OPEN SOURCE INTELLIGENCE BRASIL

OSINT TOOLS A List of Open Source Verification and Investigation Tools and Methods

By osintbrasil.blogspot.com | 20:06

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Bellingcat's Digital Forensics Tools

A List of Open Source Verification and Investigation Tools and Methods

Hello, welcome to Bellingcat's openly and freely available digital list of tools and methods we use during our open source investigations. You can follow our work on our website, Twitter and Facebook. **Feel free to suggest tools not yet listed here!** This is version 2.5 (December 1, 2017).

The list includes satellite and mapping services, tools for verifying photos and videos, websites to archive hyperlinks, and much more. The list is long, and may seem dauntingw. There are guides at the end of the document, highlighting the methods and use of these tools in further detail. We also provide tailored digital forensics workshops.

Currently, I'm trying to find a better way to thematically structure this list and I'm working on a more extensive guide with simple case-studies to the tools we use most. This will be an openly available and digital guide in English and hopefully Arabic too. I will share a link here once it is published. Feel free to contact me with questions or suggestions via e-mail (christiaantriebert@bellingcat.com) or Twitter (@trbrtc).

Maps, Satellites & Streetview				
Name	**Description**	**Pros**	**Cons**	**Link**
Bing Maps	Microsoft satellite and mapping service.	More recent and higher resolution imagery than Google, e.g. in Iraq.	Difficult to check the date of the imagery (this tool doesn't work anymore)	bing.com/maps
converting coordinates	Convert geographic coordinates between different notation styles.			synnatschke.de/geo-tools/coordinate-converter.php
Digital Globe	Satellite imagery vendor.	Preview available via the catalogus, search tool very easy to use.	$	discover.digitalglobe.com
DualMaps	Combines Google's road maps, aerial view, and street view in one embeddable tool.			data.mashedworld.com/dualmaps/map.htm
EarthExplorer				earthexplorer.usgs.gov
Geograph	Georeferenced images.			geograph.org
GeoNa	Database of location names.	Wide variety of different		geonames.org

mes		spellings in various languages.		
Google Earth Pro		Add a [Bing Maps satellite imagery layer]().	Historical imagery.	[[software]]()
Google Maps		StreetView, many large cities in U.S., Europe, modelled in 3D.	No historical satellite imagery, but historic streetview images available in many places.	[maps.google.com]()
Google Photos (former Panoramio)				
HERE WeGo		More recent satellite imagery than Google in e.g. Iraq.		[wego.here.com]()
Mapillary	Crowdsourced street level photos.			[mapillary.com]()
OpenStreetCam				[openstreetcam.org]()
OpenStreetMap				[openstreetmap.org]()
Radiant Earth				[radiant.earth]()
Sentinel Playground		Updated every 5-10 days with new imagery, dependent on cloud cover. Ability to explore a variety of	Generally low resolution of 10m/px.	[apps.sentinel-hub.com/sentinel-playground]()

		GIS variables eg NDVI or NDWO.		
TerraServer	Satellite imagery vendor.	Highest resolution available (0.3m).	$ to preview high-resolution satellite imagery.	terraserver.com
Wikimapia	Crowdsourced information related to geographic locations.	Possibility to switch between Google/Bing/OSM. Massive amount of UCG information.		wikimapia.org
Yandex Maps				yandex.com/maps

Geobased Searches				
Name	**Description**	**Pros**	**Cons**	**Link**
Echosec	Geobased searches.	Instagram, Twitter, VKontakte, Foursquare	$	echosec.net
Live map	Interactive live map of conflict news.	Variety of countries available: Afghanistan, Iraq, Syria, U.S., Ukraine, Venezuela, etc.		liveuamap.com
Photo-Map.RU	Geotagged4 VKontakte posts.			photo-map.ru
Twitter	Insert in search box: geocode:[coordinates],[radius-km], for example: geocode:36.222285,43.998233,2km (only works with km, so 500m = 0.5km)	There's a tool for it too.	Easy to fake.	

