AI & Mission-Critical Communication Systems

The current trends, complexities, applications, and evolving opportunity

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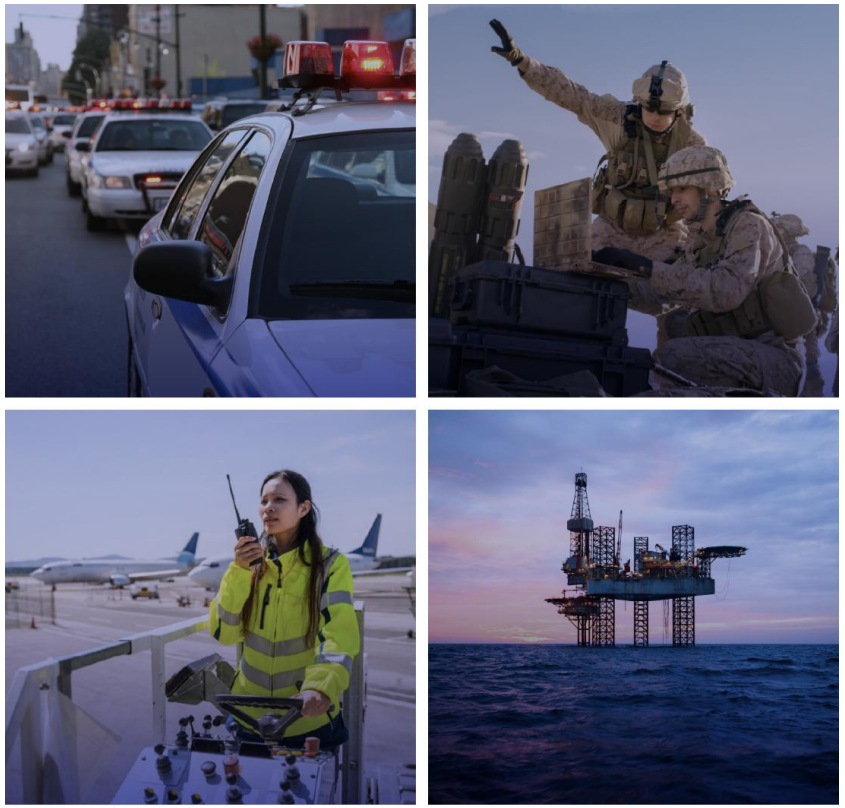
Topics to cover today…

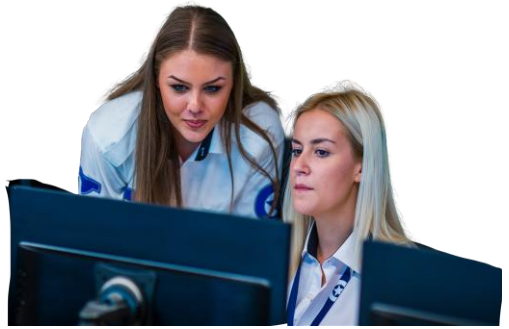
- Defining ‘AI’ and its relevance to Mission-Critical Communication Systems (MCCS)
- Related market trends and early AI adoptions
- Technical and Operational complexities
- User perception and feedback to-date
- Public Safety AI platforms: Evolution and Key drivers
- Our evolving journey with AI so far
- Leading AI features and solution sets
- What’s next and the future of AI in Public Safety



Re-thinking our approach to MCCS

The glaring questions…

- What if agency staff could **resolve critical incidents** before they are escalated **within minutes**, as compared to hours or days?
- What if **collaboration between agencies** didn't require replicating data, but could be shared **seamlessly and securely in seconds**?
- What if **adopting an AI capability** didn't mean rebuilding workflows from scratch or needing to creating new infra-structure?
- What if you could **solve resourcing/scheduling issues** whist **empowering front-line staff** and **improving productivity** at the same time?
- What if you could **scale up day-to-day CONOPS** and **improve productivity** whilst also **making a positive impact on Staff Wellness?**
- Are you leveraging technology to **ease staffing burdens**?



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Why do we need to adopt AI in MCCS?

- Legacy voice & data systems are fragmented and operate in siloes – Dispatchers, first responders and analysts need to rely on independent systems simultaneously.
  - ML & AI have reduced MTTR from hours to a few minutes reclaiming 64% of full-time security employees' hours to assign to other strategic initiatives at the largest port in S.E Asia. [1]
- To enable transition from rule-based automation to predictive and prescriptive analytics.
  - Up to 4 billion events/day have been processed in the EU using AI without compromising control or security for Border control. [2]
- AI assisted intelligence, real-time monitoring, anomaly detection and decision-making support is already available at edge connections/end points.
  - Up to 60,000 simultaneous end points has been implemented by a UK based financial institution in 2024. [3]

