

NEXT GENERATION CRITICAL INFRASTRUCTURE

SMART – SECURE - RESILIENT

NEXT GENERATION EMERGENCY
COMMUNICATIONS SAFETY

Cybersecurity

AN UNAVOIDABLE
IMPERATIVE

Risk Mitigation

CIRI | CRITICAL INFRASTRUCTURE
RESILIENCE INSTITUTE
A DEPARTMENT OF HOMELAND SECURITY CENTER OF EXCELLENCE



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NEXT GENERATION EMERGENCY COMMUNICATIONS SAFETY AN UNAVOIDABLE IMPERATIVE

EMERGENCY COMMUNICATIONS FOR CITIZEN SAFETY

- 911 System (ECC/PSAPs)
- Wireless Emergency Alerts System (WEA)
- Telecommunications Supply Chain (TSC)

NEXT GENERATION THREATS ARE PRESENT TODAY

- 911: Analog to Digital + IoT+ Cloud/Internet
- WEA: 3/4G to 5G + Cloud/Internet
- TSC: Supply, Ownership, Hardware, Software, Services

NEXT-GENERATION TECHNOLOGY ADOPTION PRESENTS SUBSTANTIAL LEVELS OF THREAT

Today

- Analog
- Digital
- Internet (Global)
- IoT (Hundreds of Millions)
- Cloud
- Wireline + Fiber + 4G
- Programmable Radio
- Emerging AI, ML and NLP



Next Generation

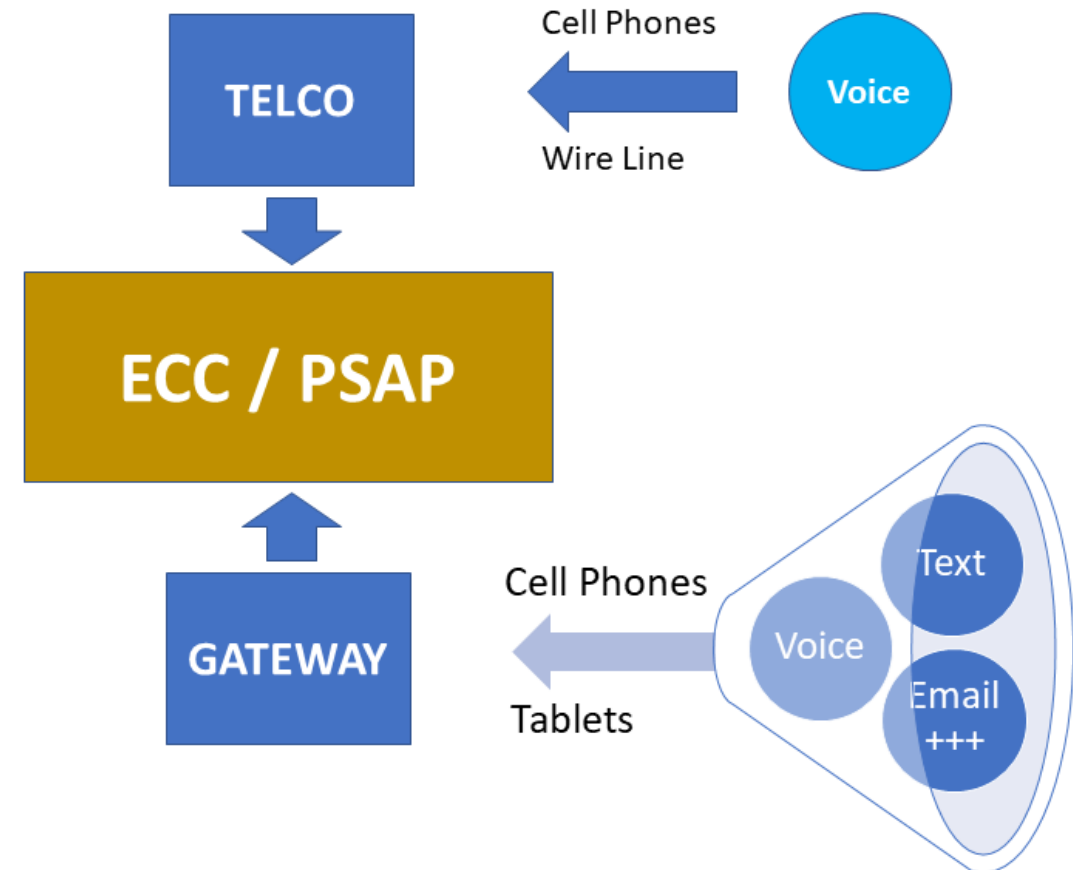
- Hybrid
- Digital + Quantum
- Internet (Global + Country)
- IoT (Billions and Billions)
- Hybrid (Storm) Clouds
- Fiber + 4G + 5G + Satellite
- Ubiquitous Software Defined Radio's
- Advanced AI, ML, NLP and Quantum

