BRITISH APCO

Working in Partnership to Improve Public Safety Technology

Artificial Intelligence in Public Safety Round Table

25th September 2024

WELCOME

Duncan Swan, British APCO COO
and
Chris Lucas, British APCO Chair

Key Words Linking AI and Public Safety

1. **Surveillance**
   - Facial Recognition
   - Behavioural Analysis
   - Real-Time Monitoring
   - Crowd Analysis
   - Video Analytics
2. **Predictive Policing**
   - Crime Prediction
   - Hotspot Analysis
   - Pattern Recognition
   - Risk Assessment
3. **Emergency Response**
   - Incident Detection
   - Dispatch Optimization
   - Resource Allocation
   - Disaster Management
   - First Responder Support
4. **Cybersecurity**
   - Threat Detection
   - Intrusion Prevention
   - Anomaly Detection
   - Fraud Detection
   - Data Breach Prevention
5. **Healthcare and Public Health**
   - Disease Surveillance
   - Pandemic Prediction
   - Health Monitoring
   - Emergency Medical Services
   - AI-Driven Diagnostics
6. **Communication and Coordination**
   - AI-Powered Dispatch Systems
   - Emergency Communication Systems
   - Real-Time Data Sharing
   - Coordination of Multi-Agency Responses
7. **Ethical Considerations**
   - Privacy Concerns
   - Bias in AI
   - Transparency
   - Accountability
   - Legal Frameworks
8. **Public Safety Applications**
   - Smart Cities
   - Drones for Surveillance
   - AI-Enhanced Body Cameras
   - Crowdsourced Safety Reporting
   - Public Safety Robots
9. **Training and Simulation**
   - Virtual Reality for Training
   - AI-Based Simulation Models
   - Scenario Planning
   - Decision Support Systems

AI in action…

- The universal translator is a wonderful device; it is a marvel of engineering. It was created by Hoshi Sato in the 22nd century, and she was an awesome polygot with the knack for understanding alien languages.
- In the fourth episode of Star Trek Discovery Season 2, a virus from an ancient probe corrupts the ship's universal translator, causing it to translate everything into multiple languages….
- https://www.youtube.com/watch?v=lIKppXg0sYw

Aaron Page & Ethan Webb, Actica
Bharesh Patel & Reka Pecsi,
Mason Advisory

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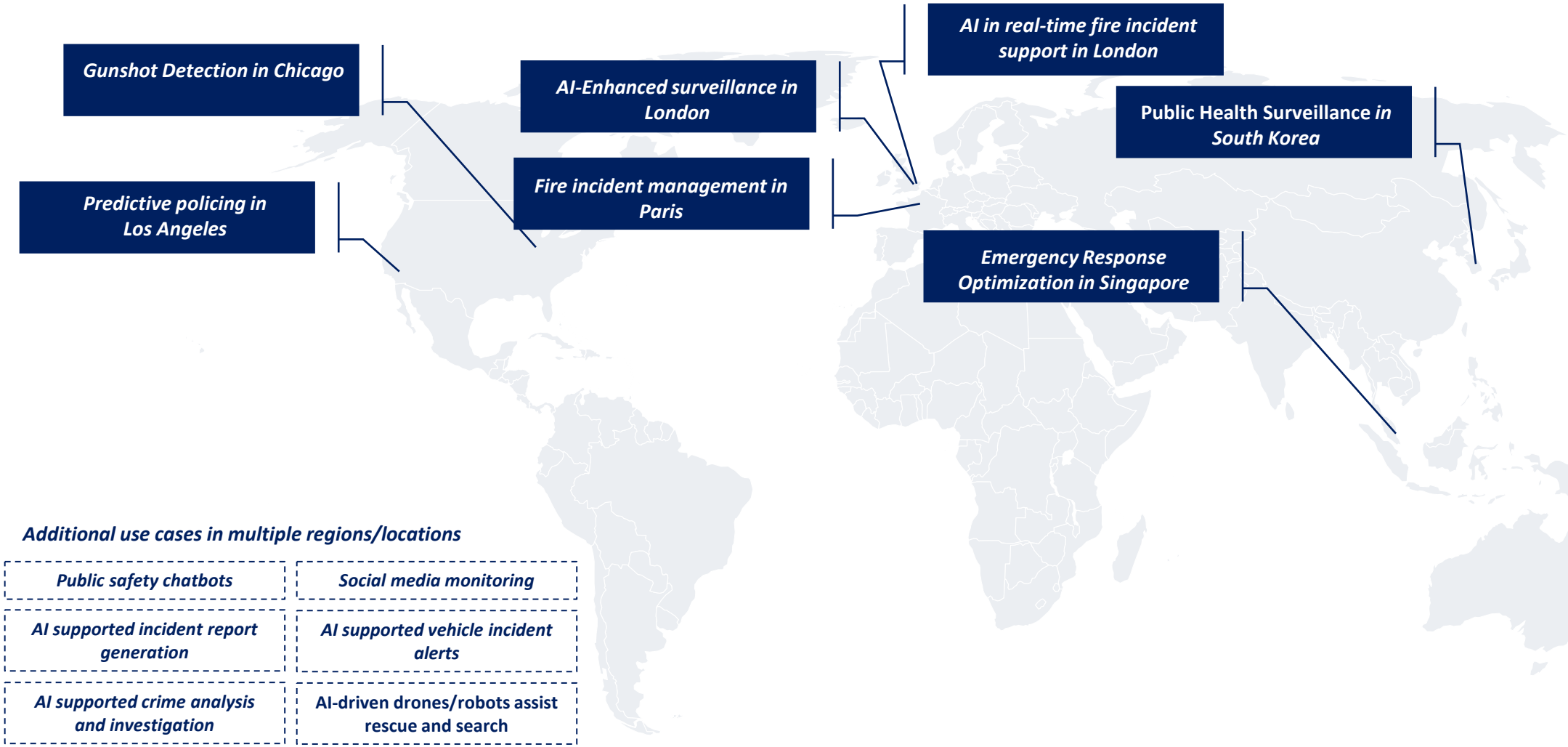
AI in Public Safety Around the World

ACTICA consulting
masonadvisory

These case studies illustrate how AI is being used to enhance public safety through predictive analytics, real-time data processing, and improved resource management, while also highlighting the need for careful consideration of ethical and privacy issues.



Additional use cases in multiple regions/locations

Public safety chatbots	*Social media monitoring*
AI supported incident report generation	*AI supported vehicle incident alerts*
AI supported crime analysis and investigation	AI-driven drones/robots assist rescue and search
Cybersecurity Threat Detection	Smart 911 AI system for call analysis

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AI in Public Safety Around the World

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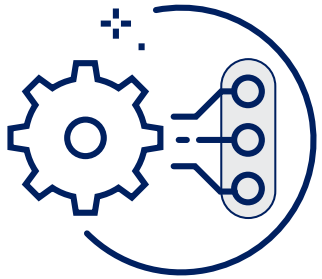
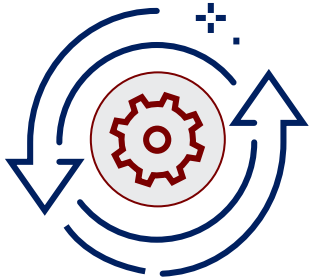


ENHANCED DECISION MAKING

AI provides actionable insights and predictive analytics, enabling better and faster decision-making.

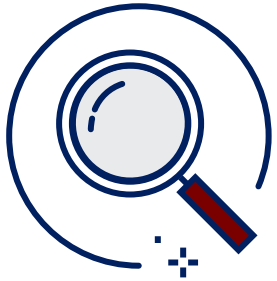
- ***Response Time Improvement**: Reduction in the average time taken to respond to incidents.*
- ***Accuracy of Predictions:** Percentage of accurate predictions for crime hotspots or emergency events.*



INCREASED EFFICIENCY

AI automates routine tasks and optimizes resource allocation, improving overall operational efficiency.

