OSINT

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OSINT workshop files!

https://github.com/Johanvdb-ehb/BIP-OSINT-Workshop

What is OSINT?

What is OSINT?

- Open Source Intelligence =

  Collecting and analyzing publicly available information to produce actionable insights.

- It’s not just “Googling”. It’s systematic, targeted, and analytical.

What is OSINT?

- Sources may include:
  - Websites, news, public databases
  - Social media platforms
  - Domain/IP information
  - Government records
  - Metadata, images, leaked data

Why is OSINT important?

In cybersecurity / ethical hacking

- Reconnaissance phase of penetration testing
- Identifying vulnerabilities before touching the target
- Mapping infrastructure & technologies
- Understanding people and processes

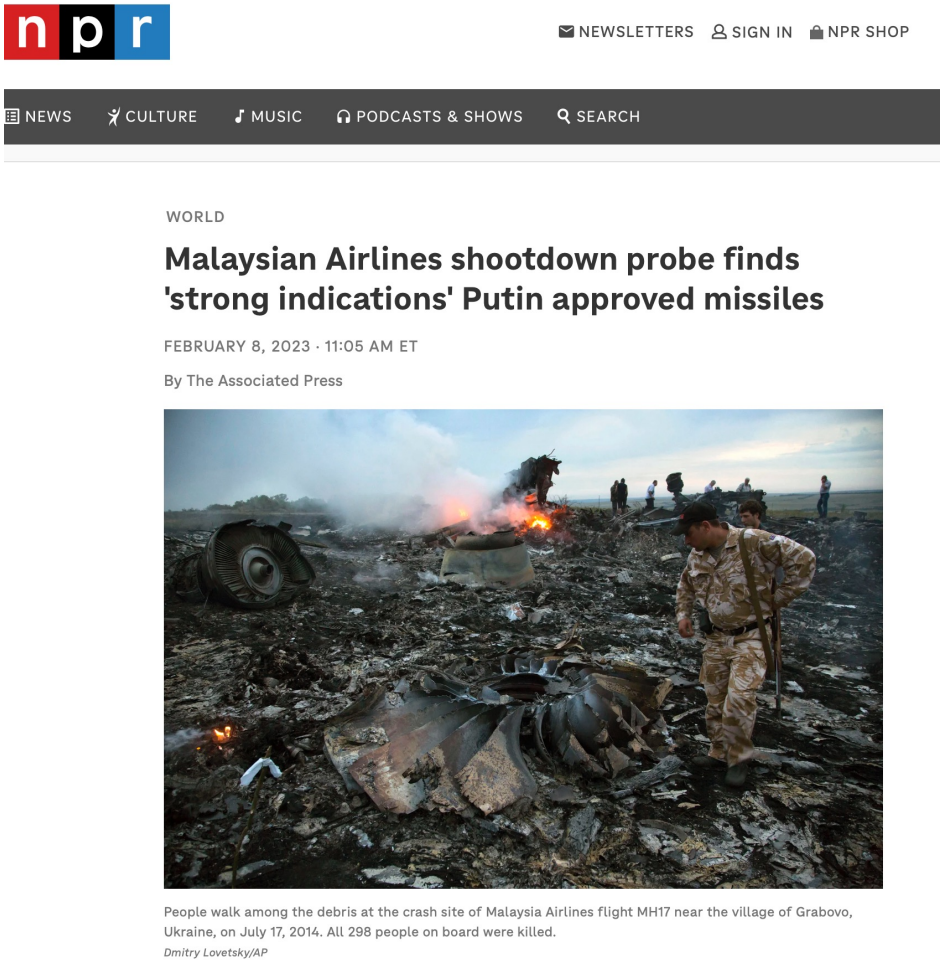
Real-World Examples

MH17 Airliner Shootdown (2014)

Tracking Russian troop movements via TikTok videos

Case 1: MH17 Airliner Shootdown (2014)

- Malaysia Airlines Flight MH17 was shot down over Eastern Ukraine, killing 298 people.
- Official story (at first): Confusion, blame-shifting, denials.



npr

NEWSLETTERS SIGN IN NPR SHOP

NEWS CULTURE MUSIC PODCASTS & SHOWS SEARCH

WORLD

Malaysian Airlines shootdown probe finds 'strong indications' Putin approved missiles

FEBRUARY 8, 2023 · 11:05 AM ET

By The Associated Press

People walk among the debris at the crash site of Malaysia Airlines flight MH17 near the village of Grabovo, Ukraine, on July 17, 2014. All 298 people on board were killed.

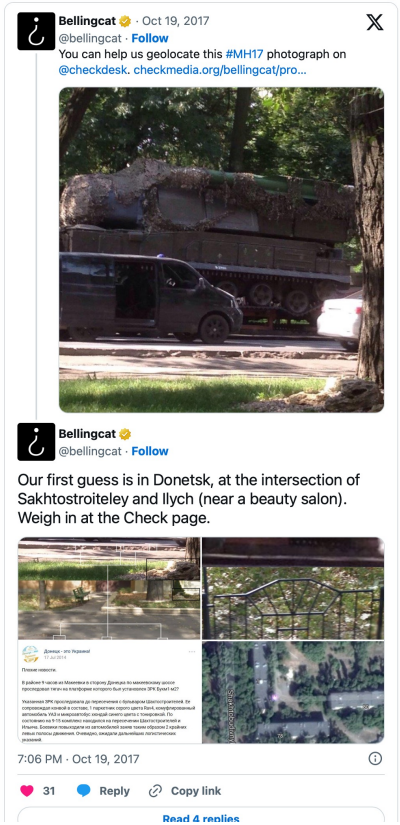
Dmitry Lovetsky/AP

Case 1: MH17 Airliner Shootdown (2014)

