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# BREAK-OUT SESSION | Cyber, Tech and Al OSINT, Cyber Investigations and Defence Challenges

# Agenda

#### **Understanding OSINT**

- What is OSINT? The Art & Science
- Definition & Legal Applications
- OSINT for Legal Professional

Preserving Evidence: Creating Your Own Chain of Custody

# Digital Tracing Techniques & Live Demos

- Canary Tokens
- Metadata in files
- Google Dorking (Hacking)

# Challenging Digital Evidence in Court

- Challenging OSINT & IP Address Attribution
- Collection Methodology Questions
- Legal Authority Issues

# Most Relevant Use Cases of OSINT

Professional OSINT Tool Management

# Securing Lawyer-Client Communications

- Counter-Surveillance for Defense Attorneys
- OPSEC for Legal Professionals
- Protecting Your Business from Digital Threats

**Q&A Session** 





# OSINT: Definition & Legal Applications

Open-Source Intelligence (OSINT) is the discipline of collecting and analyzing data from public sources to produce actionable intelligence.

- Social media or User Generated
   Content (UGC) platforms
- News sources & publications
- · Public records & databases
- Forums & discussion boards
- Business registries
- **It's NOT hacking.** It is the lawful use of publicly accessible information.
- The Challenge: The skill isn't just finding data; it's in the expert analysis, connecting disparate dots, verifying information, and understanding the context to build a coherent picture.

# For Defence Lawyers, expert OSINT provides:

- Legally admissible evidence for a case
- In-depth vetting of expert witnesses
- A strategic advantage by deconstructing the prosecution's case
- Proactive protection for your practice and your clients

Remember: Our ethical obligations require transparency about investigative methods when presenting findings in court.



### Open Source Intelligence for Legal Professionals

#### **Words Matter in Digital Intelligence**

#### **OSINT**

Open Source Intelligence: Actionable information specifically designed for governments, militaries, law enforcement, and corporate security teams to inform critical decision-making.

#### **OSINF**

Open Source Information: Raw, publicly accessible data that has been collected but requires analysis and verification before becoming actionable intelligence.

#### OSINV

Open Source Investigation: The systematic application of open source techniques to gather OSINF and conduct thorough analysis within formal investigations.

#### **The OSINV Process**

Monitoring  Continuous surveillance of digital channels and sources	Collection  Systematic gathering of relevant data and information
Q	
Analysis	Investigation
Critical evaluation and verification of collected information	Comprehensive fact-finding to establish truth
(i) <b>Event Verification Focus:</b> Professional investigators establish the <i>who, what, when, where</i> , and <i>how</i> of incidents. The <i>why</i> remains extremely rare without direct witness testimony or insider access.	



### Digital Tracing: Canary Tokens

How can we trace the location or identity of a perpetrator?

**Canary Tokens** are a free, effective tool to track digital activity, demonstrating a core tracing principle.

#### How they work:

- 1. A unique "token" is generated (e.g., a URL, a PDF document).
- 2. This token is embedded in a message to the target.
- 3. When the target interacts with the token, it "triggers."
- 4. A notification is sent with raw data, including:
  - The IP address that triggered the token.
  - Approximate geographic location.
  - Time and date of the interaction.
  - The user agent (browser/device) used.

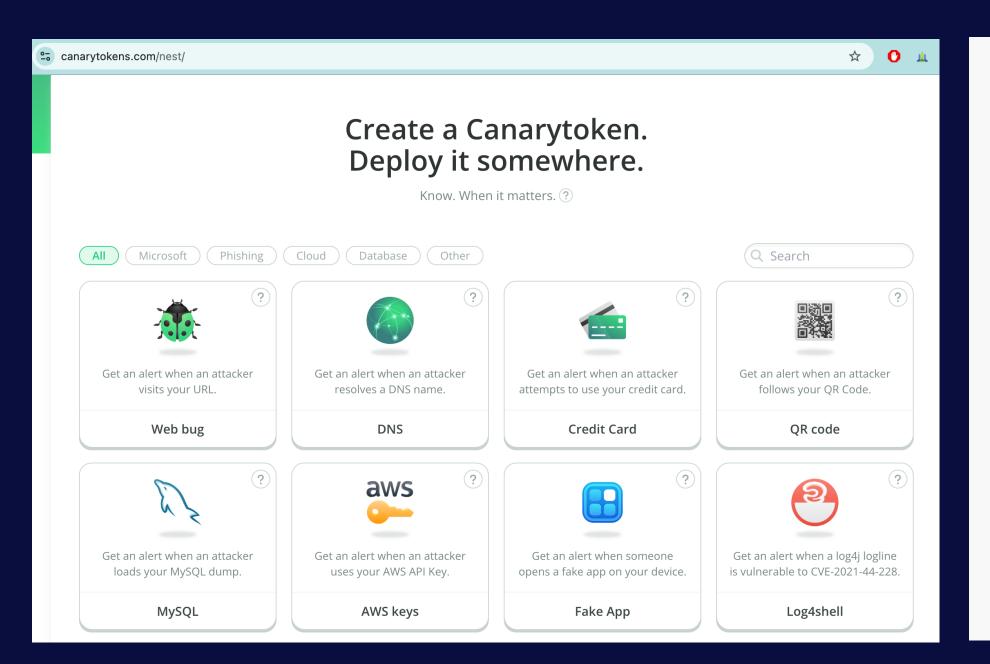
**The Expert Step:** An analyst takes this raw data and begins the real investigation—attributing the IP, correlating the data, and building a profile.