War Wir e	Geobased searches.			$	warwire.net
You Tub e					[youtube.github.io/ geo-search- tool/search.html](youtube.github.io/geo-search-tool/search.html)

<table>
<tr><td colspan="6" style="text-align:center">Images, Videos and Metadata</td></tr>
<tr><td>Name</td><td>Description</td><td>Pros</td><td>Cons</td><td>Link</td><td>Guides</td></tr>
</table>

Name	Description	Pros	Cons	Link	Guides
Amne sty YouTu be Datavi ewer	Reverse image (video still) search and exact uploading time.		Searches for a number of still, not each frame is included (thus results may be left out).	[amnestyusa.org /sites/default/cu stom- scripts/citizenev idence](amnestyusa.org/sites/default/custom-scripts/citizenevidence)	Advanced Guide on Verifying Video Content
Exifto ol	Read and manipulate metadata for a vast number of file types. Note: no GUI	Floss, Cross platform and very easy to integrate in scripts.	Yet to encounter any (Have only used on GNU/Linux).	[https://www.sno .phy.queensu.c a/~phil/exiftool/](https://www.sno.phy.queensu.ca/~phil/exiftool/)	See forum and FAQ on linked page
Foca	Extract metadata.	Windows based, open sourced 2017.	No native linux support.	[elevenpaths.co m/labstools/foca /index.html](elevenpaths.com/labstools/foca/index.html)	NullByte
FotoF orensi cs	Image forensics tool.	Simple, web based.	Public access, information not private.	[fotoforensics.co m](fotoforensics.com)	

GooFil e	Extract metadata.	Simple to use.	Doesn't work well outside Kali	tools.kali.org/information-gathering/goofile	Ascii cinema
Image Forensics	Web based image forensics tool.	Can easily identify fake or doctored images	Public access, information not private.	29a.ch/photo-forensics/#level-sweep	
InVID	Verification plugin to help journalists verify images and videos. Contextual data, Metadata, reverse search (Google, Yandex, Baidu), image forensic, Magnifie)r			invid-project.eu (plugins for Chrome, Firefox (Windows, [Mac OS X](Mac OS X), Linux)	https://www.youtube.com/watch?v=nmgbFODPiBY
Irfanview	Extract metadata.			irfanview.com	
Jeffrey's Image Metadata Viewer	Extract metadata, online.	Only requires web browser.	Public access, information not private.	exif.regex.info/exif.cgi	
Reveal Image Verification Assistant	Forensic providing eight filters to detect still images alterations.	Web-based image tool. Also available within InVID verification plugin.		http://reveal-mklab.iti.gr/reveal/index.html	Documented with examples and explanations of the different filters. Developed in Reveal project.
reverse image search	e		Recommended plugin: RevEye, which searches Google, Yandex, Baidu and Bing.		

Name	Description	Pros	Cons	Link	Guides
Spider Pig	Extract metadata.	Command line interface and scriptable.	Requires dependencies and knowledge of web technologies.	github.com/hatlord/Spiderpig	
Splunk	Extract metadata.	Report grade analysis and presentation.	Not simple to setup and deploy.	blog.sweepatic.com/metadata-hackers-best-friend	Sweepatic.com

Social Media

Facebook

Name	Description	Pros	Cons	Link	Guides
Graph.tips	Automatically advanced searches for Facebook profiles.			graph.tips/beta	
Intel Techniques	Various tools for analyzing Facebook profiles and pages.			inteltechniques.com/menu.html	
Live map	Live broadcasts around the world.			facebook.com/livemap	

Name	Description	Pros	Cons	Link	Guides
peoplefindThor				peoplefindhtor.dk	
Search Tool	Find accounts by name, email, screen name, and phone.			netbootcamp.org/facebook.html	
StalkScan	Automatic advanced searches per Facebook profile.			stalkscan.com	
Video Downloader Online	Download Facebook videos.			fbdown.net	

Instagram					
Name	**Description**	**Pros**	**Cons**	**Link**	**Guides**
Websta	Find other locations in Instagram's database near a particular location.			websta.me	Use direct URL with a location ID, e.g. websta.me/location/116231

