



VISUAL DATA ONLY



LOCATION + TIMESTAMP



+ BEARING & ALTITUDE



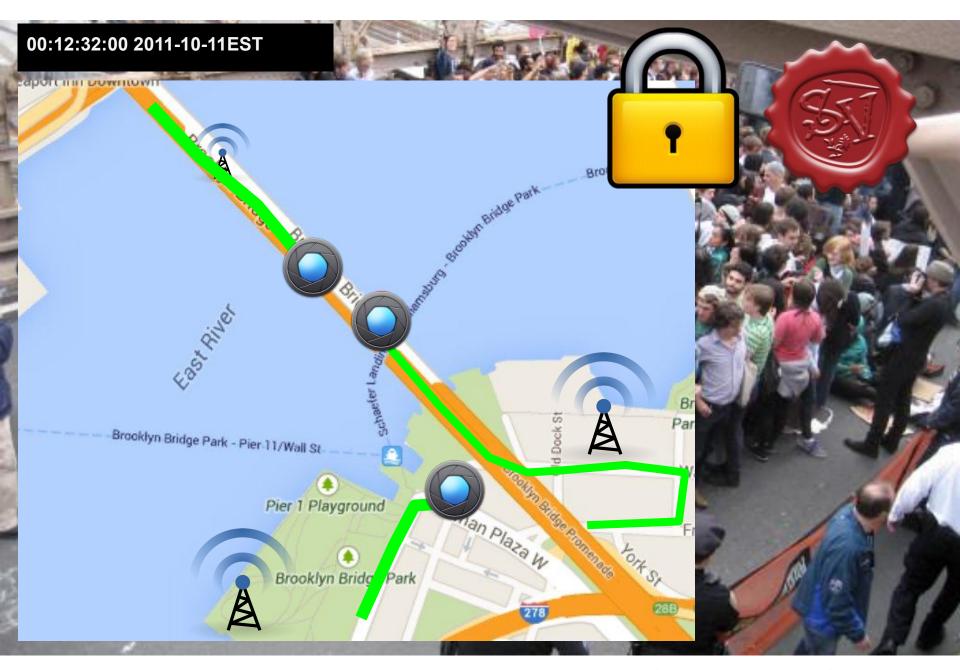
+ MOVEMENT OVER TIME



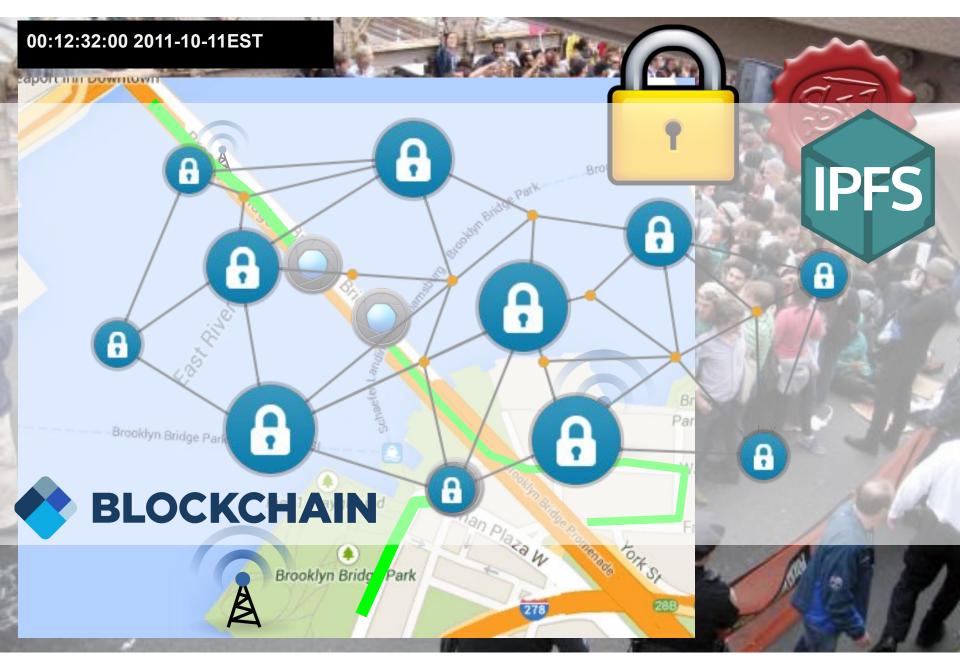
+ NEARBY NETWORK INFO



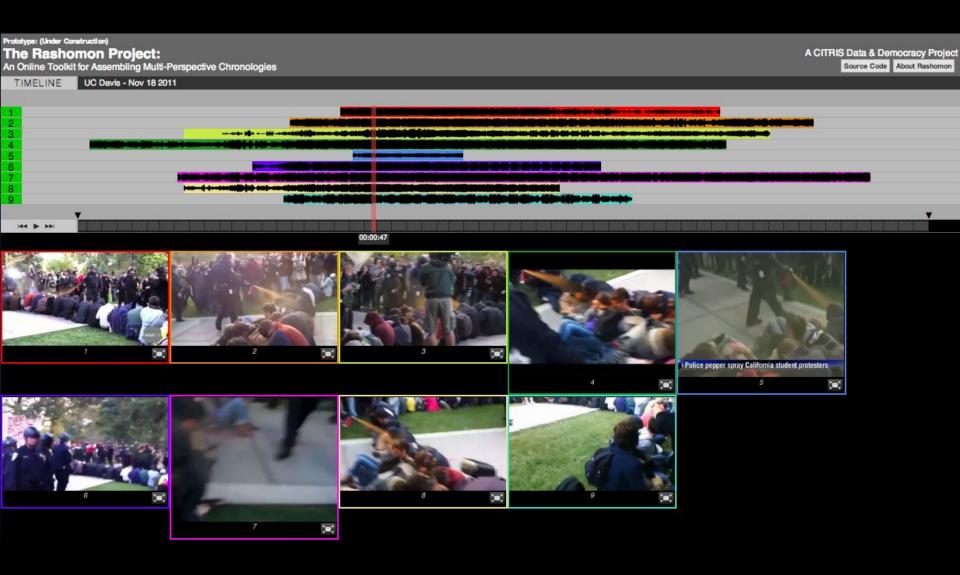
+ DIGITALLY SIGNED AND SECURED



+ MULTIPLE VIEWPOINTS OF PROOF

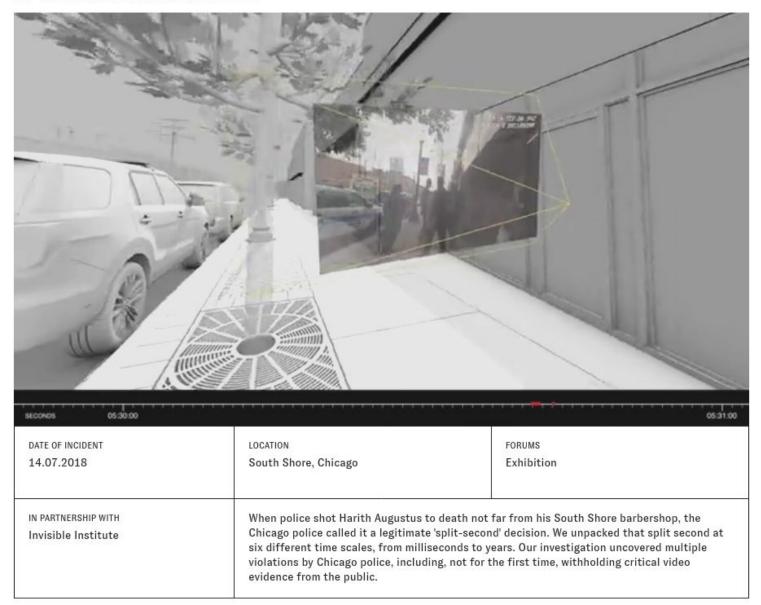


