

 **Forensic Analytics**

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Frontline Innovation: The Power of Digital in Missing Persons Investigations



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Foreword



Forensic Analytics are proud to partner with Locate International: supporting their mission of finding the missing and identifying the unidentified. Locate International was founded by Dave Grimstead in 2018. Today, its team of over 300 volunteers are passionate about finding answers for the missing persons families. Locate International volunteers support on average 200–300 investigations annually!

Through this partnership, Forensic Analytics provide expert-led training in using the vast array of digital media available for investigators. We also provide our flagship software solutions—CSAS and CSAS Find and our expert support, to ensure the investigators have the essential tools, expertise and skills needed to undertake complex investigations in the digital age.

“We’ve been proud to support Locate International’s mission over the past year, supporting their dedicated volunteers in the search for answers for families of the missing. Forensic Analytics, we are deeply committed to understanding the challenges facing policing today and developing solutions that address these head-on—driving efficiency, enhancing investigative outcomes, and ultimately making a meaningful impact.

By providing access to our tools, expertise and tailored training, we aim to empower volunteers with the capabilities they need to carry out their vital work. Our partnership with Locate International is a powerful example of our mission: to transform the way police investigate through data driven approaches. Through innovation, collaboration, and a relentless focus on excellence, we remain proud to support the policing community in bringing clarity and closure to families of the missing”.

—Steve Rick, CEO, Forensic Analytics Ltd

A handwritten signature in black ink, appearing to read 'Steve Rick', with a long horizontal stroke extending from the bottom right.



It is through the strength of this collaboration that we are proud to present this research paper. We credit the research findings to the CEO of Locate, Mark Greenhalgh whose doctorate research, *Case Closed or Case Cold? Exploring Investigative Interventions in Long-Term Missing Person Cases*, is the most current research in the field and updates his previous research published in 2021.

“Our partnership with Forensic Analytics is great and I must thank the team at FA. It has laid the groundwork for a significant leap in our digital capability. While still early in deployment, the training and support provided are helping us build stronger investigative foundations. Over the next year, we aim to fully embed these tools into our casework, using digital timelines and data-led insights to support complex reviews and generate new lines of enquiry.”

—Mark Greenhalgh, CEO of Locate International

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Introduction

Long-term missing person cases remain among the most complex and emotionally charged challenges in modern policing. While existing research has begun to map the demographic and risk-related aspects, there has been significantly less attention given to the operational and systemic factors that influence investigative outcomes.

Despite well intentioned efforts missing persons investigations in the UK remain under significant strain. Without innovative thinking, revised operational procedures and investment in digital tools, the challenges will only continue to intensify.

The National Police Chiefs Council (NPCC) revised Digital and Data strategy 2025–2030 calls on forces to modernise their technology capabilities. The NPCC believe that by collaborating with industry to identify effective solutions that address the widening digital skill gap, investigative outcomes can be improved.



Missing Person Investigations

The Systematic and Operational Challenges

90s

Every 90 seconds, someone is reported missing in the UK³

170,000

Individuals are reported missing each year²

3M

3 million investigative policing hours annually⁴

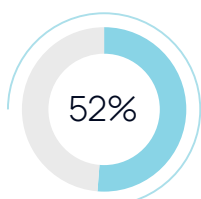
In the 2022/23 financial year alone, police forces in England and Wales received 312,901 missing person calls. Amongst these, around 400 adults are reported missing daily, with 91% classified as medium to high risk.⁵

These classifications often necessitate the active deployment of officers and specialist resources such as Police Search Advisors (POLSA) teams, and in high-risk cases, the use of aerial support, like helicopters.

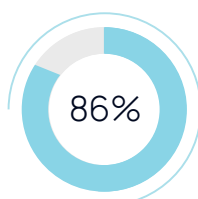


Investigating missing person cases places a significant demand on policing, with an estimated **three million investigative hours spent annually**. The demand of missing person investigations combined with a lack of funding has led to a serious operational strain.