LinkedIn					
Name	**Description**	**Pros**	**Cons**	**Link**	**Guides**

Nam e	Description	Pros	Cons	Link	Guides
Soci lab	Visualise and analyse your own LinkedIn network.			[sociliab.co m](#)	

Snapchat					
Nam e	**Description**	**Pros**	**Cons**	**Link**	**Guides**
Sna p Map	Searchable map of geotagged snaps.			Via mobile phone app, [techcrunch. com/2017/0 6/21/snap-map/](#)	

Tumblr					
Nam e	**Description**	**Pros**	**Cons**	**Link**	**Guides**
Tum blr Orig inal s	Find original posts per Tumblr, thus excluding reblogs.			[studiomoh. com/fun/tu mblr_origin als](#)	

Twitter					
Nam e	**Description**	**Pros**	**Cons**	**Link**	**Guides**
InVI D verif icati	InVID plugin provides a Twitter advanced	Allows to document use cases from the past without APIs and time limit. Allows to search for content within a user-defined		[InVID verification plugin.](#)	Automates the conversion between calendar date and Unix timestamp in Twitter advanced search:

on plugin	search by time interval up to the minute.	time range after a breaking news.			https://youtu.be/nmgbFODPiBY?t=4m21s
One milliont weet map	Tweets map per locations up to 6 hours old, keyword search option.			[onemilliont weetmap.c om](onemilliontweetmap.com)	
Tree verse	Chrome extension to visualise Twitter conversations.			[t.co/hGvska 63Li](t.co/hGvska63Li)	
Twe etre ach	Find reach of tweets.		Advanced search operators available, same as Google advanced search.	[tweetreach. com](tweetreach.com)	
Twit ter adv anc ed sear ch	Search by date, keywords, etc.			[twitter.com/ search- advanced](twitter.com/search-advanced)	
Twit ter geo bas ed sear ch	geocode: [coordinates], [radius-km], for example: geocode:36.222 285,43.998233,2 km	There's a tool for it too.			
Twle	Download	Easy and quick to use, there's a	Goes up to 3,200	twlets.com	

	anyone's tweets, followers and likes in an Excel sheet.	Chrome extension too.	tweets, followers and likes.		
quar ter twee ts	Geobased Twitter search.			gtrtweets.c om/twitter	

(YouTube					
Nam e	**Description**	**Pros**	**Cons**	**Link**	**Guides**
Amn esty You Tub e Data view er	Reverse image (video still) search and exact uploading time.		Searches for a number of still, not each frame is included (thus results may be left out).	amnestyus a.org/sites/ default/cust om- scripts/citiz enevidence	Advanced Guide on Verifying Video Content
Geo Sear ch Tool	Search for YouTube videos based on location.			youtube.git hub.io/geo- search- tool/search. html	

Transport					
Air					
Name	**Description**	**Pros**	**Cons**	**Link**	**G ui**

					des
AirNav RadarBox	Tracking flights, including private and military jets.			radarbox24.com	
ADS-B Exchange Global Radar	Tracking flights.	Includes a number of military aircraft.		global.adsbexchange.com/VirtualRadar/desktop.html	
FlightAware				flightaware.com	
FlightRadar24	Tracking (civilian) flights.		$ to go back in 12 month archive.	flightradar24.com	
Marine					
MarineTraffic				marinetraffic.com	
VesselFinder				vesselfinder.com	
Railway					
Trains	Full interactive maps of various railway networks in European countries.			Denmark, France, Germany, Netherlands	
Misc					
WikiRoutes	Public transport database.			wikiroutes.info	

Date & Time

Name	Description	Pros	Cons	Link	Guides

Name	Description			Link	
SunCalc	Make approximation of time of the day using shadow direction.			suncalc.net	
Wolfram|Alpha	Does a load of things, including **weather forecasts** per day and location.			wolframalpha.com	