+ DECENTRALIZED SHARING & NOTARIZATION

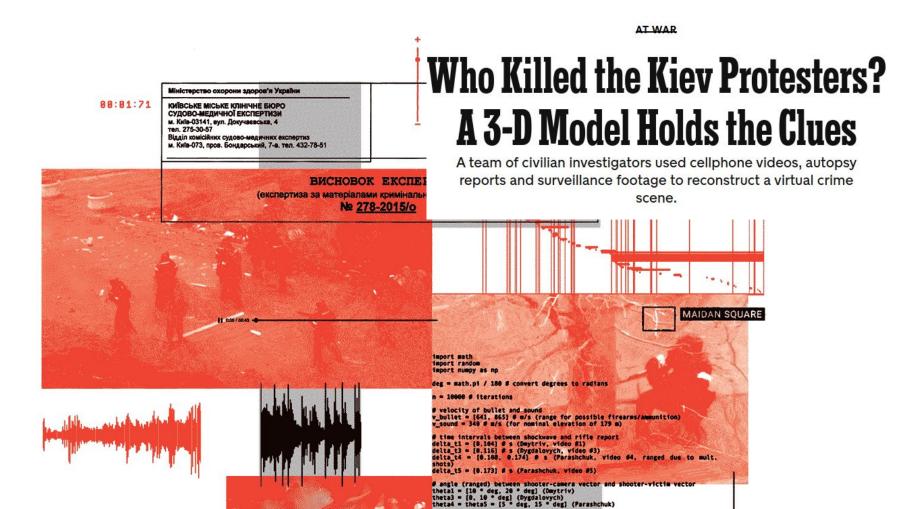


MULTI VIEW TIMELINE SYNC

https://forensic-architecture.org/



3D SPATIALIZATION



https://www.nytimes.com/2018/05/30/magazine/ukraine-protest-video.html

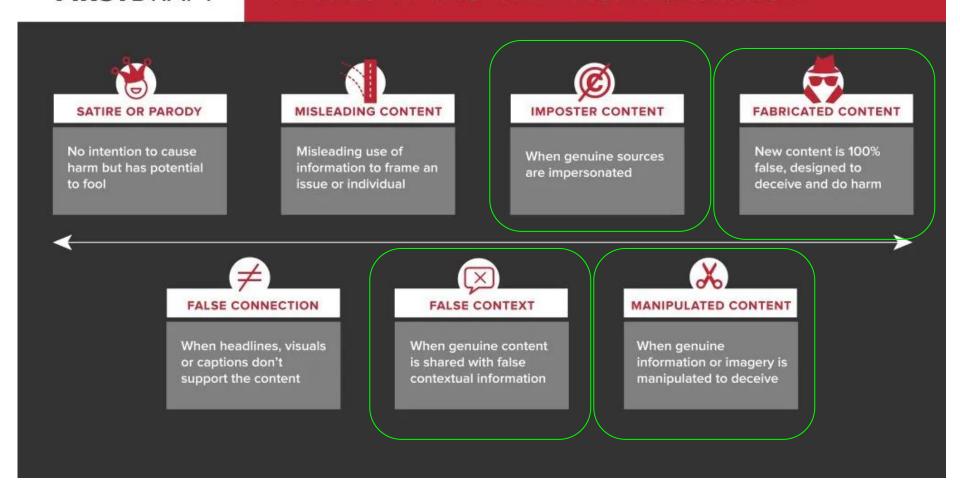
equation: # (v_sound * (t1 + t2 + delta_t))**2 = (v_bullet * t1)**2 + (v_sound * t2)**2