- ***Operational Cost Reduction:** Decrease in costs associated with manual processes and resource management.*
- ***Resource Utilization:** Increase in the effectiveness of resource allocation, measured by the ratio of deployed resources to incidents addressed.*



PROACTIVE PREVENTION

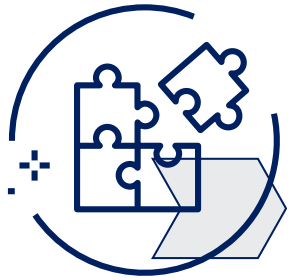
AI enables predictive analysis and early detection of potential threats or risks, allowing for proactive measures.

- ***Incident Reduction Rate:** Percentage decrease in the number of incidents due to predictive interventions.*
- ***Prevention Success Rate:** Ratio of successful preventive actions to the total number of interventions.*

ENHANCED SITUATIONAL AWARENESS

AI processes large volume of data from various sources to provide real-time situational awareness.

- ***Data Integration Speed:** Time taken to integrate and analyse data from multiple sources.*
- ***Situational Awareness Accuracy:** Accuracy of real-time data and insights provided by AI systems.*



OPTIMIZED RESOURCE ALLOCATION

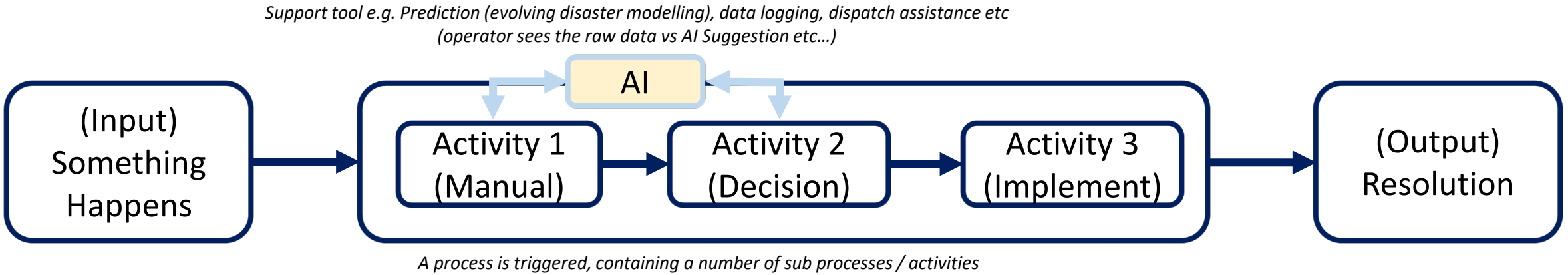
AI optimises the deployment of resources based on real-time needs.

- ***Reduction in Resource Waste:** Reduction in unnecessary resource deployment, such as overstaffing or deploying equipment to non-critical areas.*
- ***Average Response Time Reduction:** Decrease in average response times to emergency calls, as resources are more effectively directed to where they are most needed.*

AI Integration: A Generalisation of a Process

Having seen how AI is being used across the world, to realise a range of benefits we need to spend a moment to consider how AI can be implemented into our Business Processes, Data flows and Operational Procedures.

This is explored by considering a generalised process:



AI-Human Collaboration / AI Assistant Implementation
The aim of the AI is to Augmenting Human capacity, making sure an operator has all necessary information as quickly and readily as possible.

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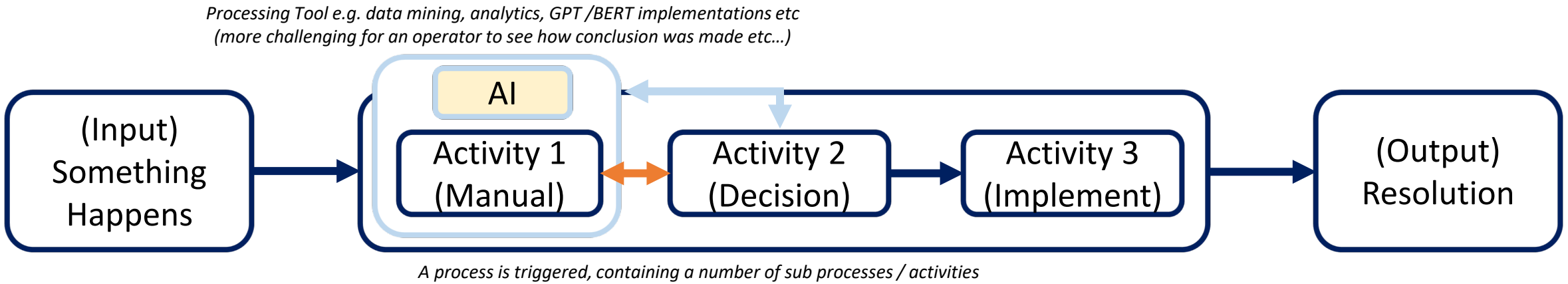

Task Automation Implementation
AI as a processing tool, less human involvement – due to greater time requirements. E.g. data mining, language processing / NLP / chat bot…

AI Integration: A Generalisation of a Process

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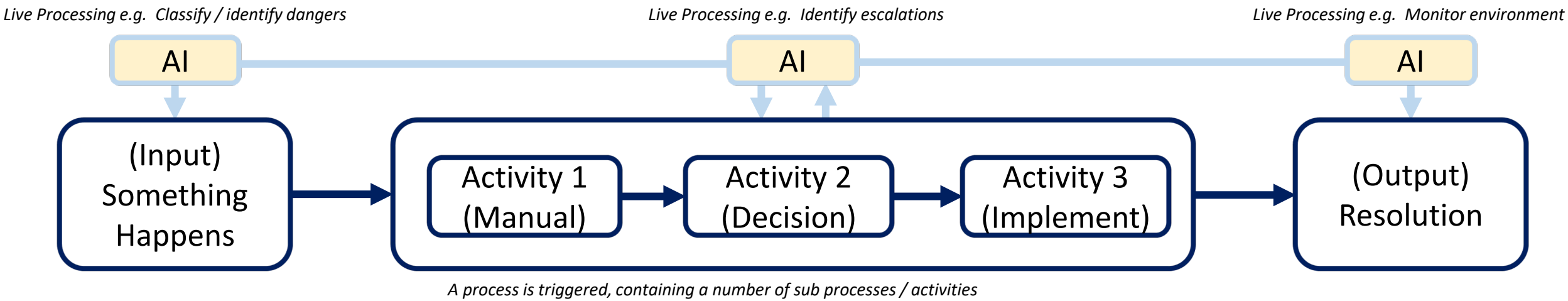

AI Monitoring and Reporting Implementation
AI to mine live data; such as processing live CCTV data to identify weapons, groups or incidents.

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Round table discussions set-up

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Round table discussions will take place in the morning and in the afternoon.
Each table will have the opportunity to discuss all the below topics, each topic will take around 30 minutes.
Our moderators will facilitate the discussions with initial questions.

Topic 1: Maximising AI's Potential: Opportunities in Emergency Response | Ethan Webb

How AI can improve decision-making and inter-agency coordination.

Topic 2: Overcoming Barriers: Technical and Operational Challenges in AI Integration | Reka Pecsi

Understanding the roadblocks to effective AI implementation and adoption.

Topic 3: Addressing Concerns: Tackling Fear and Uncertainty Around AI in the Public Sector | Bharesh Patel

Overcoming reluctance and building confidence in adopting AI in public services.

Topic 4: Looking Ahead: Future Innovations and the Next Frontier of AI in Emergency Services | Dr Aaron Page

Exploring where AI is heading and how to align stakeholders for the future.

