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Cell Phone Analysis

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Overview

- **Cell Phone Analysis**
- **Template Overview**
- **Common Terms**
- **Data Management**
- **Cell Site Tools**
- **Call Detail Records**
- **Examples**

What is Cell Phone Analysis?

Cell phone analysis is used in police investigations or court proceedings where the estimated cell phone location of a suspect and/or victim can be used as supporting evidence.

Location of a cell phone is derived by correlating the location of cell phone towers and antennas with the Call Detail Records (CDR) belonging to a cell phone (handset) suspected of being present during a crime.

CDR, cell tower, and antenna information is obtained through warrant by the investigating law enforcement agency from the cell phone carrier/provider.

Maps are the obvious medium for correlating, analyzing, and communicating cell phone location(s) and other location based evidence.

Maps are easily understood and provide a powerful visualization to uncover and understand the events surrounding a crime.

Agencies utilizing well constructed maps depicting a suspects direct proximity to a crime have experienced an 80%+ plea rate, meaning the case doesn't go to trial.

V1 Goal

A template to structure and streamline the workflow of an analyst conducting cell phone analysis in support of law enforcement operations

- Historic toll analysis
- **NOT wires**
- **NOT pings**
- **NOT pen registry (trap & trace)**
- **NOT tactical/field collection**
- **NOT tower dumps**
- **NOT radio wave propagation**
- **NOT timing advance analysis**