QUERYING MASSIVE MEDIA SETS



FIRSTDRAFT

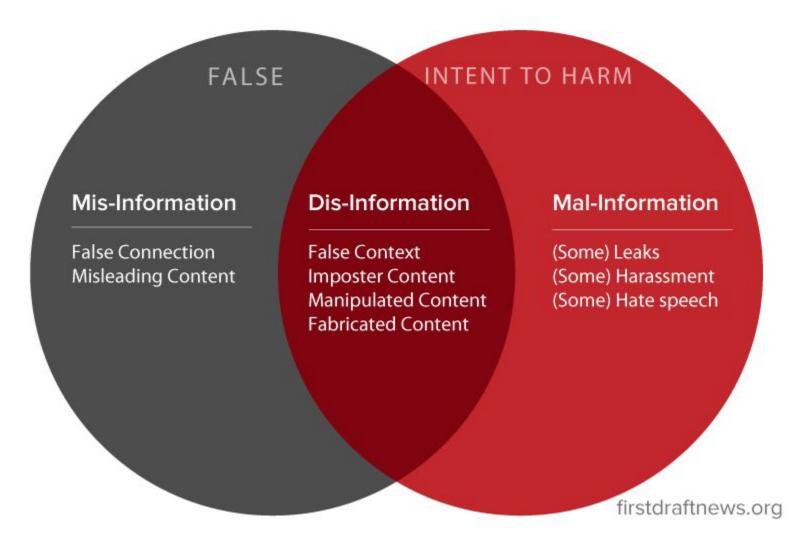
7 TYPES OF MIS- AND DISINFORMATION



Claire Wardle, PhD and Hossein Derakhshan, with research support from Anne Burns and Nic Dias https://shorensteincenter.org/information-disorder-framework-for-research-and-policymaking/

(GREEN BOXES SHOW PROOF MODE APPLICATIONS)