https://www.youtube.com/watch?v=RyxIiW9m2mM

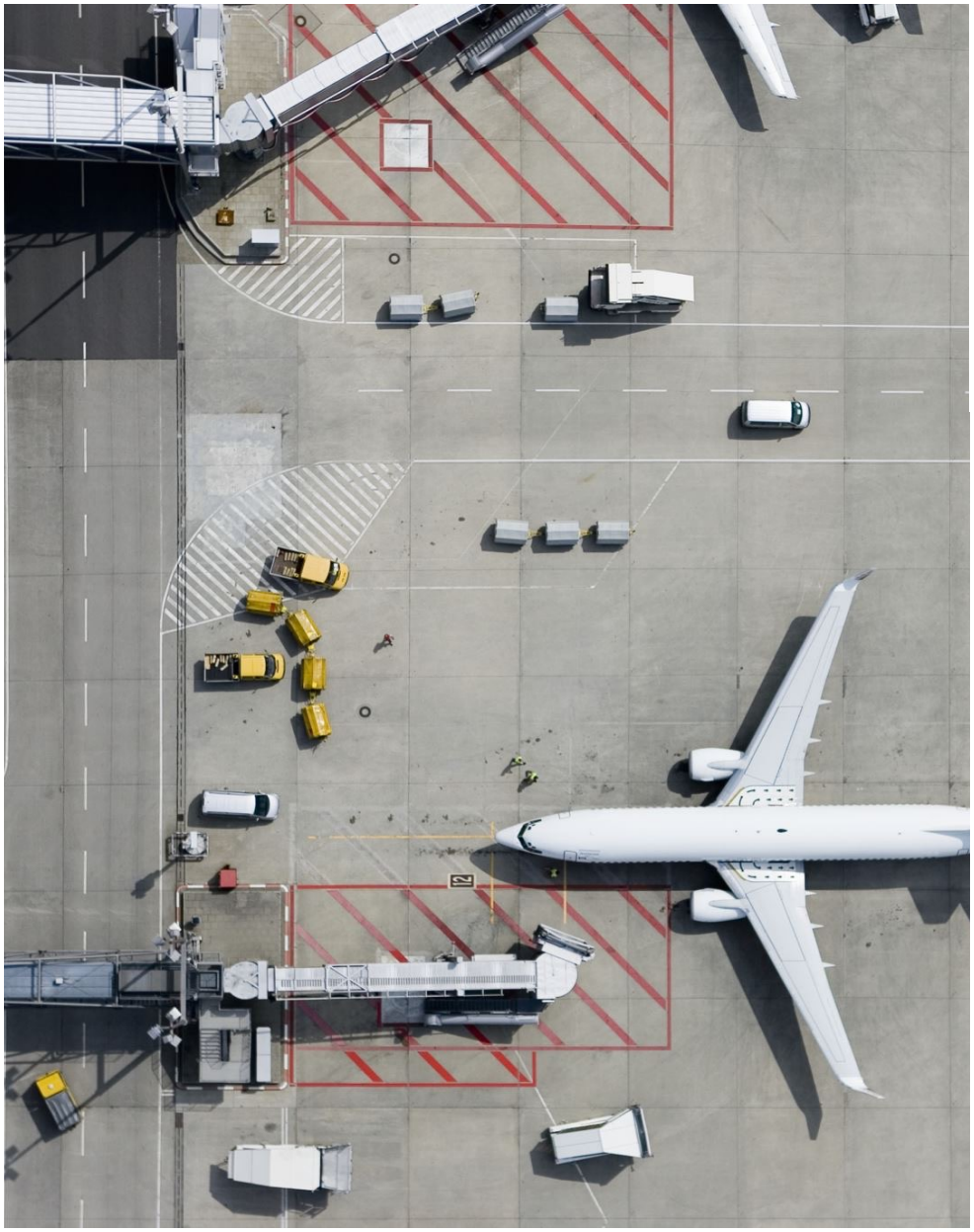
Case 1: MH17 Airliner Shootdown (2014)

- What Bellingcat (https://www.bellingcat.com) did:
- Collect public photos & videos
  - Social media posts from locals
  - Buk missile launcher seen in multiple locations
- Identify unique markings
  - Numbers, paint, dents → match across images



Case 1: MH17 Airliner Shootdown (2014)

- Match background: buildings, trees, road signs
- Use Google Earth / satellite imagery



Case 1: MH17 Airliner Shootdown (2014)

- They proved
  - The Buk came from Russian 53rd Brigade
  - It crossed the border into Ukraine
  - It was near the launch site hours before impact
  - Later seen missing one missile
- Result:
  - Their findings were confirmed by official international investigators and used in court.
- OSINT can solve real-world global crimes with public data only.

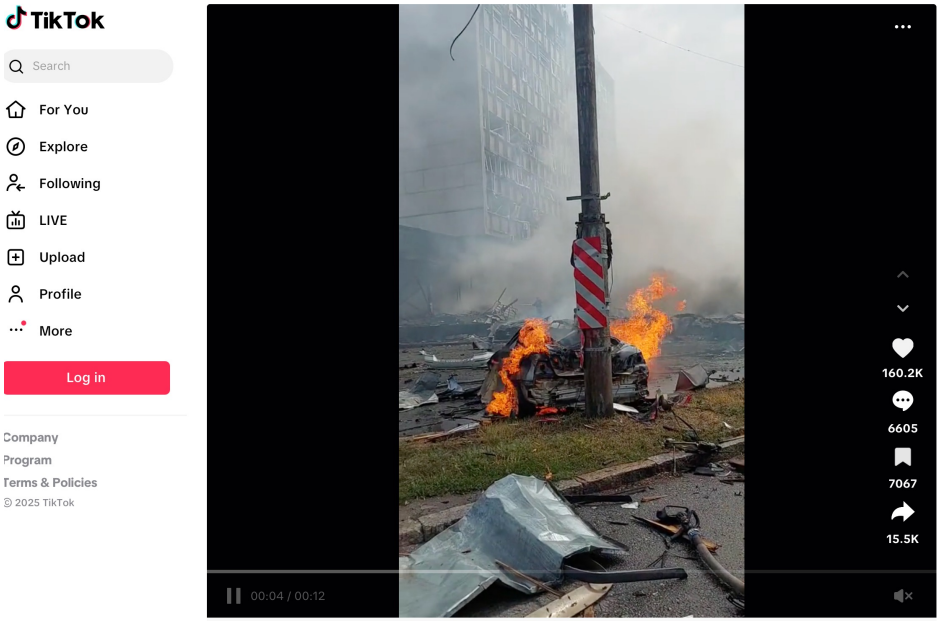
Who is Bellingcat?

- Bellingcat is an independent investigative journalism collective founded in 2014.
- They became famous for using OSINT techniques like public data, social media and satellite imagery to uncover the truth in major global events.
- They showed the world that you don’t need to be a government or spy agency to do intelligence work. A laptop, internet, and smart analysis can be enough.

- https://www.bellingcat.com

Tracking Russian troop movements via TikTok videos

- TikTok's short, highly visual clips created a huge, fast stream of on-the-ground footage during the Ukraine crisis. The clips were often filmed by locals, conscripts, or soldiers themselves. Investigators estimated a large portion of frontline visual evidence came from TikTok.
- TikTok strips EXIF/location metadata from videos, so investigators rely on visual clues, user captions, comments, language, and other posts by the same account to infer origin/time.
- https://www.bellingcat.com/resources/how-tos/2022/11/02/how-to-investigate-tiktok-using-tiktok-ukraine-research/



OSINT PRINCIPLES & MINDSET

OSINT is not just searching. It’s a PROCESS.

Intelligence Cycle

- Define the question / objective
  - “What exactly do I need to know?”
- Plan & choose sources
  - Where can I find reliable information?
- Collect data
  - Tools, searches, scraping, social media, docs, images,…
- Verify & analyze
  - Check credibility, cross-check, extract insights.
- Produce output
  - Write report / profile / timeline / map.
- Review & repeat
  - Often cyclic. New info = new questions.

OSINT

- OSINT is NOT just finding data.
- It’s turning data into intelligence into action.

Data	Raw info	“Johan’s email is…”
Intelligence	Analysis + context + relevance	“This email connects Johan to company/organisation X and explains his role.”

- To produce intelligence, not just collect data.

OSINT goal

Mindset shift for ethical hackers

- **Traditional hacking starts with technical exploitation.**
- **Modern hacking starts with information exploitation.**
- OSINT allows you to:
  - Map infrastructure BEFORE touching it
  - Discover vulnerabilities without scanning
  - Understand the human layer (employees, passwords, behaviors)
  - Reduce noise and stay stealthy

- **“The fewer packets you send, the better the hacker you are.”**

Documentation & Reproducibility

- Why?
  - Keep evidence trail
  - Allow others to verify
  - If you present findings, you must show HOW you got them
- Good habit: record URLs, dates, queries, screenshots!

Legal & Ethical Boundaries

- OSINT is based on public information, but:
  - Legal does not always mean ethical
  - Information can still be sensitive or personal
  - Some sites forbid scraping or automated access
  - Don’t expose private individuals unnecessarily

Legal & Ethical Boundaries

- Ask yourself:
  - Should I access this?
  - Should I store/share it?
  - Could this harm someone?

- Golden rule:
  - OSINT = Open Source, but always Responsible.

Exercise: Ethical Dilemma

- While researching a client during a reconnaissance task you find a publicly available PDF (on the client's website) that contains an employee's personal phone number. The PDF is clearly internal (labelled "internal" in the filename) but accessible without login.