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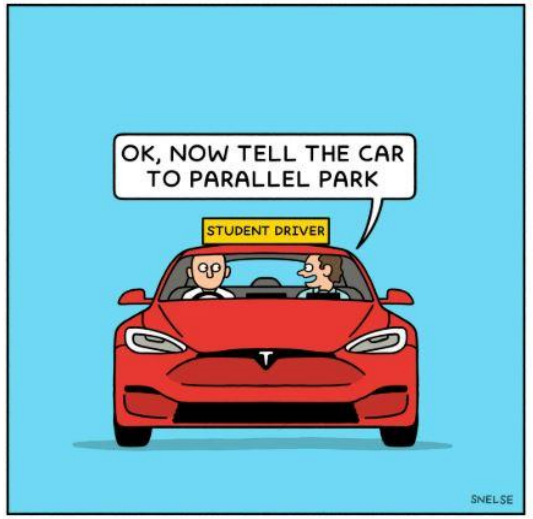
Why do we need to adopt AI in MCCS?

- Communication systems that were never designed to talk to one-another must now inter-operate.
  - Up to 70% reduction in incident response times and 75% fewer false positives has been achieved by NATO threat analysts in 2025 alone. [4]
- Traditional approaches for data movement between agencies introduces risk, delays, privacy and security implications.
  - The largest Navy in the world deals with major data storage and off-load capability inefficiencies (in the Peta-bytes per ship).
- Shift from manual radio selection/paging and dispatch to converged IP & PTT over broadband with video and public safety grade AI is already here.
  - Motorola SVX Body worn cameras with voice, video and AI language translation is a great example.

Key complexities and challenges

- Most common challenges & questions:
  - Will AI **replace** my job?
  - How can I **trust** AI?
  - How does I know if my **personal data** is being stored by AI?
  - Is my data **safe & secure**?
- Data integrity and quality in high-noise, multi-modal environments pose **a constant problem**.
- **Automation bias**, **Operational trust** and Regulatory compliance – the new age unknowns.
- **Network resilience** and **fail-over for AI-powered components** are still being defined.
- Integration with legacy control-room consoles and dispatch systems **are only now transitioning from analogue to IP/VoIP**.
- AI Cyber Security: **Adversarial attacks** and addressing **evolving risks** in addition to general cyber security & network infrastructure requirements need to be continually addressed.
- The question of '**AI hallucination**' for LLMs needs to be solved without AI!
- The risk of **over-reliance on AI** and how to tackle it in these early days.



Early adoptions of AI in related markets

Aviation/ATM

- Automated voice transcription and keyword spotting in ATC communications.
- Real-time anomaly detection on flight-tracker telemetry and comms. Logs.
- AI-based predictive route planning and aircraft movement control.
- AI- supposed sector-based ATC.

Defence

- Data is now as a key strategic asset.
- AI-enhanced situational awareness: Merging Comms, radar and ISR feeds.
- Autonomous prioritisation of radio channels under contested conditions across borders.
- AI based drone control and automated geo tagging
- Automated threat-analysis support.

Transport

- AI-driven traffic-control algorithms in rail and metro control centres
- Major move to update from SCADA systems to AI based automation.
- Voice command recognition for maintenance crew dispatching on rail lines.
- Predictive capacity planning for dispatch frequencies and staffing for 24/7 operations

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Early adoptions of AI in related markets

Intelligence agencies

- Natural-language processing for rapid threat analysis in mission rooms.
- Secure cross-domain cluster search without moving data across LEMF platforms.
- Pattern recognition and automatic correlation for profiling and watch list entries.
- AI powered deep-dive models for LI data enrichment across telco and internet pipes

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Call Centres

- Real-time call sentiment analysis and agent-assist suggestions.
- Automated skills-based routing powered by NLP
- Chatbots with escalation triggers tied into mission-critical voice channels.
- Real-Time and Retrospective Transcription
- Stress level reporting

Mining

- AI enriched data-based predictions for extracting rare earth minerals.
- Edge AI for underground wireless telemetry and personnel tracking
- Automated safety alert generation from voice-activated sensor reports
- Optimization of shift-handover communications via intelligent logging

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User perception & feedback

- Early adopters have reported **improved situational awareness** and **faster response times**.
  - Cutting Quality Assurance check times by 50%.
  - Cutting incident response times by up to 70%
  - Reducing false positives/alert fatigue by up to 75%
  - Freeing analysts to focus on actual mission-critical tasks requiring human intervention.
- Concerns over '**black-box' decision making** in high-stakes incidents still an issue.
- Desire for **seamless human-AI teaming** and clear audit trails is now becoming a bench-mark
- AI is helping **solve the inefficiency of storing and retrieving large data sets** + addressing the long-standing issue of **high data storage and duplication costs**.
- AI is becoming **a force multiplier** in environments constrained by high classification, work force shortages and long training cycles.