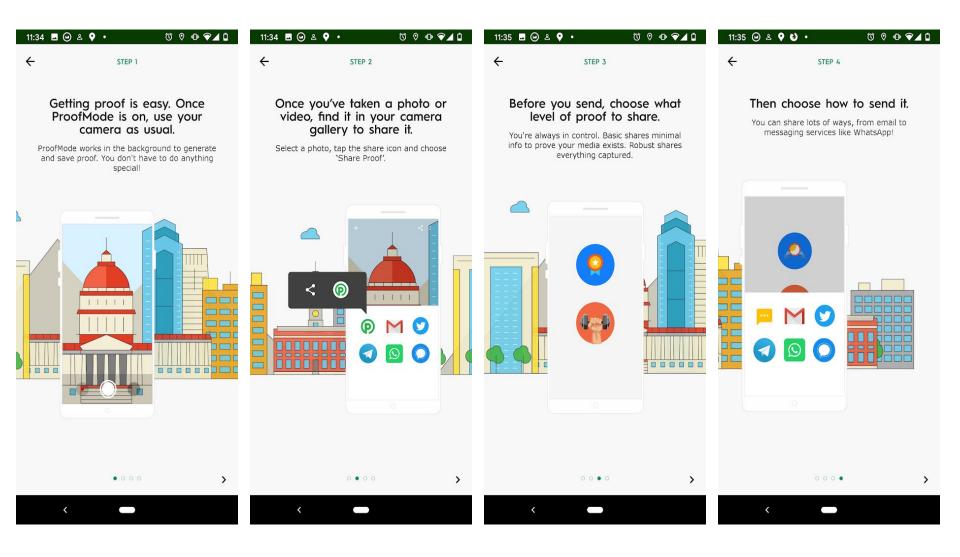
INFORMATION DISORDER

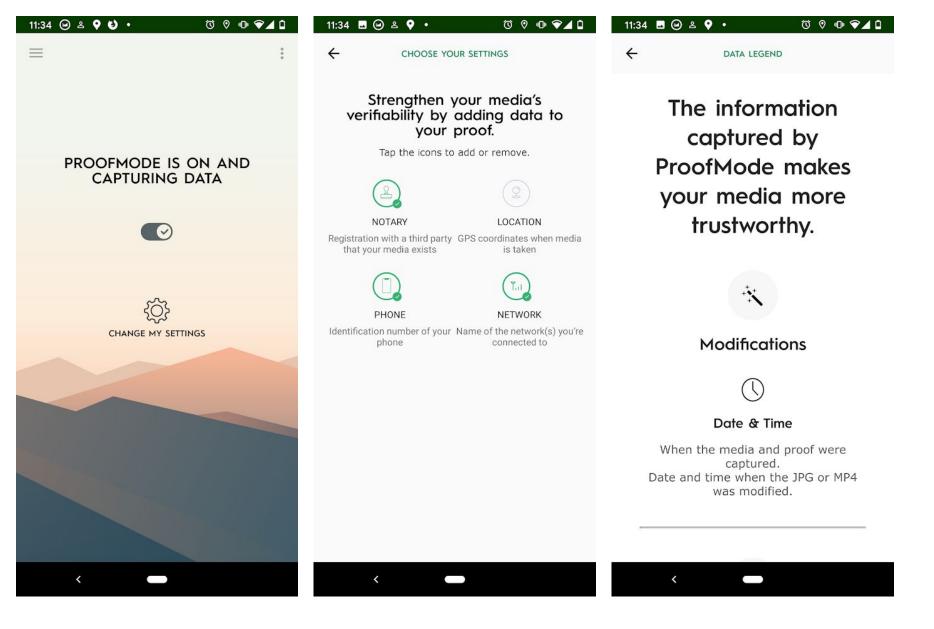


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What is ProofMode?