- Include it in the report? Redact it? Contact client first?

Solution

- **Verify**: Confirm the file is truly public (URL accessible without auth) and capture evidence (screenshot, URL, retrieval datetime). Document how you found it (query, dork, etc.).
- **Assess harm**: Consider what harm public exposure of that phone number could cause (targeted phishing, harassment, identity risk).
- **Notify client (safest immediate step):** Before publishing the finding in a broadly distributed report, privately notify the client (normal in pentests anyway) and propose options: removal, redaction, or inclusion with redaction. Provide remediation steps (restrict directory, remove file, replace with sanitized copy).
- **Report responsibly**: In the formal report, include the finding but redact direct PII (replace the number with [REDACTED: personal phone number]) while describing the location and impact.

Exercise

- We are doing a penetration test for ehb.be.
- Can we identify staff members who may be vulnerable to phishing?

Solution

- Collect public staff pages, contact pages, PDFs, and site:ehb.be "@ehb.be".
- Pivot emails: LinkedIn, Twitter, GitHub to confirm identities and roles.
- Prioritise high-value targets (IT, finance, admin, helpdesk, VPN/mail admins).
- Verify with 2 signals (staff page + LinkedIn or matching email on GitHub).
- Report findings (redact PII for public sharing) with suggested mitigations (remove public personal emails, enforce email format, phishing training).

Google dorking/hacking

Google Dorking

- Google dorking is using advanced search operators to find exposed files, forgotten pages, credentials, configuration files and sensitive text that ordinary searches miss.
- Legal & ethical rule: only search targets you have written permission to test. Public does not always mean publishable.

Google Dorking

- Common operators:
  - site: limit to a domain (site:example.com)
  - filetype: find file types (filetype:pdf, filetype:xlsx)
  - inurl: / intitle: words in URL or title
  - ext: (same as filetype) and - to exclude results
  - quoted phrases "", OR, * wildcard
  - chaining: combine for precision (site:example.com filetype:xlsx "password")
- Tip: use cache: or Wayback snapshots to find removed content. (https://web.archive.org)
- Always record: full query, timestamp, and result URL (reproducibility).

Google Hacking

Advanced operators use the following syntax:

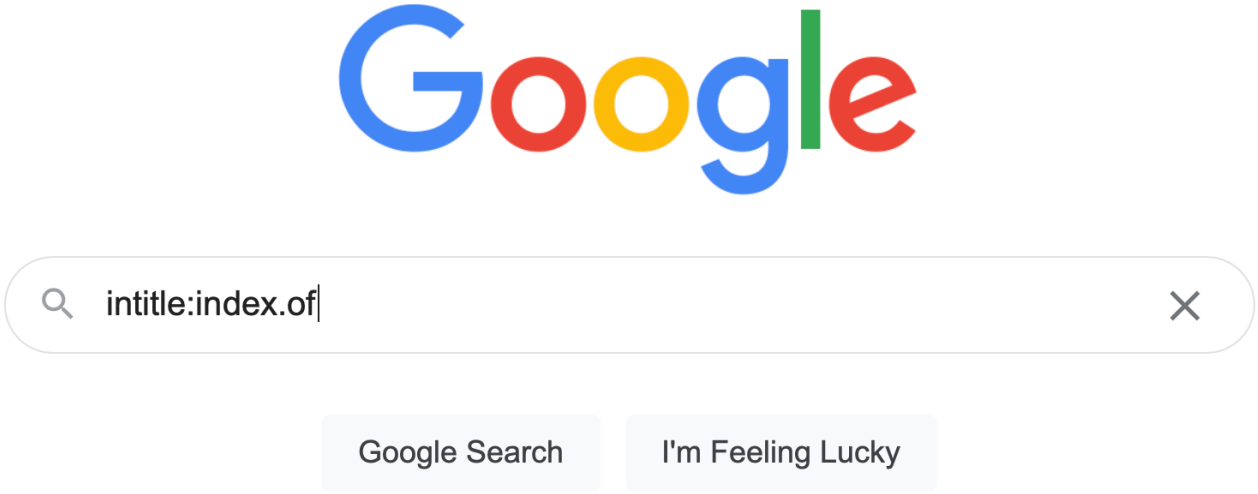
Operator	Purpose	Mixes with other Operators?	Can be used alone?
intitle	Search page title	yes	yes
allintitle	Search page title	yes	yes
inurl	Search URL	yes	yes
allinurl	Search URL	no	yes
filetype	Search specific files	yes	no
allintext	Search text of page only	yes	yes
site	Search specific site	yes	yes
link	Search for links to pages	no	yes
inanchor	Search links anchor text	yes	yes
numrange	Search numbers within a desired range.	yes	yes
daterange	Search in date range	yes	no

Google Hacking

Special Search Characters

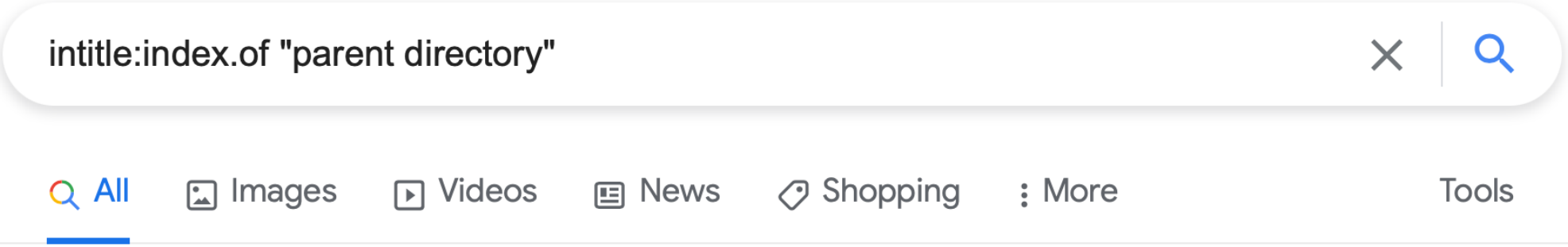
Character	Purpose
+	forced inclusion of something common
-	exclude a search term
“ ”	use quotes around search phrases
.	a single wildcard
*****	any word
|	Boolean ‘OR’
(“master card” | mastercard)	Parenthesis group queries

Examples of Google Hacking



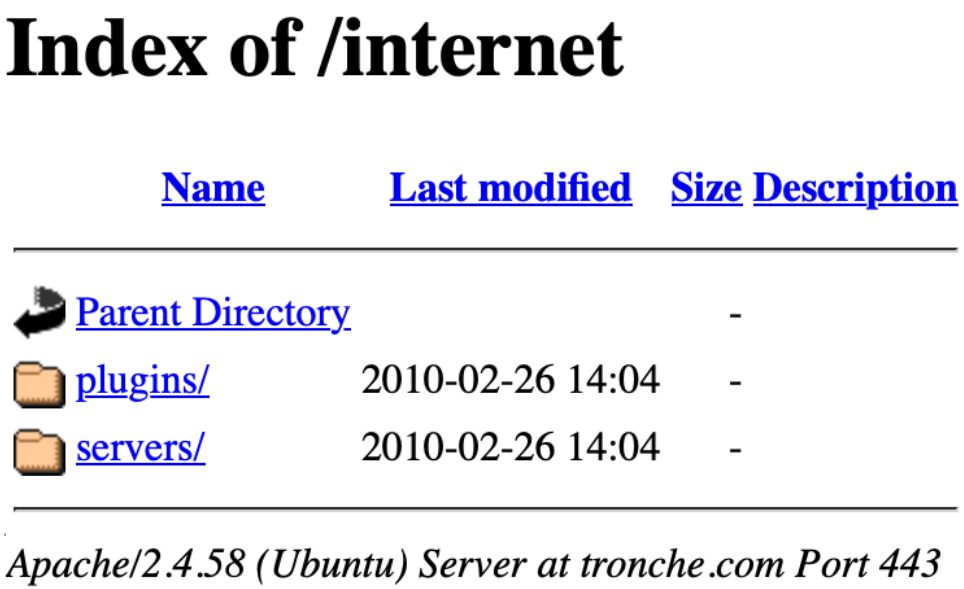
- The `intitle:` operator is used to search for specific terms in the title of a webpage.
- For example, `intitle:”index of”` could reveal web servers with directory listing enabled.

