

Cell Phone Evidence



Evan Weitz & Shannon Holmes

REASONS TO GATHER INFORMATION

What was said?- Content important (Drug cases, self-defense, conspiracy, etc..)

Mon, Aug 24, 9:11 PM

We met [at 7-11](#)
remember man

Lol

What's up

Not much dude
wanna smoke so
bad u have any
green

I don't know you.
Send me a pic

Hey bro what's good
wit ya

How much to lookin
for

Was just saying
whassup lol

Lol. Whassup. Chillin
here. You got any
hooks for sum blow

I actually do man.
Lol

Can you get me an 8

too :) and it's a solid
connect too u
looking for a ball

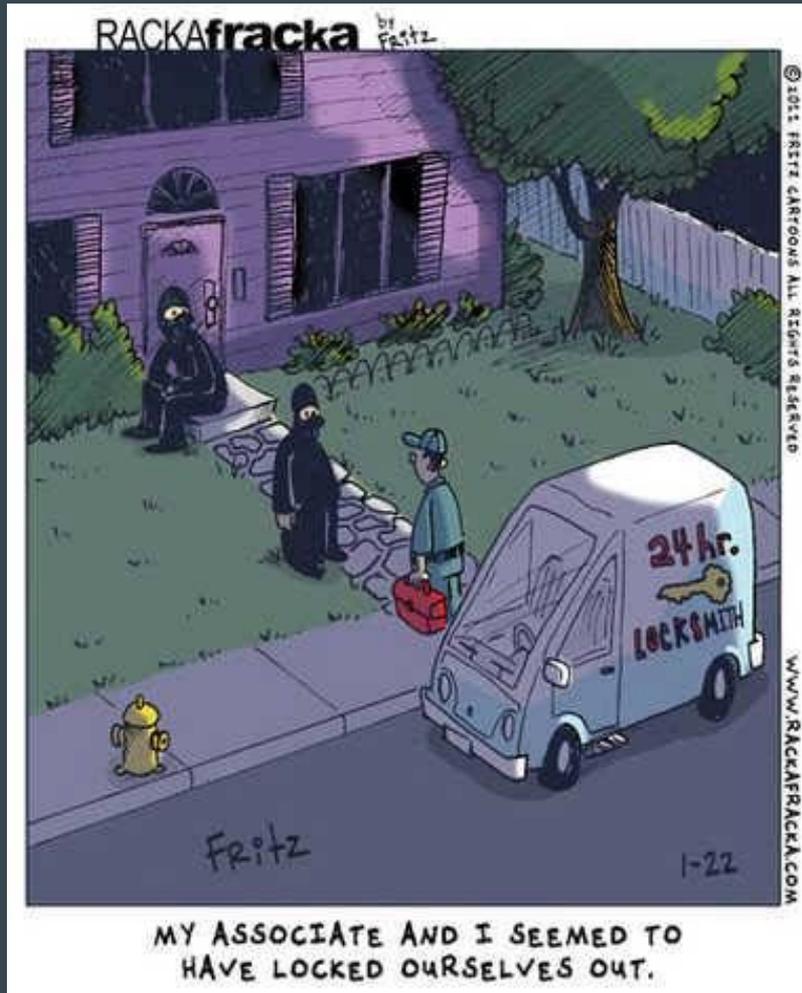
Yah man. Hook a
brotha up

OK I gotchu bro.
They're all bagged
up in .6 bags that
cool

I just gotta swing
thru my boys house.
Its not stomped on