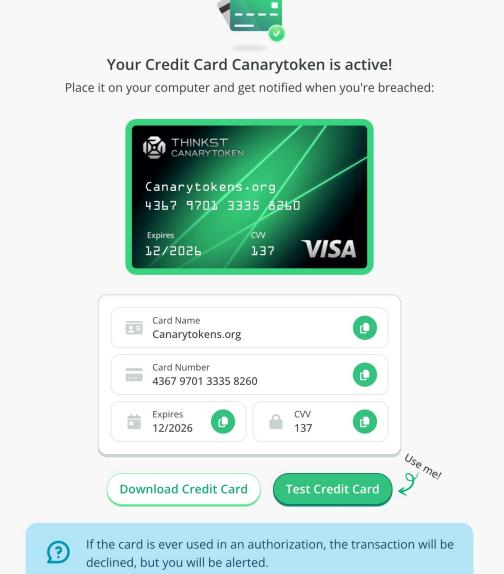


https://canarytokens.com/nest/



### It is that easy!









# LIVE DEMO: Tracking Digital Footprints

**Canary Tokens: Digital Tripwires** 



#### **Create Token**

Generate a unique token at canarytokens.org and embed in document/email



#### Deploy

Send to target or place where subject will access



#### **Receive Alert**

Get notification with IP, timestamp, and device info when accessed

Legal consideration: Ensure deployment adheres to applicable privacy laws and disclosure requirements in your jurisdiction

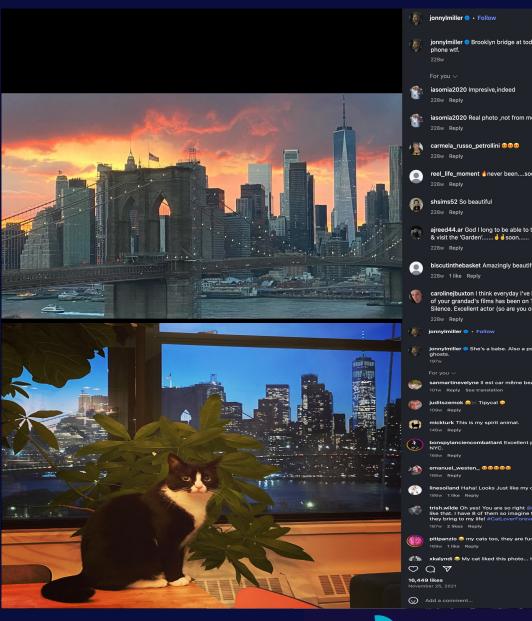


### Discover Angelina Jolie's ex-husband apartment using OSINT

Angelina Jolie and Jonny Lee Miller hung out in his Dumbo apartment. Using photos from his Instagram and an article from the DailyMail we're able to figure out where he lives.

