

Location Data, Current State of Affairs in Law, & Practical Impact in Court

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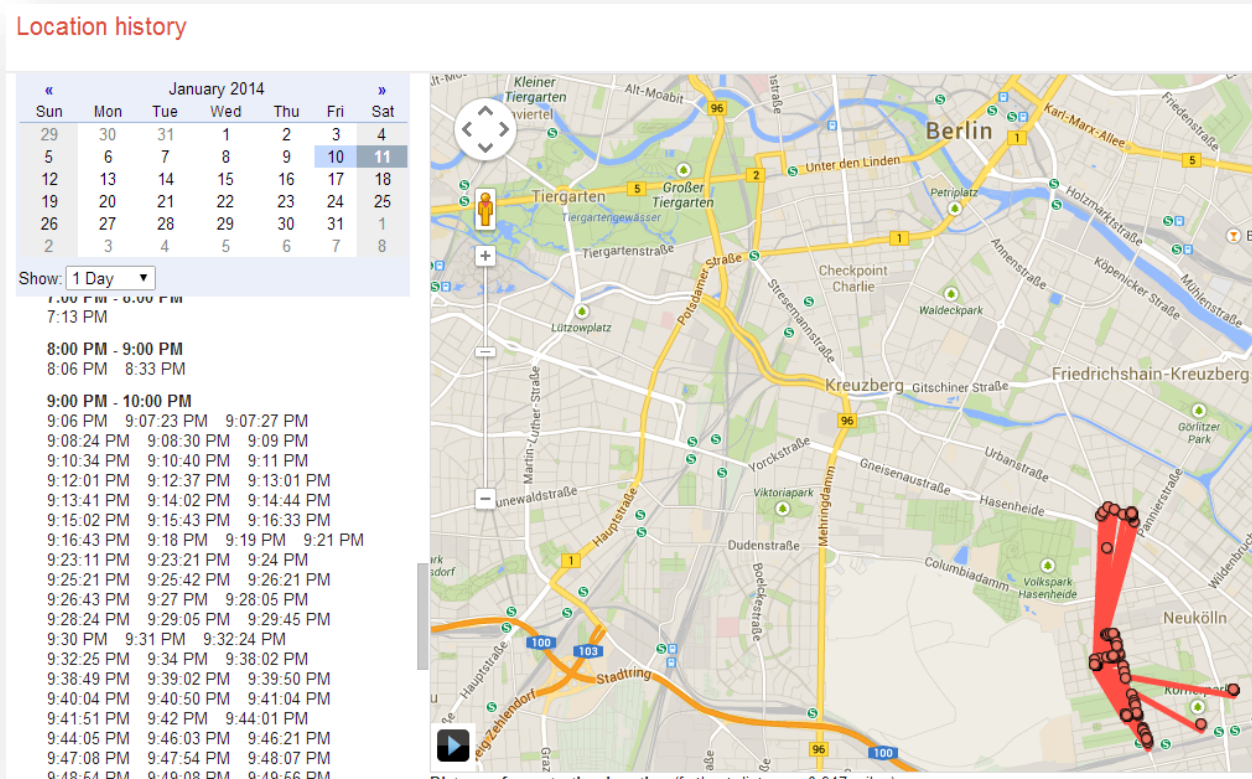


Location Data

- What data exists that can tell us where a person(or device) is at a given time?
- Where is it stored? (Third party data)
- How can we interpret it, and how accurate is it?
- How do investigators use this data?

















Location Data: What Is Out There

- Location Information in the Cloud
 - Example Google Location History



Location Data: What Is Out There

Google Google Takeout

	Google+ Circles	vCard format	✓
	Google+ Pages	All pages HTML format	✓
	Google+ Stream	HTML format	✓
	Groups		✓
	Hangouts		✓
	Keep		✓
	Location History	JSON format	✓
	Mail	All mail	✓
	Maps (your places)		✓
	My Maps		✓
	Panoramio		✓
	Profile		✓
	Tasks		✓
	Voice		✓
	Wallet		✓
	YouTube	All data types OPML (RSS) format	✓