either

REASONS TO GATHER INFORMATION

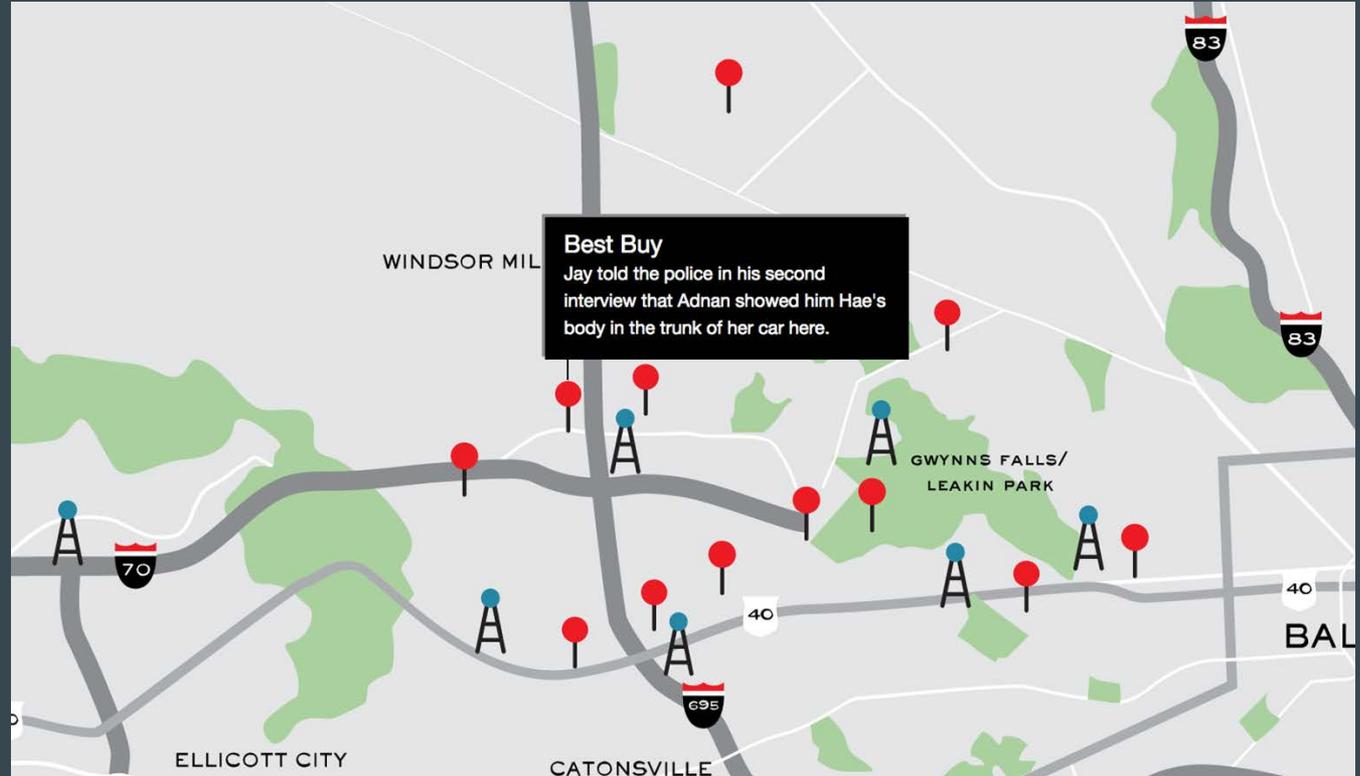
Who talked to who?- Links
between witnesses (Bias, timing
of events, conspiracy)



MY ASSOCIATE AND I SEEMED TO
HAVE LOCKED OURSELVES OUT.

REASONS TO GATHER INFORMATION

Location?



SOURCES OF INFORMATION

CELL PHONE

Information available:

Call History

Text Messages

Photos

Notes

E-mails

Social Messaging Applications



CELL PHONE

Visual Examination

Document with photographs

Forensic Analysis

Does not alter data

Deleted items can be recovered

Uses forensic software (Cellebrite, EnCase, etc..)

Different programs can retrieve different data



COMPUTER

Phones often backed up to Computer

Computer may have information the phone does not.