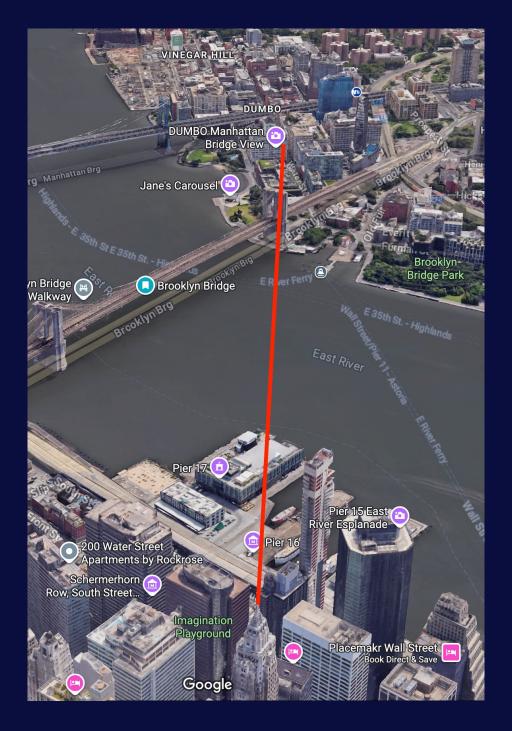






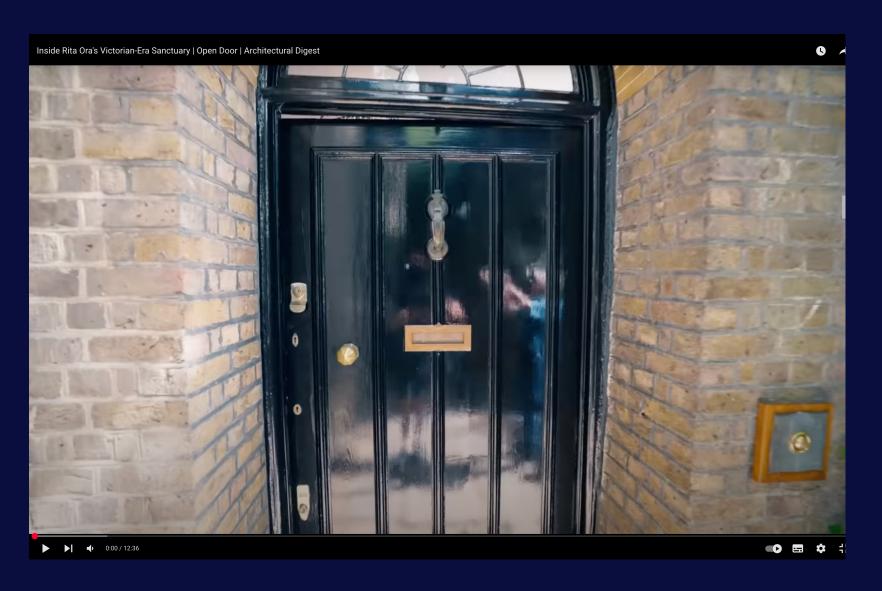


### Discover Angelina Jolie's ex-husband apartment using OSINT





Rita Ora did an Archdigest video a while back and showed off her house somewhere in London. Let's find it using OSINT.









Arthur Rackham

文 35 languages ~

Article Talk

Read Edit View history Tools ~

From Wikipedia, the free encyclopedia

**Arthur Rackham** RWS (19 September 1867 – 6 September 1939) was an English book illustrator. He is recognised as one of the leading figures during the Golden Age of British book illustration. His work is noted for its robust pen and ink drawings, which were combined with the use of watercolour, a technique he developed due to his background as a journalistic illustrator.

Rackham's 51 colour pieces for the early American tale *Rip Van Winkle* became a turning point in the production of books since – through colour-separated printing – it featured the accurate reproduction of colour artwork.<sup>[1]</sup> His best-known works also include the illustrations for *Peter Pan in Kensington Gardens*, and *Fairy Tales of the Brothers Grimm*.

#### Biography [edit]

Rackham was born at 210 South Lambeth Road, Vauxhall, London as one of 12 children. In 1884, at the age of 17, he was sent on an ocean voyage to Australia to improve his fragile health, accompanied by two aunts.<sup>[2]</sup> At the age of 18, he worked as an insurance clerk at the Westminster Fire Office and began studying part-time at the Lambeth School of Art.<sup>[3]</sup>

#### **Arthur Rackham**



Self-portrait, 1934

Born 19 September 1867

London, England

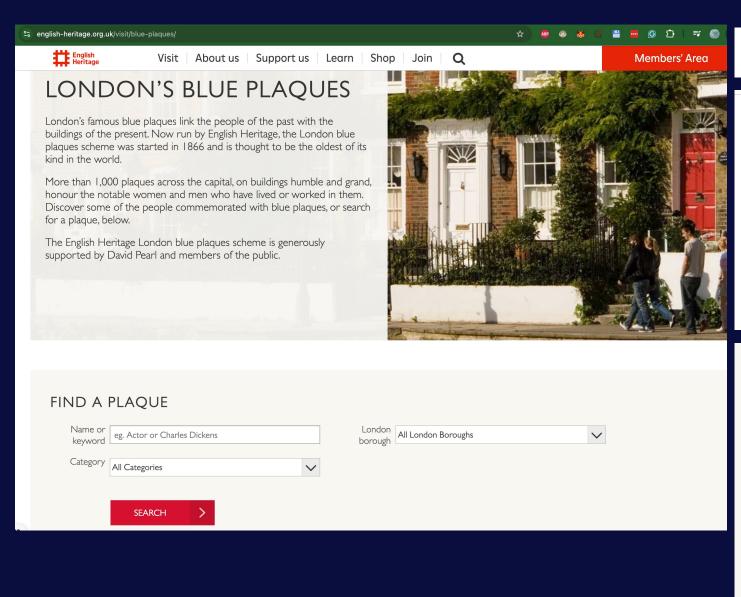
Died 6 September 1939 (aged 71)

Limpsfield, Surrey, England

Known for Children's literature, Illustration







From 1906 the family lived in Chalcot Gardens, near Haverstock Hill, [6] until moving from London to Houghton, West Sussex in 1920. In 1929, the family settled into a newly built property in Limpsfield, Surrey. [7] Ten years later, Arthur Rackham died at home of cancer.