Directory listings



Directory listings

- A basic query that returns a large number of false-positive results:
  - **intitle:index.of**
- These queries return some more interesting stuff:
  - **intitle:index.of "parent directory"**
  - **intitle:index.of name size**



Web Server Detection

- A Security Tester can use this information to determine the version of the web server, or to search Google for vulnerable targets. In addition, this indicates whether the web server is well maintained or not. Query:
  - intitle:index.of server.at
- This query focuses on the term “index of” in the title and “server at” appearing at the bottom of the directory listing.

Discover open vulnerabilities on a network

- You can discover open vulnerabilities on a network. For example, the following provides any page holding the results of a vulnerability scan using Nessus:
  - intitle:”Nessus Scan Report" "This file was generated by Nessus”

Let's try it out

Assignment

- Let’s use Google to search for
  1. Find directory listings (exposed folders / “index of” pages).
  2. Discover public web servers (default pages, server banners).
  3. Locate email lists (email.xls/csv) containing possible Personally Identifiable Information (PII).
  4. Find FTP servers / exposed file shares.

- Check out
  - https://www.exploit-db.com/google-hacking-database
- **Dorking is passive. You are only using search engines. Don’t attempt to access admin interfaces, authenticate, or exploit anything.**

Solutions

Directory listings, find exposed folders

- intitle:"index of" "Parent Directory" "last modified"
- intitle:"Index of /" "Index of" "Name" "Last modified"
- intitle:"index of" "backup" OR "backups" "sql" OR "zip" OR "tar"

- **Why**: Directory listings often expose file names and sometimes downloadable backups.
- **What to record:** URL, screenshot, suspicious filenames (e.g., backup.sql, db_dump.zip).

Web server default pages & banners

- intitle:"Welcome to nginx"
- intitle:"Apache2 Ubuntu Default Page"
- "It works!" "Apache"
- intext:"Welcome to" "This is the default web page"

- **Why**: Default pages or server banners often indicate forgotten or unpatched hosts.
- **What to record:** URL, page title, short note why it’s worth triage.

Email lists / spreadsheets

- filetype:xlsx "email" OR "e-mail" OR "contact"
- filetype:xls "email" OR "phone"
- filetype:csv "email" OR "phone" OR "address"
- inurl:uploads filetype:xlsx "email"

- **Why**: Public spreadsheets frequently contain PII and are indexed by search engines.
- **What to record**: URL, header row or screenshot, sensitivity rating (Low/Medium/High).

FTP servers / exposed shares

- inurl:ftp:// "index of"
- "ftp://" "Parent Directory" "index of"
- intitle:"index of" intext:"ftp"

- **Why**: Some FTP servers are indexed and reveal files or credentials.
- **What to record**: FTP path/URL, filenames seen, whether anonymous access appears enabled.

Metadata & geolocation

Leaking sensitive information

Leaking of sensitive information

- Metadata = information about a file.

- Examples:
  - Photo EXIF: camera model, timestamp, GPS coordinates, …
  - Office docs (DOCX/PPTX): author name, computer username, editing history, hidden comments.
  - PDFs: title, author, creation/modification timestamps.
  - Images inside docs can carry their own EXIF too.

Why metadata leaks matter

- Reveals who created a file (author, email, username).
- Reveals when & where (timestamps, GPS).
- Can link seemingly unrelated items (same camera serial, same computer name).

Let’s have a look!

Metadata & geolocation

Find hidden metadata

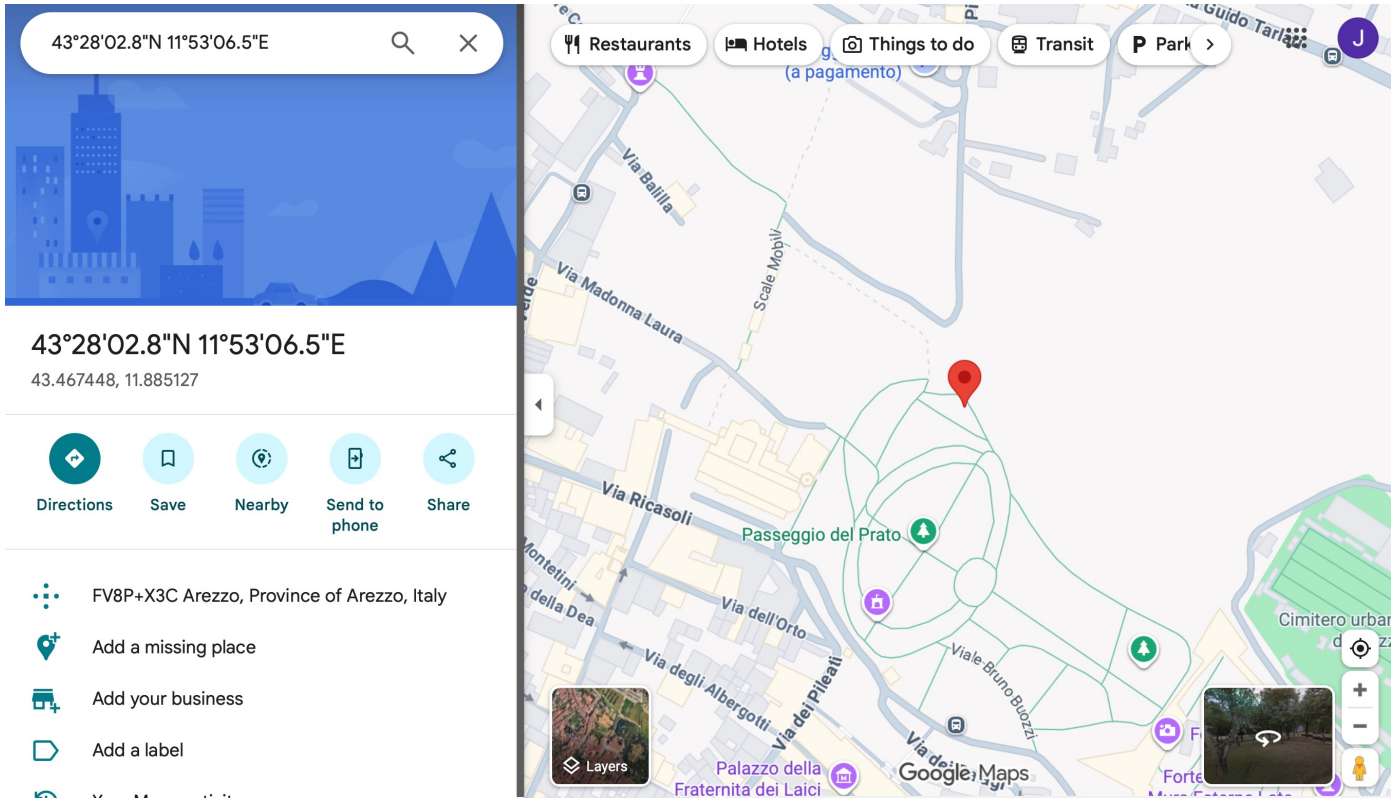
- Use a real public image:
  - https://github.com/ianare/exif-samples/blob/master/jpg/gps/DSCN0010.jpg
- In Kali terminal

