



5G – More Than Just Cell Phones

The Air and Space Force's Future Mobile Connectivity has Arrived

Lenny Chin – AT&T

Mike Strunk – AT&T (Col, USAF Retired)

DAFITC - August 2023

© 2023 AT&T Intellectual Property. AT&T and globe logo are registered trademarks and service marks of AT&T Intellectual Property and/or AT&T affiliated companies. All other marks are the property of their respective owners

AT&T Proprietary – Not for use or disclosure outside of AT&T companies and its third party representatives except under written agreement.



The **5G** Transformation



Massive IoT Connectivity

Support billions of connected devices



Ultra Low Latency

+ Edge technologies further accelerate responsiveness



Ultra Reliability

Support more mission critical applications



Better Throughput

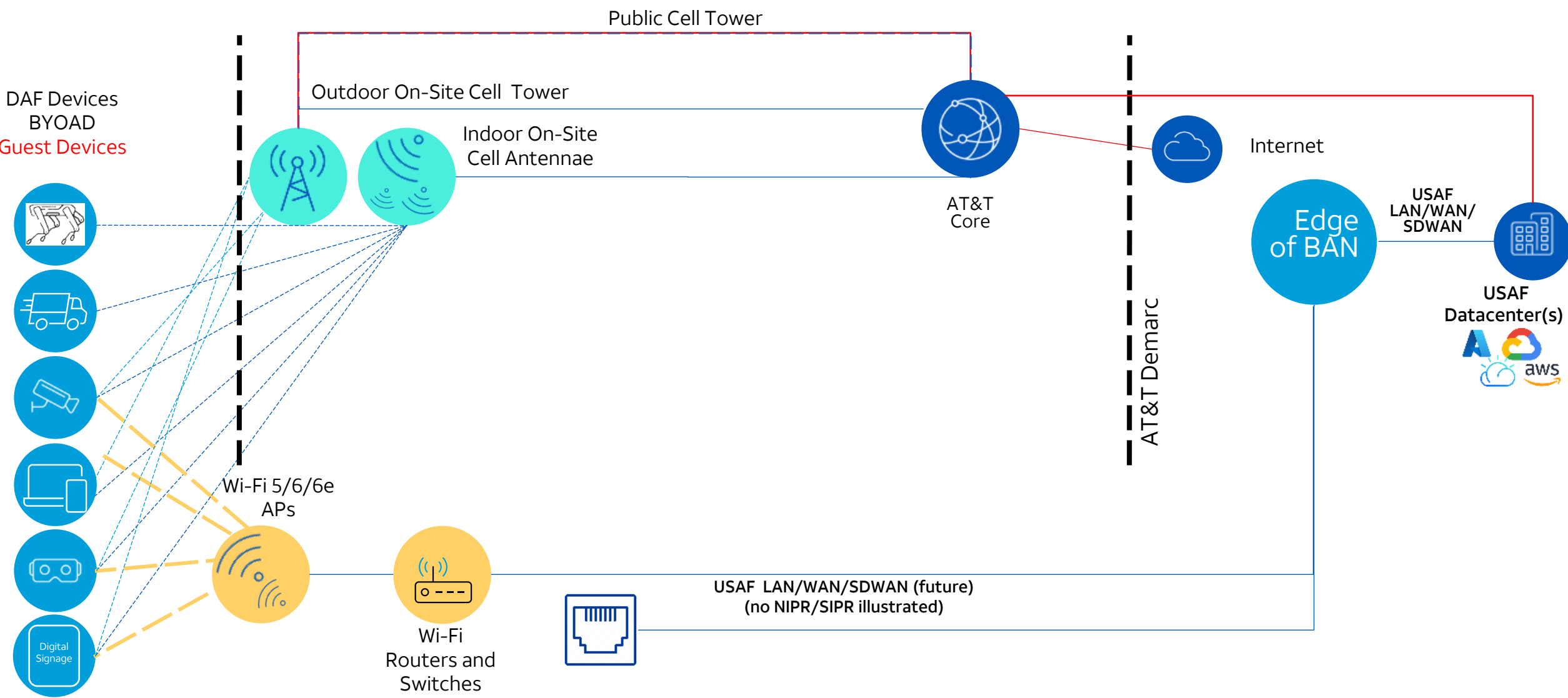
Support massive data workloads



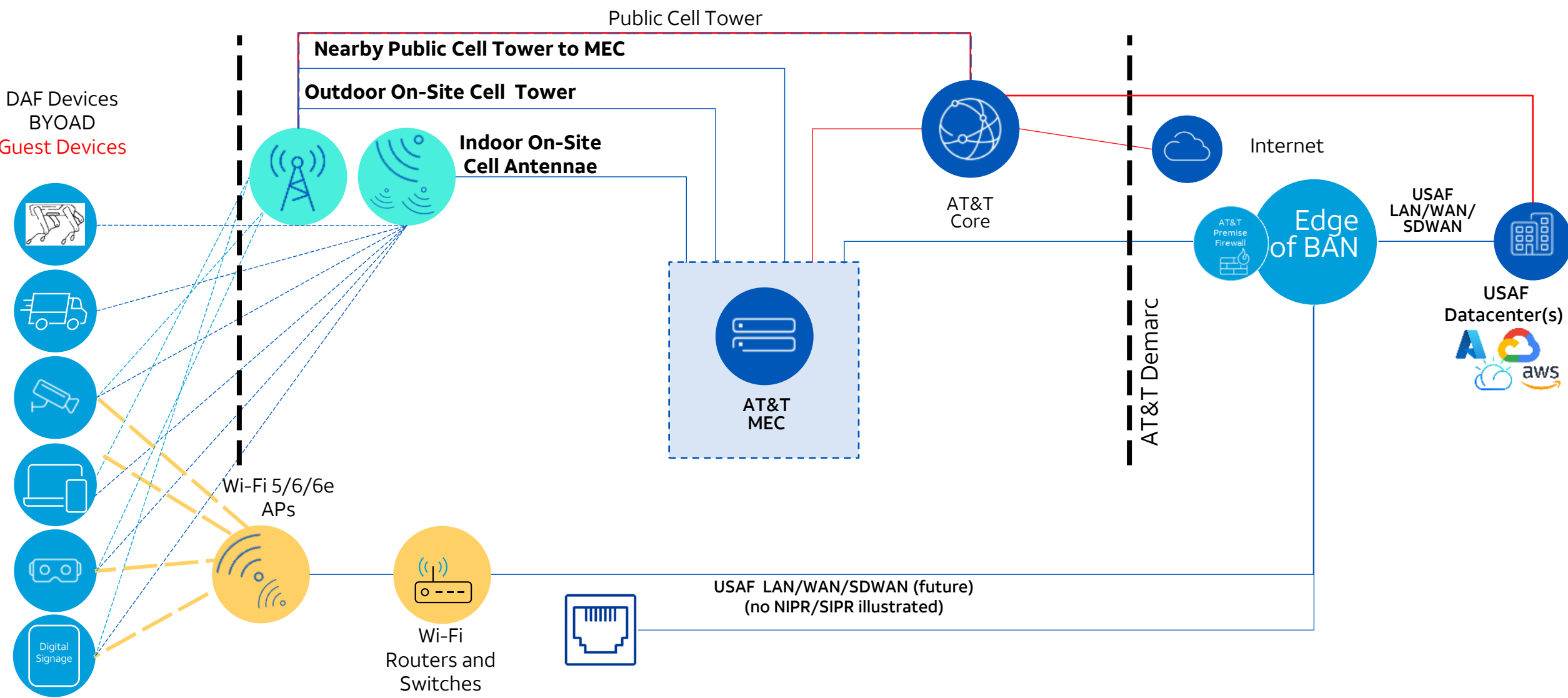
Ultra High-Speeds

Ultra fast (1 Gbps +)

Mobile Wireless Access Framework for a Base



Mobile Wireless Access Framework for a Base



5G

&

Wi-Fi6



Cellular technology works well in large areas.

Designed for short-to-medium coverage areas.



Well suited for fast moving indoor or outdoor objects without additional engineering.

Well suited for stationary or slow-moving indoor objects.



Great for requirements needing low latency or better capacity.

May reach saturation quickly unless additional engineering and management is added for mobility.