82% have already invested or are planning to invest in GenAI

81% recognise AI is key for smarter, faster, and more productive operations

68% prioritise investing in data analytics and science tools to address data challenges

A recent Elastic survey of 192 Public Sector leaders who have adopted AI in their organisations for 12 months. [5]

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AI Platform for Public Safety

- **Distributed** and **Unified** AI orchestration for Police, Fire, and EMS dispatch.
- Dynamic resource allocation: **Predictive deployment** of units based on **historic incident patterns.**
- Multi-agency **data fusion**: 911 calls, CCTV, IoT sensors, social media feeds
- **Real-time speech-to-text transcription** in multiple languages with word and phrase Spotting
- **Predictive incident clustering** and hotspot forecasting through **historical mining**.
- Advanced call-taker coaching through **sentiment** and **compliance** checks.
- Automate processes, optimize resources and **make every team member count!**

- Telecommunicator Stress Level Reporting
- Call Type Reporting and Trending

- Automated Evaluations
- Real-Time Call Scoring
- Call Summarization
- CAD Data Entry Validation
- Preloaded APCO and NENA Evaluation Forms
- Custom Form Options

- Contextual Search
- Quickly Read Summaries and Key Call Points
- Voice-Enabled Search *(quickly locate recordings using voice commands)*

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Our AI adoption and journey to-date:

- Our core belief: AI should be **developed responsibly**, grounded in **research-based practice** and guided by a simple rule: **Do no harm**.
- Our mission: Enabling agencies to **adopt cloud-based AI** capabilities **without overhauling** their **existing infrastructure**.
- Investment in our **own AI language model** trained specifically on **Mission-critical & Public Safety data sets**.
  - 98-99% accuracy required at minimum for V&V before releases.
- Provide agencies a **centralized source of truth**: a single clearinghouse for **operational data**, **human interactions** and **actionable insights**.
- Ultimately provide humans with **real-time evidence** and **actionable intelligence** – We put the **human at the centre of AI**.

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- Automated QA/QM
- Trained on Public Safety Data
- Find It Faster
- Advanced Data Analytics
- Stress Level Reporting

QA/QM Assistant

Supervisor Assistant

Research Assistant

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Evolving opportunity and next steps

- **Establish AI-readiness assessments** for existing control rooms.
- **Pilot AI use cases** in non-critical operations before full-scale rollout to MCCS.
- **Invest** in operator training, ethical AI governance and continuous monitoring.
- Forge **cross-industry partnerships** to share **best practices** and standardise across the board where possible.
- Participate in Smart-city rollouts, 5G mission-critical trials in key markets with **AI adoptions**.
- **Integrating AI** as a **sub-system** with regional MCPTT, TETRA, and LMR networks.
- **Collaborations** with telcos, government emergency agencies, and system integrators.

AI-based Quality Assurance Evaluation - Video

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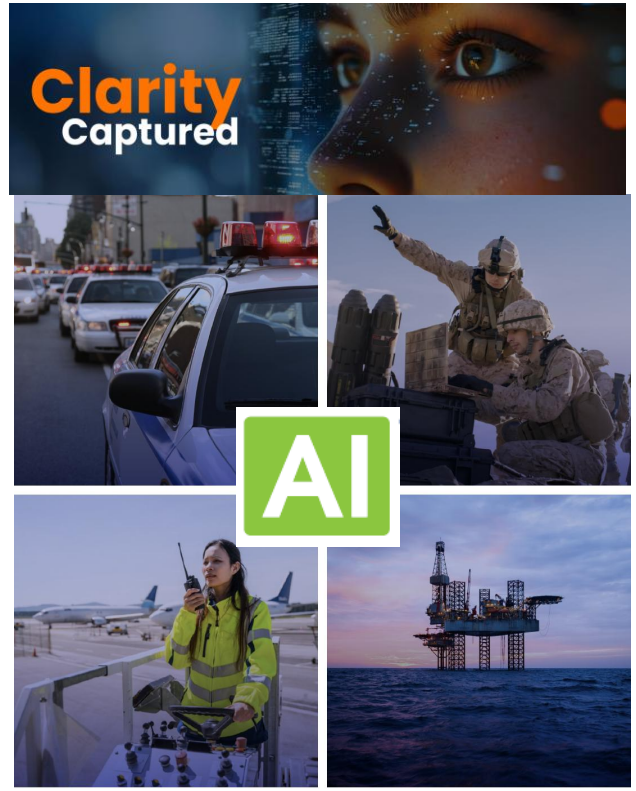
Closing remarks

- AI is a **force multiplier** transforming historical and every-day data into **actionable intelligence** reducing **response times drastically.**
- AI will **transform mission-critical communication systems** from reactive to **predictive and pro-active** modes of operation.
- AI in MCCS should be used **to augment** control room and first responder capabilities and **not replace them**.
- Constantly addressing data quality, integrity, trust, security, and human factors with AI will be **baseline of the future**.
- By leveraging the power of AI, mission-critical communications systems will become more efficient, reliable and responsive at an **exponential rate.**
- Ultimately **transforming public safety** and **emergency response** for the next few decades and it will keep **getting better and faster** along the way**.**
- Human decision-makers **must always retain oversight and control** over mission-critical systems.

Because…



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Q & A

Autopilot 1.0 was invented

in 1914….

…Autopilot 2.0 in 2025 is now called **Artificial Intelligence**!

Thank you for your time.

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