wget -O DSCN0010.jpg https://raw.githubusercontent.com/ianare/exif-samples/master/jpg/gps/DSCN0010.jpg

exiftool DSCN0010.jpg

exiftool -c "%.6f" DSCN0010.jpg # convert to decimal

Google Maps


43°28'02.8"N 11°53'06.5"E
43°28'02.8"N 11°53'06.5"E
43.467448, 11.885127
Directions
Save
Nearby
Send to phone
Share
FV8P+X3C Arezzo, Province of Arezzo, Italy
Add a missing place
Add your business
Add a label
Restaurants
Hotels
Things to do
Transit
Park
(a pagamento)
Via Balilla
Via Madonna Laura
Scale Mobili
Via Ricasoli
Passeggio del Prato
Via dell'Orto
Via degli Albergotti
Via dei Pileati
Viale Bruno Buozzi
Palazzo della Fraternita dei Laici
Cimitero urban
Layers
Google Maps

Practical mitigation

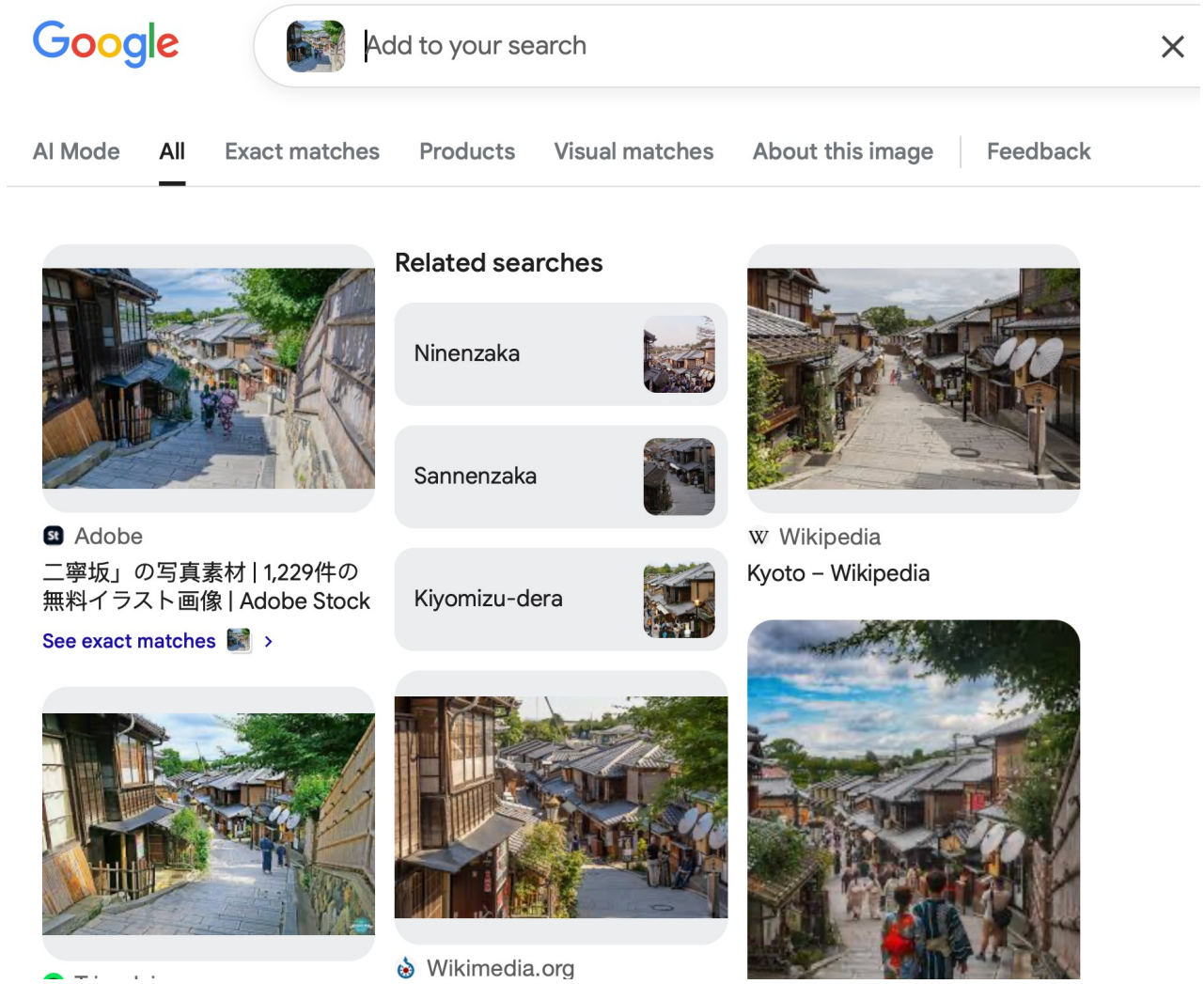
- Command to strip EXIF with exiftool:

```
exiftool -all= -overwrite_original DSCN0010.jpg
```

Where is this Starbucks?

https://img.enjoy-osaka-kyoto-kobe.com/wp-content/uploads/2025/09/26165119/starbucks-coffee-01-1024x678.webp

Google Image



Video Frame Extraction + Reverse Image Search

- Take any video
- Pause at a moment with background features
- Use screenshot
- Upload frame to Google Images or Yandex Images.

Exercise

- “15 Stunning City Street — Free Stock Footage” youtube
  - https://youtu.be/MZmWJGzcTX8?si=PAkhHR40GAvscWz9

yt-dlp -f best -o "class_video.mp4" https://www.youtube.com/watch?v=MZmWJGzcTX8

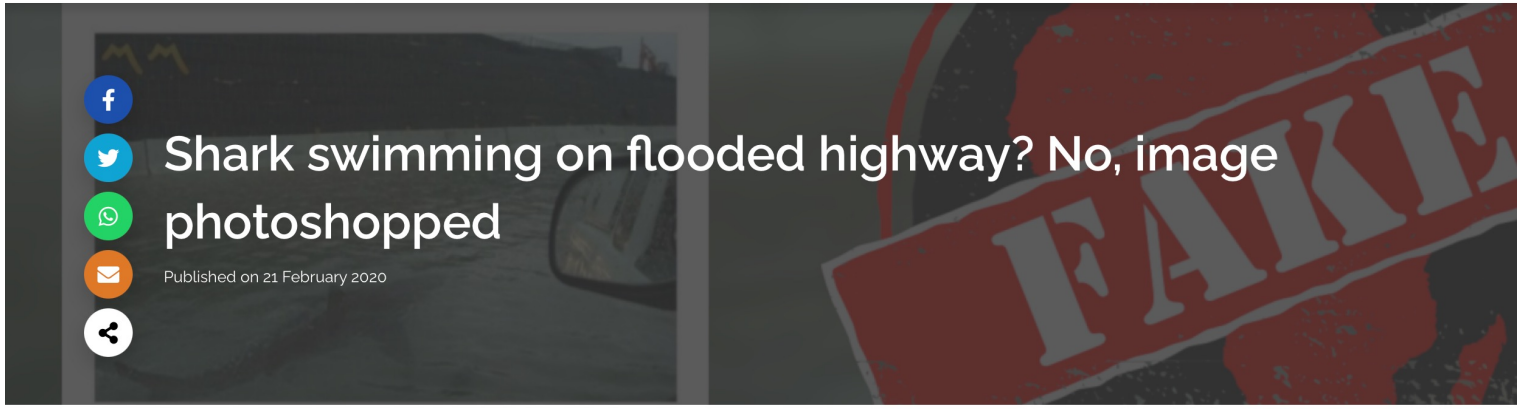
Extract single frame at 00:00:12.500 (12.5 seconds)

ffmpeg -ss 00:00:12.500 -i video.mp4 -frames:v 1 frame_12_5s.jpg

InVID

- InVID = In Video Veritas
- It’s a browser plugin and web-based tool that provides a set of forensic utilities to analyze online videos and images.
- It helps users:
  - Detect manipulation
  - Trace source/origin
  - Extract frames from videos
  - Perform reverse image searches
  - Check metadata
  - Analyze image integrity