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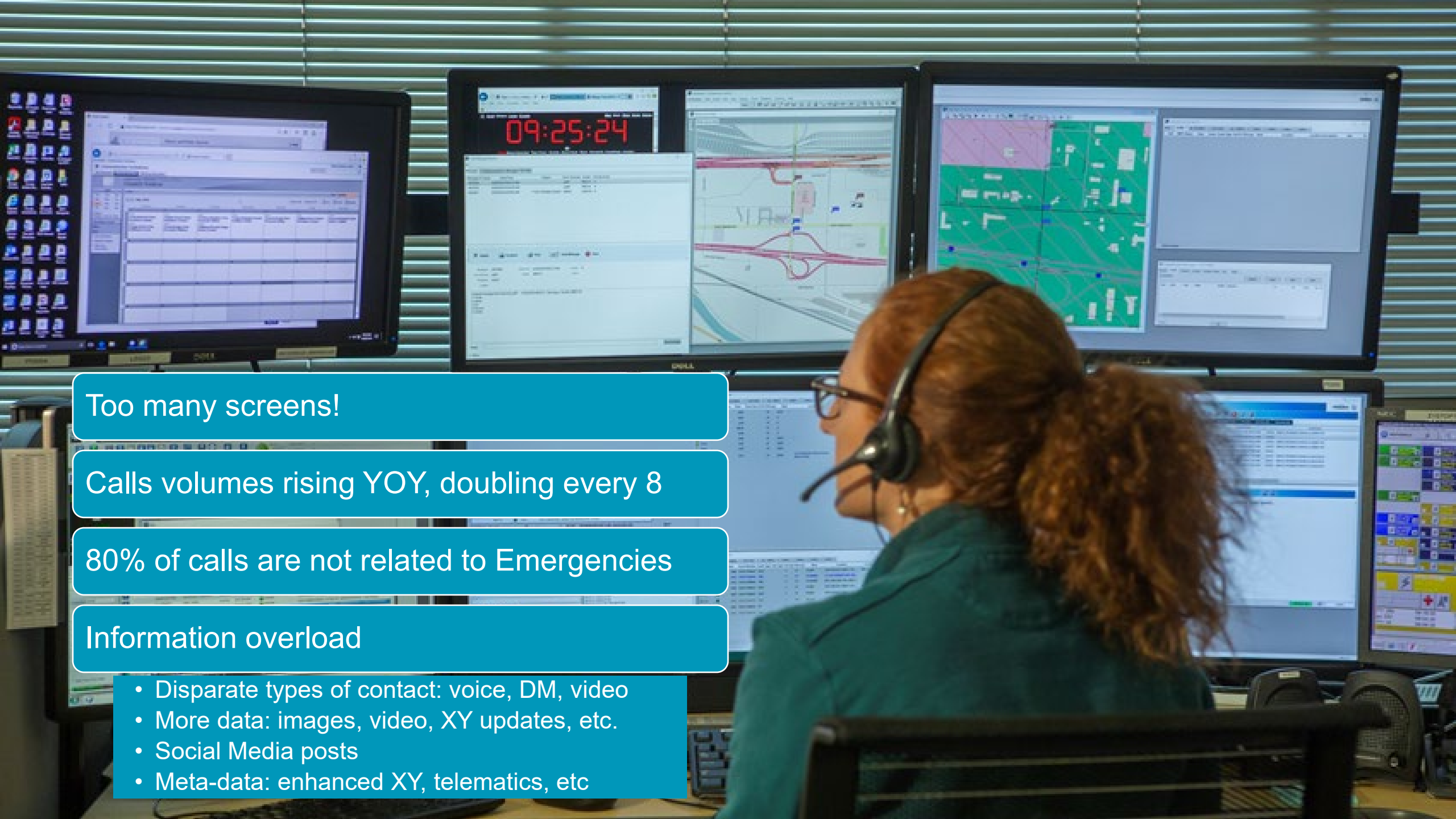
Thank you!

Dr Aaron Page, Ethan Webb, Bharesh Patel, Reka Pecsi

Nick Chorley, Hexagon

Everyone’s talking about “AI”

- Precursor to what we call AI is sometimes traced to the 1950’s with Alan Turing’s Theory of Computation
- AI is now pervasive and older forms of AI are considered “routine technology” as technology evolves
- Popular uses:
  - Search engines (Google, Yahoo)
  - Recommendation engines (Netflix, YouTube)
  - Self-driving cars (Tesla)
  - Virtual assitants (Alexa, Siri)
- Decision makers now have a more open approach to using new capabilities like AI, because they are using it every day in their private lives



Too many screens!

Calls volumes rising YOY, doubling every 8

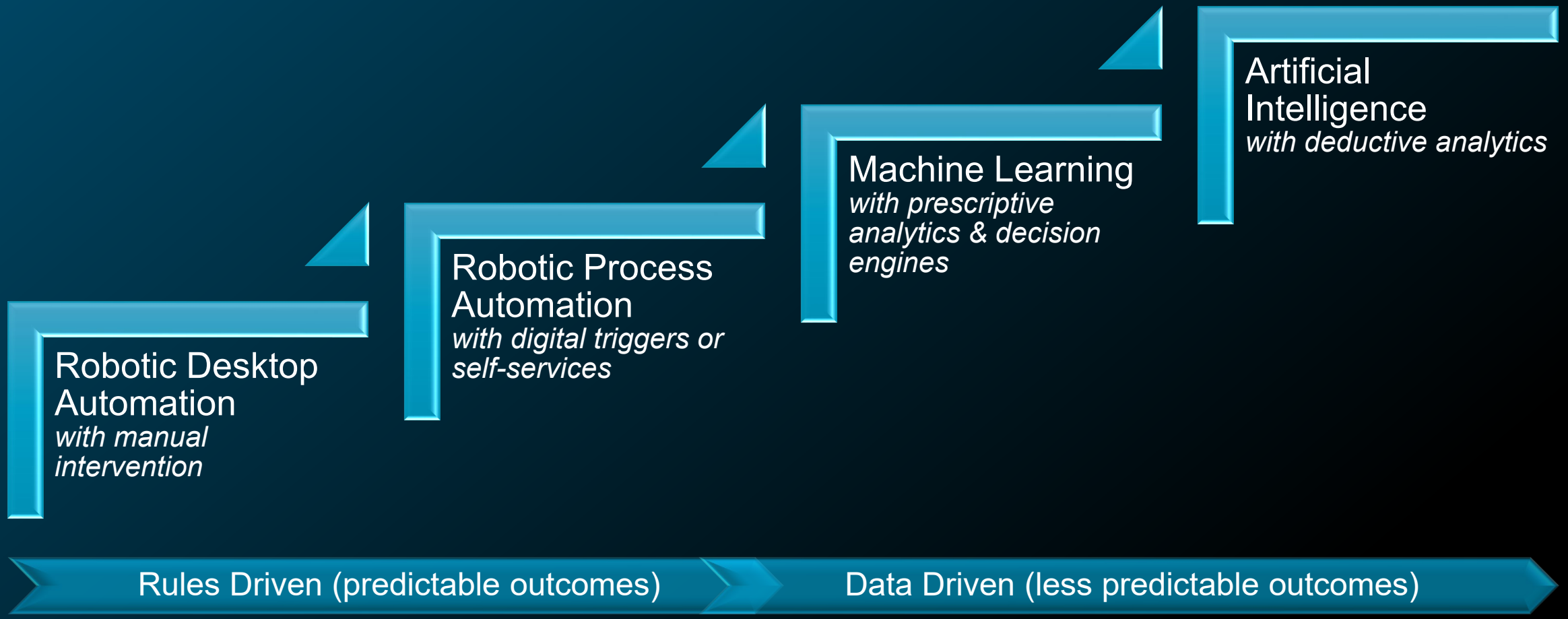
80% of calls are not related to Emergencies

Information overload

- Disparate types of contact: voice, DM, video
- More data: images, video, XY updates, etc.
- Social Media posts
- Meta-data: enhanced XY, telematics, etc

Automation vs. Artificial Intelligence

What sort of automation is appropriate in the control room?



After Siyong Liu, Quora.com

HEXAGON

Why Assistive AI in Public Safety?

Human centred approach to embedding AI in CAD

- Augmenting operator judgement - not replacing it
- Aiding better decisions, amplifying intuition, and buying time

Operational blind spot

- Missing connections and opportunities to reduce impact
- Time lag between data capture and realisation

Pressure to perform

- Help see the wood for the trees – save time
- Be alerted to performance issues and how they could be mitigated

Detecting & acting on connections in “live” events

- Retrieving the historical context into decision making
- Early containment of rapid onset events

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What are we doing at Hexagon?

HEXAGON

HxGN OnCall Dispatch | Smart Advisor

What?