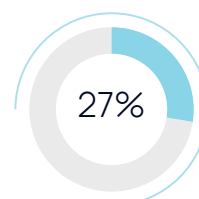
Mark Greenhalgh carried out research in 2024 to understand the challenges of missing person investigations, specifically long-term missing cases. The research titled, **Case Closed or Case Cold? Exploring Investigative Interventions in Long-Term Missing Person Cases**⁶, outlines some of the key systematic issues within missing person investigations and recommendations.



of police forces **lack dedicated Missing Person units**



of officers said caseload volume **undermines investigative quality**



of officers worked under a defined **cold case policy**⁷

Addressing the challenges of missing person investigations in the UK requires a clear understanding of the systemic barriers.

Greenhalgh's research identified that a significant proportion of UK police forces lack dedicated missing person units, compounded with the fact that **32% police officers have less than five years' service**⁹ this has created a gap in institutional knowledge and investigative experience. Underfunding and staffing shortages often result in cold cases being rushed through reviews, with growing numbers of unresolved cases continuing to accumulate.

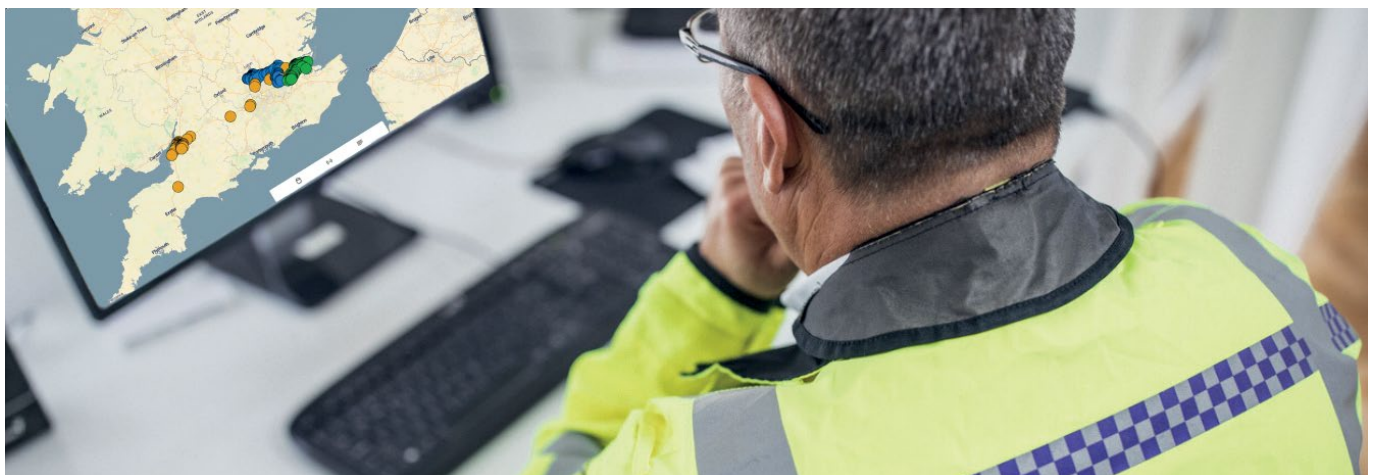
Greenhalgh's research found that **86% of officers believe caseload volume undermines investigative quality**⁹, describing a "tick-box culture" where procedural compliance is prioritised over meaningful investigation—particularly for medium—and low-risk cases.

Additionally, 58% of officers had no formal training in missing persons investigations¹⁰. This has been recognised by the National Police Chiefs Council (NPCC) in the revised National Policing Digital Strategy 2025–2030. The strategy states that there is a **"need for the digital skills gap to be addressed, particularly with the fact that the demand for digital skills is increasing."**

As the overwhelming number of caseloads continue to grow, embracing technology is crucial. Not only do forces need to increase their use of technology, but they also need to invest in the appropriate training for their staff to maximise technological capabilities. Digital data, such as mobile phone records, social media activity, and geolocation information could play a pivotal role in reconstructing the last known movements of a missing person. Yet without adequate technology, training, and funding, these opportunities are often missed.

"The research clearly highlights the value of early digital enquiry: from mobile data to social media, these tools drive faster, smarter investigations. Just as importantly, technology can support early intervention and prevention, helping reduce the number of cases that go cold in the first place."

