



INDUSTRY VISION AND EXPECTATIONS OF AI IN THE CONTROL ROOM

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A NEW FUTURE FOR CRITICAL CONTROL ROOMS

Inspiring excellence in mission critical
services through global networking



Challenges facing critical control rooms

- Changing citizen expectations
 - *outdated processes*
- Keeping up with the requirements of the business
- Rapidly changing technology
 - *social media*
 - *situational awareness*
 - *Mobility*
- Changing operational imperatives
 - *Safe Cities*
 - *Collaboration*
- Cost of provision
- Stagnation
- Poor performance
- Staffing issues
 - *high turnover*
 - *low morale*
- How to tap into and examine new working practices and ideas

Factors affecting the control room environment

- Politics – external and internal
- Culture – external and internal
- Funding / Affordability
- Ownership
- Citizen demand and expectation
- Policing/operational models (insert your own theme here)
- Legal and contracts
- Procurement regulations
- Standards (i.e. Incident recording, e-Call, NG112)
- Supplier relationships
- Mobile technologies
- Command and Control techniques and supporting technologies
- Process in/efficiency
- Staff (control room and field based)
- Training
- Interoperability
- Collaboration
- Environmental
- Performance measurement

What is ICCRA?

The International Critical Control Rooms Alliance brings together critical control room professionals in order to help deliver excellent mission critical services.

Our Vision

ICCRA will drive the concepts of constant evolution and share best practice in **critical control rooms across a range of sectors**, driving excellence in mission critical service delivery.

The Alliance will become the leading global organisation representing the interests of critical control rooms across multiple sectors.

Target Members

ICCRA members are drawn from all critical control room interest areas:

- Critical National Infrastructure business, operational and finance leads
- Critical Control Room directors
- Critical Control Room managers
- Critical Control Room users
- Industry partners and specialists in many areas including:
 - HR
 - Environmental
 - Ergonomic
 - Citizen contact
 - Social media
 - Business strategic
 - Dispatch comms
 - System Integrators and control room software and hardware providers



ICCRA links critical control rooms professionals across sectors to create shared learning opportunities.

- **Public Safety/Emergency Services**
- **Airports and Airlines**
- **Utilities**
- **Banks**
- **Transportation Service Providers (buses, trains, metro)**
- **Maritime and Coastguard Agencies**
- **Border Protection Agencies**
- **Highways and Road Agencies**
- **Ports Management.**

Our Membership Proposition

We provide members with the opportunity to network and learn, providing environments for international collaboration and discussion, and influencing the wider critical control room stakeholder community.

We will:

- **S**upport
- **P**ersuade/lobby
- **I**nspire
- **N**otify /inform
- **E**ducate

through a broad range of services and events:

- Web presence
- Events
- Conference
- Webinars
- International Critical Control Rooms Week
- Annual Survey



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Operational challenges

The AI response

What is it doing?