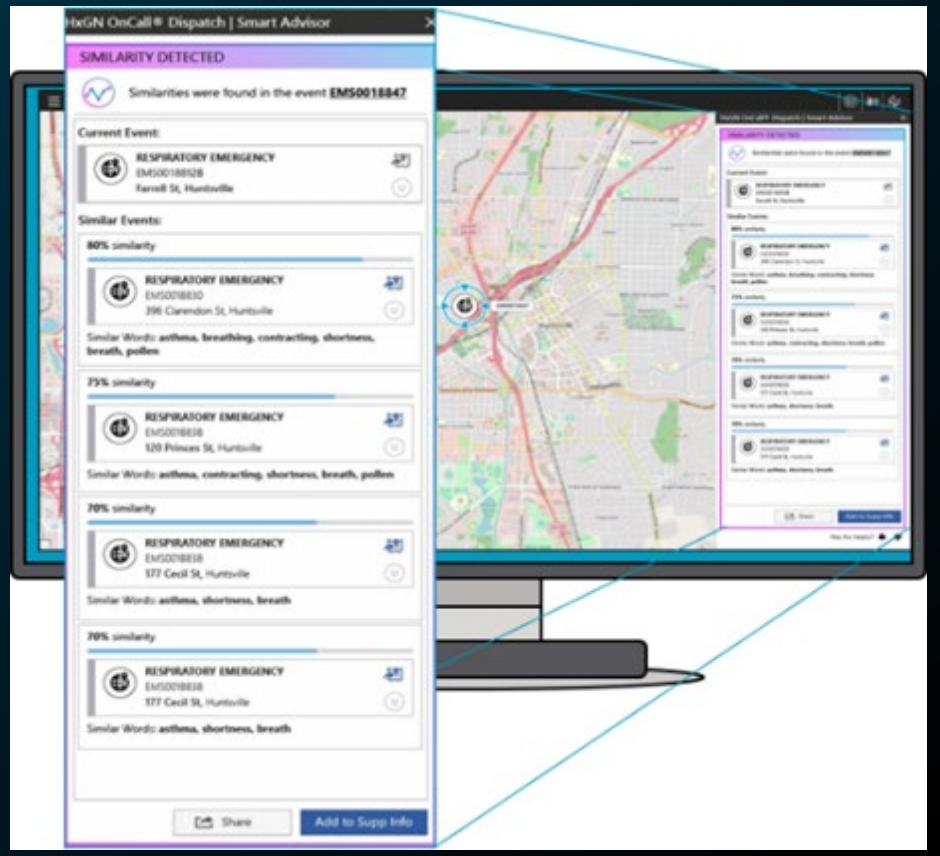
- First assistive AI embedded within C&C software to help Public Safety staff detect and respond to complex emergencies sooner

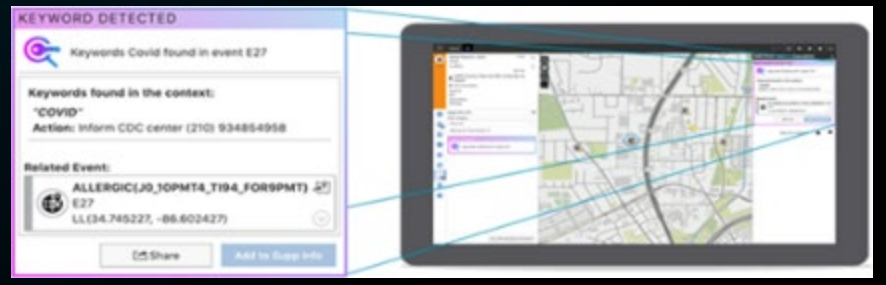
How?

- Continually mines and analyses operational data using AI, Advanced Stats. and ML to alert users to trends, anomalies and similarities

Explainable & Ethical

- “Glass Box” not “Black Box”
- Focus on Events not People
- Not “Predictive Policing” or citizen profiling
- Admins can “tweak” settings





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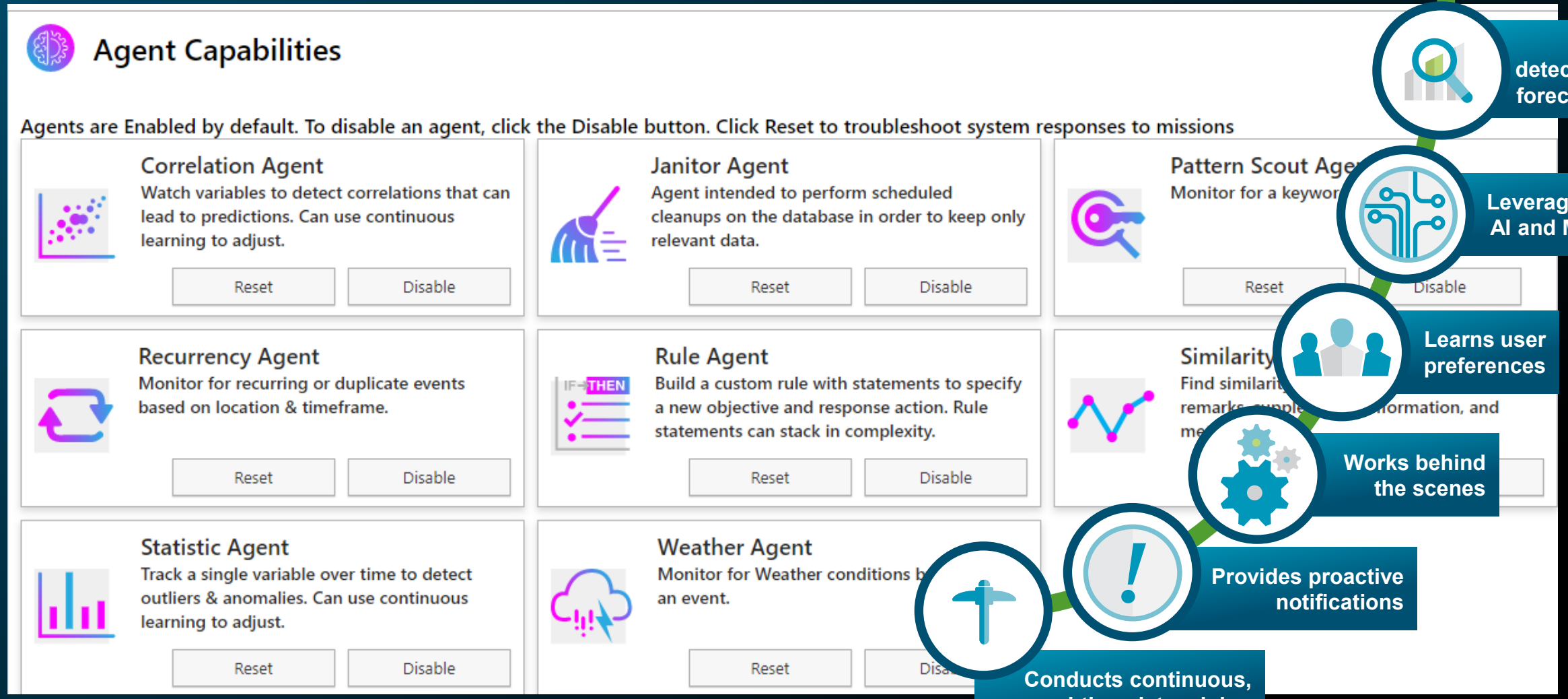
Smart Advisor Agents



HEXAGON

Thank You

HEXAGON

Nick Cooper, Content Guru

AI in Public Safety

Roundtable

Nick Cooper, Derek Townsend

Wednesday 25th September 2024

External – Confidential

About Content Guru

Content Guru
Engagement Made Easy®

Content Guru
Engagement Made Easy®

We provide CX solutions through the cloud

storm®

CX services and CCaaS run on our cloud platform

brain®

AI applications run using our **brain®** service layer

Public Sector Clients

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Engagement Made Easy®

Department for Education

Rural Payments Agency

Home Office

Department for Work & Pensions

Ministry of Defence

Driver & Vehicle Licensing Agency

Companies House

Department for Environment Food & Rural Affairs

NHS

CALL 111 The NHS non-emergency number

NHS Sussex Partnership NHS Foundation Trust

NHS Blood and Transplant

Barnet, Enfield and Haringey NHS Mental Health NHS Trust

EBPC

HSC Belfast Health and Social Care Trust

Yeovil Hospital Healthcare

HUC

NHS George Eliot Hospital NHS Trust

wavenet

NEC

serco

G4S

vodafone

Environment Agency

Sheffield City Council

Portsmouth City Council

Lancashire County Council

Norfolk County Council

Essex County Council

Huntingdonshire District Council

Cambridge City Council

Southampton City Council

Police Scotland

Civil Nuclear Constabulary

British Transport Police

Northumbria Police

Surrey Fire & Rescue Service

Sussex Police

Leicestershire Police

Humberside Police

Some of the Many Uses of AI

Engagement Made Easy®

- Validation Verification Visualisation
- Preparing complex enquiries for human decision-making
- Updating record systems
- Screen-pop relevant information
- Automated assessment and auditing
- Automated ID&V
- Form-filling
- Knowledge management
- Sentiment analysis
- Intelligent Routing
- Intelligent self-service options
- Automated enquiry resolution

Engagement Made Easy®

AI in Quality Management

What is Quality Management?