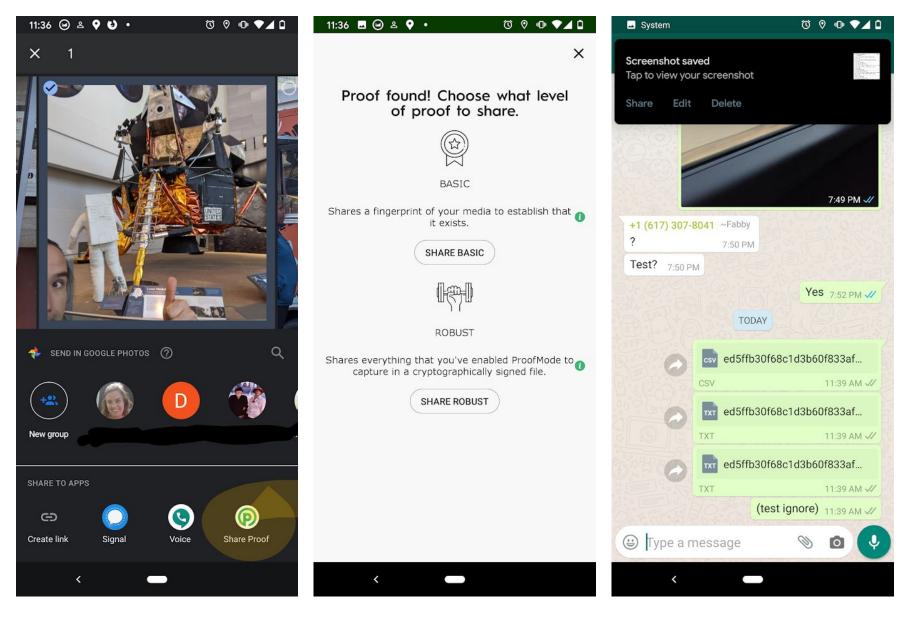
With minimal user interaction, ProofMode enhances the evidentiary value of media shot on a mobile phone. It generates cryptographic fingerprints and sensor evidence for any photo or video so the proof is there, ready to share, when needed, and provides a simple way for individuals to choose to share rich metadata, signed and hashed media with one-click from within their gallery.





Sharing from ProofMode?

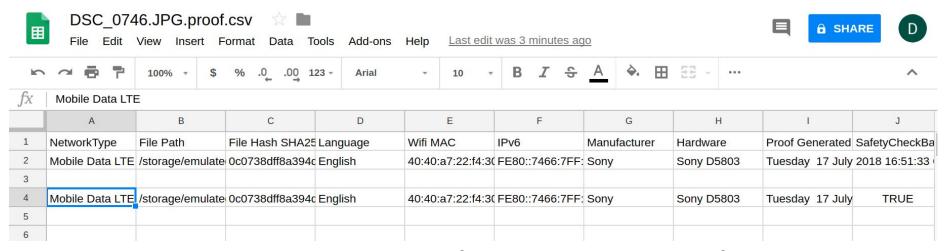
The data created by ProofMode can be **easily shared** through a "Share Proof" button in your phone's standard photo album to anyone you choose over email or a messaging app, or uploaded to a cloud service or reporting platform.



3 steps to share!

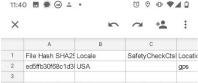
Sensor Data from ProofMode?

Sensor data is saved in CSV file that can be easily parsed and imported by existing tools for analysis and visualization.



Check out our detailed legend (a work in progress!) here: https://docs.google.com/spreadsheets/d/1L5tD6HtBNkZObaZnOd2R2zVINOz9F1h-0d7W6Bosh6o/edit?usp=sharing

File Has	Locale	SafetyC	Locatio	r IPv6 IPv4	Locatior Locatior Langua Netw	ork Network Manufac	DataTyr Har	dwa Scre	ens Wifi MA	Notes	Devicell	Location	Locatior Sa	fetyC Location	r File Moc Sa	afetyC CellInfo	Locatior Safe	tyC Proof G File Patl	Location
93d32e:	USA		gps	FE80::6 192.0.0). 14 42.3285 English Mobil	le [Connec LGE	Mobile [LGI	E Ne 4.94	423 02:00:00	0:00:00:0	3qua9k\	-71.124	0	15101	Wednesda	y Nov [{"cellic	i' -14	Wednes /storage	0
93d32e:	USA		gps	FE80::6 192.0.). 14 42.3285 English Mobil	le [Connec LGE	Mobile [LGI	E Ne 4.94	423 02:00:00	0:00:00:0	3qua9kv	-71.124	0	15101	Wednesda	y Nov [{"cellic	r' -14	Wednes /storage	0
93d32e:	USA		gps	FE80::6 192.0.). 14 42.3285 English Mobil	le [Connec LGE	Mobile [LGI	E Ne 4.94	423 02:00:00	TimeBea	3qua9kv	-71.124	0	15101	Wednesda	y Nov [{"cellic	i' -14	Wednes /storage	0
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93d32e:	USA	TRUE	gps	FE80::6 192.0.0). 14 42.3285 English Mobil	le [Connec LGE	Mobile [LG	E Ne 4.94	423 02:00:00	0:00:00:0	3qua9kv	-71.124	0 TF	RUE 15101	Wednes ey	JhbG [{"cellic	d' -14 Wed	nes Wednes /storage	0
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Sha-256 hash "f5fca62f0e65b8b0bb435e8012432f338ee33ef5fb23b7daf697afcf4ae0193a" -