Essential capabilities needed for cell phone analysis

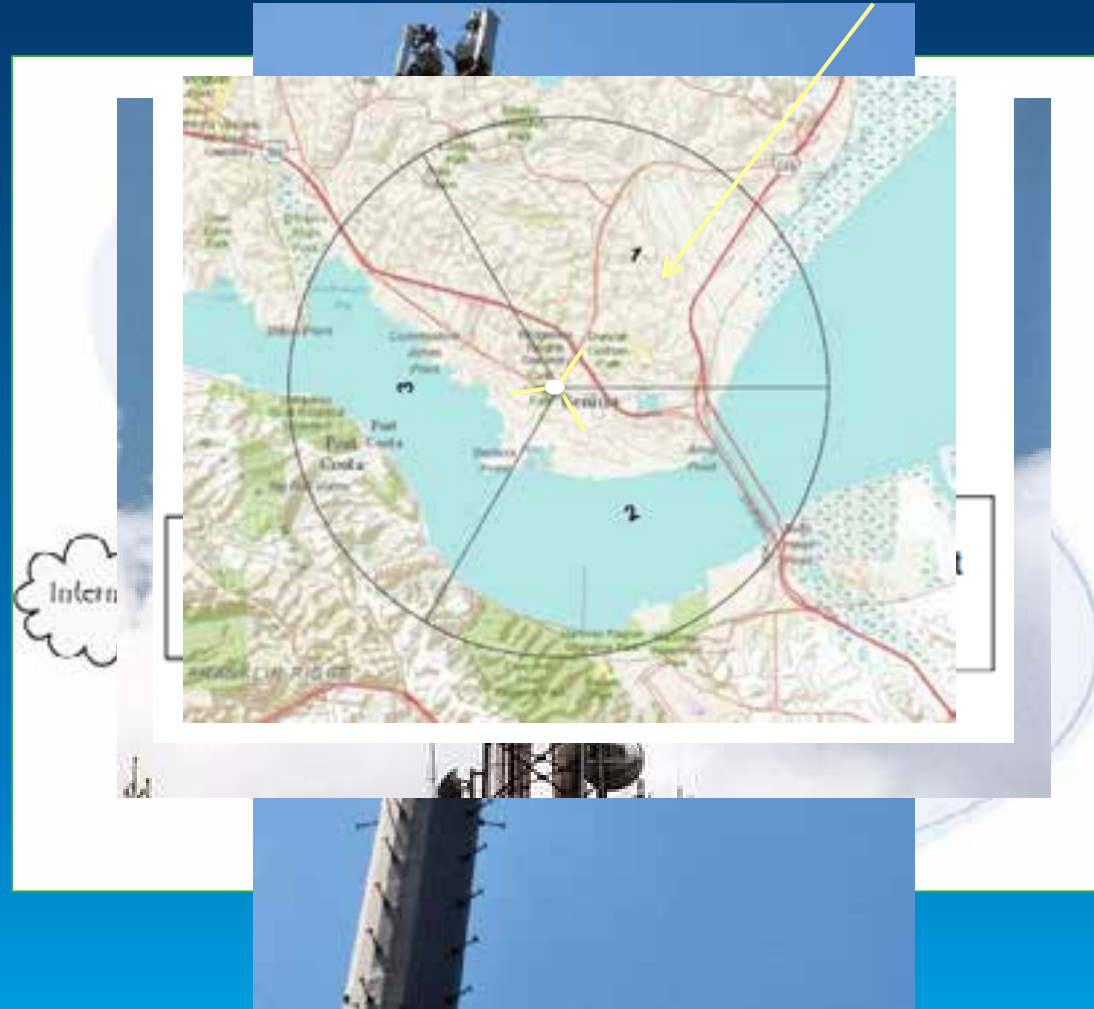
ArcGIS for Desktop - Basic

Create cell sectors and reference handset activity

Support additional analytical workflows

Terms

- Cell Tower / Site
- Carrier
- Antenna
- Cell Sector
- Azimuth
- Switch / RePoll
- Call Detail Records



Excel: Data Management

Carrier

AT&T (GO)
Boost Mobile
Cellular One
Cricket
Liberty
MetroPCS
Net10
Nextel (Boost)
nTelos
SouthernLINC
Sprint PCS
Sure West
T-Mobile (ToGo)
TracFone
U.S. Cellular
Verizon
Virgin Mobile