Post-Event Assessment

QM in Real-Time

Practical Considerations

Engagement Made Easy®

What is QM?

The assessment of activities undertaken to assist customers

Making sure the service provided to customers is highest quality

QM considers technical, logistical and emotional aspects

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Engagement Made Easy®

Why use AI in QM?

Assessment takes time.
Manual assessment takes effort

Manual assessment of all interactions is impossible

Assessment requires an objective response to subjective measures

Engagement Made Easy®

Post-Event Assessment

Why assess?

Onboarding

Continuous improvement

Contention resolution

AI brings:

Speed, scale and coverage

Management focus

‘Expert witness’

Emotions – sympathy and empathy

Neutrality

Engagement Made Easy®

QM in Real-Time

From assessment to assistance

Prevention is better than cure

Dynamic sentiment observation

Agent knowledgebase

Supervisor alert

Reduce burden

Solution research

Wrap-up and documentation

Engagement Made Easy®

AI Considerations

Solutions to suit problems

Analytical vs generative

Situation and location

Ownership and Privacy

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NCO0924

Round Table

Jonathan Sinclair, Inclutec Ltd

INCLUTECH

MAKE . IT . BETTER

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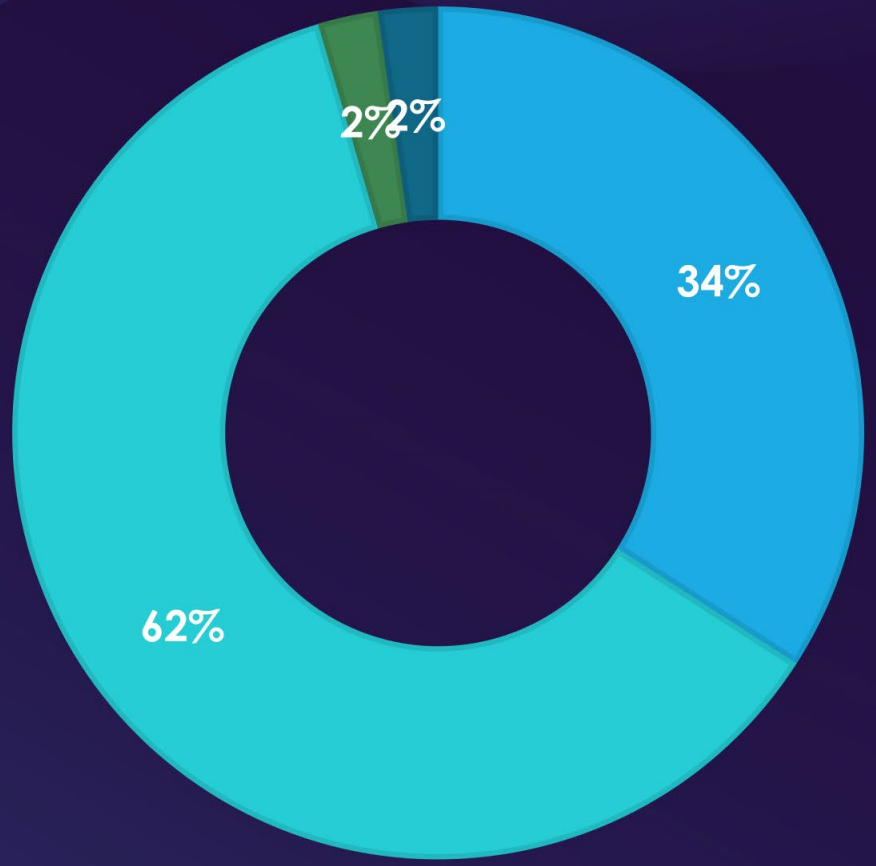
jonny@inclutech.co

PROFESSIONAL NETWORK VIEWS

DO YOU BELIEVE AI SHOULD BE USED IN PUBLIC SAFETY TECHNOLOGY?



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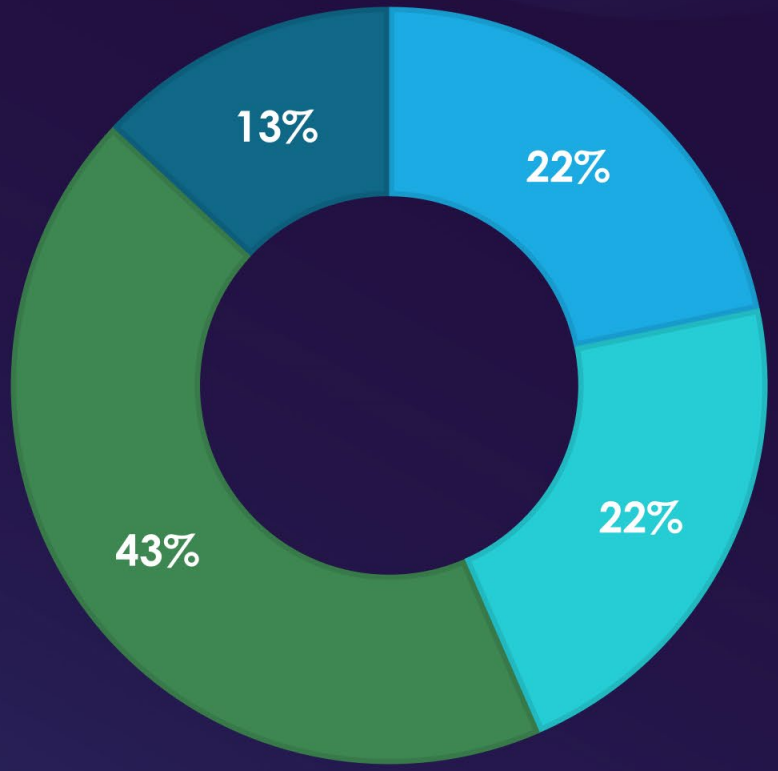
PROFESSIONAL NETWORK VIEWS

WHAT DO YOU BELIEVE COULD BE THE MOST SIGNIFICANT BENEFIT OF AI IN PUBLIC SAFETY?