—Mark, Greenhalgh, CEO Locate International, 2025



The growing number of unsolved missing person cases stem from a combination of factors, all linked to systemic strain within the policing sector. This has generated an increasing reliance on the third sector to support policing and resolve cases. This is something we have seen first-hand in our partnership with Locate International. The failure to adequately resource and professionalise missing person investigations has profound consequences; not only for policing but for families and communities.

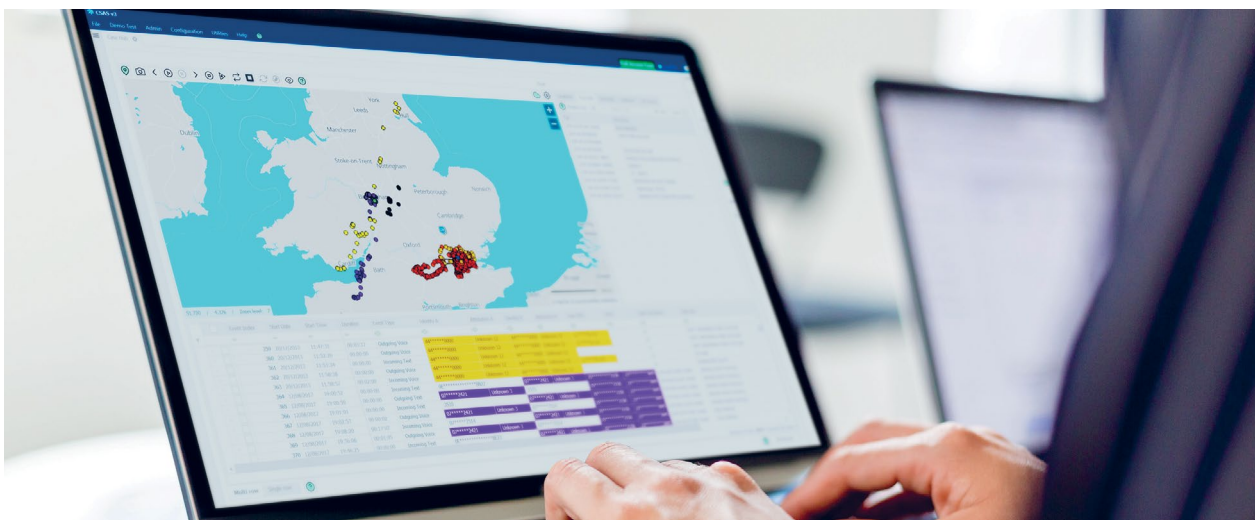
Dave Grimstead founder of Locate International highlights the issues of these investigations remaining unexplained and unsolved; **"If they had died and their bodies were found; some would result in an inquest. Questions might be posed. Systems would be reviewed. Their story could help inform prevention efforts."**

However, when someone disappears without a trace, that process seldom begins. There is often no formal review, no inter-agency learning, and no chance to comprehend what could have been handled differently. The case remains open—and the opportunity to prevent future harm is thus closed."

The Importance of Digital Data in Missing Person Investigations

In today's digital age, nearly all crime involves a digital element, yet this critical source of evidence is often underutilised in missing persons investigations. Limited resources, time constraints, and budgetary constraints limiting access to specialised training means that digital data is frequently overlooked, under-requested, or insufficiently analysed. The examination of communications data can be complex and time-consuming, and with analytical capacity stretched thin across police forces, the responsibility often falls to frontline officers and detectives, many of whom lack formal training in digital investigation techniques.

Budgetary pressures have further compounded this issue, resulting in a fundamental lack of investment in digital training for police officers. Without the necessary skills or awareness of what digital data can reveal, potentially vital lines of enquiry may be missed altogether.