“Shark on the highway”



Shark swimming on flooded highway? No, image photoshopped

Published on 21 February 2020

“Believe it or not, this is a shark on the freeway in Houston, Texas. #HurricaneHarvy,” reads the text of what seems to be a screenshot of a Twitter post, shared on Facebook in South Africa in October 2019.

It shows a small shark swimming in water flowing alongside some kind of barrier. A rear-view mirror on the right suggests the image may have been snapped from a car.

Hurricane Harvey was a storm that hit the coast of Texas in late August 2017, carrying with it massive rainfall and causing severe flooding across the US state.

Africa Check

How?

- Open InVID plugin, right click on image
  - https://en.wikipedia.org/wiki/Hurricane_Shark

- Run quick checks:
  - Reverse image search with at least Google and Bing
  - Metadata tab: any EXIF/IPTC left?
  - Forensic filters (ELA / clone) for obvious anomalies (optional but fun).

- Real or manipulated?

InVid Forensics

- ELA / Compression: shows if parts were edited later.
- Noise Analysis: checks if all areas come from the same source.
- Clone Detection: finds copy-paste areas.
- Magnifier / Deep Learning : look for strange edges, lighting, or AI signs.

- Each filter answers a different question. Combine results to make a smart conclusion.

Shodan

the search engine for the Internet of Things

Safety & ethical rules

- **Discovery only**: documenting banners and ports is allowed; do not attempt to log in, exploit, or run active scans.
- **No changes**: never interact with device management interfaces.
- **Responsible disclosure**: if you find highly sensitive exposures do not publish them. Notify the owner privately via appropriate channels.

Shodan

- **Indexes internet-connected devices** (servers, routers, webcams, IoT, databases).
- **Collects service banners** (open ports, protocol, software/version, TLS certs).
- **Outputs**: IP, ports, banners, geolocation, hostnames, …
- **Common uses**: asset discovery, attack-surface mapping, vulnerability reconnaissance, monitoring.

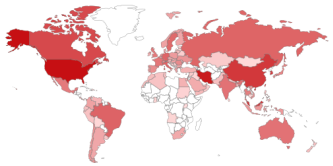
- **Ethical reminder**: Discovery only, never exploit or attempt unauthorized access.

SHODAN | Explore | Downloads | Pricing | D-link | Account

TOTAL RESULTS

228,676

TOP COUNTRIES



United States	**33,372**
Iran, Islamic Republic of	**27,258**
Malaysia	**15,268**
Korea, Republic of	**15,171**
China	**14,585**

More...

TOP PORTS

View Report | Browse Images | View on Map

New Service: Keep track of what you have connected to the Internet. Check out **Shodan Monitor**

2.179.139.118 2022-10-02T15:56:41.971843

Data Office of qom for adsl users

Iran, Islamic Republic of, Qom

```
220 D-Link FTP version 1.0 ready at Fri Jan  7 04:46:26 2000
530 User anonymous cannot log in.
Login failed.
```

46.100.76.38 2022-10-02T15:56:26.727232

Telecommunication Company of Azarbayejan Gharbi

Iran, Islamic Republic of, Kandovān

```
SNMP:
  Uptime: 11415400
  Description: DSL-2600U
  Service: 14
  Versions:
    1
  Objectid: 1.3.6.1.4.1.1.2.3.4.5
  Name: D-Link
```

46.59.28.245 2022-10-02T15:56:00.923875

h-46-59-28-245.A980.priv.bahn

```
HTTP/1.1 200 OK
```

Shodan

D-link devices

(popular WiFi router and IoT manufacturer)

Shodan

Find devices in a particular city

SHODAN | Explore | Downloads | Pricing | apache city:"brussels"

TOTAL RESULTS

39,798

TOP PORTS

80	19,706
443	15,477
8080	709
5006	469
5005	403

More...

TOP ORGANIZATIONS

Google LLC	21,238
Proximus NV	1,954
Combell NV	896

View Report | View on Map

New Service: Keep track of what you have connected to the Internet. Check out Shodan M

Superpan | Nuevo tablero de FINSA

35.233.20.70
70.20.233.35.bc.googleusercontent.com
superpan.finsa.com
Google LLC
Belgium, Brussels

cloud

SSL Certificate

Issued By:
|- Common Name:
R3
|- Organization:
Let's Encrypt

Issued To:
|- Common Name:
superpan.finsa.com

Supported SSL Versions:
TLSv1, TLSv1.1, TLSv1.2

```
HTTP/1.1 200 OK
Date: Sun, 02 Oct 2022 16:38:23 G
Server: Apache
X-Powered-By: PHP/7.2.13
Link: <https://superpan.finsa.com
X-Frame-Options: SAMEORIGIN
X-Mod-Pagespeed: 1.13.35.2-0
Vary: Accept-Encoding
Ca...
```

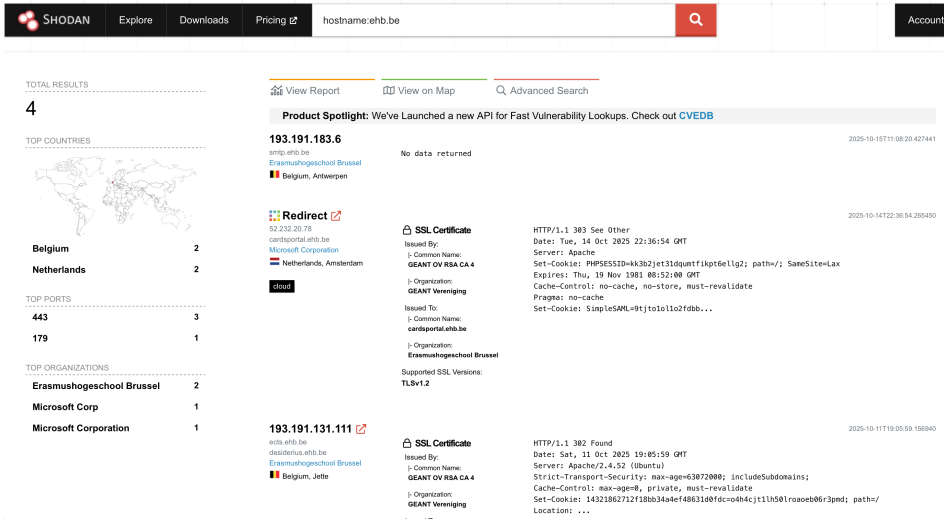
Apache HTTP Server Test Page powered by CentOS

34.76.117.10

```
HTTP/1.1 403 Forbidden
```

Results

- IP address & reverse DNS (top)
- Open ports list (left column)
- Service banners (HTTP headers, SSH banner, product/version)
- Location & ISP / Org (where the IP is registered)
- Port history / last update (when Shodan last saw the host)
- HTTP page preview and screenshots (if available)