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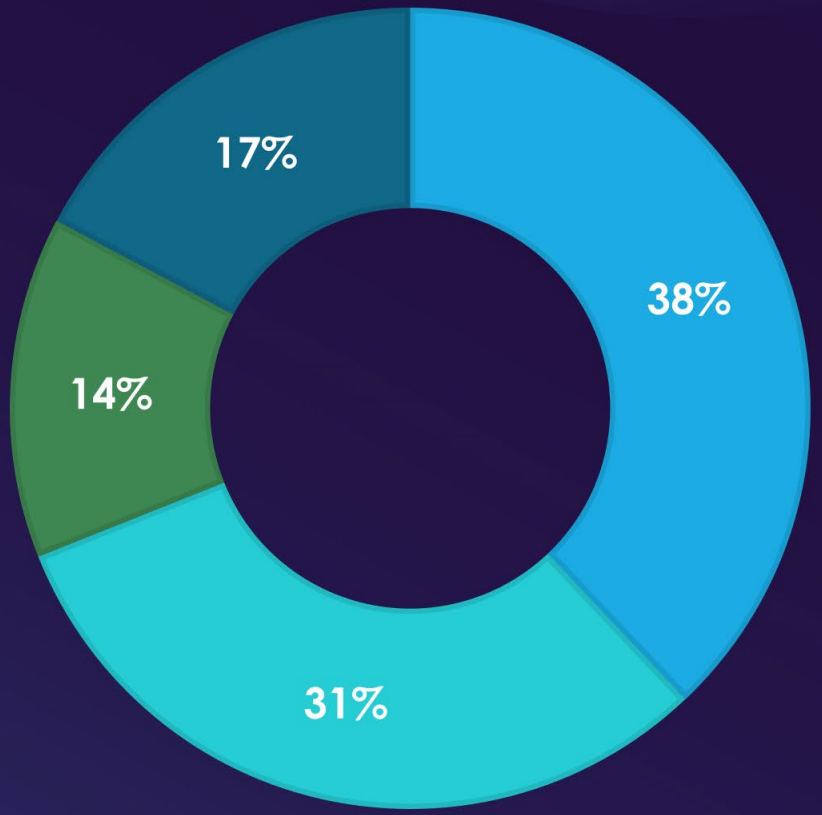
PROFESSIONAL NETWORK VIEWS

WHAT IS YOUR BIGGEST ETHICAL CONCERN REGARDING THE USE OF AI IN PUBLIC SAFETY?



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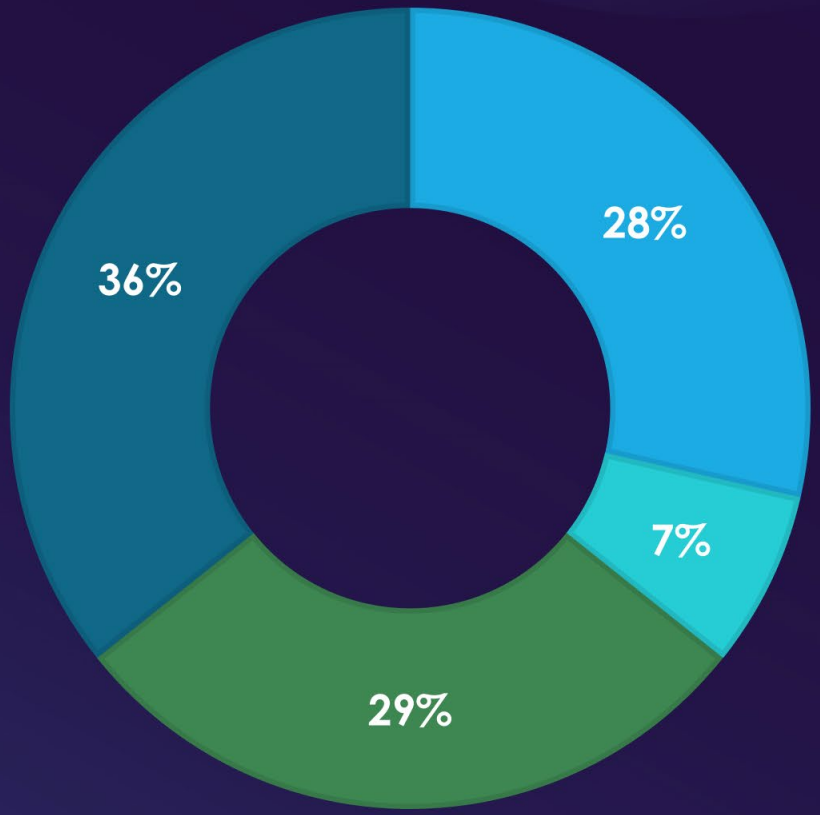
PROFESSIONAL NETWORK VIEWS

WHAT DO YOU THINK IS THE BIGGEST CHALLENGE IN IMPLEMENTING AI IN PUBLIC SAFETY?



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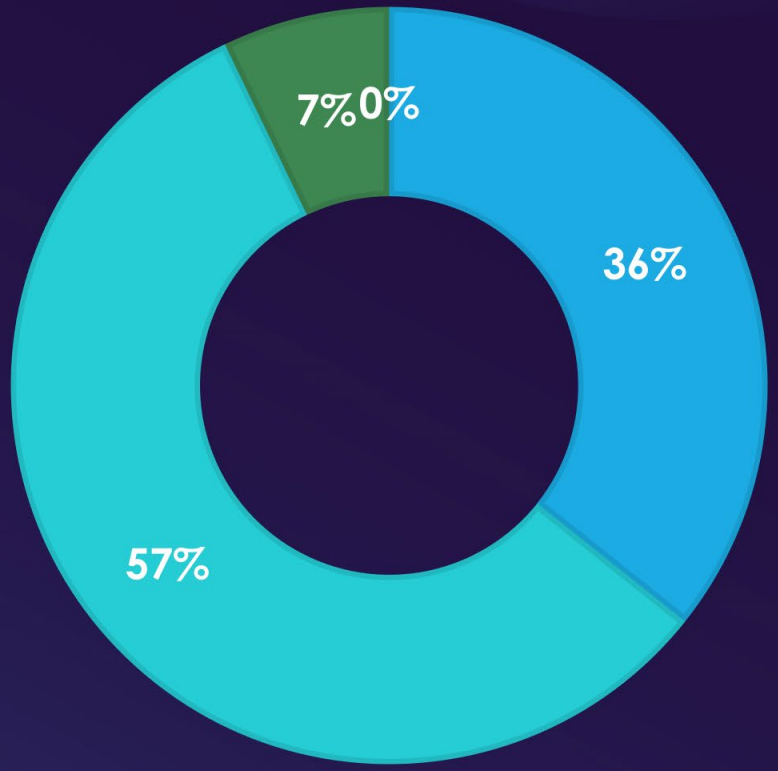
PROFESSIONAL NETWORK VIEWS

WHERE DO YOU SEE THE BIGGEST GROWTH POTENTIAL FOR AI IN PUBLIC SAFETY OVER THE NEXT DECADE?



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QUOTES

Kate Crawford, "Atlas of AI"

"AI systems are deeply influenced by human processes, labour, and resources. This reflects the idea that AI, despite its name, is rooted in human experience, making it no more objective or superior than the people who build it."

Andrew Ng, Co-Founder of Google Brain and Coursera

"AI is no smarter than the data you give it. It's like training a child — if you teach it bad habits, it will learn them."

Joanna Bryson, AI Researcher and Ethicist

"AI is made by humans, for humans, with human limitations."

Timnit Gebru, AI Researcher and Ethics Advocate

"AI is not neutral, it is a reflection of our society. It inherits all of our biases and prejudices."

Cathy O'Neil, Author of "Weapons of Math Destruction"

"Algorithms are opinions embedded in code."

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???

Is AI the issue here or are we, society, the issue; do we already have issues with privacy & trust in our people, process and technology ?

Is AI simply about providing us improved automation and decision augmentation, increasing our finite (potentially bias) people resource and brains virtually ?

Do we think we can train, improve, reduce bias/prejudice easier in AI ,ourselves as a society or neither ?

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THANKS

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jonny@inclutech.co

Reinard van Loo, Frequentis

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FOR A SAFER WORLD

AI in Communication Solutions & International View

Opportunities, Guardrails, and are we solving the right problems?