Recognising this gap, the National Police Chiefs' Council (NPCC) revised Digital Strategy 2025-2030 states:

“We will need to invest significantly in digital leadership and capabilities to deliver our transformation.”¹²

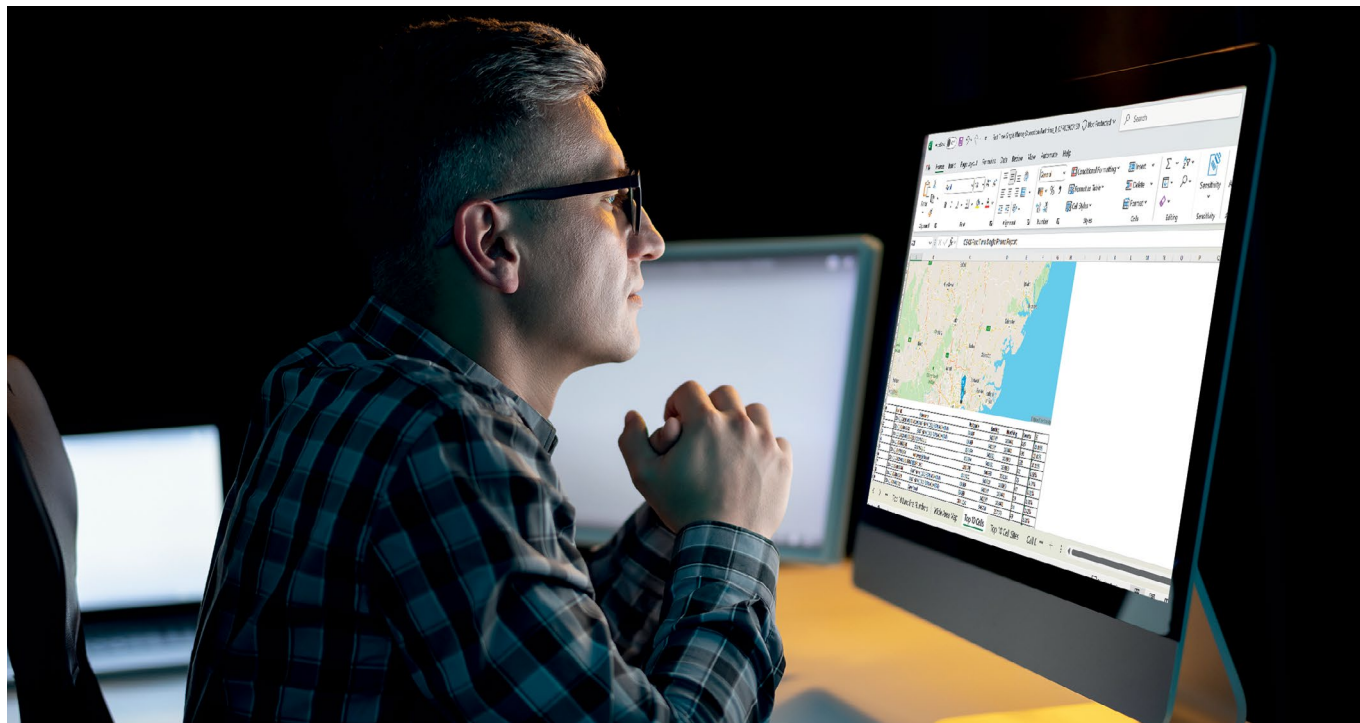
This sentiment is echoed in the COMPASS Framework, developed by Greenhalgh.¹³ The framework outlines a roadmap for improved investigative practice, identifying communications and digital evidence as fundamental to effective missing persons investigations.

It highlights the importance of early engagement with digital sources—particularly within the first 24-48 hours, when timely insights can be most impactful.

Key Elements of the COMPASS Framework for Investigative Effectiveness:

- Communications & Digital Evidence
- Open-Source Intelligence (OSINT)
- Media Engagement
- Personal Profile Development
- Assigned Officer Continuity
- Supervisory Oversight
- Search Strategy

Digital data such as communication data records, mobile handset downloads and vehicle telematics offers objective, irrefutable insights into a person's location, associations, and behaviours prior to their disappearance. Unlike anecdotal accounts or witness statements, digital evidence provides a factual timeline that helps investigators reconstruct events with clarity and precision.



Communications data can identify the last known location of an individual, while telematics may reveal travel routes and patterns. When combined, these sources build a comprehensive picture that not only supports existing hypotheses but also challenges assumptions potentially uncovering new lines of enquiry that would otherwise remain hidden.

