

ENSURING INTEROPERABILITY BETWEEN LMR & BROADBAND

Mission Critical Push To Talk (MCPTT) connects your teams over mobile broadband and has the ability to connect via your existing LMR networks too. During this technical session, the experts will discuss how these technologies converge & provide interoperability across your systems.

Learning objectives:

- Discover why Utilities need interoperability when adopting private LTE solutions
- Uncover the layers of interoperability opportunity across your systems
- Explore interoperability with the ecosystem of end user devices
- Learn about the evolution of MCPTT Technology and 3GPP Standards





**NEXT IS NOW
FOR INTEROPERABLE COMMUNICATIONS**



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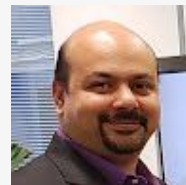
SPEAKERS



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AGENDA - Interoperable Communications

POWERFUL ALONE. GAME CHANGING TOGETHER.

- Drivers
- Vision
- Technology Evolution
- 3GPP MC-X Standards Adoption
- Interoperability
- Security



WHY DO UTILITIES NEED LMR-MCPTT INTEROP?

Your
Evolving
Networks

Your
Evolving
Devices &
Apps

Neighbor
Evolving
Networks

Neighbor
Evolving
Devices &
Apps

Backup
Network
Resilience



**Consistent
Seamless
Connectivity**

**Any Place
Any Network
Any Device
Any App**



WHAT IS EXPECTED FROM AN MCPTT SOLUTION PERSPECTIVE?

Call Types

- Group & 1:1 MC-PTT
- MC-Data
- MC-Video

Group Management

- Pre-planned Groups
- Ad-hoc Groups
- Mutual Aid Groups
- Group Re-grouping

Dispatch Control

- Priority Override
- Location, Geo-fence Services
- Remote Situational Awareness

Multi-Agency Interoperability

- Day-to-Day & Mutual Aid Scenarios

Call Quality & Reliability

- Apps & Devices QoS differentiation
- Priority & Pre-emption
- Synchronized Audio

Emergency Calls

- Dispatch Answer Point
- Public Service Answer Point (e.g., E911)

Direct Mode & Relay

- Device-to-Device (Off-Network)
- Device-to-Device-to-Network



OUR VISION

POWERFUL ALONE. GAME CHANGING TOGETHER.