Next

Location Data: What Is Out There

The screenshot displays the Cornerstone Discovery software interface. The top menu bar includes 'File', 'Extract', 'Utilities', and 'Help'. A 'License' button with a green checkmark and a 'Rate us' button with a blue star are in the top right corner. The left sidebar shows a tree view with 'PASSWORD NEEDED' (Robert [redacted] iPhone), 'DEVICES' (Robert [redacted] iPhone), and a list of backup dates/times. The main area is titled 'Backup details' and shows a black iPhone icon. The details include: Device: iPhone 6, Serial: DNQH [redacted], Firmware: 9.3.5, Folder: Complete backup, Time: 12:30 AM, IMEI: n/a, and Status: Complete and unencrypted. An Apple logo is in the top right of the main area. Below the details are tabs for 'Overview', 'Preview', 'Expert Mode', and 'App View'. The 'Available data' section lists various data types with their respective counts: Photos (5,140), Videos (257), Contacts (2,196), Voicemail (49), Calendar (202), Notes (29), SMS (69,627), Call history (7,121), Recordings (None), and WhatsApp (None). Location data is listed as 'Extract 2,476'.

Backup details

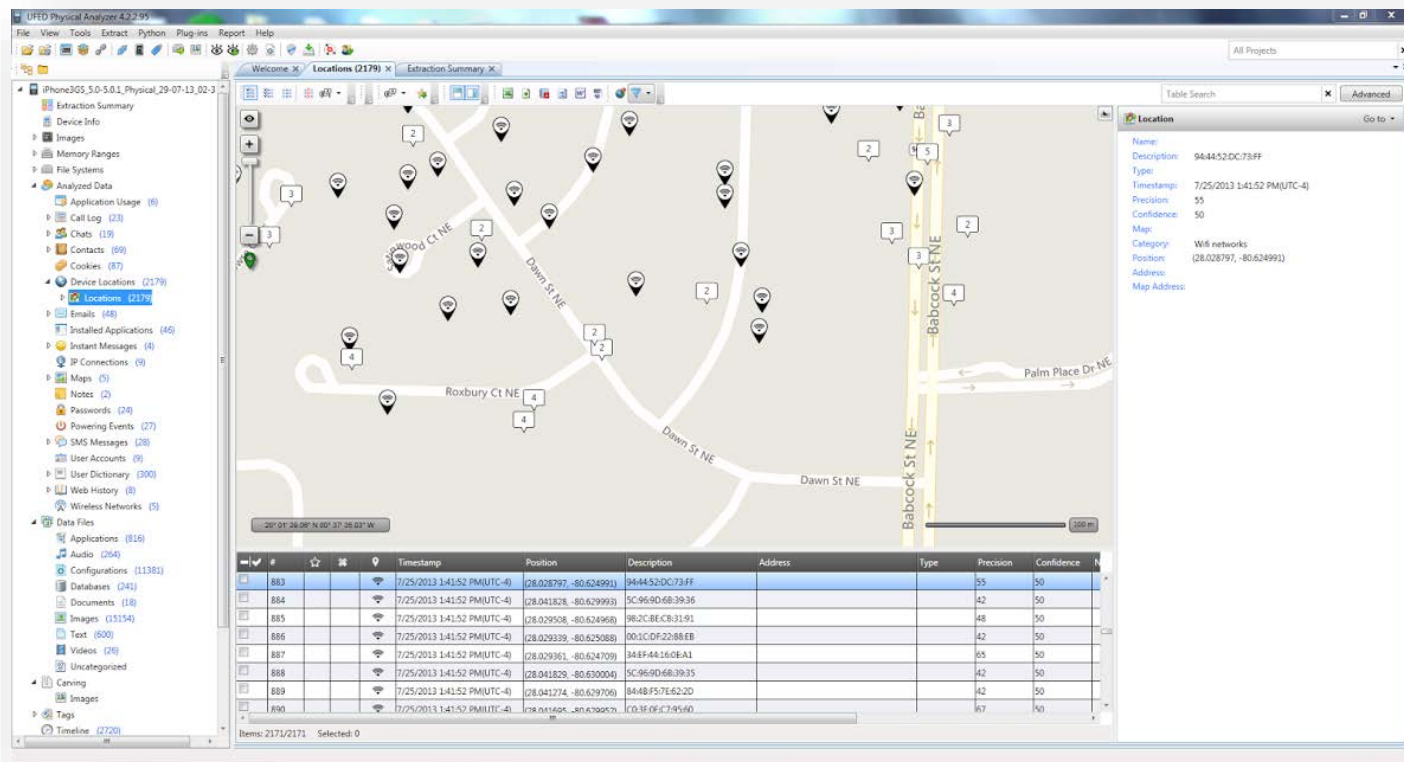
Device: iPhone 6
Serial: DNQH [redacted]
Firmware: 9.3.5
Folder: Complete backup
Time: 12:30 AM
IMEI: n/a
Status: Complete and unencrypted