based on the digital data comprising the media file

lmage Metadata 56520 6571223A 32343132 7D2C7822 62737369 64223A22 32303A33 373A3036 3A64343A 37393A39 39222C22 eq":2412}, {"bsstd":"20:37:06:d4:79:99", TIFF Metadata: 56560 73736964 223A2222 2C227769 66694C65 76656C22 3A2D3831 2C227769 66694672 6571223A 32343632 ssid":"", wifiLevel":-81, wifiFreq":24 56600 702C7822 62737369 64223A22 30323A32 333A3933 3A31383A 30313A31 38222C22 73736964 223A2248 },{"bssid":"02:23:93:18:01:18","ssid": DateTime: 2015:05:11 16:27:21 56640 50435031 3532352D 32633936 3638222C 22776966 694C6576 656C223A 2D36322C 22776966 69467265 PCP1525-2c9668", "wifiLevel":-62, "wifiFi 56680 71223A32 3433377D 2C782262 73736964 223A2266 613A3866 3A63613A 38353A35 373A6339 222C2273 q":2437},{"bssid":"fa:8f:ca:85:57:c9", Make: Motorola 56720 73696422 3A224879 6C612773 29436974 74696543 61737422 2C227769 66694C65 76656C22 3A2D3639 sid":"Kylg's CittleCast", "wifilevel": Model: XT1031 56760 2C227769 66694672 6571223A 32343337 70207822 62737369 64223A22 34383A37 383A38393 3A66393A ,"wifiFreq":2437},{"bssid":"48:70:89:ff56800 62373A36 38222C22 73736964 223A2260 61647861 643122C 22776966 694C6576 656C223A 2036392C b7:68", "ssid":"madpadd", "wifiLevel":-66 XResolution: 72 YResolution: 72 56840 22776966 69467265 71223A32 34323270 2C7B2262 73736964 223A2264 303A6332 3A38323A 30363A36 "wifiFreq":2422},{"bssid":"d0:c2:82:86: 56880 623A3738 222C2273 73696422 3A22646F 65636F6E 66657265 6E636522 2C227769 66694C65 76656C22 b:78", "ssid": "doeconference", "wifiLevel 56920 3A2D3730 2C227769 66694672 6571223A 32343632 7D2C7B22 62737369 64223A22 64303A63 323A3832 :-70, wifiFreq":2462), {"bssid":"d0:c2: 56960 3A66303A 33333A30 38222C22 73736964 223A2264 6F65636F 6E666572 656E6365 222C2277 6966694C :f0:33:08", "ssid": "doeconference", "wif DateTimeOriginal: 2015:05:11 16:27:21 57000 6576656C 223A2D37 332C2277 69666946 72657122 3A323436 327D2C7B 22627373 6964223A 2264303A evel":-73, wifiFreq":2462}, {"bssid":"dc ComponentsConfigura... (1.2.3.0) 57040 63323A38 323A6630 3A39613A 3663222C 22737369 64223A22 222C2277 6966694C 6576656C 223A2D36 c2:82:f0:9a:6c", "ssid":"", "wifiLevel": MaxApertureValue: 2.52606 57080 372C2277 69666946 72657122 3A323431 327D2C78 22627373 6964223A 2230633A 36383A30 333A3764 7, "wifiFreq":2412}, {"bssid":"0c:68:03: BrightnessValue: -1 57120 34643534 626222C 22737369 64223422 222C2277 6966694C 6576656C 22342D36 382C2277 69666946 :d5:bh"."ssid":"","wifilevel":-68."wif DigitalZoomRatio: 1 57160 72657122 34323431 32702C7B 22627373 69642234 22373034 31303435 63343166 34343834 6161222C req":2412},{"bssid":"70:10:5c:1f:48:aa' Saturation: 1 57200 22737369 64223A22 222C2277 6966694C 6576656C 223A2D36 392C2277 69666946 72657122 3A323431 "ssid":"", "wifilevel":-69, "wifiFred":2 FNumber: 2.4 57240 327D2C7B 22627373 6964223A 2230633A 36383A30 333A3764 3A64353A 6263222C 22737369 64223A22 2), ("bssid": "0c:68:03:7d:d5:bc", "ssid" FocalLength: 3.5 57280 222C2277 6966694C 6576656C 223A2D36 392C2277 69666946 72657122 3A323431 327D2C7B 22627373 ","wifiLevel":-69,"wifiFreq":2412),{"b: SceneCaptureType: 0 57320 6964223A 2237383A 31383A35 633A3166 3A34383A 613222C 22737369 64223A22 222C2277 6966694C td":"70:18:5c:1f:48:a2","ssid":"","wif SceneType: 1 57360 6576656C 223A2D36 392C2277 69666946 72657122 3A323431 327D2C7B 22627373 6964223A 2264303A evel":-69, "wifiFreq":2412], {"bssid":"di ApertureValue: 2,52606 57400 63323A38 323A3836 3A36623A 3735222C 22737369 64223A22 222C2277 6966694C 6576656C 223A2D37 c2:82:06:6b:75", "ssid":"", "wifiLevel": Sharpness: 1 57440 302C2277 69666946 72657122 3A323436 327D2C7B 22627373 6964223A 2266303A 32393A32 393A3938 0,"wifiFreq":2462},{"bssid":"f0:29:29: ColorSpace: 1 57480 3A38393A 3764222C 22737369 64223A22 222C2277 6966694C 6576656C 223A2D37 322C2277 69666946 :89:7d", "sid": "", "wifiLevel": -72, "wif Contrast: 0 57520 72657122 3A323436 32702C7B 22627373 6964223A 2264303A 63323A38 323A6630 3A33333A 3034222C req":2462},{"bssid":"d0:c2:82:f0:33:04" PixelYDimension: 720 57560 22737369 64223A22 222C2277 6966694C 6576656C 223A2D37 332C2277 69666946 72657122 3A323436 "ssid":"", "wifiLevel":-73, "wifiFreq":2 WhiteBalance: 0 57600 327D2C7B 22627373 6964223A 2264303A 63323A38 323A3037 3A37643A 3566222C 22737369 64223A22 2},{"bssid":"d0:c2:82:07:7d:5f","ssid" FlashPixVersion: (1,0) 57640 222C2277 6966694C 6576656C 223A2D37 372C2277 69666946 72657122 3A323433 377D2C7B 22627373 ","wifiLevel":-77,"wifiFreq":2437},{"b DateTimeDigitized: 2002:12:08 12:00:00 57680 6964223A 2264303A 63323A38 323A3835 3A32323A 3032222C 22737369 64223A22 222C2277 6966694C id":"d0:c2:82:85:22:82".""ssid":"","wif ExposureMode: 0 57720 6576656C 223A2D37 372C2277 69666946 72657122 3A323436 327D2C7B 22627373 6964223A 2264303A evel":-77, "wifiFreq":2462},{"bssid":"dc PixelXDimension: 1280 57760 63323A38 323A3835 3A32323A 3061222C 22737369 64223A22 222C2277 6966694C 6576656C 223A2D37 c2:82:85:22:0a","ssid":"","wifiLevel" ExifVersion: (2.2) 57800 382C2277 69666946 72657122 3A323436 327D5D7D 2C226361 70747572 65547970 65223A32 37317D2C 8, "wifiFreq":2462}]}, "coptureType":271] CustomRendered: 0 57840 78227469 6D657374 616D7022 3A313433 31333736 31323230 39352C22 73656E73 6F72506C 61796261 {"timestamp":1431376122095, "sensorPlayl ExposureProgram: 2 57880 636B223A 7B226163 635F7A22 3A362E30 30313636 39383833 37323830 32372C22 6163635F 79223A34 ck":{"acc_z":6.001669883728027,"acc_y" ExposureBiasValue: 0 57920 2E383739 35363634 37383732 39323438 2C226163 635F7822 3A2D382E 37383435 33313935 38393530 .079566478729248, "acc_x":-0.78453195699 57960 36323236 7D2C2263 61707475 72655479 7065223A 3237317D 2C7B2274 696D6573 74616D70 223A3134 6226}, "captureType":271}, {"timestamp":1 **GPS Metadata** 58000 33313337 36313038 3033312C 2273656E 736F7250 6C617962 61636B22 3A7B2270 69746368 223A342E 31376108031, "sensorPlayback": ("pitch": 58040 31383735 2C22726F 6C6C223A 2D34352E 3132352C 22617A69 6D757468 223A2D38 2E303632 357D2C22 1875, "roll":-45.125, "azimuth":-8.0625 **GPSVersion**: (2,2,0,0) 58080 63617074 75726554 79706522 3A323731 7D2C7B22 74696D65 7374616D 70223A31 34333133 37363135 captureType":271),{"timestamp":1431376 MapDatum: WGS-84