Driving Innovation in Missing Persons Investigations

At Forensic Analytics, we recognise the transformative potential of digital evidence in missing persons cases. Our tools are designed to analyse and present this data to an evidential standard helping law enforcement make faster and more informed decisions in time-critical investigations.

We work in close partnership with law enforcement agencies and partners to address the complex and evolving challenges of modern policing. Our approach begins with a deep understanding of policing needs, enabling us to develop cutting-edge digital forensic solutions that enhance operational efficiency and modernise investigative practices.

Our industry-leading tools are designed to deliver measurable improvements in policing outcomes, particularly in the context of missing persons investigations, where time and precision are critical. By integrating our tools into investigative workflows, we help police forces streamline existing processes, uncover insights faster, and make more informed decisions.



CSAS Find is our newest product and modernises frontline policing, empowering officers to achieve results faster and more efficiently.

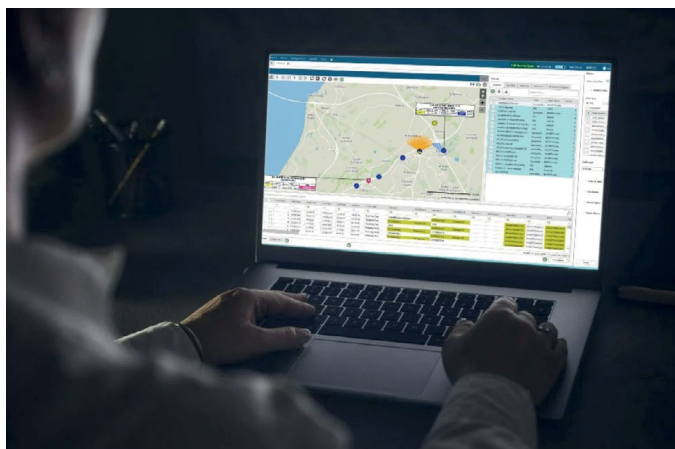
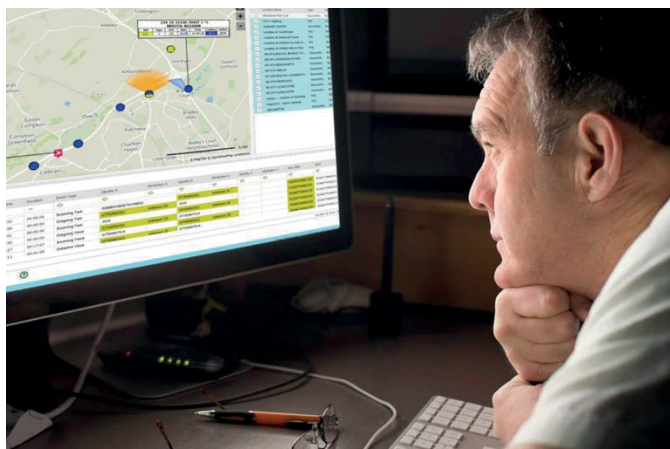
It delivers a transformation in missing and fugitive investigations, saving time and money. This product is an evolution of our award winning CSAS software, which has delivered outstanding results throughout law enforcement over the last 12 years.

CSAS Find is designed for smoother collaboration across teams making missing persons investigations more streamlined, efficient and cost-effective improving policing outcomes and restoring confidence in policing.

CSAS Find provides police with a more responsive frontline and empowers them to:

- Collaborate in real-time across desktop, mobile and tablet applications
- Improving communication, coordination and information sharing
- Plot points of interest and events, updating in real time across all devices, helping to deploy officers to the right areas at the right time
- Have real-time access to critical data and visualisation tools
- Visualise different modes of transport to estimate distance travelled enabling targeted searches
- Cell View allowing more precise visualisation of cell coverage and enabling more refined searches

We are partnering with SOLV Technology, building interoperability between CSAS Find and their technology. This collaboration allows customers to build a missing case within our software, before clicking a button that will lead them straight to SOLV's technology where they can set up targeted broadcast appeals to the general public. This valuable partnership is one of the many ways in which we continue to build our missing persons investigation capabilities.



Our flagship software CSAS (Cell Site Analysis Suite) has been contributing to significant police outcomes on missing persons investigations for over a decade.