Sites

PROVIDER
SWITCH
CELLID
SECTORID
UNIQID
LATITUDE
LONGITUDE
AZIMUTH
BEAMWIDTH
RADUIS
SOURCE
LASTUPDATE

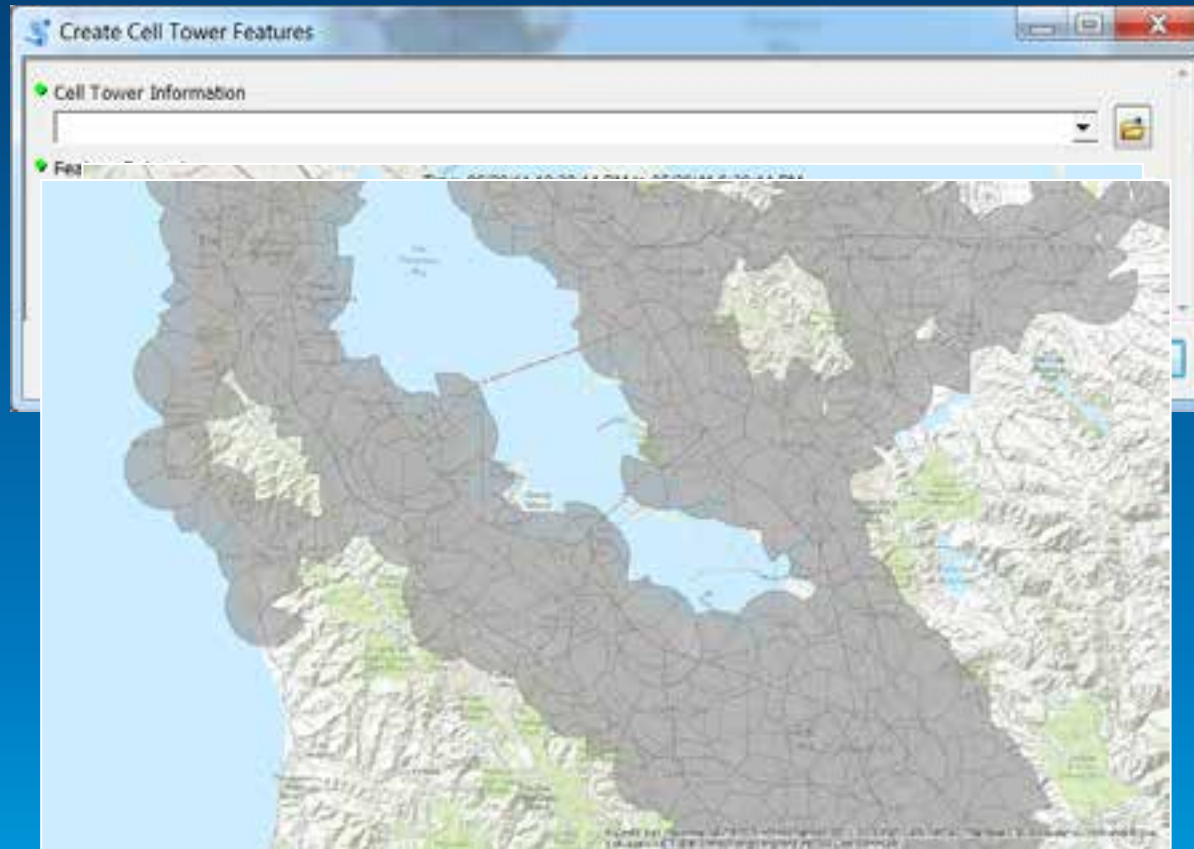
Call Detail Records

DATE
TIME
DATETIME
DURATION
DIRECTION
SUBSCRIBERID
DIALEDNUM
DESTNUM
STATUS
SPFEATURE
CALLERID
PROVDER
BEGSWITCH
BEGTOWER
BEGSECTOR
BEGUNIQID
ENDSWITCH
ENDTOWER
ENDSECTOR
ENDUNIQID