iTunes for iPhone

Android files copied to hard drive



COMPUTER

Cloud backups

Websites

Check-ins

Social Media Posts

Photos



CARRIER RECORDS



Call History

Number

Time

Duration

Tower Info

Text Message History

Numbers

Time

Content not available

CARRIER RECORDS

Subscriber Info

Name

Billing Address

TracFones

Point of sale

Finding the Cell Phone Service Provider

Free websites

<http://freecarrierlookup.com/>

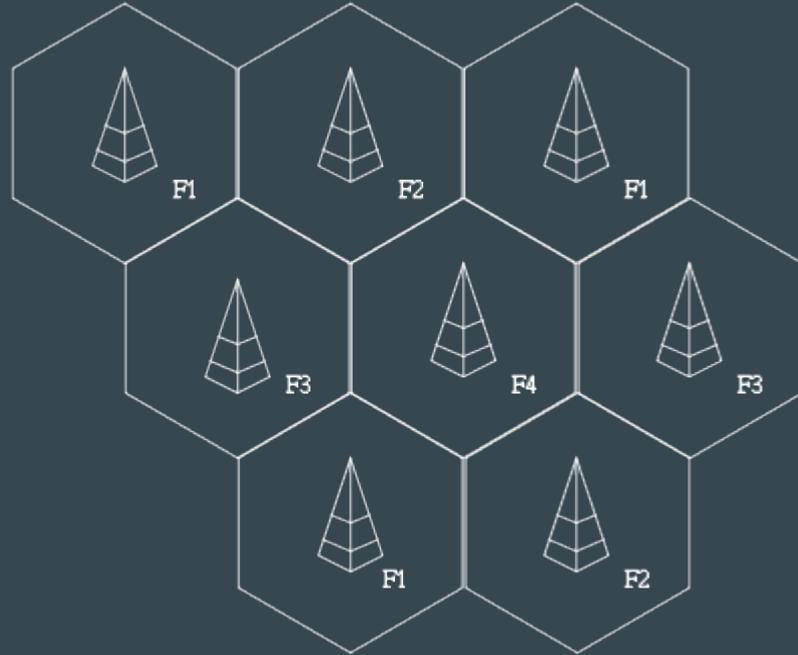
Subpoena contact info

<http://www.search.org/resources/isp-list/>

CELLULAR TECHNOLOGY

Limited Number of Frequencies

Area Split into Cells



Tower Search Results



Alert! 61 Towers (13 Registered,48 Not Registered) found within 3.00 miles of **819 N 6th St, Milwaukee, WI 53203.**



Info! The NEAREST Tower is .08 miles away and is owned by **Milwaukee Radio Alliance.**



Alert! One New Tower Application found within 3.00 miles of **819 N 6th St, Milwaukee, WI 53203.**

Tower Type	ID Num	Site Owner	Height	Dist
 Registered	(1)	Milwaukee City Center, Llc	663 feet	.12 miles
	(2)	Entercom Milwaukee, Llc	227 feet	.18 miles
	(3)	City Of Milwaukee	232 feet	.19 miles
	(4)	Industar Digital Pcs, Inc. Db a = Industar	123 feet	.76 miles
	(5)	Time Warner Cable Midwest Llc	282 feet	.83 miles
	(6)	Sba Towers, Llc	158 feet	1.27 miles
	(7)	Milwaukee, City Of	315 feet	1.65 miles
	(8)	Wisconsin Bell Telephone Company	168 feet	1.66 miles
	(9)	Milwaukee County Government	286 feet	2.66 miles
	(10)	United States Cellular Corporation	70 feet	2.81 miles
	(11)	Courier Communications Db a = Wnov Radio	292 feet	2.85 miles
	(12)	United States Cellular Corporation	120 feet	2.90 miles
	(13)	United States Cellular Corporation	120 feet	2.96 miles
 Not Registered	(1)	Kans Net Inc	278 feet	.12 miles
	(2)	Newaukee	784 feet	.29 miles
	(3)	County Of Milwaukee, Wisconsin	204 feet	.31 miles
	(4)	Indus Inc	171 feet	.36 miles
	(5)	Indus Inc	199 feet	.42 miles
	(6)	Blank	221 feet	.48 miles
	(7)	Milwaukee Public Schools	205 feet	.49 miles
	(8)	Nextel Communications	145 feet	.71 miles
	(9)	Warner Amex Cable Comms. Co.of Milwaukee	225 feet	.76 miles
	(10)	Milwaukee School Of Engineering	202 feet	.77 miles

Tower Search Results!



Alert! 36 Towers (16 Registered, 20 Not Registered) found within 4.00 miles of **1025 Clark St, Stevens Point, WI 54481**.