Available data

- Photos: Extract 5,140
- Videos: Extract 257
- Contacts: Extract 2,196
- Voicemail: Extract 49
- Calendar: Extract 202
- Notes: Extract 29
- SMS: Extract 69,627
- Call history: Extract 7,121
- Recordings: None
- WhatsApp: None
- Location data: Extract 2,476

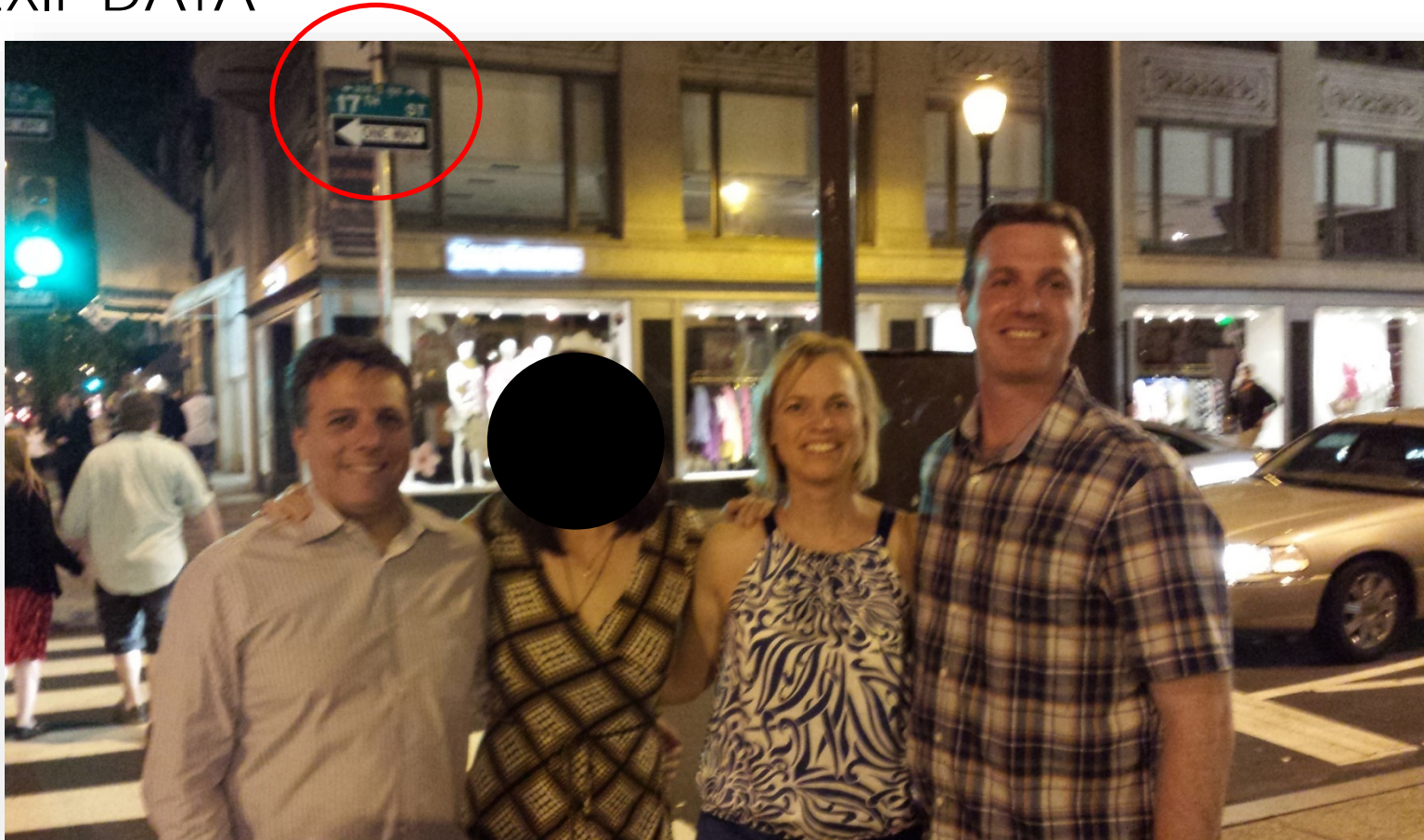
Location Data: What Is Out There

- Location Information – Mobile Devices
 - Mobile devices - Phones, tablets, GPS and other mobile devices



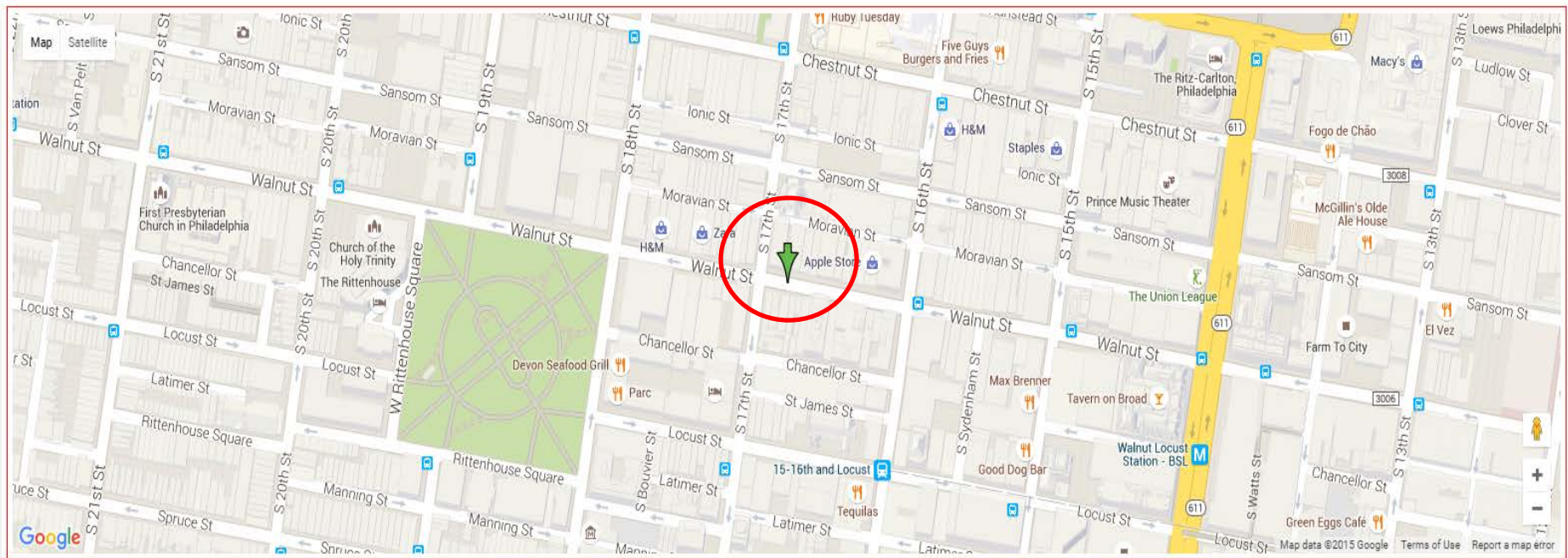
Location Data: What Is Out There

- EXIF DATA



Location Data: What Is Out There

- Location Information



Location Data: What Is Out There

■ Social Media

The screenshot displays a Facebook profile for Andrew Baker. On the left, the 'PHOTOS · 2014' section shows two images: a group of four people and a couple. Below this, the 'POSTS FROM FRIENDS · 2014' section shows two posts from Catherine Milligan. The main timeline area features a post from Catherine Milligan dated December 12, 2014, with the text 'Hey there little brother!'. Below this is a post from Andrew Baker dated November 23, 2014, sharing a link to a MapMyHike profile. The link includes a map of a red trail and the text: 'Hiked 1.25 mi on 11/23/14', 'Distance: 1.25 mi, Duration: 27:33, Pace: 0:21:59 min/mi, Energy Burned: 238 kCal', and 'WWW.MAPMYHIKE.COM | BY MAPMYFITNESS'. To the right of the main timeline is a vertical calendar view for 2014, with months from January to December listed. At the bottom right, there is a 'Sponsored' section featuring an advertisement for Dunkin' Donuts.