#### I RESULT FOR RACKHAM



#### RACKHAM, ARTHUR (1867-1939)

Painter, Illustrator

• 16 Chalcot Gardens, Belsize Park, London, NW3 4YB, London Borough of Camden

#### RACKHAM, ARTHUR (1867-1939)

Plaque erected in 1981 by Greater London Council at 16 Chalcot Gardens, Belsize Park, London, NW3 4YB, London Borough of Camden



**Profession** Painter, Illustrator

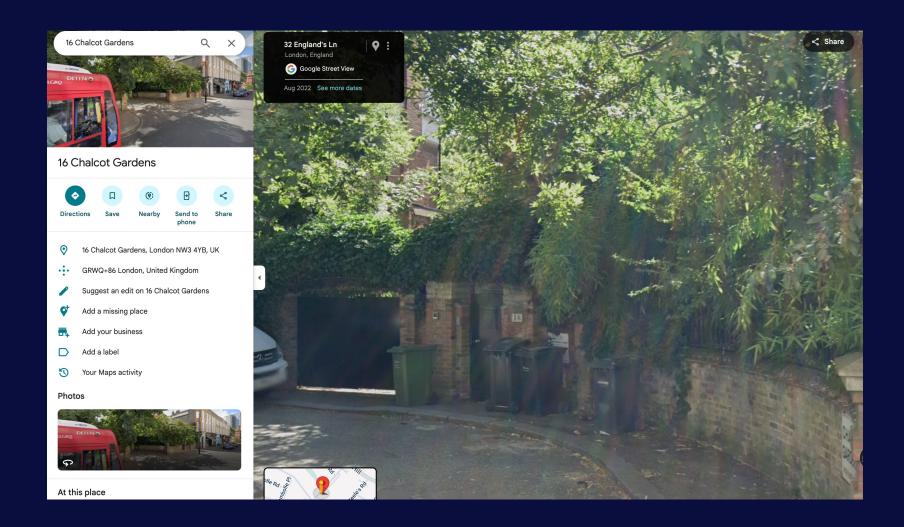
Category Cartoons and Illustration

Inscription ARTHUR RACKHAM 1867-1939 Illustrator lived here

Material Ceramic

All images © English Heritage







# The Photo's Secret (EXIF Data Extraction)

- 1. Enable Location Services: First, ensure that the camera on your device has location services enabled. This setting allows the camera to record the GPS coordinates in the photo's metadata.
- **2. Capture the Image:** Take a digital photo of your target subject or location.
- **3. Transfer the File:** Transfer the photo file from your camera or phone to a computer. You can do this easily using a method like Airdrop, a USB cable, or by emailing the file.
- **4. Use an Online EXIF Viewer:** Open a free online EXIF viewer tool in your web browser. Popular options include **get-metadata.com** or **exif.tools**.
- **5. Extract the Data:** Drag and drop the photo file from your computer directly into the viewer's upload area. The tool will instantly read and display all the embedded EXIF data.
- **6. Pinpoint the Location:** Locate the **GPS coordinates** in the displayed data. You can often click on the coordinates to open a mapping application like Google Maps, which will show the exact location where the photo was captured.

```
dondada@Dons-MacBook-Pro ~ % exiftool Downloads/ECBA/WindowsXP_1551719014755.jpg
ExifTool Version Number
                                : 12.76
                                : WindowsXP_1551719014755.jpg
File Name
                                : Downloads/ECBA
Directory
File Size
                                : 234 kB
File Modification Date/Time
                                : 2025:09:12 10:15:26+03:00
                                : 2025:09:12 15:04:00+03:00
File Access Date/Time
File Inode Change Date/Time
                                : 2025:09:12 10:15:29+03:00
File Permissions
                                : -rw-r--r--
                                : JPEG
File Type
File Type Extension
                                : jpg
MIME Type
                                : image/jpeg
XMP Toolkit
                                : Image::ExifTool 11.27
GPS Latitude
                                : 54 deg 17' 41.27" N
GPS Longitude
                                : 2 deg 15' 1.33" W
                                : OWoodflint
Copyright
Image Width
                                : 1920
Image Height
                                : 1080
Encoding Process
                                : Baseline DCT, Huffman coding
Bits Per Sample
                                : 8
                                : 3
Color Components
Y Cb Cr Sub Sampling
                                : YCbCr4:2:0 (2 2)
Image Size
                                : 1920x1080
Megapixels
                                : 2.1
GPS Latitude Ref
                                : North
GPS Longitude Ref
                                : West
GPS Position
                                : 54 deg 17' 41.27" N, 2 deg 15' 1.33" W
```



# The X-Ray Vision (Google Dorking)

#### What is Google Dorking?

Google Dorking is a technique that uses specialized search queries to find information that is publicly available but not easily accessible through standard searches. It's not hacking; it's simply a skill that allows you to use Google's advanced operators to find files and data that organizations have accidentally left exposed to the public. This includes everything from confidential spreadsheets and internal presentations to login pages and private documents.

#### The Challenge

An admin endpoint (e.g., a page allowing user creation) has been left exposed on the following dummy website, designed for security testing.