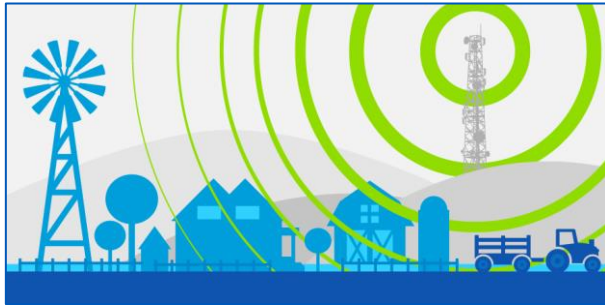
Capital investment for infrastructure typically made by the cellular provider; users pay a monthly service fee.

Large capital investment by user needed to install infrastructure.



5G | Spectrum Advantages

Low Band



- Speed improvement can vary from marginally better to 1.2x vs LTE
- Offers blanket coverage
- Supports nationwide coverage

Mid Band



- Faster speed and lower latency than Low Band
- Signal can travel significant distance compared to High Band

High Band



- Ultra fast (1 Gbps +)
- Ultra low latency – quick response times
- Signal only covers short distances & easily blocked by obstacles
- Limited coverage to parts of selected areas
- Supports high density locations

Newer phones/end devices needed to take advantage of 5G spectrum



5G Use Cases

Smart Base Profile & Technology

RESOURCES



ENERGY



WATER



DISASTER
MANAGEMENT



FORCE
PROTECTION



EMERGENCY



PERIMETER
MANAGEMENT



ASSET
MANAGEMENT

SMART BASE ENABLEMENT



VIDEO
INTELLIGENCE



SMART
LIGHTING



TRUSTED
NETWORKS



DEV-SOC-OPS



PREDICTIVE
MAINTAINANCE



BASE MANAGEMENT



HEALTHCARE
CENTER



PSY-OPS CENTER



SYNTHETIC
TRAINING CENTER



CRITICAL COMMAND

INFRASTRUCTURE

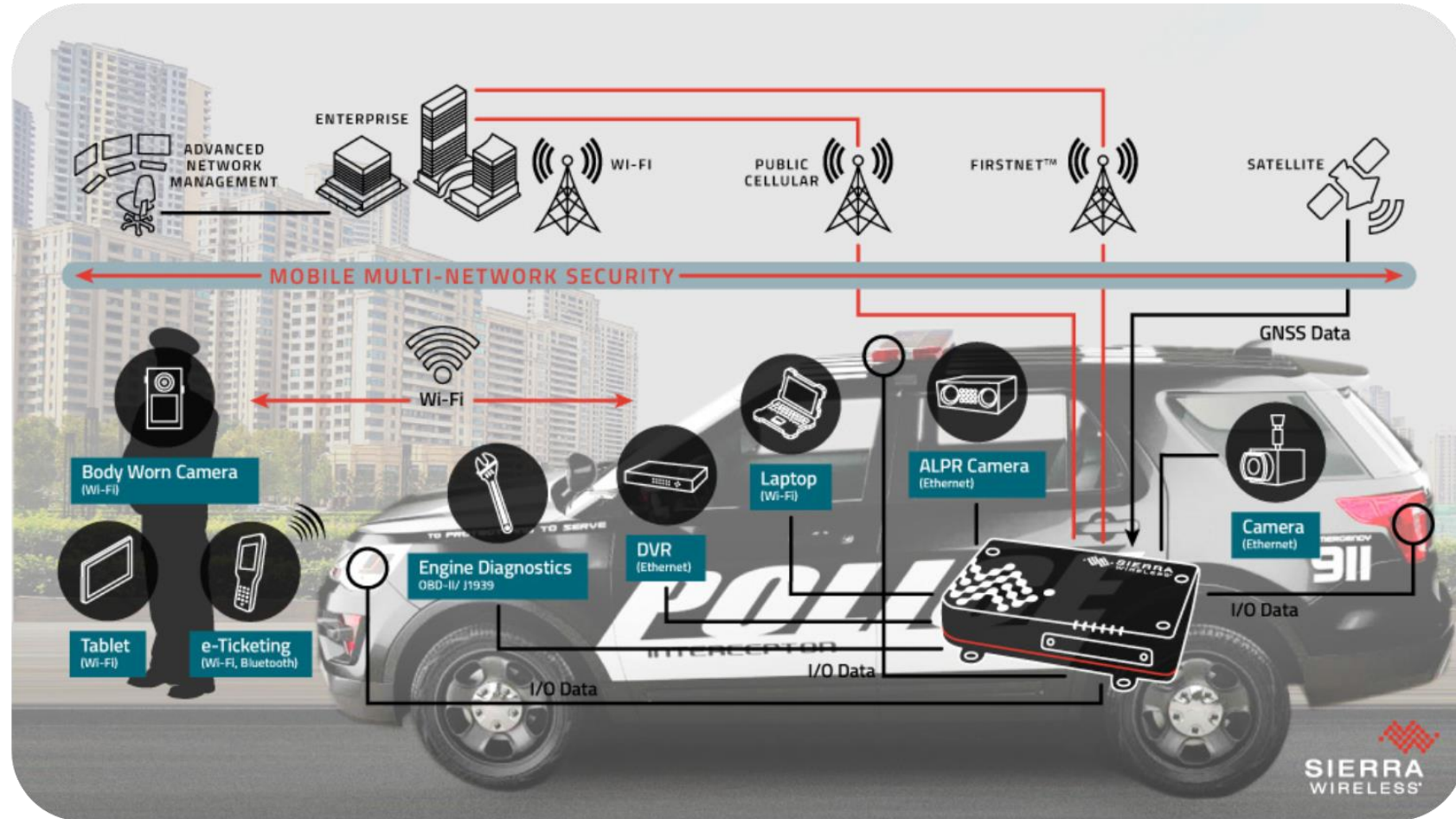
SMART BASE ENABLEMENT

© 2023 AT&T Intellectual Property – AT&T Proprietary – Not for use or disclosure outside of AT&T companies and its third party representatives except under written agreement.

OFFICER & SERVICE PERSONNEL

In-Vehicle Connectivity Solutions

- Cellular connectivity is a key enabler for mobile communications
- Creates Wi-Fi hotspot for users in and around the vehicle
- Perfect for security forces, fire department, EMS, aircraft maintainers, construction crews and others who need access to networks, systems and data while on the move, or away from Wi-Fi and other network connectivity options