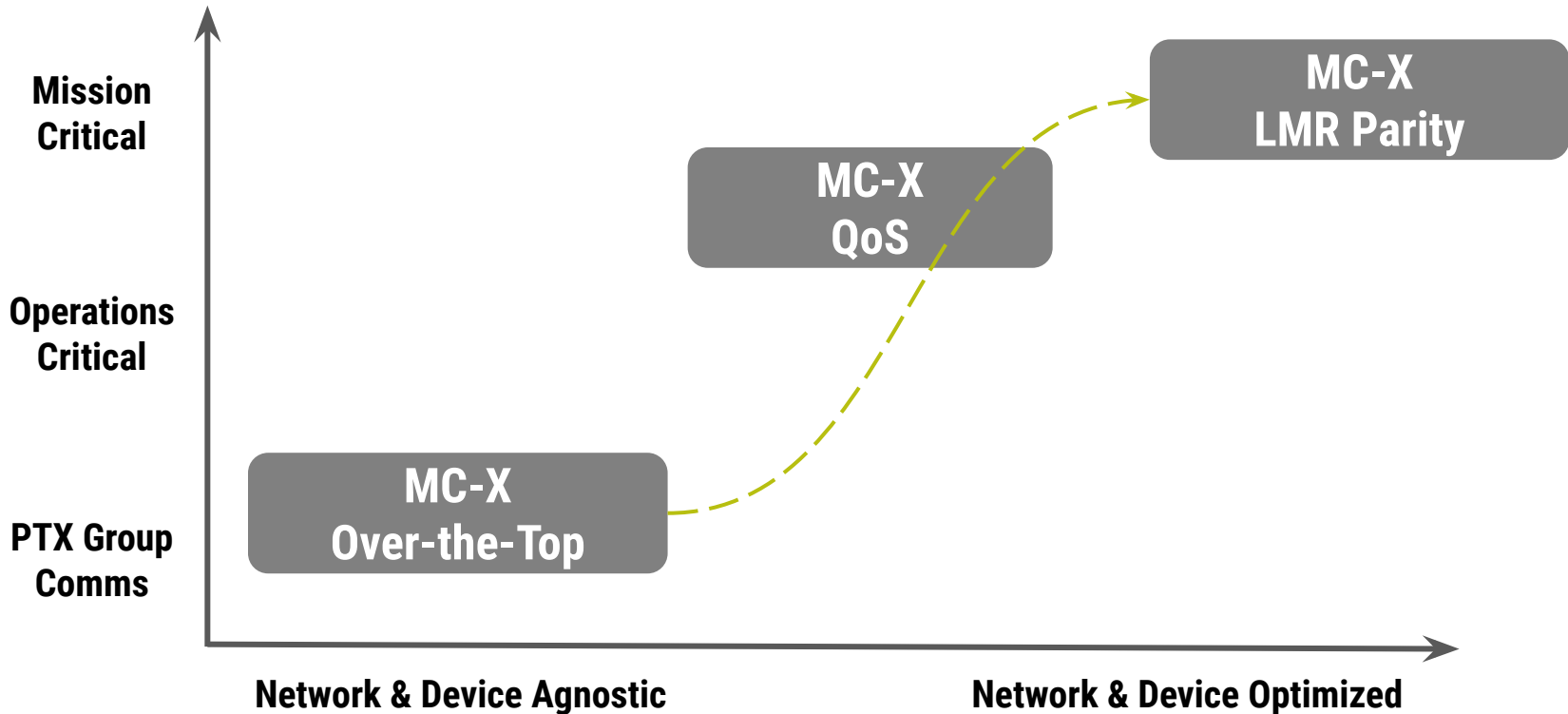
SAFE UTILITIES

Unified by instant, secure and reliable communications



TECHNOLOGY EVOLUTION

MC-X (PTT, Data, Video)



BEARERS

A PRIMER

QCIs (QoS Class Identifier)

- ❑ Non Guaranteed Bit Rate (nGBR) OR Guaranteed Bit Rate (GBR)
- ❑ Scheduling Priority, Packet Delay Budget, Packet Error Budget

QCI-1 VoLTE Voice

QCI-65 MCPTT Voice

QCI-67 MCVideo

GBR,
Priority 0.75, 75 ms latency

QCI-5 IMS Signaling

QCI-69 MC-X Signaling

QCI-9 Typical Default

Non GBR,
Priority 9, 300 ms latency

ARP (Allocation & Retention Priority) determines whether a bearer will be admitted or retained in a congested network

PCI (Pre-emption Capability Information) determines whether a bearer can pre-empt a lower priority bearer (on admission)

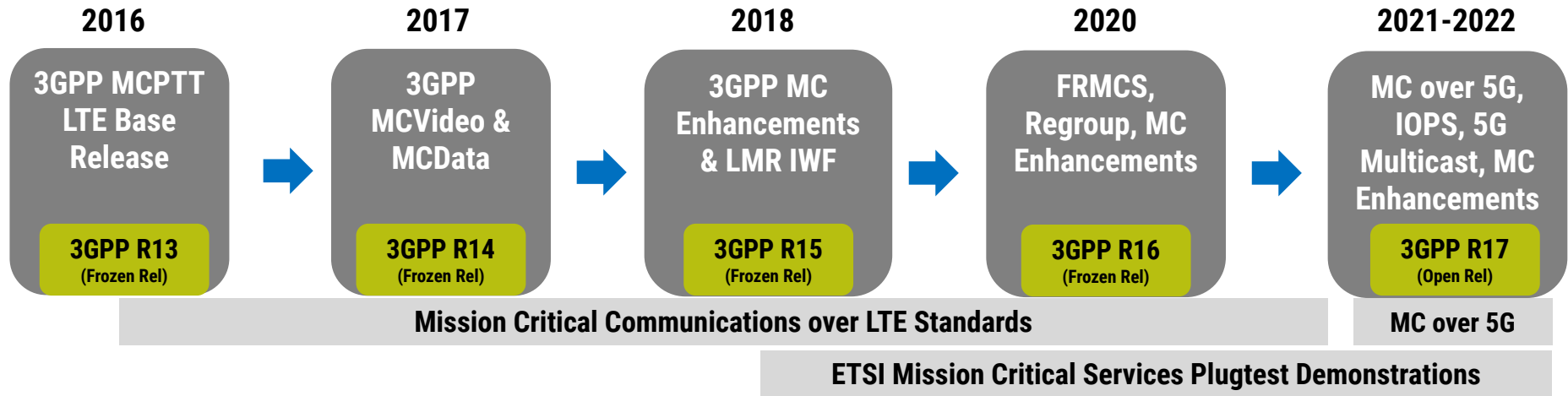
PVI (Pre-emption Vulnerability Information) determines whether a bearer can be pre-empted by a higher priority bearer

TMGI (Temporary Mobile Group Identifier) or “Broadcast GBRs” (1 Bearer for many Devices).



3GPP MC-X STANDARDS

EVOLUTION & ADOPTION



3GPP STANDARDS COMPLIANCE CHECK

POWERFUL ALONE. GAME CHANGING TOGETHER.



STAGE 1

The Value

What is the set of features and functionality available to users?
Consider all services: MC-PTT, MC-Video, MC-Data & Security



STAGE 2

The Architecture

Does the MC-X system interwork with other entities over standards compliant interfaces (e.g. IMS, operator network)?



STAGE 3

The Protocol Bits & Bytes

Can 3rd party components plug & play with the MC-X system (e.g. 3rd party Client, Dispatch, Identity Management, etc)?