PHOTOS · 2014

POSTS FROM FRIENDS · 2014

3 friends posted on Andrew's Timeline.

Catherine Milligan wrote on his Timeline.
December 31, 2014 at 9:35am

HAPPY ANNIVERSARY!

Like · Comment

Catherine Milligan wrote on his Timeline.
December 12, 2014 at 7:04pm

Hey there little brother!

HAPPY ANNIVERSARY!

Like · Comment

Catherine Milligan · Andrew Baker
December 12, 2014 ·

Hey there little brother!

Like · Comment

Andrew Baker shared a link.
November 23, 2014 · MapMyHike ·

Hiked 1.25 mi on 11/23/14
Distance: 1.25 mi, Duration: 27:33, Pace: 0:21:59 min/mi, Energy Burned: 238 kCal
WWW.MAPMYHIKE.COM | BY MAPMYFITNESS

2014
December
November
October
September
August
July
June
May
April
March
February
January

2013
2012
2011
2010
2009
2008
2007
2006
2005
2004
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2002
2001
2000
1999
1998
1997
1996

Sponsored

Dunkin' Donuts
dunkindonuts.com

Location Data: What Is Out There

- Information maintained by cellular service providers
 - Call Detail Records (CDR)



T-Mobile

verizon✓



Cell Towers

- Most antennas have 3 sides
- Each side of the antenna has an azimuth and beam width
- Cell phones will usually connect to the closest cell site
- If the cell site is busy the phone can connect to the next tower

Cell Towers

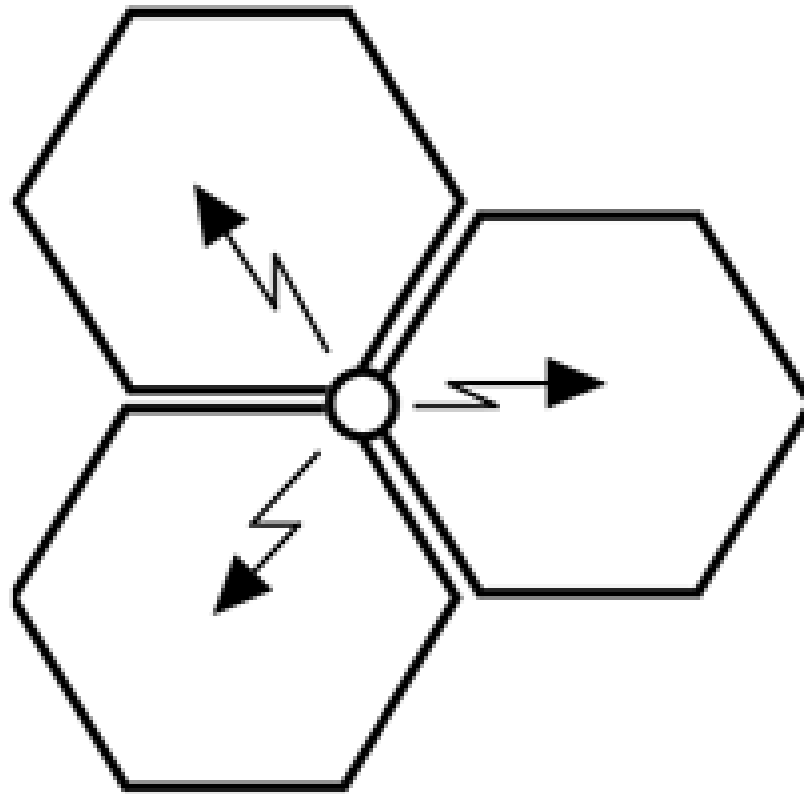


Photo from mellomikeswolfcreekcamper.blogspot.com



Photo from emfnews.org

Cell Towers



Cell Towers

- Coverage depends on a variety of factors:
 - Equipment and Configuration
 - Population & Density
 - Frequency
 - Terrain
 - Buildings