IN TRANSITION – THE HYBRID ECC / PSAP

MOVING TO NEXT GENERATION ARCHITECTURE

EXPANSION OF THREAT SURFACE WITH ANALOG VOICE + INTERNET VOIP + IOT

- Analog Voice ECC / PSAP has vulnerabilities
- VoIP with internet access with evolving media significantly increases risk mitigation challenge

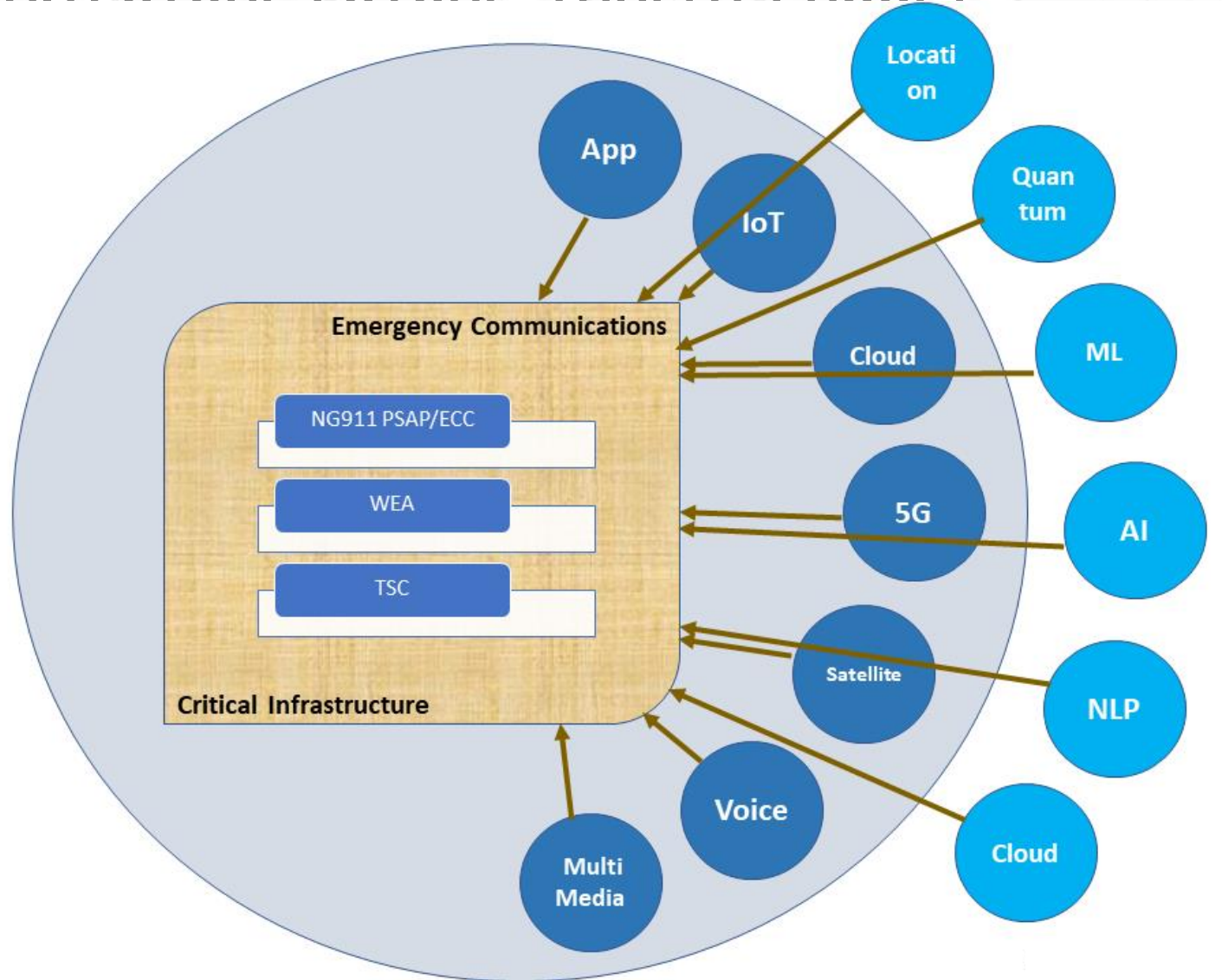
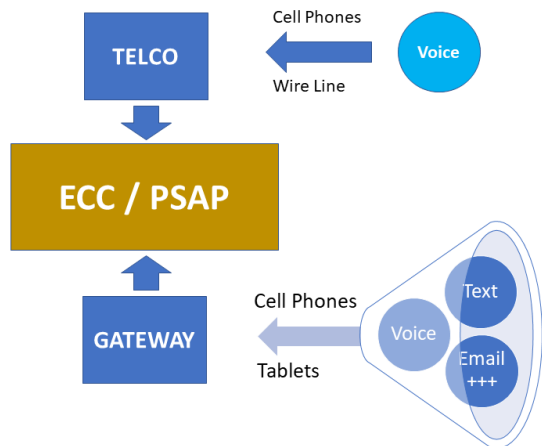