AI around the world in Communications

- **Opportunities**: Some Typical Applications of AI in Communication
- **Guardrails**: International Regulations determine what is allowed to do
- **Solving the right Problem**

 © Frequentis AG 2024

Opportunities

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Typical AI in Communication Solutions

Artificial intelligence in the public sector can contribute to:

- more relevant advice and services to citizens in different situations in life
- better decision-making support for public-sector employees
- rationalising processes and optimising resource utilisation
- improving the quality of processes and services by automatically detecting possible deviations
- predicting trends based on data from both agencies and their environments
- natural language processing for sorting and categorising, and for translating between different languages and language forms

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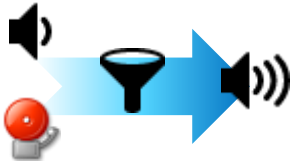
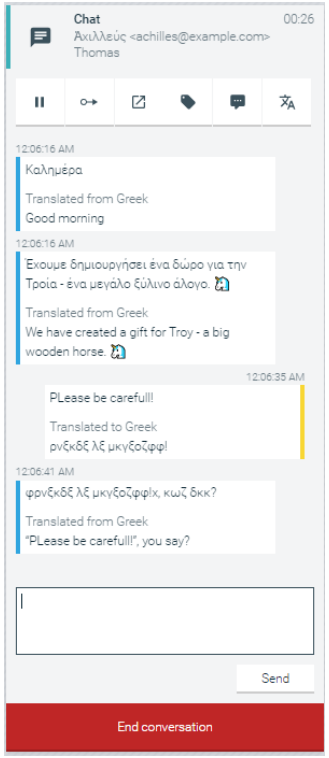
Typical AI in Communication Solutions

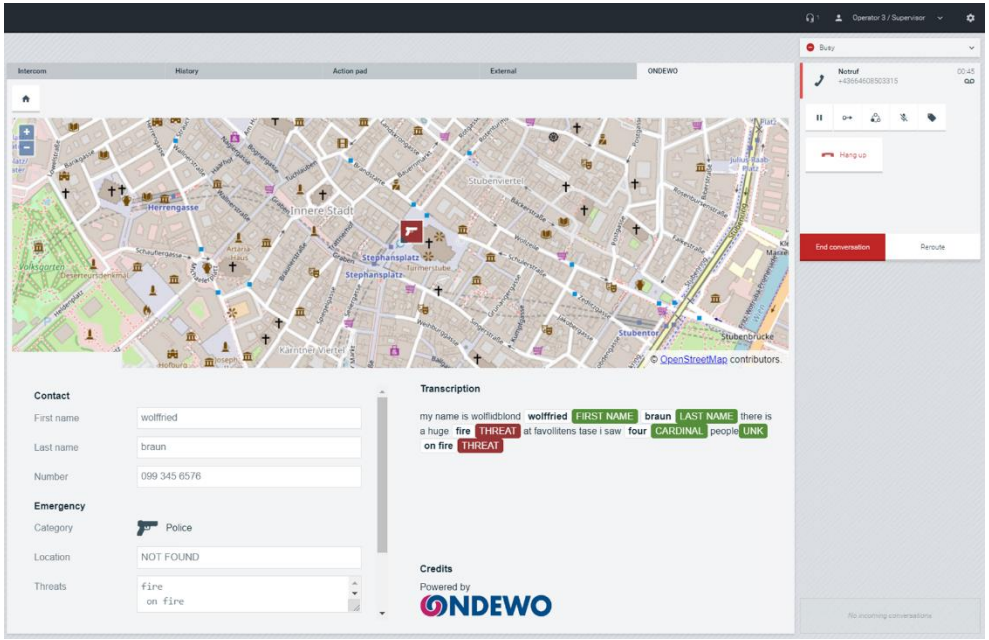
IVR Speech Recognition



Improve Audio/Remove noise



Translation of text chats



Speech/Topic Recognition in emergency calls

 © Frequentis AG 2024

Transcription and Translation of live voice / recording

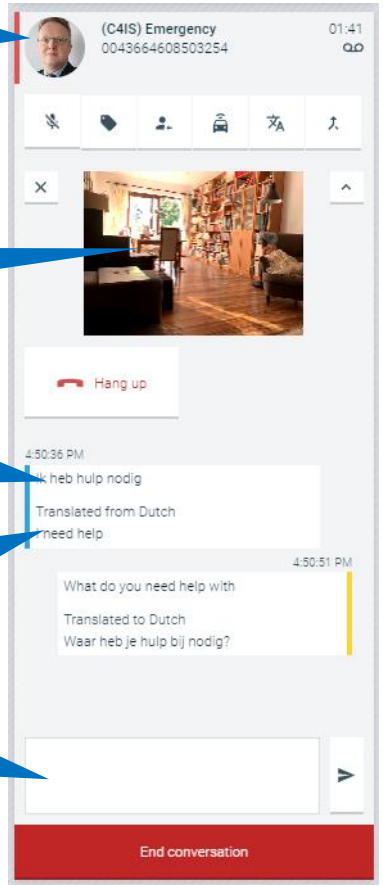
Voice Call with…

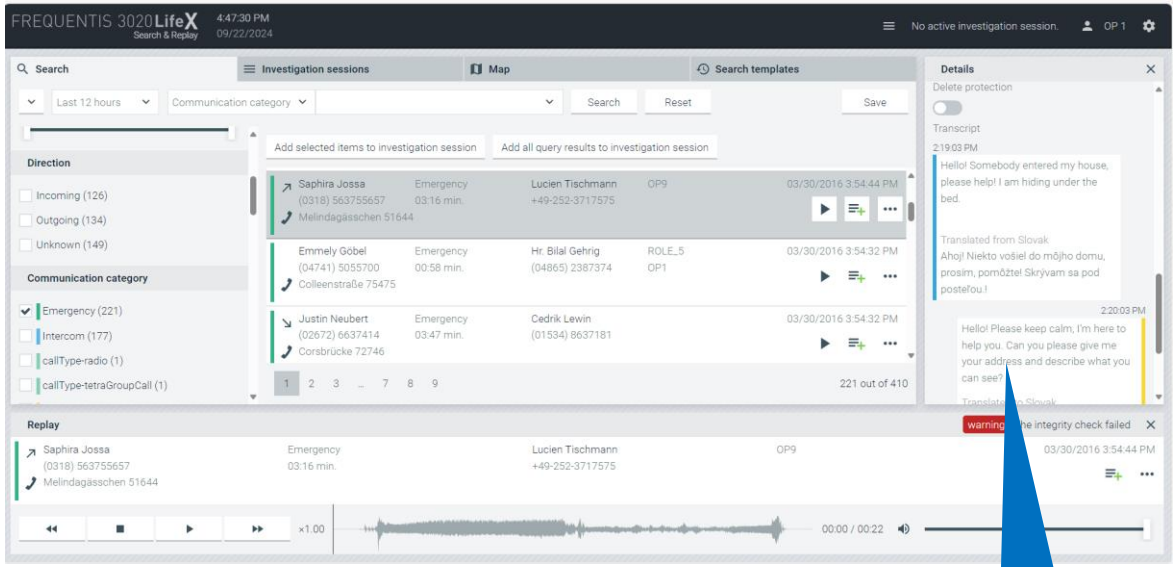
Life Video Feed

Recognised Speech

Translated Speech

Text-to-speech entry





AI Transcription of recording

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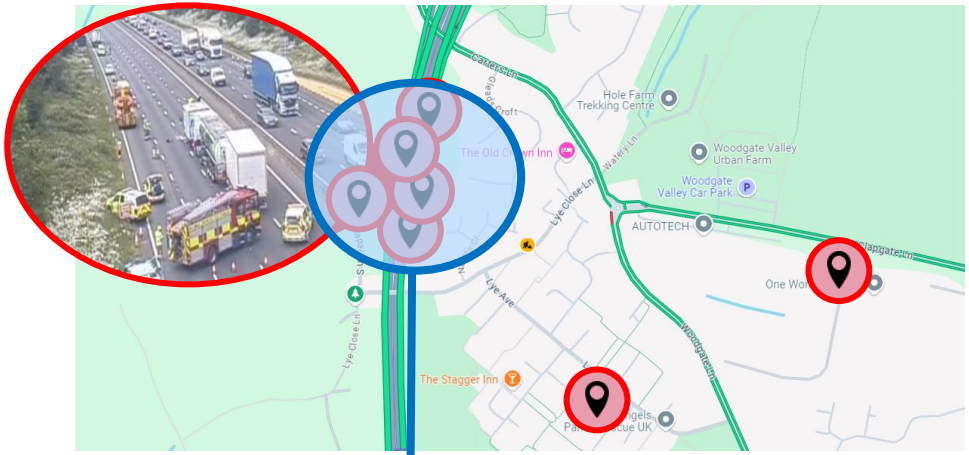
Queue Jumping, Auto Call back abandoned emergency calls

(Carbyne Emergency Call Triage)

Goal: Reduce redundant and abandoned calls, decrease calls in queue



While queuing, go through IVR:

Is your call about car acident on M5? If no, stay on the call.

If yes: We are aware and working on it. Please state additional information or hang up.