Location Data: What Is Out There

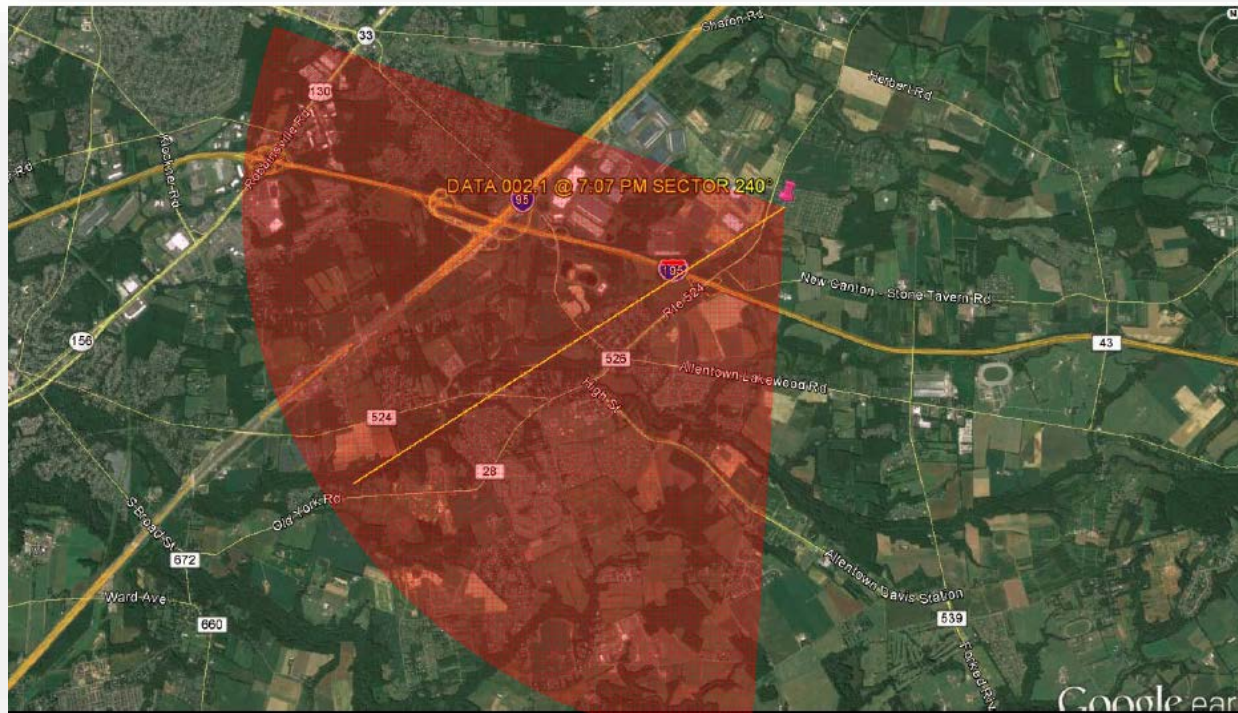
- Information maintained by cellular service providers
 - Call Detail Records (CDR)

Combined Detail LE 814-384-████████

MS	Start Time	First Tower Cell ID / ECGI Cell	First Tower Latitude	First Tower Longitude	Last Tower Cell ID / ECGI Cell	Last Tower Latitude	Last Tower Longitude	Duration(Seconds)
18143	8/23/2014 02:13:55 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	43
18143	8/23/2014 02:15:40 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	48
18143	8/23/2014 02:17:15 AM	15523	42.11114849	-80.0794776	16012	42.11005556	-80.1105556	23
18143	8/23/2014 02:28:24 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	2
18143	8/23/2014 02:28:47 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	99
18143	8/23/2014 02:31:54 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	41
18143	8/23/2014 02:32:35 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	28
18143	8/23/2014 02:33:38 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	34
18143	8/23/2014 02:34:13 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	45
18143	8/23/2014 02:35:54 AM	15513	42.12546944	-80.0793222	15523	42.11114849	-80.0794776	37
18143	8/23/2014 02:43:33 AM	16012	42.11005556	-80.1105556	16012	42.11005556	-80.1105556	82
18143	8/23/2014 02:48:27 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	15
18143	8/23/2014 02:52:44 AM	16012	42.11005556	-80.1105556	15523	42.11114849	-80.0794776	37
18143	8/23/2014 02:53:24 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	22
18143	8/23/2014 02:54:42 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	34
18143	8/23/2014 02:55:18 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	34
18143	8/23/2014 02:56:21 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	32
18143	8/23/2014 02:57:09 AM	15523	42.11114849	-80.0794776	15523	42.11114849	-80.0794776	35
18143	8/23/2014 02:58:06 AM	15513	42.12546944	-80.0793222	15513	42.12546944	-80.0793222	22