<table>
<tr><td colspan="6" align="center">Individuals, WhoIs, IPs, Website Analysis</td></tr>
<tr><td>Name</td><td>Description</td><td>Pros</td><td>Cons</td><td>Link</td><td>Guides</td></tr>
<tr><td>Passive DNS</td><td>Collects, stores and analyses data from thousands of passive DNS collection sensors.</td><td>Complete unadulterated historical and current DNS information.</td><td>15 API calls day, 15 web based searches a day.</td><td>community.riskiq.com</td><td></td></tr>
<tr><td>Censys.io</td><td>Censys continually monitors every reachable server and device on the Internet.</td><td>Complete wealth of knowledge of internet connected devices.</td><td>None</td><td>Censys.io</td><td></td></tr>
<tr><td>Domain Tools</td><td></td><td></td><td></td><td>domaintools.com</td><td></td></tr>
<tr><td>DNS History</td><td>Collection of historical DNS information.</td><td>Free, simple and easy to use.</td><td>Sometimes limited in availability.</td><td>DNS History</td><td></td></tr>
<tr><td>Geo IP Tool</td><td>Check your own IP, handy to check if your VPN is working,</td><td></td><td></td><td>geoiptool.com</td><td></td></tr>
<tr><td>Shodan</td><td>Internet of things search engine.</td><td>Can find heaps of misconfigured network connected devices.</td><td>Lives in the grayzone...</td><td>shodan.io</td><td></td></tr>
</table>

- **IXMaps**, [IXMaps](#)
- [Network-Tools](#)
- [Open Site Explorer](#)
- **People search**
  - **Peekyou**, [peekyou.com](#)
  - **Pipl**, the world largest people search engine, find persons behind an e-mail address, social media username, or phone number, [pipl.com](#)
  - **Yasni**, [yasni.com](#)
  - **Zaba Search**, only US, [zabasearch.com](#)
  - [publicrecords.searchsystems.net](#)
  - [cemetery.canadagenweb.org/search.html](#)
  - [opencorporates.com](#)
- [Robtex](#)
- [Search IRC](#)
- [Shodan Computer Search](#)
- [Utrace](#)
- [ViewDNS](#)
- **DNS Historical Data**, [research.dnstrails.com](#)
- **SpyOnWeb**, to retrieve websites by their Tracking codes, [spyonweb.com](#)
- **Whois**, for domain search and information, [whois.net](#) or [whois.icann.org](#)

Archiving, Downloading & Internet Storage					
Name	**Description**	**Pros**	**Cons**	**Link**	**Guides**
Archive.is	Let's you archive any webpage.				

Name	Description			Link	
CachedView	Google Cached Pages for any web site. It is the ultimate internet cache.			http://cachedview.com/	
DMCA	Search takedown notices			lumendatabase.org	
Gruber	Slideshare downloader			http://grub.cballenar.me/	
Historic Breach Database List				https://publicdbhost.dmca.gripe/random/	
Wayback Machine	Archives websites. Download an entire website from the Wayback Machine.			github.com/hartator/wayback-machine-downloader	

Miscellaneous					
Name	Description	Pros	Cons	Link	Guides
BlockExplorer	Following a bitcoin trail or following a bitcoin account ?			https://blockexplorer.com	
Check	Collaborative fact-checking.			checkmedia.org	User guide, Bellingcat's Check team
Document Redaction	Useful for removing potentially harmful content in Pdfs before viewing, like traceback.			github.com/firstlookmedia/pdf-redact-tools	
Google Search	Such as searching for a specific filetype (e.g. PDF) or on a specific website.			googleguide.com/advanc	

Operators				ed_operators_reference.html	
Hunch.ly	Research sidekick.			hunch.ly	
Insecam	Network live IP video cameras directory.			insecam.org/en/	
LittleSis	Database of who-knows-who at the heights of business and government.			littlesis.org	
Lumen	Collects and analyses legal complaints and requests for removal of online materials, helping Internet users to know their rights and understand the law. These data enables us to study the prevalence of legal threats and let Internet users see the source of content removals.			lumendatabase.org	
Maltego				paterva.com/web7	
Montage	For collaborative working.			montage.storyful.com	
OpenCorporates	Database of companies in the world.				
People tracer				peopletracer.co.uk	
Snopes2	Suspect a story may be fake or an urban legend.			snopes2.com	
Timeline JS by Knight Lab	Make an interactive timeline of events.			timeline.knightlab.com	
Unknown Hash ID	On investigation if you come across a hash but don't know what it is (and warrants further investigation) this will identify the type.			onlinehashcrack.com/hash-	

				identification.php	
Visual Investigative Scenarios (VIS)				vis.occrp.org	
Zoopla	Search for property with the UK's leading resource. Browse houses and flats for sale and to rent, and find estate agents in any area.			zoopla.co.uk	