CSAS empowers investigation and intelligence teams to process and analyse large amounts of digital data quickly, producing information to a robust evidential standard. It does so through enhanced processing of call data and handset records, downloads, ANPR, social media takeout, vehicle telemetry, and more.

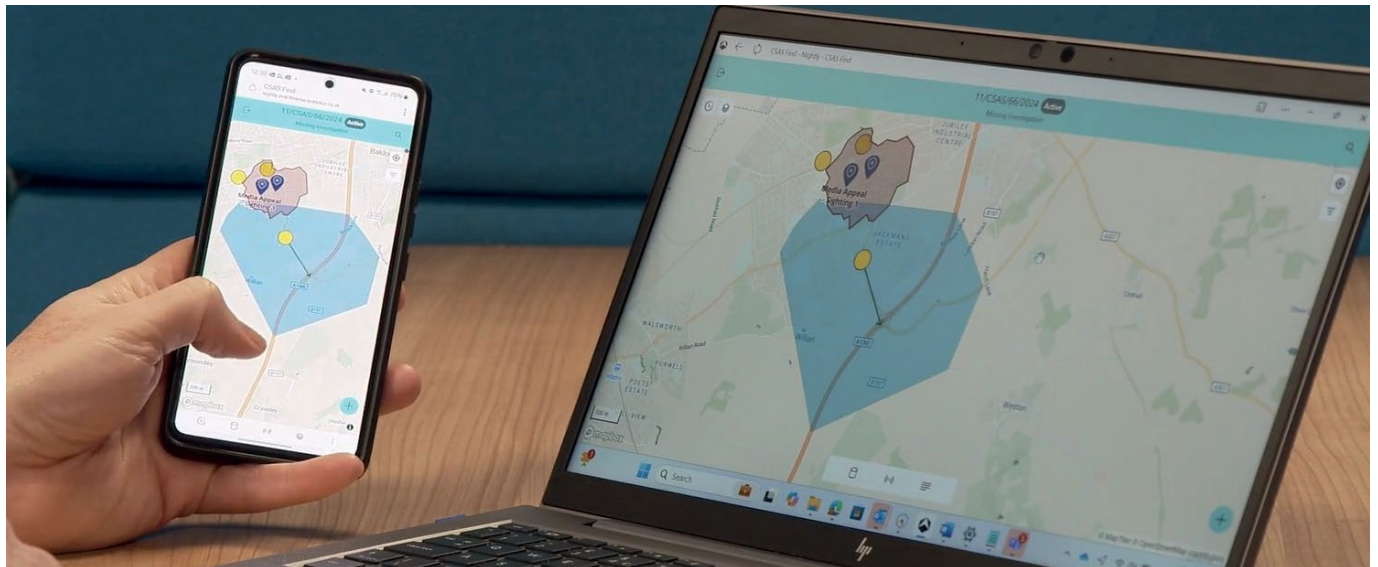
Using CSAS investigators can directly access advanced analytical capabilities, allowing them to more comprehensively investigate. Analytical enquiries are expedited, which lessens the workload for investigators, freeing them up to focus on more complex, high-priority cases. Key information can be derived at pace such as if calls have connected or if a phone has been switched off.

Fast time reports on communication data records can be produced visualising key data findings such as:

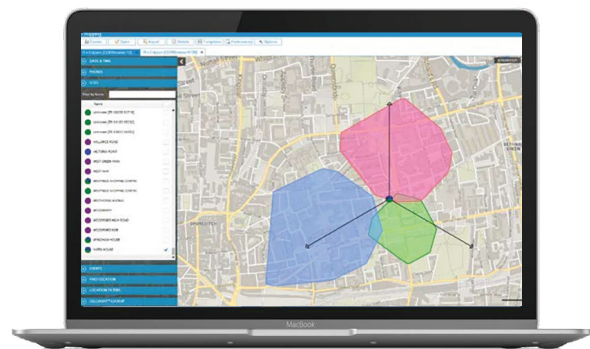
- 20 last called numbers
- Top 20 frequently called numbers
- Last used cell sites
- Most frequently used cell sites



Comprehensive training is provided to all CSAS users increasing the digital awareness of investigating officers.