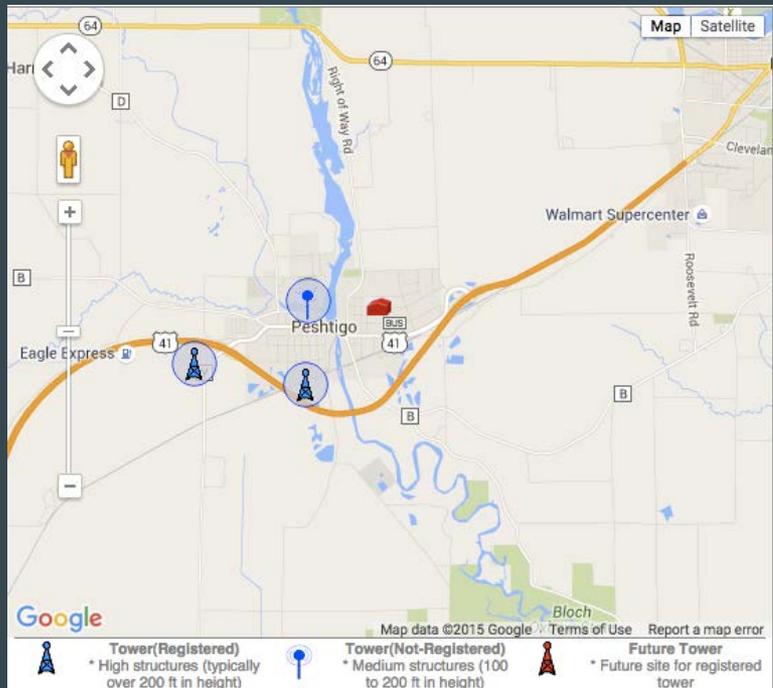


Info! The NEAREST Tower is .06 miles away and is owned by **Wisconsin Bell Telephone Company**.



Ok! No Applications for Future Towers detected as of 11/11/15.

Tower Type	ID Num	Site Owner	Height	Dist
Registered	(1)	Wisconsin Bell Telephone Company	180 feet	.06 miles
	(2)	University Of Wisconsin - Stevens Point	131 feet	.88 miles
	(3)	St. Michaels Hospital Of Stevens Point, Wi	121 feet	1.12 miles
	(4)	Americus Communications Inc Db a = Wspt	402 feet	1.18 miles
	(5)	Sentry Insurance	151 feet	1.41 miles
	(6)	Stevens Point Police Dept	180 feet	1.44 miles
	(7)	United States Cellular Corporation	167 feet	1.75 miles
	(8)	Lake Mobility Llc	128 feet	1.97 miles
	(9)	Charter Cable Partners, Llc	348 feet	1.98 miles
	(10)	Sba Monarch Towers Ii, Llc	168 feet	2.33 miles
	(11)	Warden, Jack D Db a = Wardens Communications Service	350 feet	2.57 miles
	(12)	Nsight Tower Holdings, Llc	120 feet	2.63 miles
	(13)	United States Cellular Corporation	295 feet	3.00 miles
	(14)	Spectrasite Communications, Llc. Through American Towers, Llc.	138 feet	3.37 miles
	(15)	Ccat Llc	130 feet	3.41 miles
	(16)	United States Cellular Corporation	131 feet	3.90 miles
Not Registered	(1)	Sba Towers Inc	180 feet	.33 miles
	(2)	Canadian National Railroad	120 feet	.87 miles
	(3)	Verizon Wireless Personal Communications Lp	65 feet	1.05 miles
	(4)	Blank	230 feet	1.15 miles
	(5)	Blank	120 feet	1.22 miles
	(6)	Skipko Broadcasting Company	351 feet	1.29 miles
	(7)	Blank	146 feet	1.70 miles
	(8)	Nsightel Wireless Llc	110 feet	1.76 miles
	(9)	Us Cellular Corporation - Wi	170 feet	1.82 miles



Tower Search Results!

 **Alert!** 3 Towers (2 Registered, 1 Not Registered) found within 4.00 miles of 101 N Ogden Rd, Peshtigo, WI 54157.

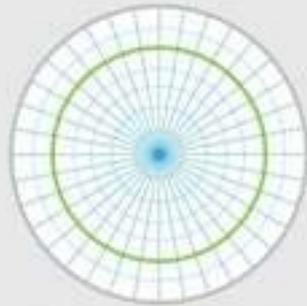
 **Info!** The NEAREST Tower is 1.27 miles away and is owned by **State Of Wi-educational Comm. Board**.