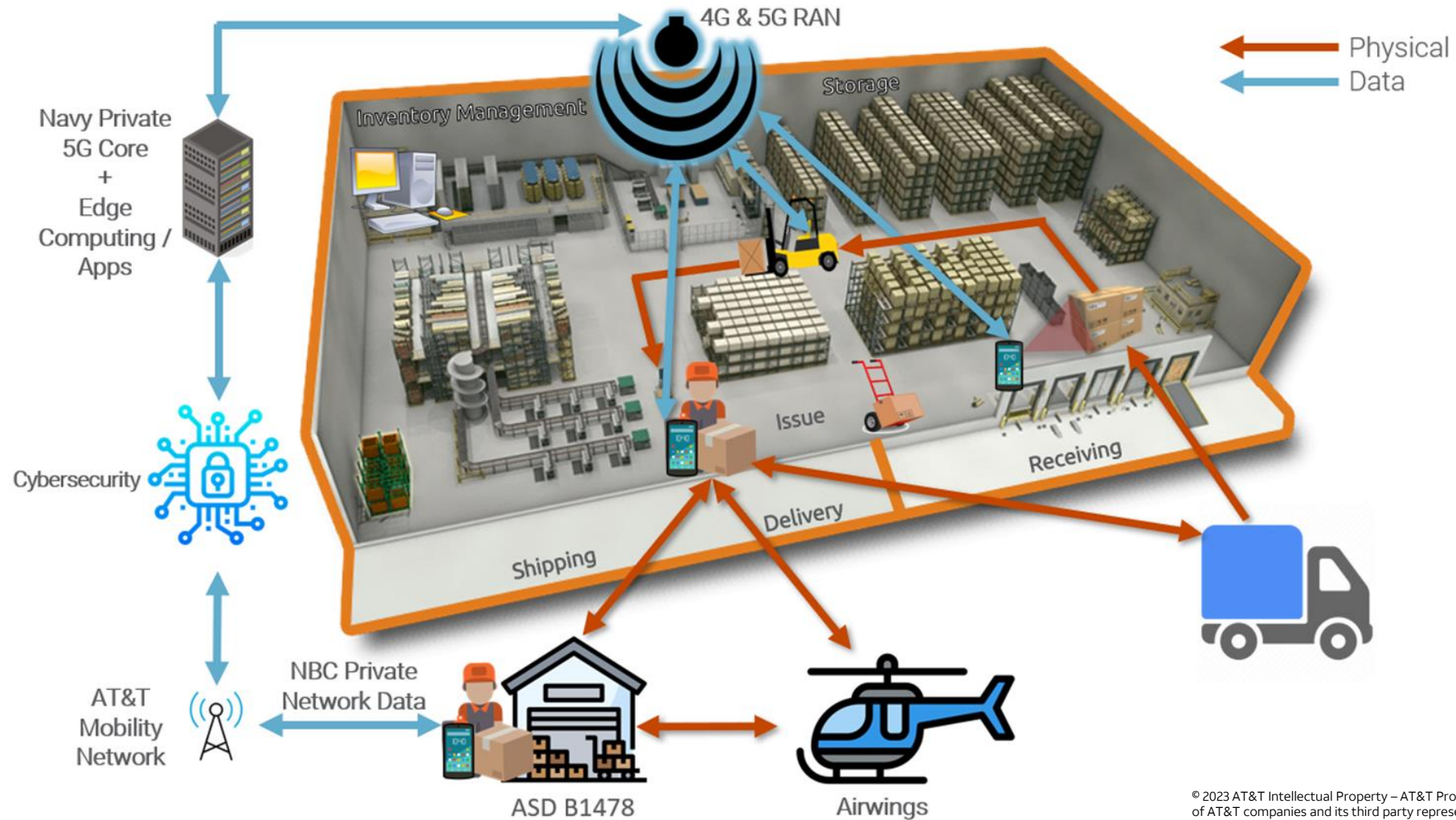
Base Security

5G wireless coverage enables you to connect security devices and sensors where wired connectivity does not exist:

- Security cameras
- Sensors
- Alarms
- Robot dogs capable of carrying
 - Visible and infrared vision
 - Thermal and LIDAR
 - Deployable drone
 - CBRNE, other passive/active/kinetic tools and sensors



5G Smart Warehouse – Navy Base Coronado Example



© 2023 AT&T Intellectual Property – AT&T Proprietary – Not for use or disclosure outside of AT&T companies and its third party representatives except under written agreement.