Results

CVEdetails.com
powered by SecurityScorecard

- Vulnerabilities
  - By Date
  - By Type
  - Known Exploited
  - Assigners
  - CVSS Scores
  - EPSS Scores
  - Search
- Vulnerable Software
  - Vendors
  - Products
  - Version Search
- Vulnerability Intel.
  - Newsfeed
  - Open Source Vulns

Apache » Http Server » 2.4.52

Vulnerabilities (37) Metasploit Modules

Version names

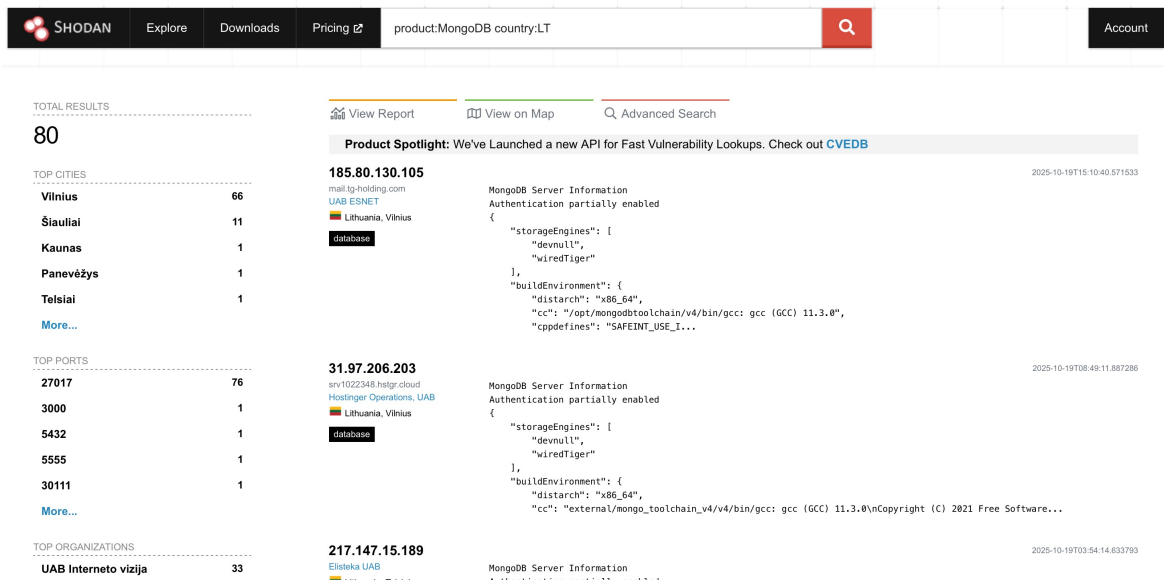
- Apache Software Foundation Apache HTTP Server 2.4.52
- cpe:2.3:a:apache:http_server:2.4.52:*:*:*:*:*:*:*
- cpe:/a:apache:http_server:2.4.52

Product information

- https://httpd.apache.org/download.cgi Change Log

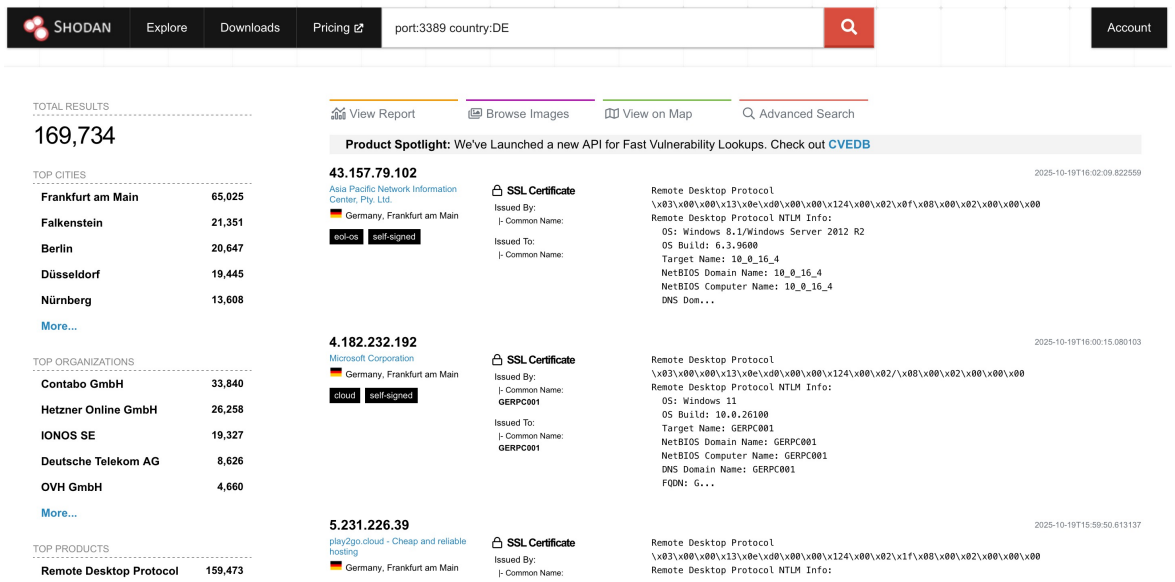
Vulnerabilities by types/categories

Year	Overflow	Memory Corruption	Sql Injection	XSS	Directory Traversal	File Inclusion	CSRF	XXE	SSRF	Open Redirect	Input Validation
2022	2	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	1	0	0	0	0	0	0	4	0	0
2025	0	0	0	0	0	0	0	0	2	0	0



product:MongoDB country:LT

Exposed databases



port:3389 country:DE

High-risk remote access (RDP)

Assignment

- Use Shodan to discover publicly exposed webcams/cameras.
- **This is discovery only which means no logins, no control attempts, no downloading or sharing images.**

Solution webcam exercise

- Common camera fingerprints
  - product:"MJPG-streamer" country:BE
  - has_screenshot:true port:554
  - http.title:"Live View" has_screenshot:true
  - port:80 has_screenshot:true "camera"
- Camera types & protocols
  - port:554 # RTSP servers often used by cameras
  - product:"AXIS" has_screenshot:true
  - product:"Dahua" has_screenshot:true
  - product:"Hikvision" has_screenshot:true

Maltego

Maltego?

- Maltego is a powerful data mining and information gathering tool used for open-source intelligence (OSINT) gathering and footprinting.
- It provides a graphical interface that enables users to visualize and explore relationships and connections between various entities, such as people, organizations, websites, email addresses, domains, and more.
- Maltego allows analysts, investigators, and security professionals to conduct investigations and gather intelligence by aggregating and analyzing data from multiple sources.