Cell Site Tool

Create Tower Features

- Cell Sites
- Cell Sectors
- Cell Sector Lines
- Cell Sector Azimuth



Site to CDR

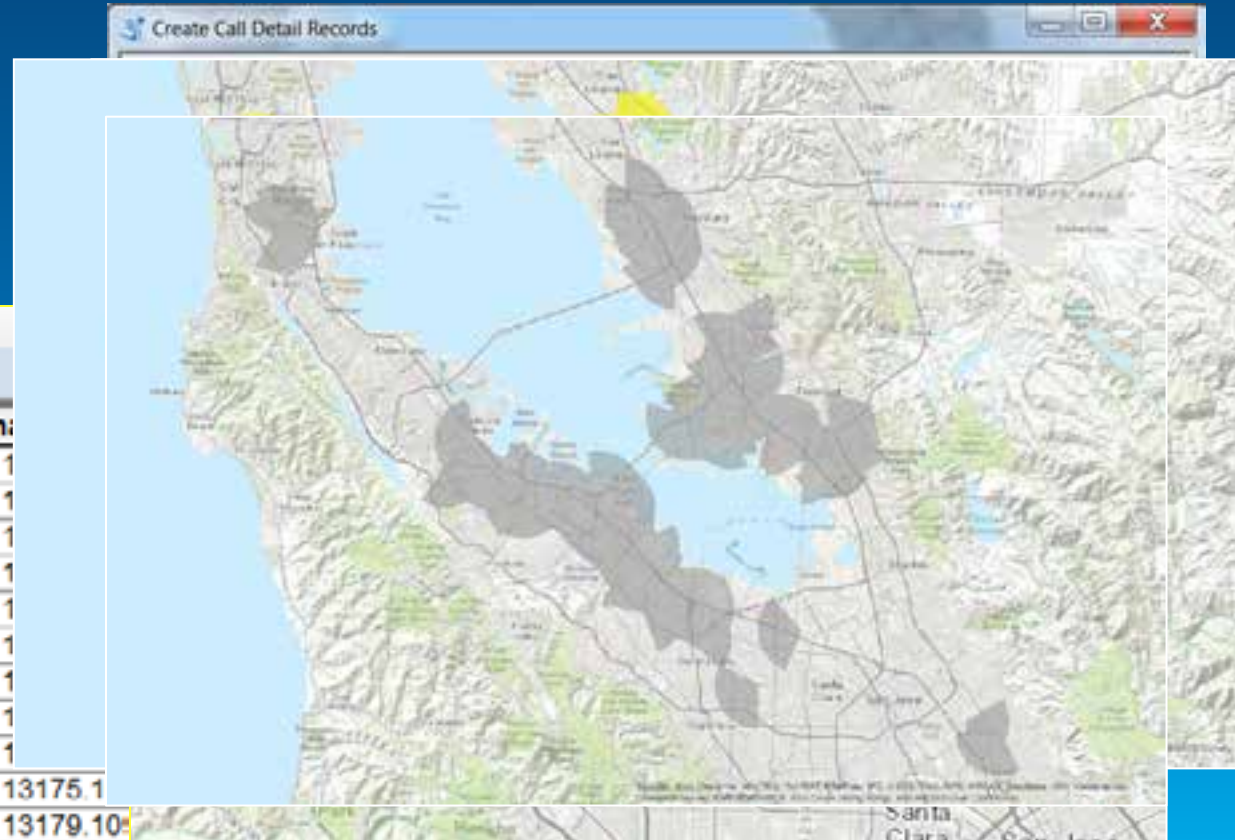
Cell#	Cascade ID	Switch	Repoll	Site Name	Address	City	County	ST	Zip	Latitude	Longitude	BTS Manufacturer	Sector	Azimuth		
0092	WAS7XC047	DE1	546	Arbor View Apartments	1460 Brinkley Road	Temple Hills	Prince George 5	MD	20748	38.80583	-76.95	LUCENT	1	240		
0093	WA23XC344	DE1	546	Stanton Water Tank	2701 Naylor Road Se	Washington Dc	District Of Columbia	DC	20020	38.8587944	-76.9696095	LUCENT	1	60		
0093	WA23XC344	DE1	546	Stanton Water Tank	2701 Naylor Road Se	Washington Dc	District Of Columbia	DC	20020	38.8587944	-76.9696095	LUCENT	2	140		
0093	WA23XC344	DE1	546	Stanton Water Tank	2701 Naylor Road Se	Washington Dc	District Of Columbia	DC	20020	38.8587944	-76.9696095	LUCENT	3	250		
0094	WAS7XC014	DE1	546	Wa57xc014	1100 New Jersey Street Se	Washington Dc	District Of Columbia	DC	20003	38.876944	-77.0038889	LUCENT	1	45		
0094	WAS7XC014	DE1	546	Wa57xc014	1100 New Jersey Street Se	Washington Dc	District Of Columbia	DC	20003	38.876944	-77.0038889	LUCENT	2	120		
0094	WAS7XC014	DE1	546	Wa57xc014	1100 New Jersey Street Se	Washington Dc	District Of Columbia	DC	20003	38.876944	-77.0038889	LUCENT	3	130		
0095	WAS4XC476	DE1	546	Sinclair Woods	11911 Glenn Dale Blvd	Glenn Dale	Prince George 5	MD	20769	38.97347	-76.79858	LUCENT	1	60		
0095	WAS4XC476	DE1	546	Sinclair Woods	11911 Glenn Dale Blvd	Glenn Dale	Prince George 5	MD	20769	38.97347	-76.79858	LUCENT	2	180		
0095	WAS4XC476	DE1	546	Sinclair Woods	11911 Glenn Dale Blvd	Glenn Dale	Prince George 5	MD	20769	38.97347	-76.79858	LUCENT	3	300		
0095	WAS8XC006	DE1	546	St. Stephen's Catholic Church	8300 Blount Rd	Beltsville	Prince George 5	MD	20712	38.987578	-76.945610	LUCENT	1	55		
0096	WAS8XC006	DE1	546	CALLING_NBR	CALLLED_NBR	DIALED_DIGITS	M_R	START_DATE	END_DATE	DURATION_SEC	CELL_1st	LAST_CELL	Tower	REPOLL	Sector	Carrier
0096	WAS8XC006	DE1	546	(571) 312-6646	(6245000) 000-0013	(202) 422-0095	Routed_Call	9/28/11 15:53:03	9/28/11 15:53:09	6	20033	20101	101	546	1	Sprint
0098	DC03XC251	DE1	546	(202) 422-0095		(571) 451-8764	Outbound	9/28/11 2:35:48	9/28/11 2:35:50	2	20101	20101	101	546	1	Sprint
0098	DC03XC251	DE1	546	(202) 422-0095		(571) 451-8764	Outbound	9/28/11 2:36:38	9/28/11 2:36:40	2	20101	20101	101	546	1	Sprint
0098	DC03XC251	DE1	546	(202) 422-0095		(202) 696-7960	Outbound	9/28/11 2:51:29	9/28/11 2:51:31	2	20101	20101	101	546	1	Sprint
0099	WAS4XC495	DE1	546	(202) 422-0095		(1202) 705-0249	Outbound	9/28/11 2:53:29	9/28/11 2:53:31	2	20101	20101	101	546	1	Sprint
0099	WAS4XC495	DE1	546	(202) 422-0095		(571) 451-8764	Outbound	9/28/11 4:10:43	9/28/11 4:10:45	2	20101	20101	101	546	1	Sprint
0099	WAS4XC495	DE1	546	(202) 422-0095		(202) 710-4381	Routed_Call	9/28/11 12:30:59	9/28/11 12:40:01	2	20101	20101	101	546	1	Sprint
0101	DC03XC207	DE1	546	(202) 422-0095		(202) 607-2419	Outbound	9/28/11 16:45:21	9/28/11 16:45:23	2	20101	20101	101	546	1	Sprint
0101	DC03XC207	DE1	546	(571) 312-6646		(202) 422-0095	Routed_Call	10/3/11 22:55:04	10/3/11 22:55:06	2	20101	20101	101	546	1	Sprint
				(202) 422-0095		(571) 312-6646	Outbound	10/3/11 23:24:36	10/3/11 23:24:38	2	20101	20101	101	546	1	Sprint
				(240) 367-3452		(202) 422-0095	Routed_Call	10/4/11 11:18:03	10/4/11 11:18:05	2	20101	40101	101	546	1	Sprint
				(240) 462-1954		(202) 422-0095	Routed_Call	10/4/11 12:18:11	10/4/11 12:18:13	2	20101	20101	101	546	1	Sprint
				(202) 422-0095		(202) 696-7960	Outbound	10/4/11 14:08:12	10/4/11 14:08:14	2	20101	20101	101	546	1	Sprint
				(202) 422-0095		(202) 696-7960	Outbound	10/4/11 14:08:16	10/4/11 14:08:18	2	20101	20101	101	546	1	Sprint
				(202) 422-0095		(202) 683-6493	Outbound	10/5/11 16:02:49	10/5/11 16:02:51	2	20101	20101	101	546	1	Sprint
				(202) 422-0095		(202) 724-8513	Outbound	10/5/11 18:10:40	10/5/11 18:10:50	2	20101	20101	101	546	1	Sprint
				(202) 422-0095		(202) 698-0130	Outbound	10/5/11 18:25:59	10/5/11 18:26:01	2	20101	20101	101	546	1	Sprint