Guides & Handbooks

- **American Press Institute Fact-Checking Resources**, americanpressinstitute.org/training-tools/fact-checking-resource
- **Bellingcat's resources**, www.bellingcat.com/category/resources/how-tos, for example:
- **Exposing the Invisible**, a project by the Tactical Tech Collective, exposingtheinvisible.org
    - Includes multiple guides (website data scraping, Google Dorking etc.), resource links, and examples of successful investigations in various fields

- **First Draft News**' resources, some of which have been written by Bellingcat members, firstdraftnews.com/resources, for example:
    - How to Get Started in Online Investigations
- **Flash Environmental Assessment Tool,** for identifying harmful substances and their effect on the environment after industry has been destroyed: https://docs.unocha.org/sites/dms/Documents/FEAT_Version_1.1.pdf
- **Poynter**, fact-checking how-to guides, factcheckingday.com/#how-to
- **Poynter**, fact-checker's code of principles, poynter.org/fact-checkers-code-of-principles
- **Verification Handbook** (PDF) is a great place to go to find tools to verify digital information, verificationhandbook.com

- **Washington Post**, fact-checker's guide, washingtonpost.com/news/fact-checker
- **Washington Post**, fact-checker tool, washingtonpost.com/news/fact-checker
- **WITNESS**
  - [Activists' Guide to Archiving Video](Activists'%20Guide%20to%20Archiving%20Video)
  - [Video As Evidence: Verifying Eyewitness Video](Video%20As%20Evidence:%20Verifying%20Eyewitness%20Video)

WEAPONS

- Open guide called "**Itrace**" by Conflict Armament Research, lots of information on different kinds of munitions and weapons presented graphically on a map format, itrace.conflictarm.com

Data Visualisation					
Name	**Description**	**Pros**	**Cons**	**Link**	**Guides**
DataBasic.io	Web tools for beginners that introduce concepts of working with data			databasic.io/en	
DataWrapper	Easy to use chart and mapping tool			datawrapper.de	
Google Fusion Tables				fusiontables.google.com	
Maptia				maptia.com	
Visual investigative scenarios				vis.occrp.org	
RAWGraphs	Free webtool to quickly visualize your			app.rawgraphs.io	

		data		
Open Desktop Semantic Search		Searches unstructured data well	opensemanticsearch.org/doc/desktop_search	

Online Security & Privacy

- Check for every digital service you use whether you have enabled **two factor authentication (2FA)**, twofactorauth.org
- Security in a box guide: https://securityinabox.org/en/

SEARCH ENGINES WHICH PROTECT PRIVACY

- **DuckDuckGo**, Internet search engine, protecting privacy, duckduckgo.com
- **StartPage**, Internet search engine, protecting privacy, startpage.com
- **Qwant**, Internet search engine, protecting privacy, qwant.com

Sources per Country					
Iraq					
Name	Description	P r o s	C o ns	Links	
Provinces of the so-called Islamic State				umap.openstreetmap.fr	
Syria					

Name	Description	Pros	Cons	Links
Maps				lib.utexas.edu/maps/syria.html
Opposition media	See this excellent list compiled by Noor Nahas of multimedia sources from Syrian opposition groups,			reddit.com
Provinces of the so-called Islamic State,				umap.openstreetmap.fr

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Companies

BUSINESS REGISTRIES

- **French SIRENE**, provided by [Investigative Dashboard](#), a queryable version of the french RCS (Business registry), with OpenRefine reconciliation tool. https://data.occrp.org/entities?filter:dataset=fr_sirene
- **Business registries in Europe**, on the European e-Justice portal, links to the national business registry of each EU member. https://e-justice.europa.eu/content_business_registers_in_member_states-106-en.do