[STT of additional information], „We will expedite your call“

Route with higher priority!

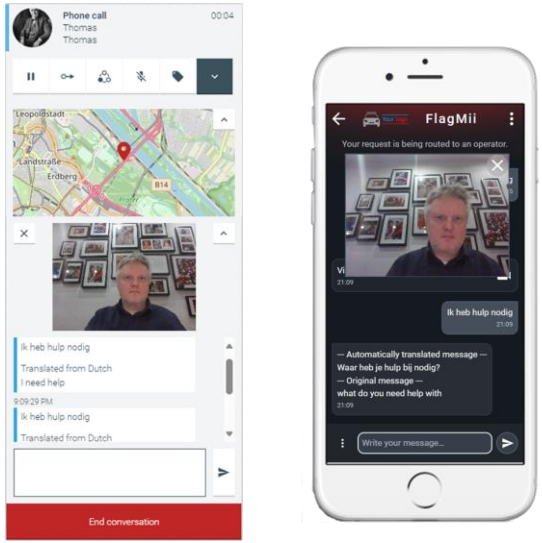
(Peel Region PSAP, Canada)

Automatic callback of abandoned emergency calls using IVR, STT

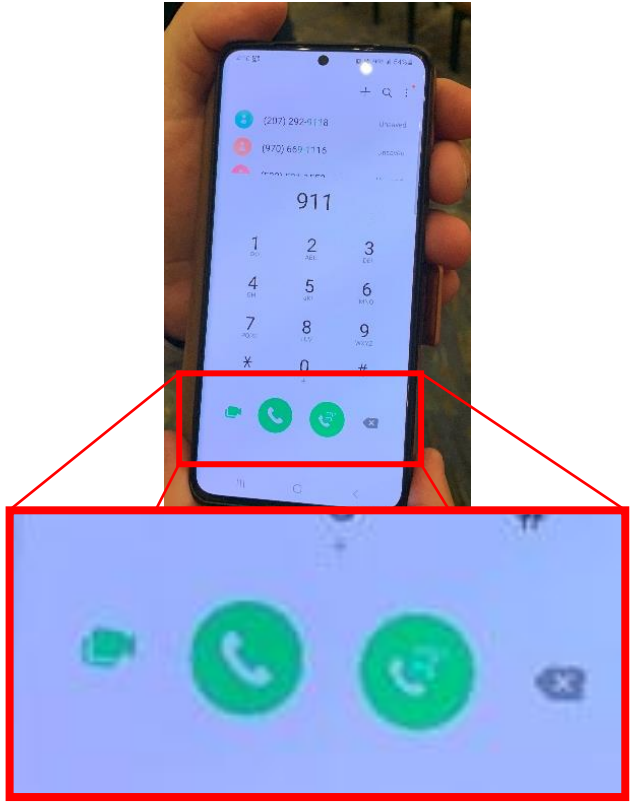
 © Frequentis AG 2024

Fudder for AI: Voice, Real Time Text, Video, Pictures and Location

e.g. OTT chat/Video, NGx and Apple Emergency SOS Live Video



OTT Chat/VIdeo



NGx

Apple Emergency SOS Live Video

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(International) Guardrails

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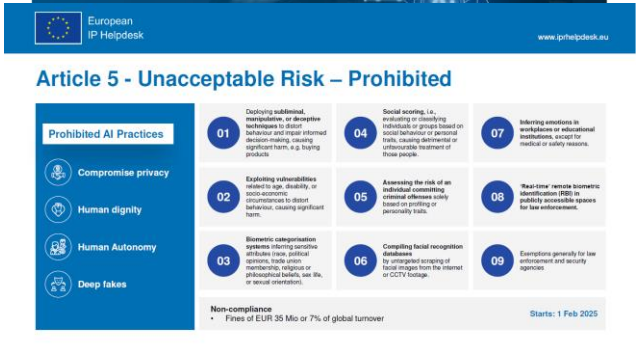
EU Regulations for High Risk Application of AI

- *"…**AI systems used to evaluate and classify emergency calls** by natural persons or to dispatch or establish priority … should also be **classified as high-risk** …"*

- *„.. AI systems **include mechanisms to guide and inform a natural person to whom human oversight has been assigned** to make informed decisions if, when and how to intervene in order to avoid negative consequences or risks, or stop the system if it does not perform as intended."*
- *"…Can be used but needs Risk/Conformity assessment"*

https://www.europarl.europa.eu/doceo/document/TA-9-2024-03-13_EN.html#sdocta2

- USA: *"…Unlike the EU's comprehensive AI regulation, U.S. AI regulation consists of a patchwork of rules, legislation and executive orders..."*



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Prohibited?

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Regulatory Issues

- GDPR
  - E.g. *„…no external cloud services allowed to be used…*“, only on-premise processing = $$~~€€~~~~£~~£
- Data Residency & Data Sovereignty
  - Still not ok to host, e.g. a critical Dutch police system in Austria...
- Government and Agency internal policies on AI
  - Some decided that „For now“, no AI based transcription/Keyword Recognition, no AI based Chatbot, no Knowledge based routing of conversations

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The Right Problems

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Customer Structuring of Problem space

© David Jackson

High

- Automate

  Via SMS Chat dialog design refer to self service web forms, Web chat standard responses with links

- Managing Demand & supply

  Transform into conversation to 999/101, use pictures/video received and store/forward

Low

High

PSAP

- Eliminate

  Via SMS Chat dialog, refer to external parties or automatically but politely end. Web chat standard responses with phone numbers, links or politely end

- Simplify

  In SMS/Web chat dialog: “Hook” customer, forward to “one-stop simple form” to enter intelligence and perform sanity check, transform into conversation to 101, crimestoppers, Anti-Terrorist hotline…

Low

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…and the right problems are?

To a [tech'] person with a hammer every problem looks like a nail

Input for the round table: How can, among others, AI help

- … to make more optimal use of scarce human resources?
- … to create and retain skilled operators?
- … to improve service to Public?
- … to improve efficiency of services provided?
- … to…" *solve [XXX], that would be soooo good…"*

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FREQUENTIS
FOR A SAFER WORLD

Dan Maund, Leonardo

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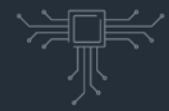
Leonardo Cyber & Security Solutions

Are you ready for AI?

BAPCO Roundtable 2024

London

25/09/2024


Electronics

Helicopters

Aircraft

Cyber & Security

Space

Uncrewed Systems

Aerostructures

Introduction & Objective

Setting the Stage

- Who am I?
- How do you feel about security risk?
- Questions rather than Answers

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CONSIDERATIONS

- Risk Exposure
- Confidentiality
- Authenticity
- Accuracy
- “Skynet”
- Response
- Questions

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Risk Exposure

What is the effect on risk of introducing the AI solution into our environment?

- Criticality (CS – Resilience BCDR)
- Sensitivity
- Threat Modelling
- New Vulnerabilities
- Security Assurance

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Confidentiality

Where and how is sensitive data exposed to ensure the AI solution works effectively?

- AI built on data model
- Effectiveness linked with data size and quality
- Data/results shared with provider?
- Access/privilege of the AI
- Access/privilege of the user

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Authenticity

Has the AI system been trained to produce authentic results?

- Who creates the data?
- Who controls the data?
- Who verifies the data?
- World view: morals, ethics, politics?
- Bias or reality?
- Impact of adjustment on accuracy?

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Accuracy

How accurate is the system?

- Human error - comparative
- Criticality of function
- What is published tolerance?
- How is published tolerance measured?
- What is your tolerance?

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“Skynet”

How prepared are we for the weaponisation of AI?

- Amplified threat actor capability
- Example – Calculator ChatGPT
- Identifying & treating existing risk – risk management
- Validation of controls – security assurance
- No rogue time-travelling sentient machines (yet)

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Responses

How do we prepare for secure AI?

- Threat Intelligence
- Threat Modelling
- Risk Management
- Security Assurance
- Supply Chain Assurance
- Detection/Response

These could be delivered/supported by AI!

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QUESTIONS

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THANK **YOU**
FOR YOUR ATTENTION

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Robert Hogg, Black Marble

Round Table

THANK YOU