CRITICAL CONNECT

THE INTEROPERABILITY HUB

Critical Connect is MSI's Best-in-class solution for

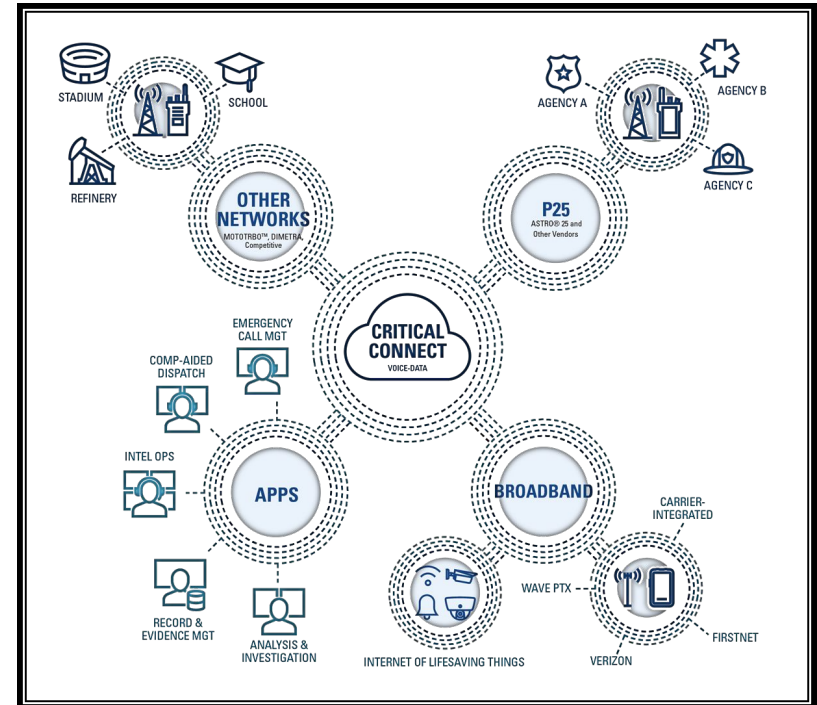
- ❑ LMR-LMR Interoperability
- ❑ LMR-Broadband Interoperability
- ❑ Hub & Spoke Model (1-N interop, multi-system patches)

Critical Connect is MSI's IWF

- ❑ ISSI to MSI ASTRO, 3rd party P25 (**P25 CAP Certified**)
- ❑ Native interfaces to MSI Systems
- ❑ Donor Radio to other 3rd party systems

Exceptional value, tiered offering

- ❑ PTT Voice
- ❑ Data services
- ❑ API Ecosystem

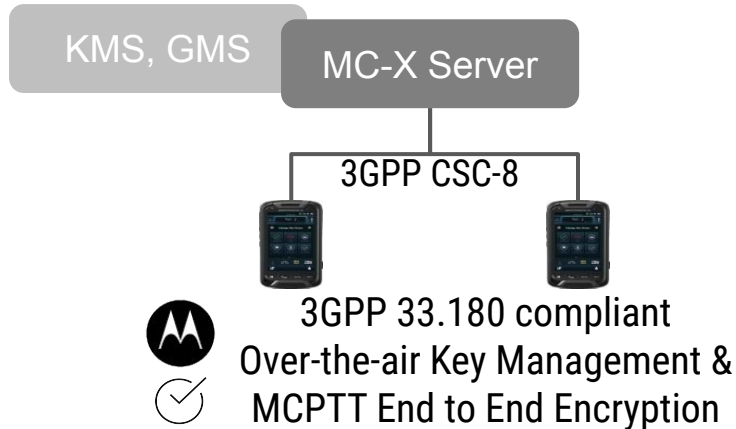


MC-X Security

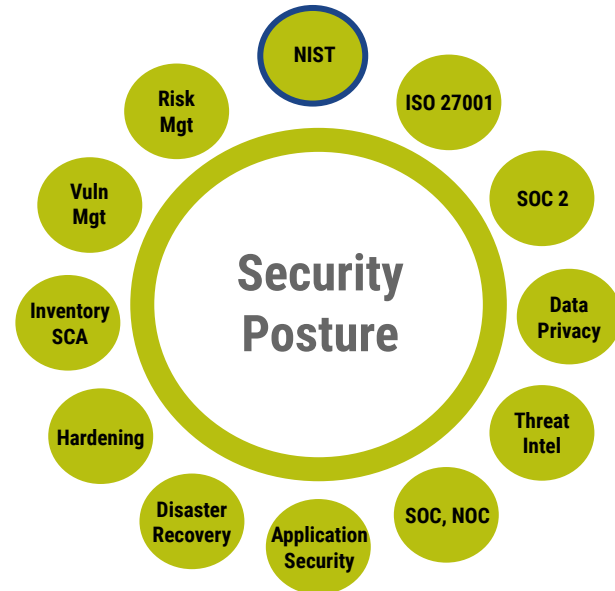
3GPP 33.180 & Cybersecurity Posture

3GPP 33.180

- ❑ MC-X Application Layer Encryption
- ❑ MIKEY SAKKE IBE for Key Distribution
- ❑ Key Usage for end to end encryption
- ❑ Control for Groups, No Control for 1-1



Important Security Considerations



OUR PROMISE

WE HELP PEOPLE BE
THEIR BEST
IN THE MOMENTS THAT MATTER





THANK YOU

**FOR CREATING
SAFER UTILITIES
&
COMMUNITIES**