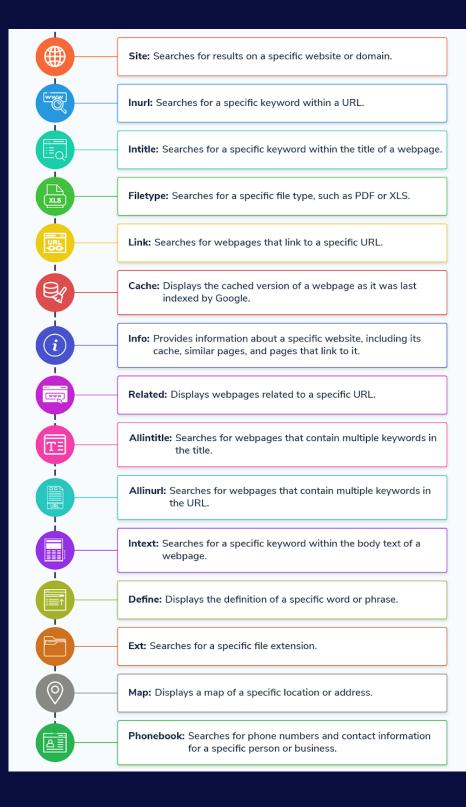
**URL:** testphp.vulnweb.com

**Your Mission:** Use the Google search operators to find the admin endpoint and create a user without authorization.

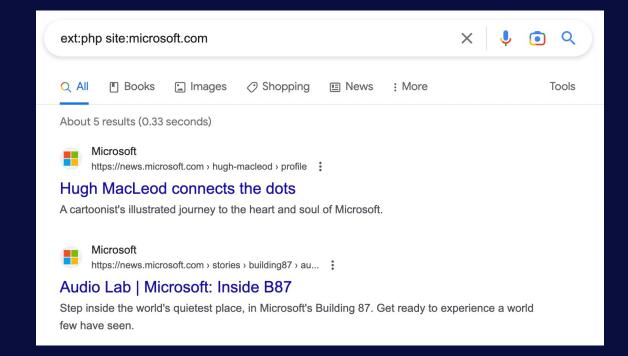
#### **Step-by-Step Guide**

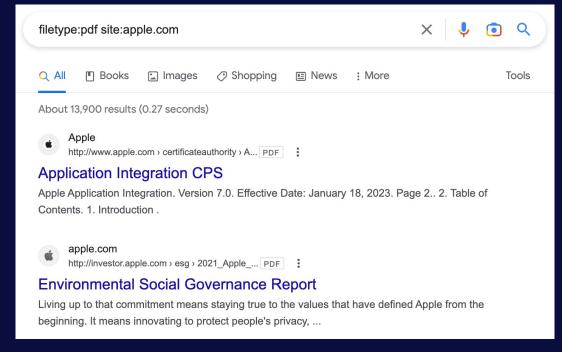
- 1. Open your web browser and navigate to <a href="https://www.google.com/search?q=Google.com">https://www.google.com/search?q=Google.com</a>.
- 2. In the search bar, construct your query by combining the operators. You will need to use site: to limit the search to the provided URL and quotation marks to search for the exact name of the flag.
- 3. Enter the complete search query and hit enter. The search results should lead you directly to the hidden file.
- Answer: site:testphp.vulnweb.com inurl:"admin"





# Google Dorking Commands







### Most Relevant Use Cases of OSINT

### Due Diligence & Background Check:

Assessing individuals, companies.

## Cybersecurity & Threat Intelligence:

Identifying vulnerabilities, tracking threat actors, and enhancing defenses.

### Fraud Detection & Risk Management:

Uncovering deceptive practices, financial scams, and reputational risks.

# Market Research & Competitor Analysis:

Gaining insights into industry trends, customer behavior, and competitor strategies.

### Journalism & Investigative Reporting:

Uncovering facts, verifying information, and exposing corruption.

### Geopolitical Analysis & National Security:

Monitoring global events, tracking extremist groups, and informing policy.



#### **Professional OSINT Tool Management**

#### **Essential Online Investigation Dashboard**

Modern OSINT investigations require a comprehensive suite of specialized digital tools. From social media analysis platforms to metadata extraction utilities, these tools form the backbone of professional intelligence gathering.

# **ALWAYS VET** YOUR TOOLS!

#### **Tool Authentication**

Verify the legitimacy and security credentials of every investigation tool before deployment in sensitive cases.

#### **Data Integrity**

Ensure tools maintain chain of custody standards and provide audit trails for legal proceedings.

#### Privacy Compliance

Confirm that tools comply with relevant privacy regulations and professional ethical standards.





Github



Github



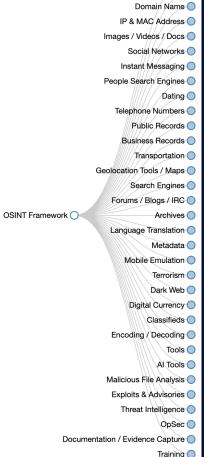


Hatless1der Cyb Detective Github

Cyb Detective **OSINT Map** 



Unvetted tools can compromise investigations, expose sensitive data, or introduce malicious code into your systems. Professional due diligence is non-negotiable.





### Preserving Evidence: Creating Your Own Chain of Custody

When you collect digital evidence, you must prove it hasn't been altered. This is the chain of custody.

#### 1. Document Everything:

• Write down every step you take. What did you search for? Where did you click? What did you download? Note the date and time.