ed5ffb30f68c1d3lUSA TRUE aps 5 ed5ffb30f68c1d3LUSA aps Timestamp: append ed580a99cb3d8859e6f3ae6fc6ebd466 -> append 886827915851c443db425b49016b88c3 12 prepend 5e594199 append bb5b1fec7d4144a1 verify PendingAttestation('https://finney.calendar.eternitywa -> append a557181f0ad4ba5eb2992283f07b3b58 16 sha256 17 prepend 5e594199 append 6a383ce4f0a666c3 verify PendingAttestation('https://bob.btc.calendar.opentim--> append e99bcd553c7b48b43f7a9fa9d6b295dc sha256 prepend 5e594199 append 94188ee8e2e076ba verify PendingAttestation('https://alice.btc.calendar.opentin 25 748tl759labjdql6e -71.12498742 26 27 Sheet1

Good of CSV and sha256 hashes!

ProofMode Specs

- Can run in the background without noticeable battery, storage or network impact.
- Uses PGP cryptography and Google SafetyNet API for identity and data integrity verification.
- Your original media is not modified all proof metadata is stored in separate files (but see note about Signal sharing).
- Automatically creates Sha-256 hash for all media files used for data integrity verification.
- Both the media files and "proof" metadata are PGP-signed for verification purposes

ProofMode Software Library





https://open-archive.org/Save-Launch/

OpenArchive launches new app Save to help journalists and human rights advocates protect and preserve highly sensitive digital media.

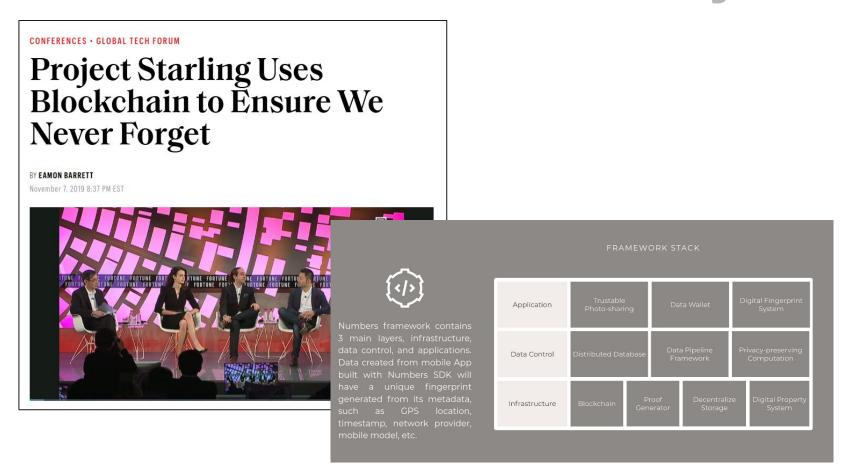
Tella - Document & Protect

Tella is a documentation app for Android.

Specifically designed to protect users in repressive environments, it is used by activists, journalists, and civil society groups to document human rights violations, corruption, or electoral fraud. Tella **encrypts and hides** sensitive material on your device, and **quickly deletes** it in emergency situations; and groups and organizations can deploy it among their members to **collect data** for research, advocacy, or legal proceedings.

 Open-Source, Freely Licensed; Available on Android, soon iOS, for integration into any third-party app

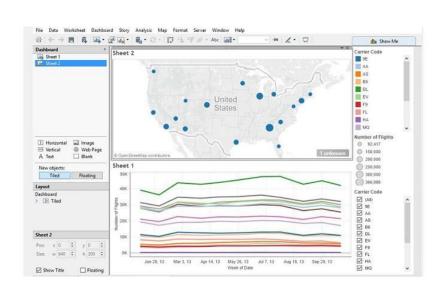
ProofMode Software Library

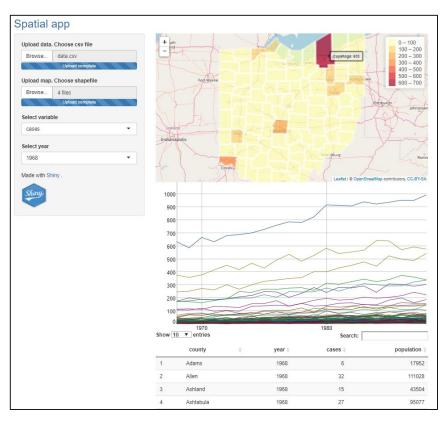


https://numbersprotocol.io

 Open-Source, Freely Licensed; Available on Android, soon iOS, for integration into any third-party app

ProofMode Data Processing





 Proof data easily parsed and verified with command lines tools, any spreadsheet application, or more advanced visualization applications like Tableau and RStudio / ShinyApps

Learn more at:

https://github.com/guardianproject/proofmode

https://blog.witness.org/2017/04/proofmode-helping-prove-hum

an-rights-abuses-world/

and

https://quardianproject.info/apps/org.witness.proofmode/

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