The Navy 5G Smart Warehouse team won the [DON IT Excellence 'Modernize' Award](#) at the Department of the Navy Information Technology Conference, West Coast, Feb. 13, 2023

Asset Management

- Track any asset virtually anywhere utilizing IoT asset management solutions
- Aerospace Ground Equipment (AGE), construction equipment, busses, vehicle fleet, cargo, and much more
- Reduce the amount of time and personnel needed to track and locate equipment, allowing them to put more time in to fixing aircraft, construction projects, etc.



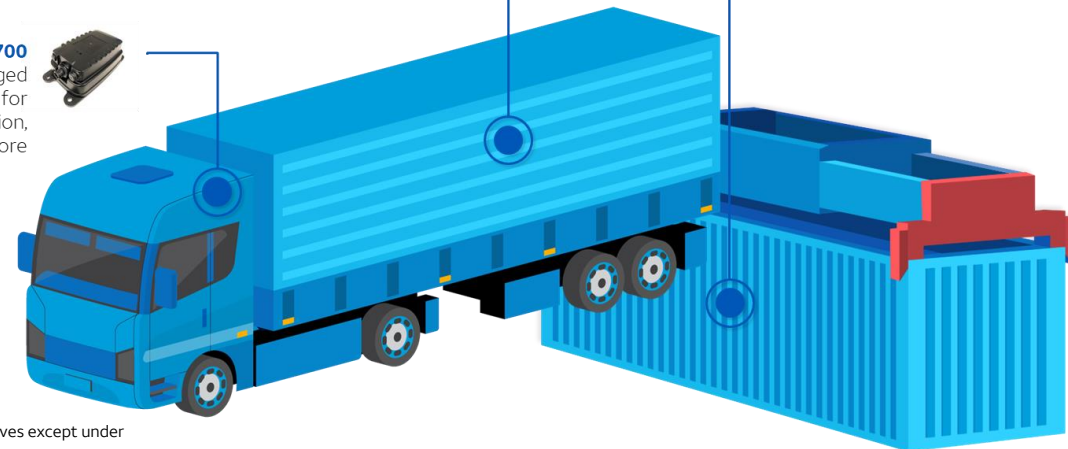
XT3182 Cargo Capacity Gateway
provides camera insights on cargo capacity, status, and door open/closed