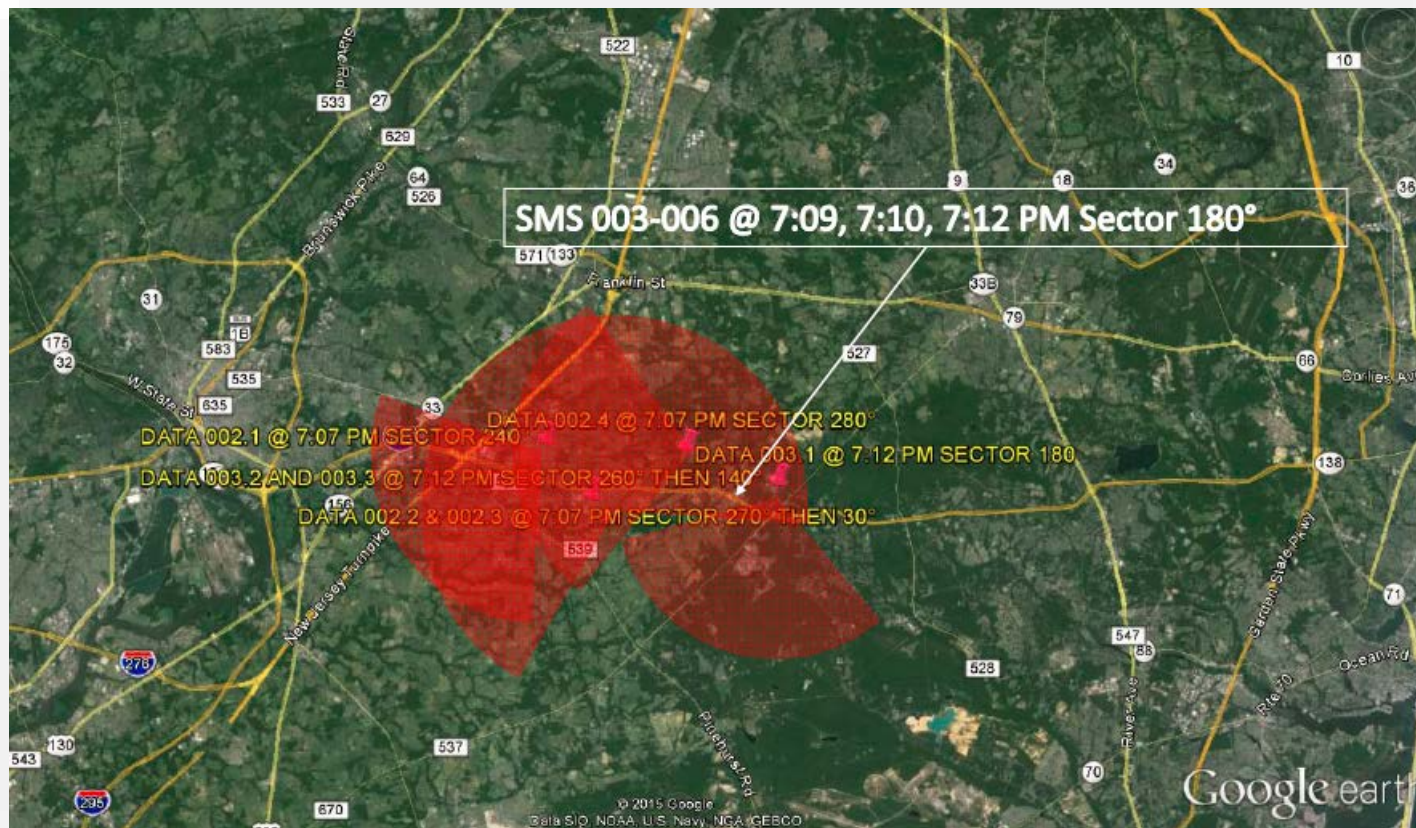
Location Data: What Is Out There

- Where was someone at any point in time?
- How fast was someone travelling? What route did they take?
 - Call Detail Records (CDR)



Location Data: What Is Out There

- Call Detail Records (CDR) – TEXTING WHILE DRIVING



“Pinging” with GPS

- More accurate – GPS
- Still directly from phone company
- Not historical data – happening NOW
- Latitude & Longitude

Current State of Affairs in Law



- Where is the law now?

Current State of Affairs in Law



■ Stored Communications Act

(c) Records concerning electronic communication service or remote computing service.—

(1) A governmental entity may require a provider of electronic communication service or remote computing service to disclose a record or other information pertaining to a subscriber to or customer of such service (**not including the contents of communications**) only when the governmental entity—

(A) obtains a warrant issued using the procedures described in the Federal Rules of Criminal Procedure (or, in the case of a State court, issued using State warrant procedures) by a court of competent jurisdiction; [or]

(B) obtains a court order for such disclosure under subsection (d) of this section; * * *

(d) Requirements for court order.-- A court order for disclosure under subsection . . . (c) may be issued by any court that is a court of competent jurisdiction and shall issue only if the governmental entity offers specific and articulable facts showing that there are reasonable grounds to believe that the . . . records or other information sought, are relevant and material to an ongoing criminal investigation. * * *

18 U.S.C. § 2703

Current State of Affairs in Law



- Stored Communications Act 18 u.s.c. 2703