#### 2. Record the Collection:

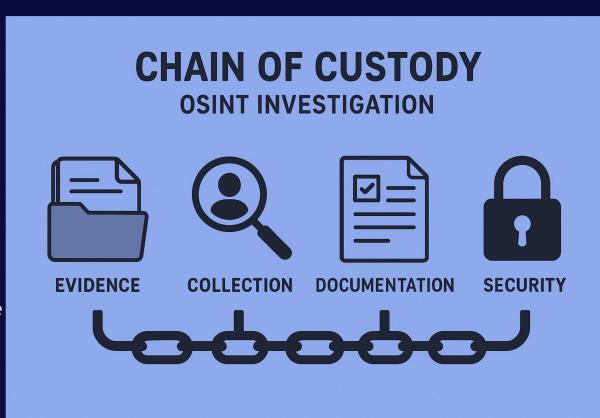
• The best method is a screen recording of the entire process, from logging in to saving the file. This shows every action and proves you didn't manipulate the evidence.

#### 3. Create a Digital Fingerprint (Hash):

 Use a free tool to calculate the "hash" (a unique code) of the original file the moment you save it. If even one pixel is changed, this code will change completely. Record this code.

#### 4. Use Archiving Tools:

For websites and social media, use an archiving service like archive.today.
 It saves a copy of the page independently and gives you a link to a time-stamped, verifiable version





# Challenging Digital Evidence in Court

#### **IP Attribution Challenges**

- Dynamic IP assignments and CGNAT complications
- Unsecured networks/publicWiFi usage
- VPN/proxy/Tor usage possibilities
- Timestamp inconsistencies across devices

# Collection Methodology Questions

- Chain of custody documentation
- Tool reliability and version information
- Calibration and maintenance records
- Analyst qualifications and certifications

#### **Legal Authority Issues**

- Jurisdictional questions for cross-border data
- Warrant specificity and scope limitations
- GDPR/data protection violations
- Fruit of the poisonous tree arguments

Remember: The prosecution must prove beyond reasonable doubt that their technical evidence specifically links to your client – simply the technical possibility is insufficient.



### Defence Challenge: Questioning Authority's OSINT

#### **Source Reliability:**

How credible is the source? A random forum post? An anonymous social media account?

#### **Chain of Custody:**

How was the data collected, preserved, and presented? Was it altered?

#### **Authenticity:**

Can the prosecution definitively prove the online persona belongs to your client?

#### Relevance:

Is the OSINT evidence directly relevant?

#### **Expert Testimony:**

Challenge the qualifications and methodology of the state's "expert."

Remember: OSINT is useful, but it's also fragile. And fragility is exactly what you can exploit in court.



### Defence Challenge: The Police's Chain of Custody

When the police present digital evidence, their chain of custody must be flawless. Ask simple, practical questions.

#### Who, When, Where?

Who collected the evidence? What was the exact date and time? What was the physical location of the officer?

#### How?

What software or tool was used to capture the information? Was it just a screenshot? Did they record the process?

#### The Original Fingerprint:

Ask for the digital fingerprint (hash) of the file at the moment of collection. Does it match the fingerprint of the evidence presented in court?

#### **Storage:**

Where and how was the file stored between collection and trial? Who had access to it? Can you provide an access log?



#### Defence Challenge: IP Address Attribution

# An IP address is not a person. An expert can prove it.

IP address attribution represents one of the most significant challenges in digital forensics. Legal professionals must understand the technical limitations and potential pitfalls when dealing with IP-based evidence.

#### **Shared IP Networks**

Entire households, office buildings, coffee shops, and public spaces often share a single public IP address through Network Address Translation (NAT), making individual attribution impossible.

#### **Dynamic IP Assignment**

Most residential and mobile IP addresses change frequently through DHCP lease renewals, meaning today's address may belong to a completely different user tomorrow.

#### **VPNs & Proxy Services**

Virtual Private Networks and proxy servers mask true locations, potentially routing traffic through servers in different continents while maintaining user anonymity.

#### **Compromised Networks**

Unsecured Wi-Fi networks allow unauthorized access by neighbors, passersby, or malicious actors, creating plausible deniability for the registered network owner.

#### **Geolocation Limitations**

IP geolocation databases typically provide city or regional accuracy at best, rarely pinpointing specific addresses, and often contain outdated or incorrect information.

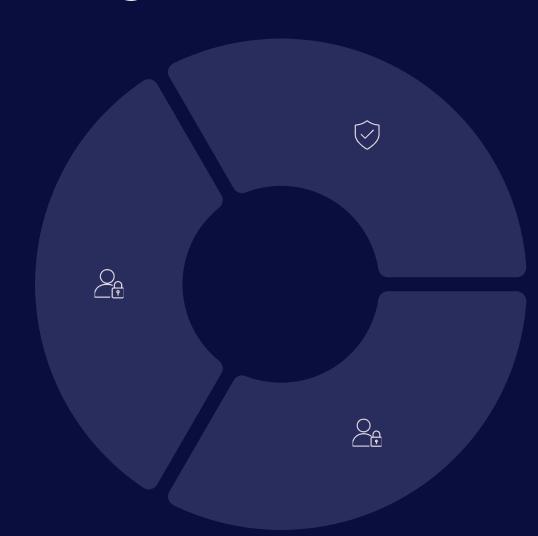


### **Securing Lawyer-Client Communications**

# The Confidentiality Triad

#### **End-to-End Encryption**

- Signal for messages/calls
- · ProtonMail for email
- · Tresorit for document sharing
- VPN for Internet activity



#### **Operational Security**

- Secure device management
- Physical access controls
- Clean desk policy

#### **Client Education**

- Communication protocols
- Document handling
- Privacy preservation

Never discuss case details on standard cellular calls, unencrypted emails, or third-party messaging platforms lacking E2EE protection.