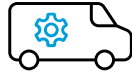
XT4700
provides rugged asset tracking for shock, utilization, location, and more



XT4964A Asset Tracker
continuously reports temperature, motion, and status over short- and long-term deployments with its energy-harvesting capabilities

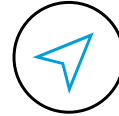


Fleet Management



Equipment trackers

Alerts if portable equipment is left behind, or if it has dropped or shifted in transit



PTO sensor

Captures the time and location when the power take-off (PTO) auxiliary equipment is engaged



Front/back door and stop sensors

Logs the time and location the door is opened and closed



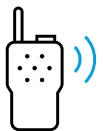
Asset tracking

Captures vehicle location, engine hours, fuel consumption, and data from additional sensors



Embedded Connectivity

Leverage embedded connectivity with certain vehicle OEMs



Enhanced Push-To-Talk (EPTT)

Instant communications with multiple drivers in the field from one screen



Camera

Monitors GPS and record time-stamped instances of aggressive driving behavior

Land Mobile Radio (LMR) to LTE Interoperability Solution

BENEFITS

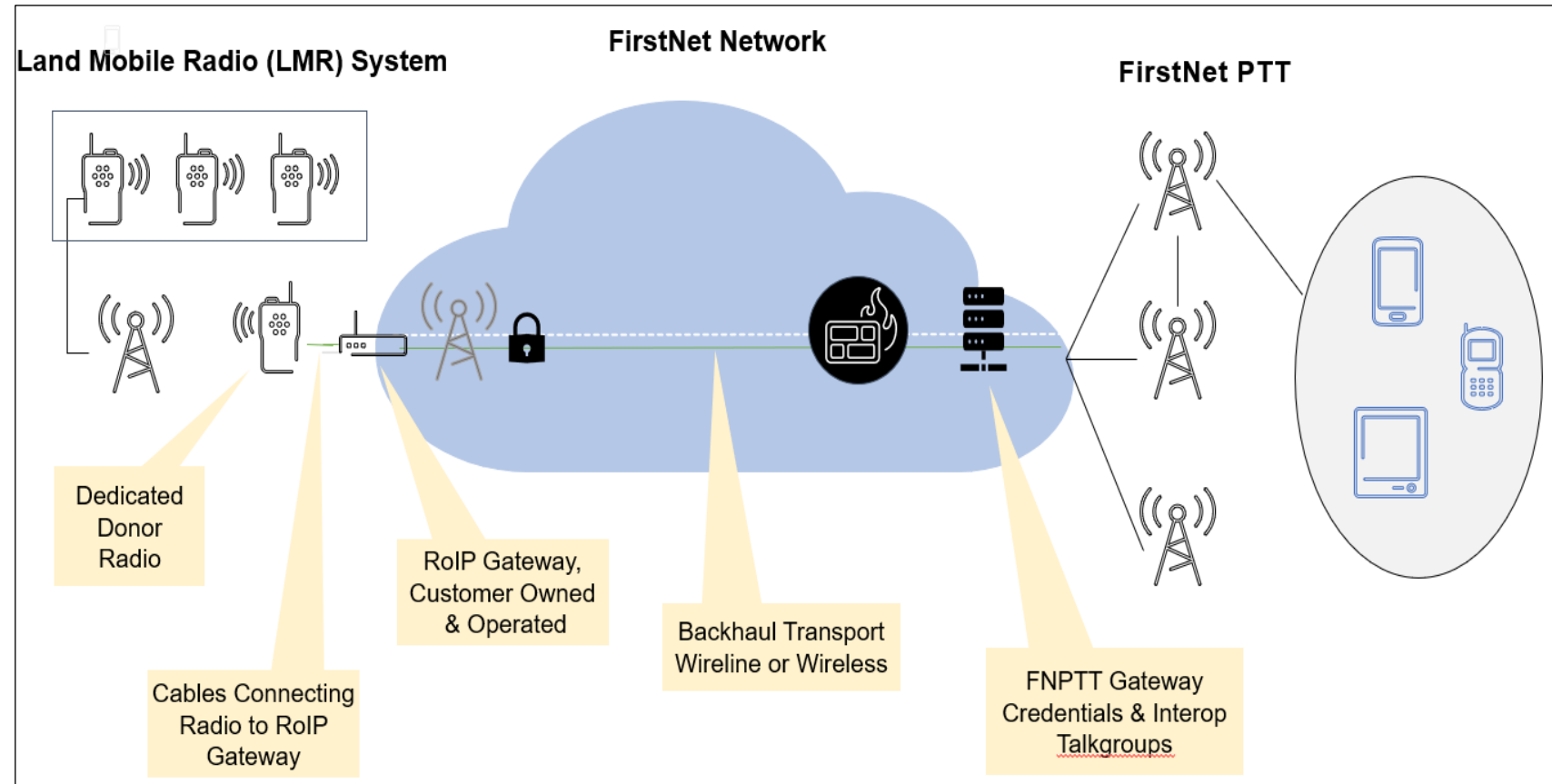
Reduces the need for new high cost LMRs

Eliminates need for users to carry cell phone and LMR

Easily extend radio networks beyond radio range

Connect telephone users with radio users

Keep communications private with advanced security features



Push to enhance

Do more than talk

We've combined the best of both worlds. Enjoy the ability to communicate one-to-one or one-to-many just like a radio, while appreciating the convenience of a mobile phone.

Track and share your location, send and receive highly secure messages including PDFs, pictures, and video, communicate with Land Mobile Radios, and take advantage of features based on 3GPP MCPTT standards.



BY THE NUMBERS

The **only** dedicated communications platform in the country that brings first responders:



Always-on, 24x7 priority and preemption across voice and data communications



A physically separate network core **fully dedicated** to public safety

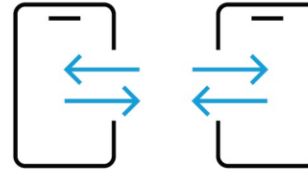


Government oversight and accountability from the **FirstNet Authority**

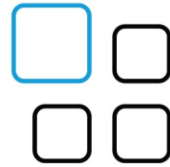