 **Ok!** No Applications for Future Towers detected as of 11/11/15.

Tower Type	ID Num	Site Owner	Height	Dist
 Registered	(1)	Nsight Tower Holdings, Llc	199 feet	1.46 miles
	(2)	Spectrasite Communications, Llc. Through American Towers, Llc.	254 feet	3.02 miles
 Not Registered	(1)	State Of Wi-educational Comm. Board	205 feet	1.27 miles
 Future	(No Towers Detected)			

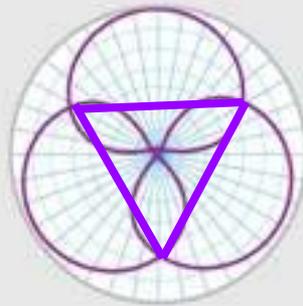
TOWER TYPES

ADDING ANTENNA SECTORS TO ADD CAPACITY



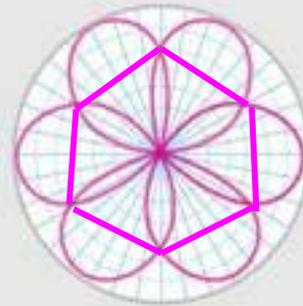
OMNI DIRECTIONAL

Minimal capacity



TRI-SECTOR

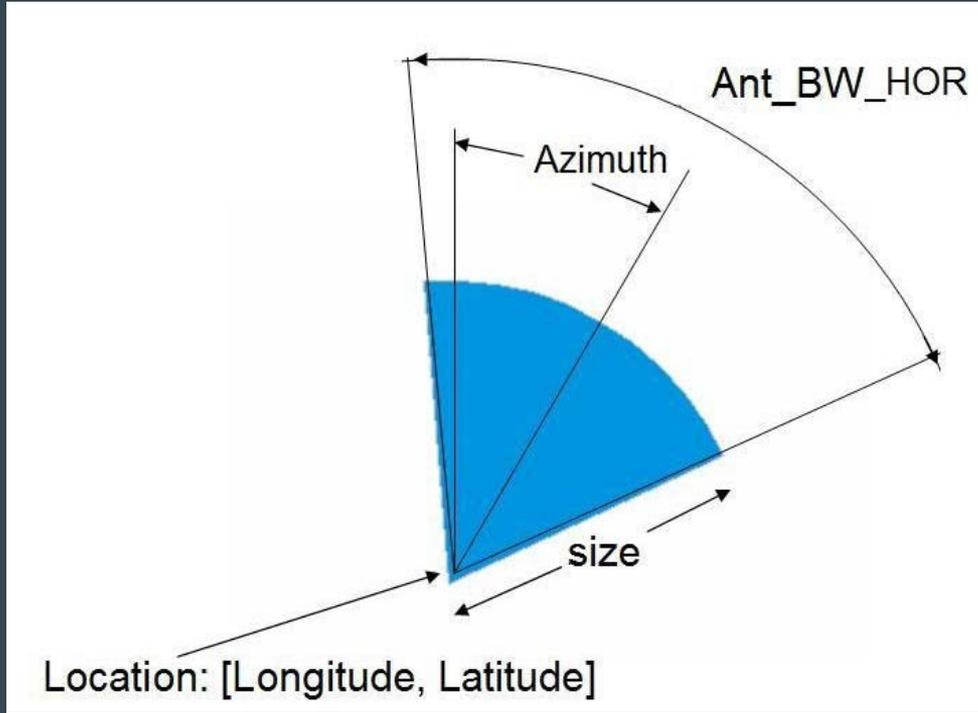
3x capacity



SIX SECTOR

6x capacity

TOWER ORIENTATION



Azimuth

Degrees from due north

Beam Width

Width of sector in degrees

Usually 120 for 3 sector towers

Amplitude

Power or Range of signal

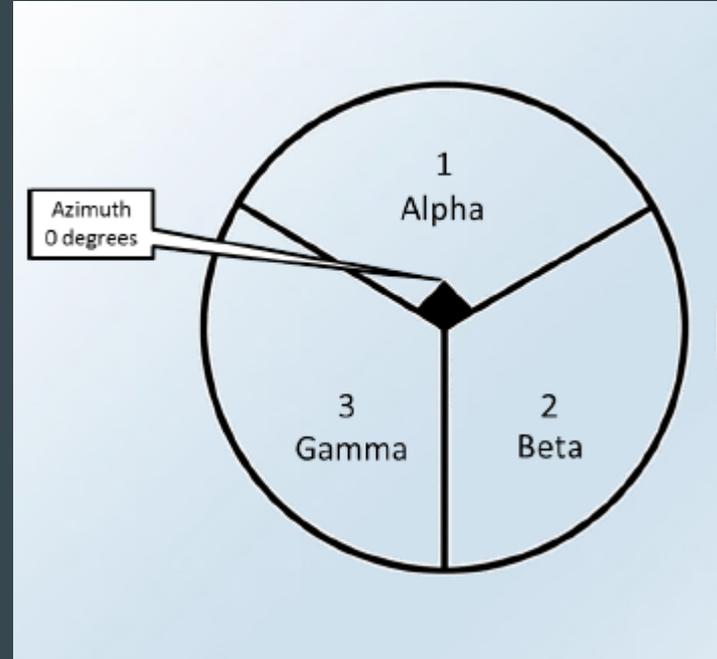
NORTEL VS. LUCENT

Nortel

Sectors (1, 2, 3)

Lucent

Sectors (2, 3, 4)