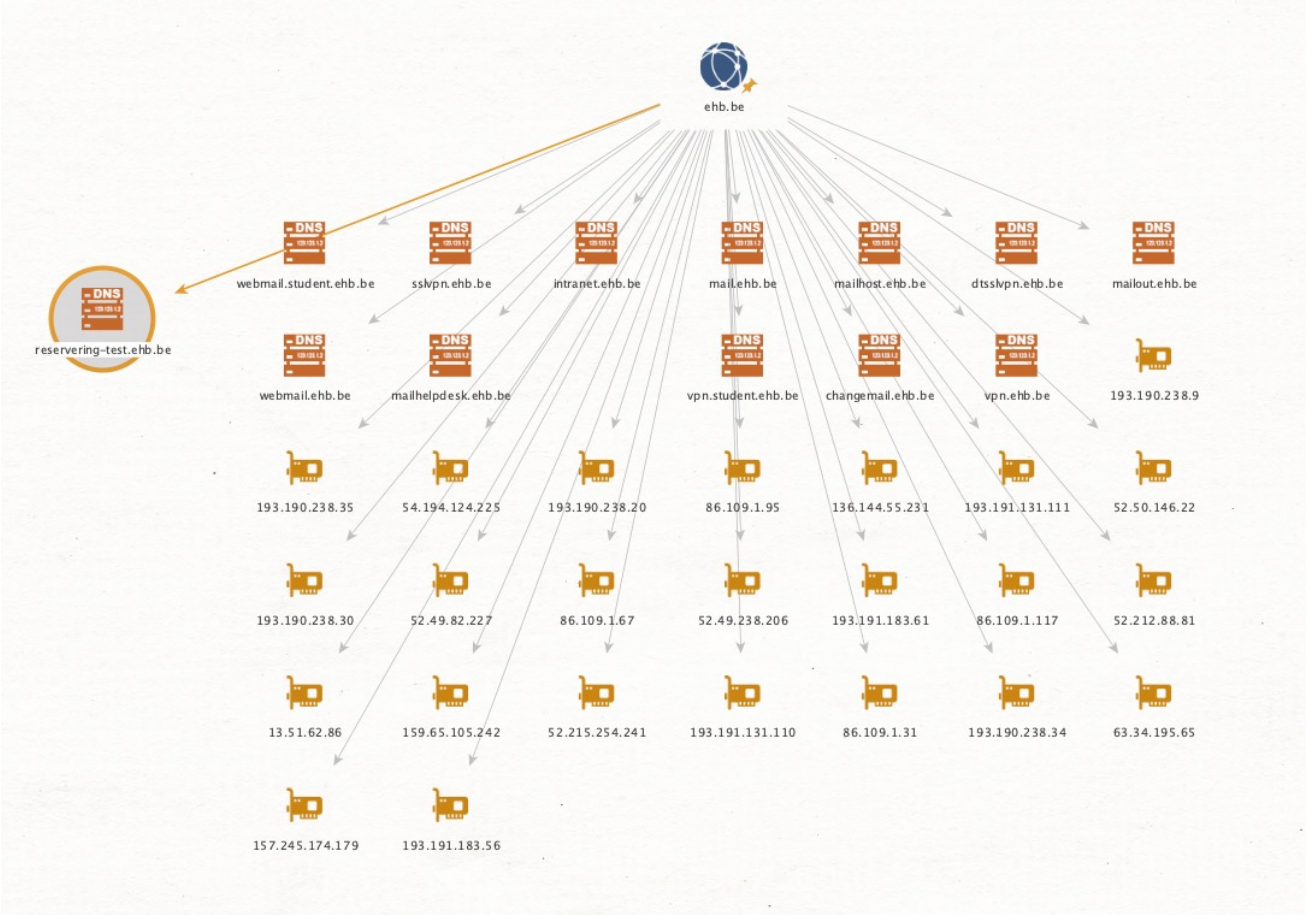
Maltego CE / Basic plan

- CE is free but limits transforms / results (rate limiting and fewer commercial transforms).
- Many useful transforms (Shodan, Censys, FullContact, WhoisXML API) need API keys (you can often times use them for free but you do need to register on their platforms)
- CE is intended for learning and non-commercial OSINT.

Demo

- New Graph: from the left palette drag a Domain entity onto the canvas.
- Double-click it, set value to ehb.be (or kaunokolegija.lt)
- Right-click the Domain node → Run Transform → choose:
  - To DNS Name / DNS from Domain
  - To IP Address (resolve A records)
  - Expand a discovered subdomain, right-click → To IP Address, then on IP

Result


ehb.be
reservering-test.ehb.be
webmail.student.ehb.be
sslvpn.ehb.be
intranet.ehb.be
mail.ehb.be
mailhost.ehb.be
dtsslvpn.ehb.be
mailout.ehb.be
webmail.ehb.be
mailhelpdesk.ehb.be
vpn.student.ehb.be
changemail.ehb.be
vpn.ehb.be
193.190.238.9
193.190.238.35
54.194.124.225
193.190.238.20
86.109.1.95
136.144.55.231
193.191.131.111
52.50.146.22
193.190.238.30
52.49.82.227
86.109.1.67
52.49.238.206
193.191.183.61
86.109.1.117
52.212.88.81
13.51.62.86
159.65.105.242
52.215.254.241
193.191.131.110
86.109.1.31
193.190.238.34
63.34.195.65
157.245.174.179
193.191.183.56

Explanation

- ehb.be
  - This is the starting point — the official domain of the institution.
- Middle layer: Subdomains (DNS names)
  - Examples we found:
  - webmail.student.ehb.be
  - sslvpn.ehb.be
  - intranet.ehb.be
  - mail.ehb.be
  - changemail.ehb.be
  - vpn.ehb.be

Explanation

- Why subdomains matter:
  - Each subdomain = a specific service (mail, VPN, intranet, test environment…)
  - This reveals what technology the organization uses internally.
  - “test” / “intranet” / “vpn” often = high-value targets for attackers.

Explanation: Bottom layer: IP Addresses (Servers)

- Each subdomain resolves to one or more IP addresses.
- Example IPs:
  - 193.190.238.35
  - 52.215.24.241
  - 136.144.55.231
  - 157.245.174.179
  - 13.51.62.86
  - ...many more

Explanation

- Why IPs matter:
  - This tells us where the service is hosted (on-premise, cloud, VPN, data center).
- IPs can be looked up in Shodan to see:
  - open ports
  - software versions
  - vulnerabilities
  - Multiple subdomains pointing to same IP = same server hosting many services.

Key Observations

- They have multiple mail systems (mail.ehb.be, mailhost.ehb.be, mailstudent.ehb.be)
  - email infrastructure is complex, so maybe potential misconfigurations.
- There are VPN endpoints (vpn.ehb.be, sslvpn.ehb.be, vpn.student.ehb.be)
  - crucial entry points, they must be secured and up to date.
- Intranet and helpdesk visible from public DNS
  - internal tools may be exposed to the internet (risky if not protected).

Key Observations

- reservering-test.ehb.be
  - "test" subdomain is a red flag.
  - Test environments often:
    - have weak security
    - use default credentials
    - are forgotten/unpatched

Why this graph is powerful in OSINT / Ethical Hacking

- It shows the attack surface:
  - All exposed services
  - What runs where
  - Which parts might be forgotten or weak
- From here, an analyst can:
  - Prioritize high-risk systems
  - Check Shodan for vulnerabilities
  - Connect infrastructure to people (next step!)

Next?

- From here, an analyst can:
  - Prioritize high-risk systems
  - Check Shodan for vulnerabilities
  - Connect infrastructure to people (next step!)

Maltego assignment

Map your online presence

Map your online presence

- Build a Maltego graph of your public footprint and identify one privacy risk
- Use Maltego to collect and visualise publicly available links, social profiles, domains, and leaked references about yourself then triage and recommend 3 quick privacy fixes.

Tip

- For example:
  - To Person → (if starting from email)
  - To Email addresses (find associated emails)
  - To Domain / To DNS Name (from personal website or email domain)
  - To Website → To URL → To Links (discover linked pages)
  - Search Engines
  - To Social Profiles / To Twitter Account / To LinkedIn Profile (where available)
  - To WHOIS (from domain)
  - HaveIBeenPwned transform
  - In Maltego, find a profile/website node → To URL → click the page → copy image URL of avatar. Open a browser and upload that image to Google Images.

Takeaway

- OSINT = Skill + Mindset + Responsibility

- Tools change, mindset stays.
- Information is power, context is intelligence.
- Everything you do leaves a trace, so act with integrity.