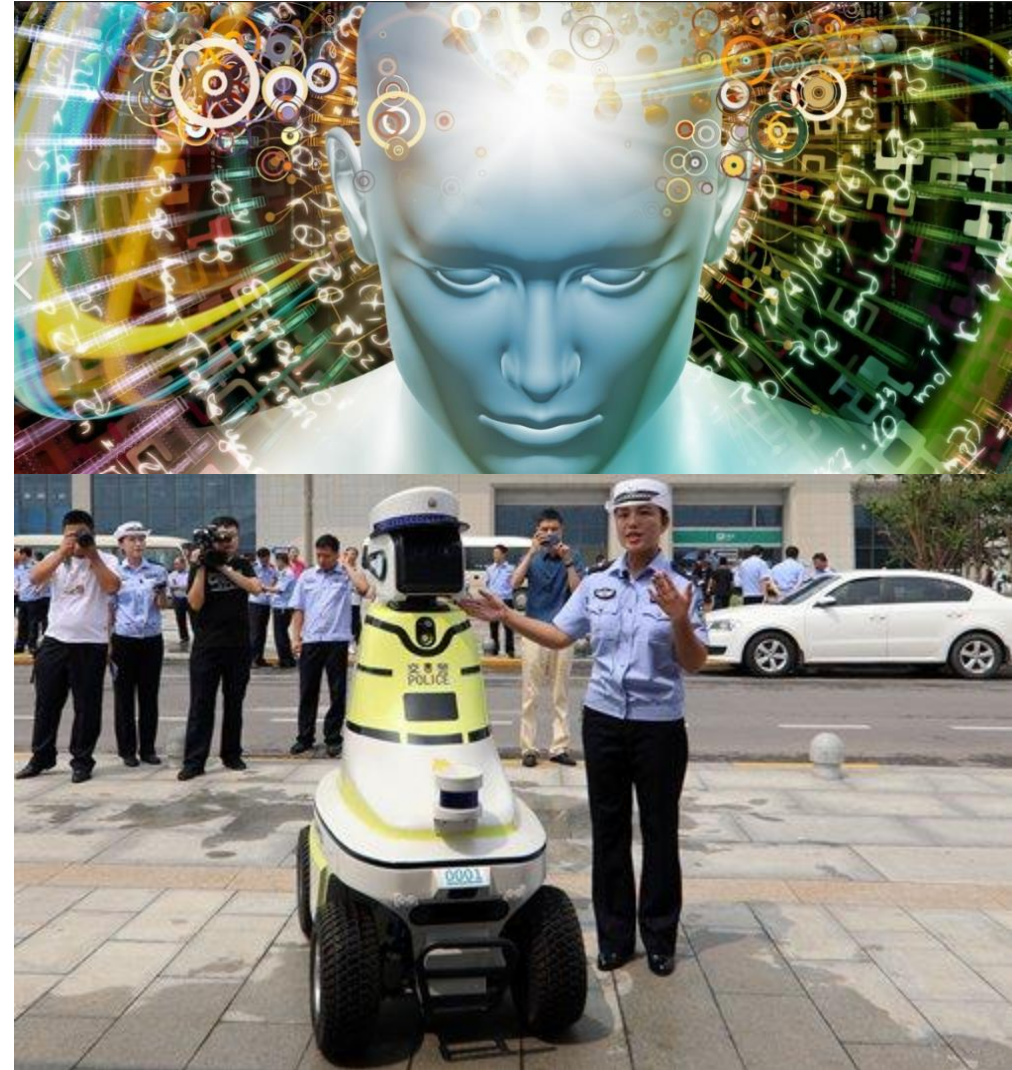
How is it doing it?

Benefits of AI

Challenges of AI

Operational challenges which may benefit from the introduction of AI in control rooms

- Employee safety
- Drive for safer communities
- CCR Work volume
- CCR Data volume
- Knowledge loss at shift HO/TO
- Harder to maintain situational awareness in larger centres
- Consistency of decision making and outcomes
- Forecasting
- Staff well being
- Transparency and trust in the service (evidence)



The AI Response

- Definition. The US National Institute of Justice describes AI as a machine's ability to independently perceive and respond to tasks that would typically require human intelligence and decision-making.
- The adoption of AI and ML in critical control rooms is irresistible as organisations strive for a digital transformation dividend
- Today, the provision of additional relevant and real-time information to inform decision making
- Tomorrow, the provision of data and auto execution of decisions?
 - Some already doing this (automobile clubs using auto dispatch to incidents)



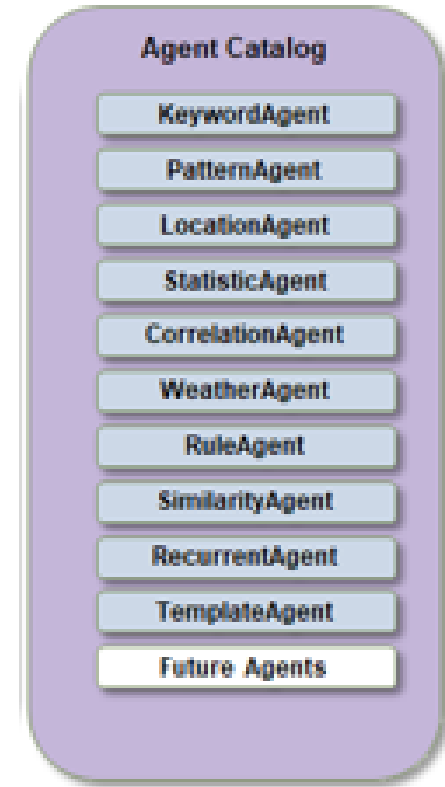
What is AI doing?