Updated: 7/26/2023

©2023 AT&T Intellectual Property. FirstNet and the FirstNet logo are registered trademarks of the First Responder Network Authority. All other marks are the property of their respective owners.

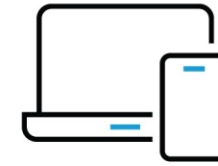
5M+
FirstNet connections



26K+
Public safety agencies and organizations subscribed



210+
apps in the FirstNet App Catalog



660
FirstNet Ready® devices

AMERICA'S PUBLIC SAFETY NETWORK

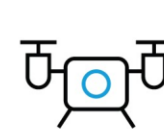
2.91M+
Square miles of coverage



250K+
Square miles more than commercial networks



150+ Dedicated assets in the FirstNet fleet



30+
ROG the Dog therapy animals



750+
Solutions triaged and deployed in 2023



FirstNet Eligibility

Primary Eligible users include:

- Personnel from law enforcement, fire services, EMS
- Emergency management (includes base EOC's)
- Public safety communications
- Continuity of government
- National security

Extended Primary Eligible users can include:

- Hospitals and healthcare
- Public works and utilities
- IT personnel and devices supporting voice and data communications in the public safety mission
- Land mobile radio infrastructure supporting public safety
- Transportation



FIRST PRIORITY™

First responders receive access to resources first, ahead of others, without throttling of text or data. In times of crisis, first responders within the network get first access to necessary resources through the automatic preemption capabilities of the network.



Hurricane Ian

A story of FirstNet and AT&T's response impact

- AT&T compact rapid deployable fits in National Guard helicopters; transported to Pine Island to help first responders in Florida with rescue operations
- AT&T used an amphibious vehicle to deliver assets to Sanibel Island to restore services after the hurricane
- Within the first 24 hours of opening AT&T's network for roaming, AT&T handled more than 10 TB of traffic from other carriers
 - 10 TB of data is equal to more than 3.3 billion text messages
 - The traffic load demonstrates a massive influx of connections helping keep those in impacted areas connected



Contact Information

Lenny Chin

M 301.247.1155

leonard.chin@att.com

Mike Strunk

M 571.655.7846

michael.strunk@att.com