### Counter-Surveillance for Defense Attorneys



#### **Physical Measures**

- Faraday bags for phones during sensitive meetings
- Regular sweeps for listening devices in offices
- Privacy screens for monitors/devices
- Awareness of physical surroundings during client meetings

#### **Digital Protections**

- Dedicated devices for sensitive case work
- Regular security updates on all devices
- VPN usage for all internet connectivity
- Disk encryption for all storage
- Two-factor authentication everywhere

Remember: Surveillance may be both state-sponsored AND private (opposing parties, tabloid media). Assume heightened risk in high-profile cases.



### Protecting Ourselves: OPSEC for Legal Professionals

How can we use these investigative techniques to protect ourselves as professionals? Understanding OSINT capabilities is the first step toward implementing effective operational security.

(11)

#### **Conduct a Digital Self-Audit**

Perform comprehensive searches of your online presence. Google yourself using various combinations of your name, professional affiliations, and contact information to understand your digital footprint.

ΗŌ

#### **Practice Mindful Posting**

Avoid sharing sensitive personal information, location data, travel plans, or case-related details that could compromise your safety or professional obligations.

#### **Recognize Social Engineering**

Develop skills to identify phishing attempts, pretexting, and other social engineering tactics designed to extract credentials or sensitive information.

#### **Strengthen Privacy Settings**

Review and enhance privacy configurations across all social media platforms, professional networks, and online accounts. Limit public access to personal information.

 $\subset$ 

#### Implement Strong Authentication

Use complex, unique passwords for each account and enable Two-Factor Authentication (2FA) wherever possible to prevent unauthorized access.

#### Sanitize Digital Documents

Remove metadata from files before sharing externally. Document properties can reveal editing history, user names, and other sensitive details.

#### What is OPSEC?

Operational Security is an analytical and executional process that can be applied to any activity or operation for the purpose of denying valuable or critical information to an adversary.



#### "We're clean on OPSEC"

#### Pete Hegseth

TEAM UPDATE:

TIME NOW (1144et): Weather is FAVORABLE. Just CONFIRMED w/CENTCOM we are a GO for mission launch.

#### **JD Vance**

I will say a prayer for victory

#### Pete Hegseth

We are currently clean on OPSEC.

#### Steve Witkoff





### "We're clean on OPSEC"





#### **Protecting Your Business from Digital Threats**

### **Business Email Compromise Defense**

Business Email Compromise (BEC) attacks cost organizations billions annually. Professional email analysis and robust internal protocols form your primary defense against sophisticated fraud attempts.



#### **Expert Email Analysis**

Suspicious email headers contain detailed routing information. Forensic experts can analyze message paths, authentication records, and metadata to determine true origins and detect spoofing attempts.



#### **Payment Verification Protocols**

**NEVER** change payment information based solely on email requests. Always verify through independent communication channels using previously established contact methods.



#### **Voice Confirmation Requirements**

**ALWAYS** verbally confirm high-stakes financial requests using known, trusted phone numbers from your records—never numbers provided in suspicious emails.

Staff Training is Critical: Train all employees to maintain healthy skepticism toward urgent or unusual requests, especially those involving financial transactions or sensitive information sharing.

#### **Essential Security Mindset**



# Quiz





### Real Quiz





### CASE STUDY: The 120 Bitcoin Heist

The Scenario: A victim loses 120 Bitcoins in a sophisticated fraud.

The investigation begins with very limited information from authorities.

The Loss: 120 BTC

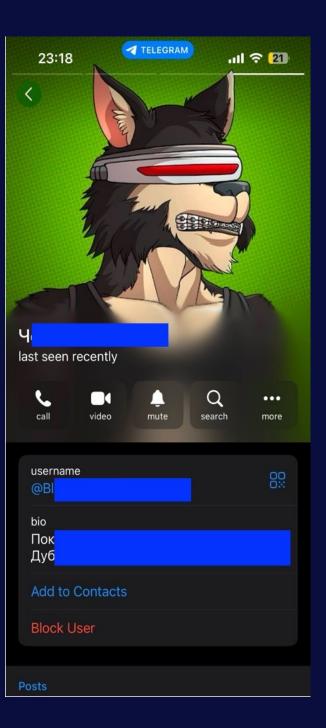
The Initial Leads (The "Digital Breadcrumbs"):

An email address: sXXXXX@mail.ru

A username: ShamMs

A Telegram handle: BlackXXXX A phone number: +792XXXXXXXX

**The Objective:** Can we turn these few digital clues into a real-world identity?





### **CASE STUDY: Connecting the Dots**

The investigation focused on finding where these clues appeared together online.