A GEOMETRICALLY EXPANDING THREAT SURFACE

IS THE ECC IMPLEMENTATION ARCHITECTURE FUTURE-THREAT PROOF?

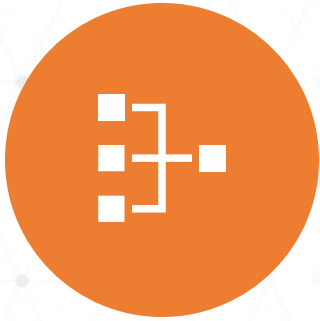
RISK MITIGATION FOR CITIZEN SAFETY IS NON-TRIVIAL

- The integrated threat for NG911 + WEA + TSC is real
- Receiving high-integrity actionable communication from a multitude of technologies and communication channels is non-trivial

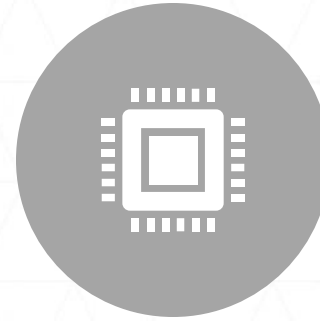


FUTURE RESEARCH REQUIRES AN AGGRESSIVE AGENDA

A RUNNING START



Understanding the complex vectors of a simultaneous, integrated, multi-faceted 911 + EMA + TSC attack



The role of a cross-system-wide architecture in Risk Mitigation of interconnected, interdependent Emergency Communication Systems Cyber Resilience

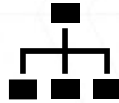


The Stormy Cloud Threat – Understanding and mitigating risk from global internet clouds that power a multi-channel multi-model communication threat to ECC / PSAPs



A lot more to be done...

THANK YOU



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