Expert/Source Tools					
Name	**Description**	**Pros**	**Cons**	**Link**	**Guides**
Expertis	Search engine for journalists to find experts (currently only academics in			http://expertisefinder.c	

e Finder	USA and Canada), contact information on page, no login, 30k experts listed			om/	
Expert Guide	Academics open to media in Australia:		Austr alia only.	http://www.expertguide .com.au/	
Help a Reporte r Out	Post a query and experts reply, mainly USA and Canada, quality of replies is hit or miss			https://www.helpamrepor ter.com/	
She Source	Female experts, mainly USA.			http://www.womensme diacenter.com/shesour ce/	
Speakez ee	Academics and those with PhDs, mainly UK:			https://www.speakezee .org	
Expert File	Mix of experts, mainly USA and Canada:			https://expertfile.com	

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Portugal

56.4%
15.6%
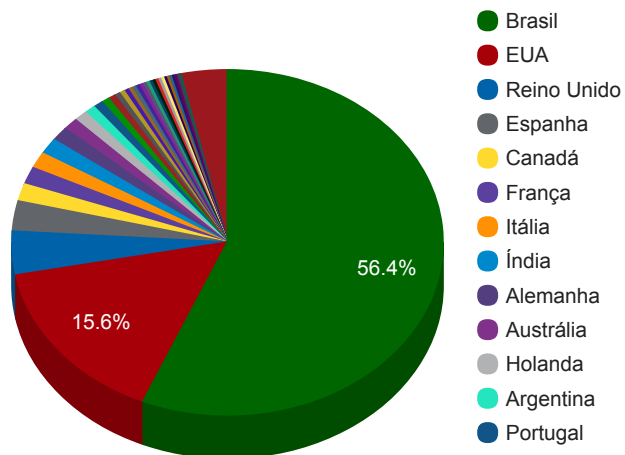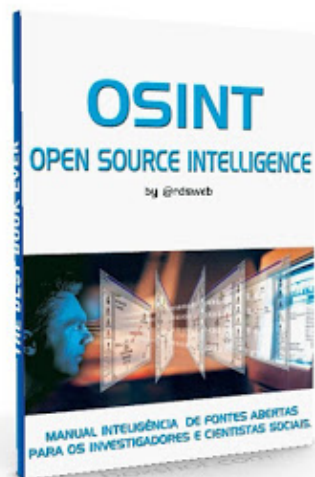
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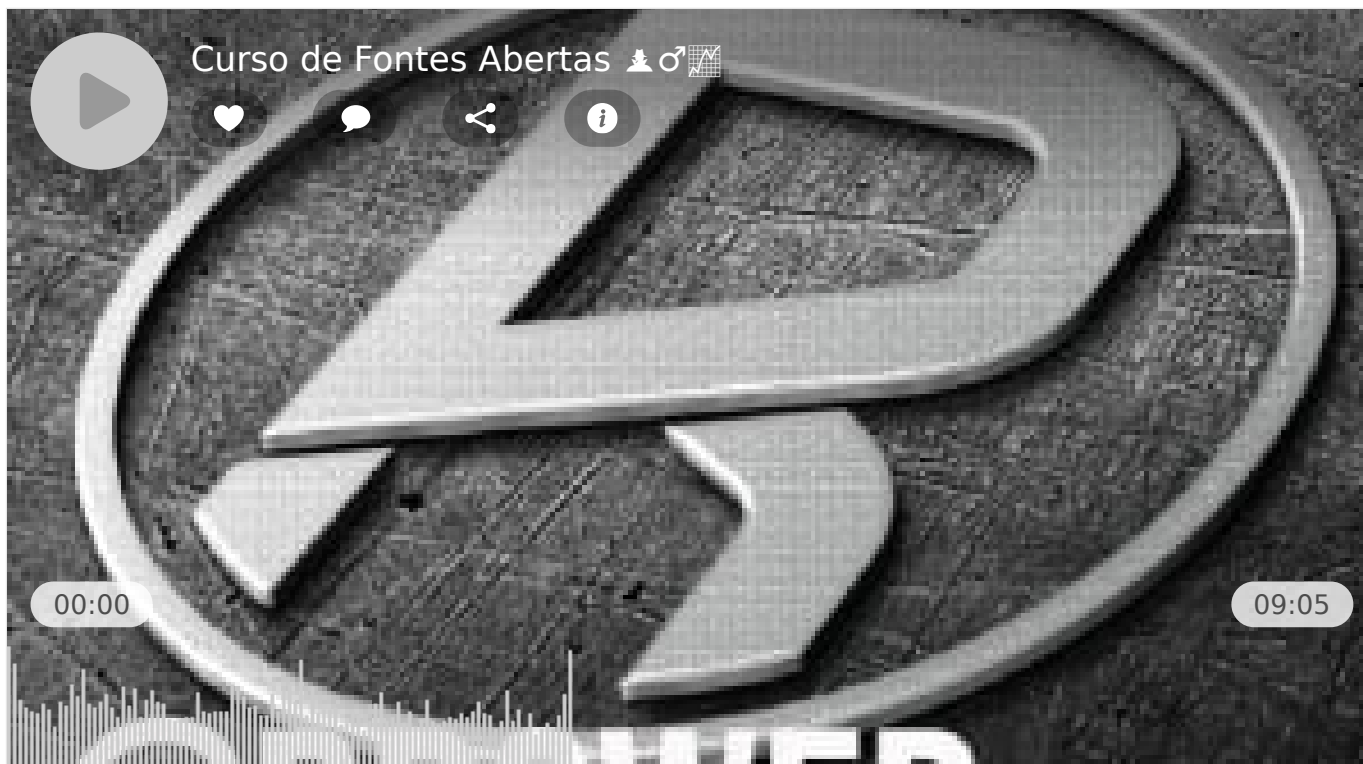
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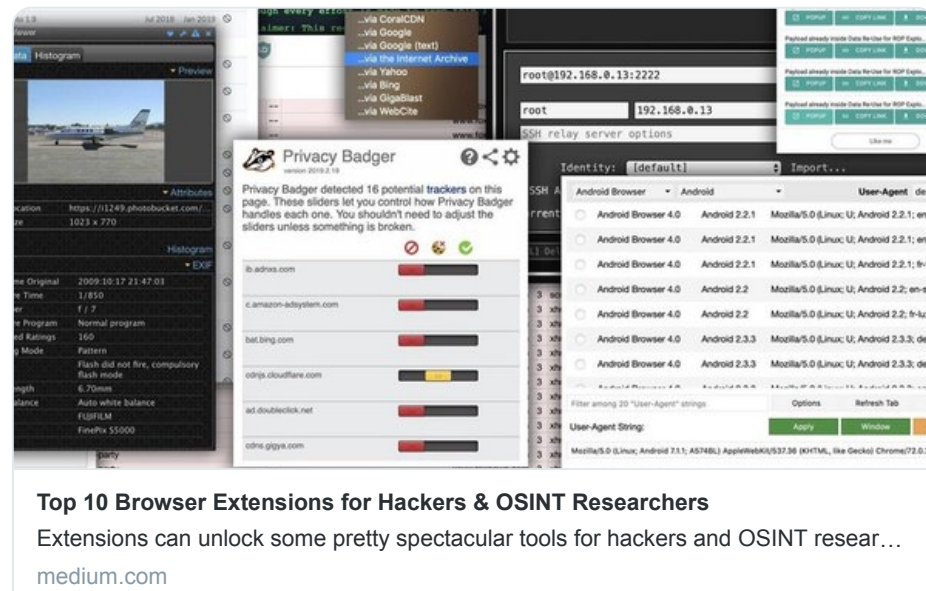
Tweets de @RDSWEB

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VIEWS

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CIA. DAS MALAS

Cia. Das …
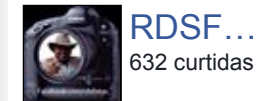1,4 mil curtidas

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