CONNECTING TO TOWER

Phone searches for strongest signal

Not always closest tower

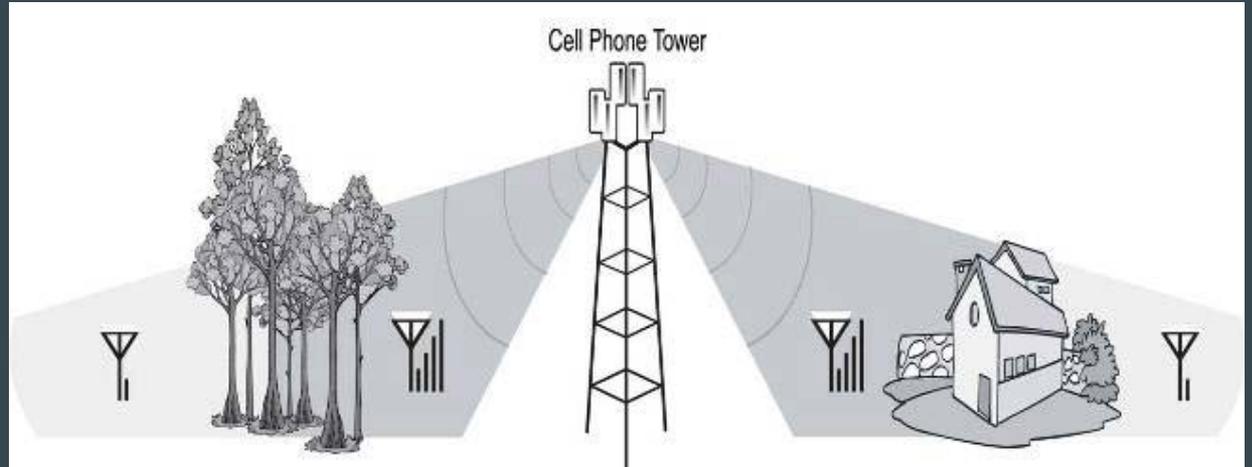
Tower traffic

Environmental factors

Vegetation

Water

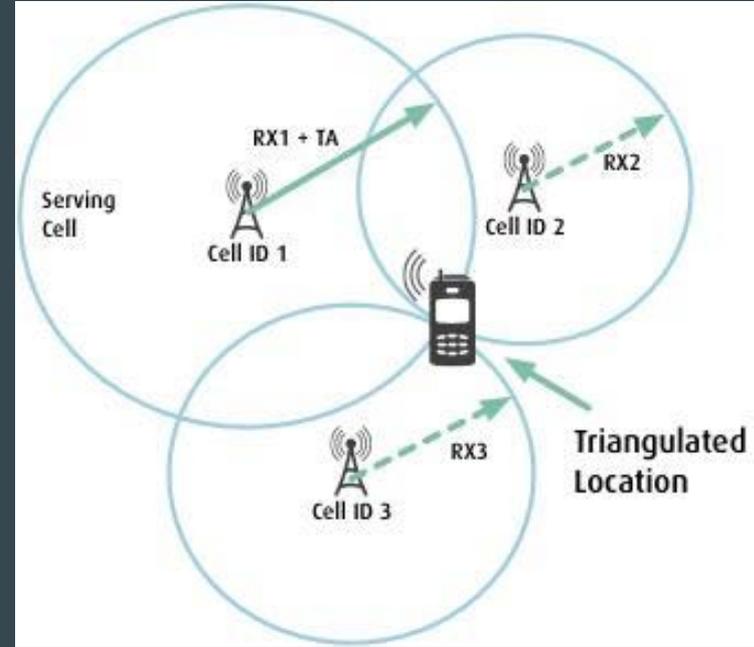