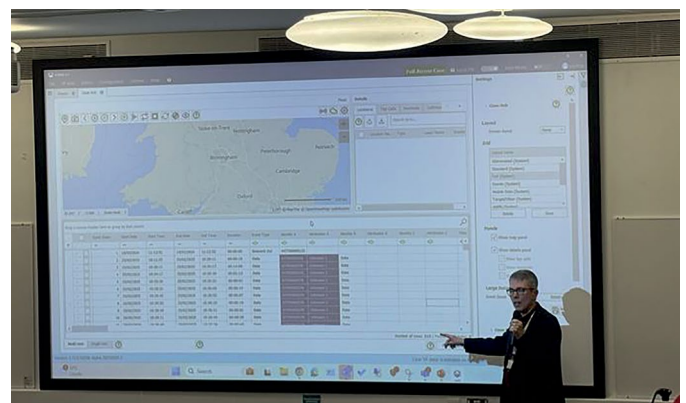


Cell View is transformative in missing investigations, providing visual imagery of cell coverage enabling more precise allocation of resources and searches. CellView uses crowd-sourced cell usage data to deliver precise and up-to-date visualisation of the area covered by a cell.



In addition to our technology solutions, we offer City & Guilds-accredited training tailored to the unique requirements of law enforcement professional ensuring that teams are equipped not only with the right tools, but also with the skills to use them effectively.

Greenhalgh's research identified that 58% of officers had no formal training in missing persons investigations highlighted the importance of analysing communications data within the golden hour. These courses equip investigators with the tools essential for successful outcomes. Investment in training ensure police have more awareness of those potential lines of enquiry and broadens their capability and skill set.



Conclusion

Missing persons investigations represent one of the most emotionally charged and operationally complex areas of modern policing.

While demographic and risk-related factors have been explored in existing research, there remains a significant gap in understanding the systemic and operational challenges that directly impact investigative outcomes.

Despite the dedication of officers and volunteers, the current approach is under considerable strain. With over 170,000 individuals reported missing annually, and three million investigative hours spent each year, the demand on police resources is immense. The lack of dedicated units, insufficient training, and limited access to digital tools has created a landscape where cases risk going cold—not due to lack of effort, but due to structural limitations.

The NPCC Digital and Data Strategy 2025–2030 rightly calls for a transformation in policing through investment in digital capabilities and collaboration with industry. Frameworks like COMPASS provide a roadmap for this change, highlighting the critical role of digital evidence in improving investigative effectiveness. To move forward, we must embrace innovative thinking, revised operational procedures, and targeted investment in digital tools and training. Early engagement with digital data—such as communications records, OSINT, financial transactions, and telematics—can dramatically improve outcomes, especially in the crucial first 48 hours of a case.

At Forensic Analytics, we believe that with strategic investment and centralised coordination, investigators can be equipped with the right tools and training to shift missing persons investigations from reactive to proactive. By embracing a data-driven approach, we can reduce investigative caseloads and enhance operational effectiveness across the board.

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Forensic Analytics

Forensic Analytics modernises law enforcement investigative practices with advanced digital forensic tools.

We're an approved supplier to 95% of UK police forces, and our services include accredited training, RF surveying, consulting, and expert witness capabilities. Our flagship product, the Cell Site Analysis Suite (CSAS), is widely used to quickly retrieve, evaluate, and transform digital evidence into actionable intelligence that meets evidential standards.

 **CSAS** The powerful, accurate and secure investigative platform trusted by law enforcement.

 **CellView** Add instant real-world detail to cell site visualisations.

 **CSAS Find** Empowering the frontline to collaborate in real time to find people.

 **Lima Cell Monitor** RF Survey hardware, optimised for law enforcement.

 **CDAN Nexus** Provide real-time intelligence straight to your frontline.

Contact us

The Forensic Analytics' team is here to help policing navigate the recommendations outlined by the HMICFRS, IOPC, and the College of Policing.

With our expertise in law enforcement and digital forensics, we can support your teams in modernising their investigative processes, reducing delays, and improving outcomes in stalking and harassment cases.

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