Step 1: The Data Breach Pivot:

Searching leaked databases revealed that the email, phone number, and the full name Shamurzaev MagoXXX-SaXXX appeared together in multiple breaches (VK, CDEK courier). This was the key that connected the alias to a real name.

**Step 2:** Deconstructing the Alias:

The username ShamMs was identified as a structured alias:

Sham = Shamurzaev

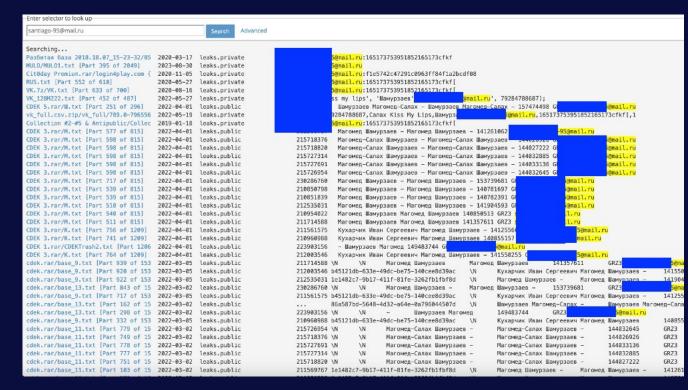
M = MagoXXX

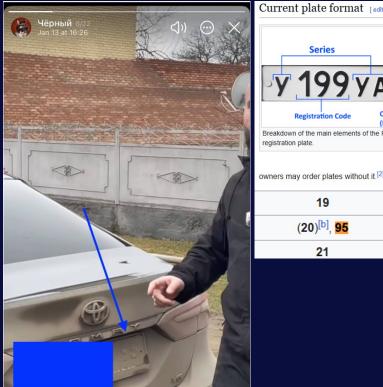
S = SaXXX

Step 3: Social Media & Public Records:

A search for the full name led to a VK (Vkontakte) profile with photos, confirming his identity.

The profile and other public data confirmed his location as Grozny, Chechnya. Russian business registries showed he was a registered entrepreneur, providing a legal anchor to his identity.







letters. To improve legibility of the numbers for Petersburg, etc.) and the international code RUS with the 1991 to 1993 Russian flag typically to the right of

plate with the Moscow) and country (RUS)

19	Republic of Khakassia
(20) <sup>[b]</sup> , <mark>95</mark>	Chechen Republic
21	Chuvash Republic



### **CASE STUDY: The Outcome**

From a handful of digital clues, a complete profile was built.

The Attacker: Shamurzaev MagoXXX-SaXXX, a Russian national born in 1994.

Location: Grozny, Chechen Republic, Russia.

#### **Key Identifiers Confirmed:**

- Photos from social media.
- University affiliation in Ukraine.
- Official business registration records.

#### **Significant Risk Factors Uncovered:**

A familial name match to an individual listed under Russian anti-terrorism financing laws.

Origin in a region known for transnational criminal networks.

**Conclusion:** The investigation successfully unmasked a supposedly anonymous attacker, providing the legal team with a real name, face, location, and actionable intelligence.



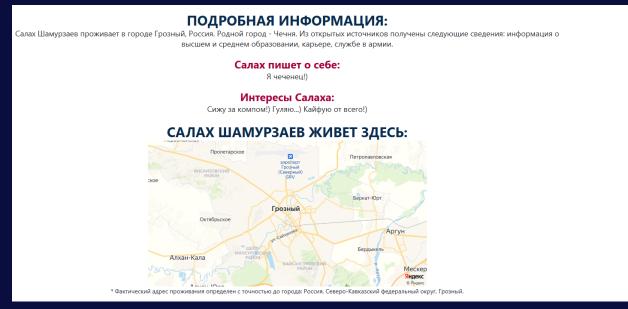
Страна проживания: Россия

**Город:** Грозный **Телефон:** 22861

Текущая деятельность: НТУ «ХПИ»

**Отправить** сообщение







# **Q&A** and Key Takeaways

#### **Use OSINT Defensively**

Apply the same techniques authorities use to verify their claims and develop counter-narratives

### **Secure Client Communications**

Use appropriate encrypted channels and educate clients on proper security protocols

#### **Protect Yourself**

Implement proper security measures to prevent business email compromise and surveillance

#### **Challenge Digital Evidence**

Question technical assumptions and demand proper authentication of digital forensics

Contact Information

<u>infosec@CyberOpsNetwork.com</u> | www.CyberOpsNetwork.com



### Workshop time – Group 1

- 1. Download the following image: <a href="https://bit.ly/ECBA-CyberOps">https://bit.ly/ECBA-CyberOps</a>
- 2. Use only details from GitHub, Twitter(X) and the WordPress website to answer the questions from the quiz





# Workshop time – Group 2

Picture 1





Picture 2