 - LINK: Stored Comm. Act

[https://cornerstonediscovery.com/_public/FCLC/18%20USCS%20 %202703.pdf](https://cornerstonediscovery.com/_public/FCLC/18%20USCS%20%202703.pdf)

Current State of Affairs in Law



- Arguments in Carpenter v. United States

- LINK: Oral Argument Transcript

- https://cornerstonediscovery.com/_public/FCLC/U.S.%20v.%20Carpenter%20-%20Oral%20Arg.pdf

- LINK: 6th Cir. Opinion in Carpenter

- https://cornerstonediscovery.com/_public/FCLC/U.S.%20v.%20Carpenter%20-%20Opinion.pdf

Current State of Affairs in Law



- Briefs in Carpenter v. United States

- LINK: Brief for US

- https://cornerstonediscovery.com/_public/FCLC/16-402-bs-US.pdf

- LINK: Brief for Petitioner

- https://cornerstonediscovery.com/_public/FCLC/16-402-ts.pdf

Current State of Affairs in Law



- 3rd Circuit's opinion in *In re United States for an Order Directing Provider of Elec. Commun. Serv. to Disclose Records to the Gov't*, 620 F.3d 304
 - LINK: Case
 - https://cornerstonediscovery.com/_public/FC/LC/620%20F.3d%20304.pdf

Current State of Affairs in Law



- 3rd Circuit's opinion in United States v. Stimler, 864 F.3d 253

- LINK: Case

- https://cornerstonediscovery.com/_public/FCLC/864%20F.3d%20253.pdf

Current State of Affairs in Law



- N.D. Ca.'s opinion in In re Tel. Info. Needed for a Crim. Investigation, 119 F. Supp. 3d 1011.

- LINK: Case File

- https://cornerstonediscovery.com/_public/FCLC/In%20re%20Tel.%20Info.%20Needed%20for%20a%20Crim.%20Investigation_%20119%20F.%20Supp.%203d%201011.pdf



Practical Impact in Court

- Pretrial Motion Litigation

- LINK: 2703 Order

- [https://cornerstonediscovery.com/_public/FCCLC/2703\(d\)%20Order.pdf](https://cornerstonediscovery.com/_public/FCCLC/2703(d)%20Order.pdf)



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