Buildings



TRIANGULATION

MUST BE REAL TIME

CANNOT BE DONE FROM
HISTORICAL DATA

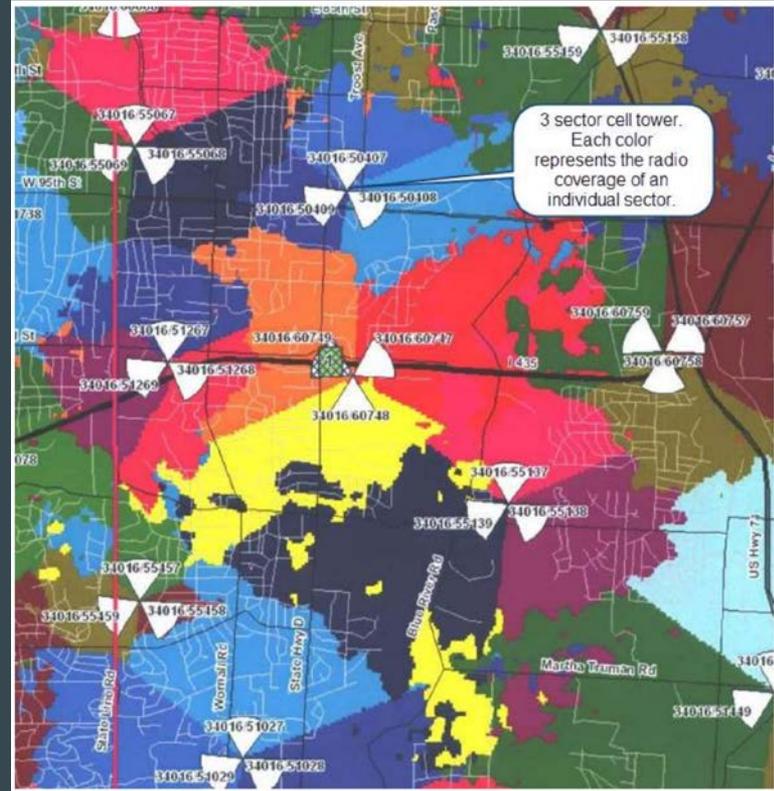


INTERPRETING CALL DETAIL RECORDS

LIMITATIONS

Actual cell coverage doesn't follow a nice neat model.