Call Detail Tools

Create Call Detail Features

- Call Detail Records
- Call Detail Summary

SUBSCRIBERID	CALLFREQUENCY	Sh
1235551212	382	1
1235551212	339	1
1235551212	142	1
1235551212	87	1
1235551212	79	1
1235551212	36	1
1235551212	20	1
1235551212	19	1
1235551212	11	1
1235551212	10	13175.1
1235551212	10	13179.10
1235551212	9	13173.8
1235551212	8	13180.14



Overview

Create Call Detail Features

- Call Detail Records
- Call Detail Summary



ArcGIS FEATURES PLANS GALLERY MAP HELP SIGN IN

Cell Phone Analysis (ArcGIS 10.2)

Cell Phone Analysis is an editing map and set of tools that can be used by law enforcement agencies to analyze cell tower information and call detail records for wireless service providers.

Desktop Application Template by ArcGISTeamLocalGov
Last Modified: December 13, 2013
(0 ratings, 339 downloads)
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Description

Cell Phone Analysis is an ArcGIS for Desktop editing map and set of tools that can be used by law enforcement agencies to analyze cell tower information and call detail records for wireless service providers. Typically, this analysis is done during investigations and court cases.

Cell Phone Analysis can be used by law enforcement officials to do the following:

- Locate cell tower sites and determine the antenna azimuth, sectors, beam width, and so on.
- Associate call detail records for a given cellular handset with a given set of towers.
- Determine which tower and sector a specific cellular number passed through.
- Identify the frequency of calls on any given tower and sector.

You can configure the Cell Phone Analysis editing map for your organization and, in doing so, learn how to analyze cell tower information and call detail records using your organization's data. To complete the configuration, you will need experience with editing workflows in ArcGIS for Desktop.

<http://www.arcgis.com/home/item.html?id=3e27e95b60dd4304a56287f3ee0b0f3f>

Overview

- **Analytical Workflows**
- **Ingest Tools**
- **Visualizing Relationships**
- **Email Pings & GeoEvent Processor**



Understanding our world.

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