- Detecting complex emergencies sooner by analysis of:
 - ANPR
 - Facial recognition
 - Intrusion alert
 - Access control
 - Sensors
 - Network equipment
 - Drones
 - Social media
- Diagnostic analytics – post event review
- Descriptive analytics – historical data providing “Association” intelligence
- Predictive analytics – suggest “what is likely” statements (defect prediction?)
- Prescriptive analytics – define “What if” scenarios (optimisation activities?)
- Use of robots to do mundane or dangerous tasks, can be interactive with the citizen
- Transcribing audio and video, blocking unwanted emails, preventing banking fraud, diagnosing medical conditions
- Quickly and accurately identifying potential suspects, suspect vehicles, unsafe incident scenes, or suspicious items
- Digital twins



How is AI working today? The role of Agents (1/2)

- AI-enabled solutions support continual, autonomous assessment that is more efficient, effective, and scalable than manual monitoring of video, alarms, sensors and common operating pictures alone
- The **Keyword Agent** unlocks extensive and valuable intelligence held in incident remarks and metadata. It monitors incident feeds and alerts users when specific keywords occur in real-time operations
- The **Location Agent** monitors all incoming (new) events in real time for a defined geographic area. The ability to flag new and previous events within a specified radius of the event location provides valuable information when locations of interest (such as special events, high-crime areas, or high-profile buildings) are under surveillance.
- The **Recurrency Agent** monitors incoming (new) events in real time to determine if the event has occurred in the same (or similar) location and/or at the same frequency.
- the **Rule Agent** to define ad-hoc notifications using any of the operational variables that Smart Advisor monitors. For example, you can create a mission for the rule agent to send a notification if two incidents of arson occur within a one-hour period.





How is AI working today? The role of Agents (2/2)

- The **Similarity Agent** monitors new incoming events in real time, comparing them with previous events (including supplemental information) to determine if the event is similar or related to others
- The **Statistic Agent** automatically monitors and tracks a single operational variable over time (a training period) to detect outliers and anomalies automatically
- The **Weather Agent** monitors publicly available web services, such as NOAA and OpenWeatherMap, in real time for extreme weather conditions. The Weather Agent notification includes weather information, observations, and forecasts for specific periods of time.
- The **Pattern Agent** assesses real-time operational data against user-defined expressions and sends notifications when it detects patterns. Patterns can include phone numbers, Social Security numbers, emails, hash tags, and license plate information.
- The Pattern Agent notification includes the following information:
 - Incident number
 - Pattern detected
 - Contextual occurrence of the pattern (with surrounding text)
 - A user-defined recommended action
 - Additionally, the incident location can be shown on the map

Benefits of AI in critical control rooms

- Provides richer, actionable insights that would otherwise go unseen
- Improves operational safety
- Can provide more consistent outcomes
- Bring efficiency through streamlined workflows
- Improve forecasting via evidence-based insights into trends, in turn promoting more efficient operations
- Awareness through the discovery of patterns, similarities, and linked incidents
- Worker well-being:
 - Mundane task automation
 - Reduced workload
 - Wearables reporting vital signs
 - Better outcomes improve job satisfaction
- Transparency: Surveillance and data collection methods (e.g., facial and license plate recognition, sonar-based imaging) promote opportunities to build public trust and improve accountability
- Feedback: Operational data provides insights into where process improvements can be made
- Build safer, smarter communities



Benefits of AI in critical control rooms (2/2)

- Earlier warnings – risk control
- Faster troubleshooting
- Easier collaboration
- Fewer trips

But it's not all good news....

- Additional computing power costs
- Organisations must prepare their data sources for AI
- Trust in the outcome by the user and the wider stakeholders
- Knowledge deficit
 - Capabilities to develop sound AI strategy
 - Skills shortage for programming etc.
- Governance and privacy concerns
 - Data protection. Vulnerability to attack and/or contravention of GDPR rules
 - Bias. Concerns about the risk of predictive policing systems exhibiting racially biased outcomes as a result of being trained on historic crime data that reflects racial discrimination.
 - Risk that police algorithms may direct officers to patrol areas that are already disproportionately over-policed, which may further entrench certain kinds of discrimination.

Summary

- Massive amounts of data need to be assessed and analysed to learn in order to prevent reputation damaging incidents occurring
- Staff costs would be prohibitive, and the tasks are mundane if completed by humans
- AI can accomplish many mundane tasks but also many valuable tasks where human error has a propensity to exist
- AI tools and solutions exist today and are being built as intrinsic components of control room solutions
- There is negativity around some aspects but can be addressed with focus, time and money
- The benefits of AI are worth chasing



THANKS....