Easier to exclude than to include



Call Records vs. Messages on Phone

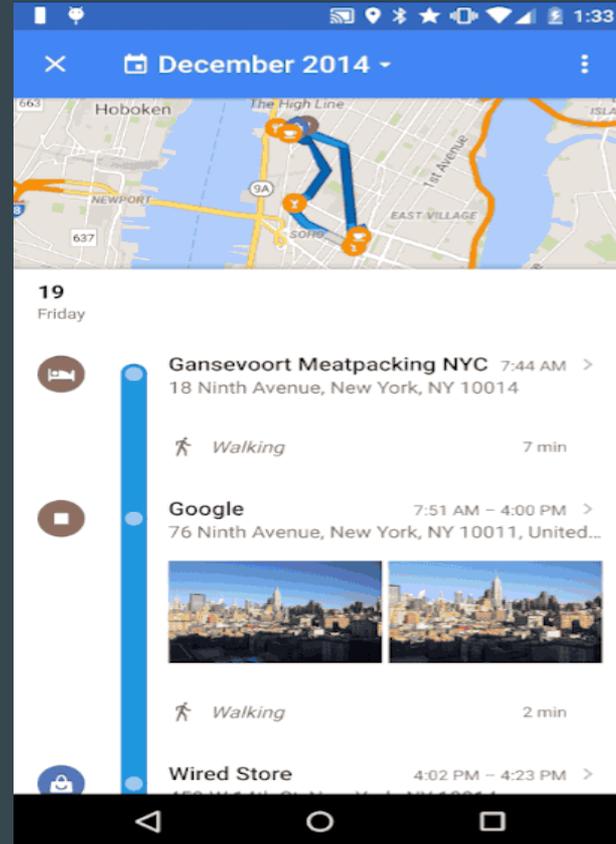
fx (920) 450-9756												
	A	B	C	D	E	F	G	H	I	J	K	L
1	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 7:08:04	9/2/2015 7:08:04	0	Text Detail	193	morning		
2	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 7:51:58	9/2/2015 7:51:58	0	Text Detail	228	hi		
3	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 7:59:35	9/2/2015 7:59:35	0	Text Detail	194	oh just hi i see		
4	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 7:59:58	9/2/2015 7:59:58	0	Text Detail	228	???????????		
5	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 8:02:11	9/2/2015 8:02:11	0	Text Detail	193	yep sho you right		
6	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 8:02:43	9/2/2015 8:02:43	0	Text Detail	228	overslept...getting ready for work...What's up with you?		
7	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 8:03:49	9/2/2015 8:03:49	0	Text Detail	192	you will text you in a little bit and let you know what's up		
8	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 8:07:19	9/2/2015 8:07:19	0	Text Detail	228	???????????		
9	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 8:07:53	9/2/2015 8:07:53	0	Text Detail	192	???????????		
10	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 8:12:05	9/2/2015 8:12:05	0	Text Detail	228	???????????		
11	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 8:13:02	9/2/2015 8:13:02	0	Text Detail	194	???????????		
12	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 8:16:16	9/2/2015 8:16:16	0	Text Detail	191	???????????		
13	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 8:17:14	9/2/2015 8:17:14	0	Text Detail	228	???????????		
14	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 11:39:19	9/2/2015 11:39:19	0	Text Detail	191	hey you just waking up		
15	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 11:57:12	9/2/2015 11:57:12	0	Text Detail	228	Hey...		
16	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 12:06:12	9/2/2015 12:06:12	0	Text Detail	191	call me before you leave this side of town		
17	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 12:08:06	9/2/2015 12:08:06	0	Text Detail	228	ok...30 minutes		
18	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 12:42:44	9/2/2015 12:42:44	0	Text Detail	228	Hello?		
19	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 13:02:44	9/2/2015 13:02:44	0	Text Detail	191	hello		
20	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 13:03:05	9/2/2015 13:03:05	0	Text Detail	228	yes		
21	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 13:04:11	9/2/2015 13:04:11	0	Text Detail	193	you see hello and yes		
22	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 15:38:13	9/2/2015 15:38:13	0	Text Detail	228	???????????		
23	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 15:39:12	9/2/2015 15:39:12	0	Text Detail	191	???????????		
24	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 15:39:49	9/2/2015 15:39:49	0	Text Detail	228	???????????		
25	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 15:42:25	9/2/2015 15:42:25	0	Text Detail	191	???????????		
26	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 17:06:57	9/2/2015 17:06:57	0	Text Detail	191	yeah momma		
27	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 17:14:38	9/2/2015 17:14:38	0	Text Detail	228	Yeah??		
28	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 17:16:40	9/2/2015 17:16:40	0	Text Detail	193	really ((
29	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 17:17:09	9/2/2015 17:17:09	0	Text Detail	193	come see me momma		
30	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 17:17:12	9/2/2015 17:17:12	0	Text Detail	228	Really what?		
31	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 17:19:58	9/2/2015 17:19:58	0	Text Detail	191	is that it?		
32	(920) 224-3517	(920) 450-9756		Inbound	9/2/2015 17:23:34	9/2/2015 17:23:34	0	Text Detail	228	Sorry...i'm still working		
33	(920) 450-9756	(920) 224-3517		Outbound	9/2/2015 17:24:09	9/2/2015 17:24:09	0	Text Detail	191	be there momma?		

OTHER CONSIDERATIONS

Stingrays

GPS Data

Google location history



OTHER CONSIDERATIONS

Spoof my phone

<http://www.spoofmyphone.com>

Textalyzer

Any Questions?

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