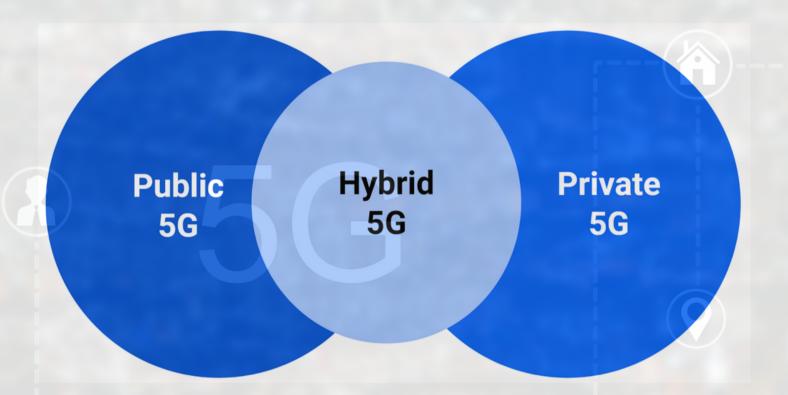




## Private 5G



## Hybrid 5G



Optimize overall investments and costs

Meet SLAs leveraging network slicing capabilities





## Testing Private 5G Networks

KEY CONSIDERATIONS

| Spectrum                | Verify support for multiple frequency bands (FR1/FR2)  Identify and eliminate any interference |  |  |  |
|-------------------------|--|--|--|--|
| Interference            |  |  |  |  |
| Device<br>Complexity    | Verify support for sub-6GHz and mmWave   |  |  |  |
| Radio Access            | Test multiple radio access technologies, including 5G new radio (NR) and 4G LTE                |  |  |  |
| <b>Deployment Modes</b> | Test different deployment modes, i.e., NSA and SA  |  |  |  |
| Latency                 | Verify whether the latency requirements specified for eMBB and URLLC use cases are met         |  |  |  |
| OTA Testing             | Verify correct 5G transmission for near field and far field Over-the-Air (OTA)                 |  |  |  |
| Bandwidth               | Test variable bandwidth and subcarrier spacing (SCS)   |  |  |  |
| Power Class             | Support testing for different power classes  |  |  |  |





## /Inritsu

envision: ensure

# 5G Testing Solutions

Components Transmitter

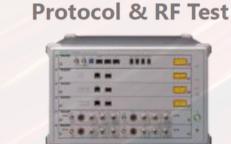
Chipset Device R&D Certification Acceptance

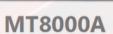
Production

**Vector Network Analyzer** 









**5G NR Device** 

RF Conformance



**ME7873NR** 



**Production Test** (Sub-6GHz)



MT8870A

**Production Test** 

(mmWave)

Signal Analyzer



MS2850A

**Spectrum Master** 

**NSA-NR LTE Anchor** 







Protocol Conformance Carrier **Acceptance** 



MT8000A



**OTA Chamber/Shield Box** 













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### THANK YOU



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