Mapping 911 Calls 24x7 with a Web Based Map

Introduction

Dave Eaton - GIS Manager for Maricopa Region 911, which consists of 25 PSAP (Public Safety Answering Points)
~350 call taking positions

Manage data and software for Mapped ALI

Technical Manager for the Reverse 911 program

What is Mapped ALI?

Mapping software used by 9-1-1 call centers to identify the location of 9-1-1 calls

ALI - Automatic Location Information

Wireline: RESD, BUSN, COIN…

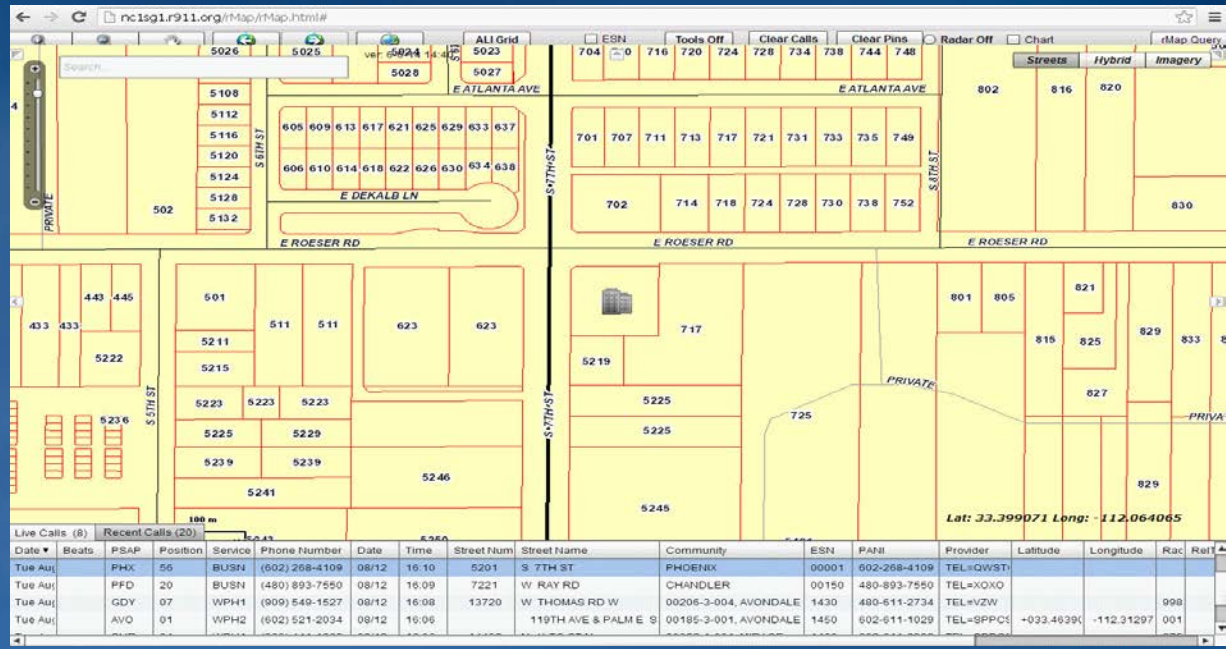
Wireless: WRLS, WPH1, WPH2, TELM

Why is it needed?

2004 Installed 216 mapped ALI clients

Landline call:

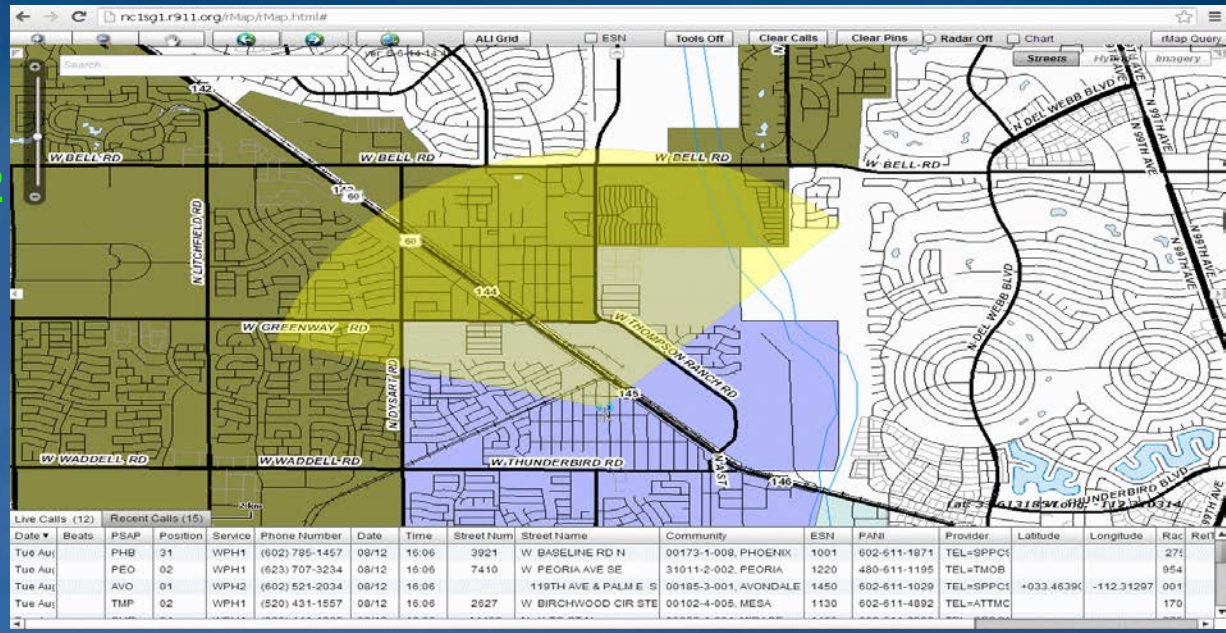
231
(602) 867-5309 RESD 08/08 13:28
JENNY A TUTONE
150 P#602-867-5309
S 12TH ST
00001
AZ PHOENIX
TEL=COX
PSAP=PHX --PHOENIX



Wireless call Phase 1:

230
(602) 987-6543 WPH1 08/08 13:26
VERIZON WRLS 800-451-5242
13720 P#480-611-2736
W THOMAS RD W

1430
AZ 00206-3-004, AVONDALE
TEL=VZW
10%9981
PSAP=GOODYEAR PD

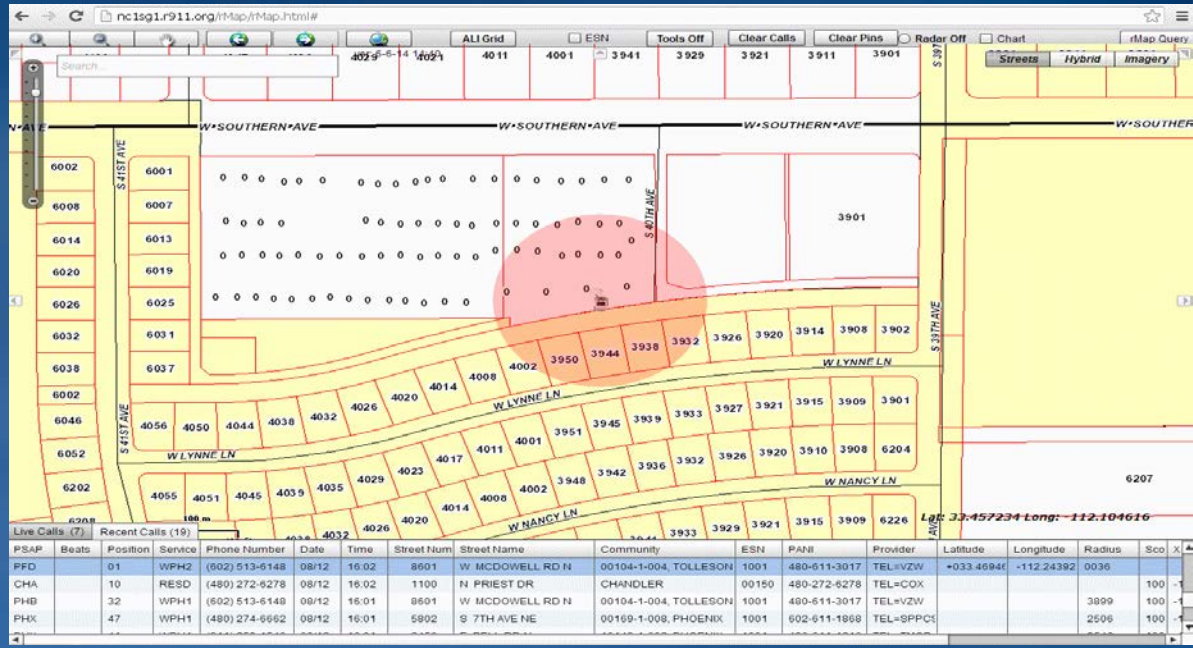


Date	Beats	PSAP	Position	Service	Phone Number	Date	Time	Street Num	Street Name	Community	ESN	PANI	Provider	Latitude	Longitude	Rac	Ref
Tue Au		PHB	31	WPH1	(602) 785-1457	08/12	16:06	3921	W BASELINE RD N	00173-1-008, PHOENIX	1001	602-611-1871	TEL=SPPC			275	
Tue Au		PEO	02	WPH1	(623) 707-3234	08/12	16:06	7410	W PEORIA AVE SE	31011-2-002, PEORIA	1220	480-611-1195	TEL=TMOB			954	
Tue Au		AVO	01	WPH2	(602) 521-2034	08/12	16:06		119TH AVE & PALM E S	00185-3-001, AVONDALE	1450	602-611-1029	TEL=SPPC	+033.46390	-112.31297	001	
Tue Au		TMP	02	WPH1	(520) 431-1557	08/12	16:06	2627	W BIRCHWOOD CIR STE	00102-4-005, MESA	1130	602-611-4892	TEL=ATTMC			170	

Wireless call Phase 2:

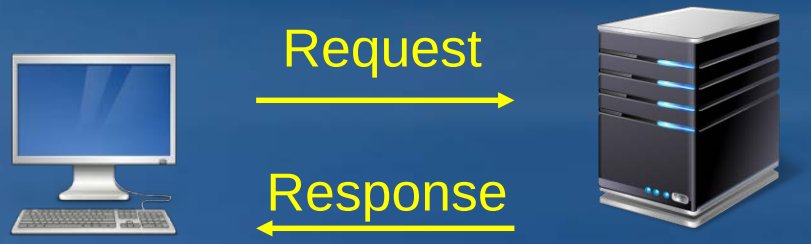
223
(602) 555-1212 WPH2 08/08
13:27
AT&T MOBILITY 800-635-6840
1710 P#602-611-4681
W SOUTHERN AVE N

1001
AZ 06226-1-000, PHOENIX
TEL=ATTMO
+033.40169 -112.09663 0041
PSAP=PHOENIX PD



2011 – Why can't we make our own mapped ALI?

Because web maps just request data



Mapped ALI should zoom to the location of live 911 calls without user intervention

Because I'm not a programmer!!!!

Mapped ALI requirements

Map

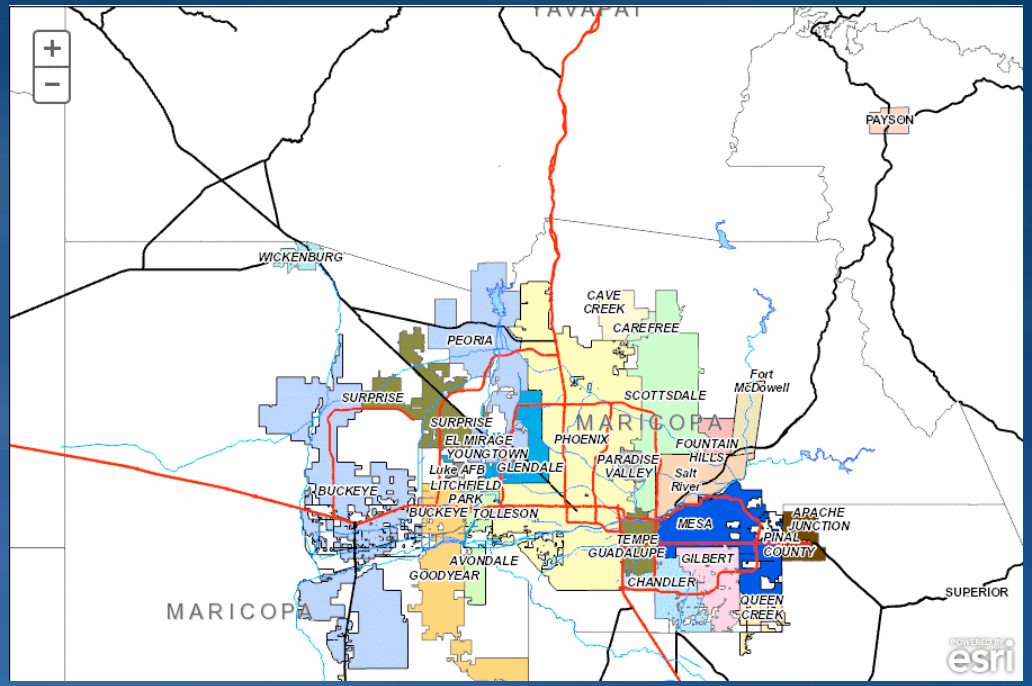
Push ALI data to map clients

Map must zoom to active 911 call per position

MAP

Need ArcGIS server and Data

Each position only needs a web browser and Adobe Flash Player



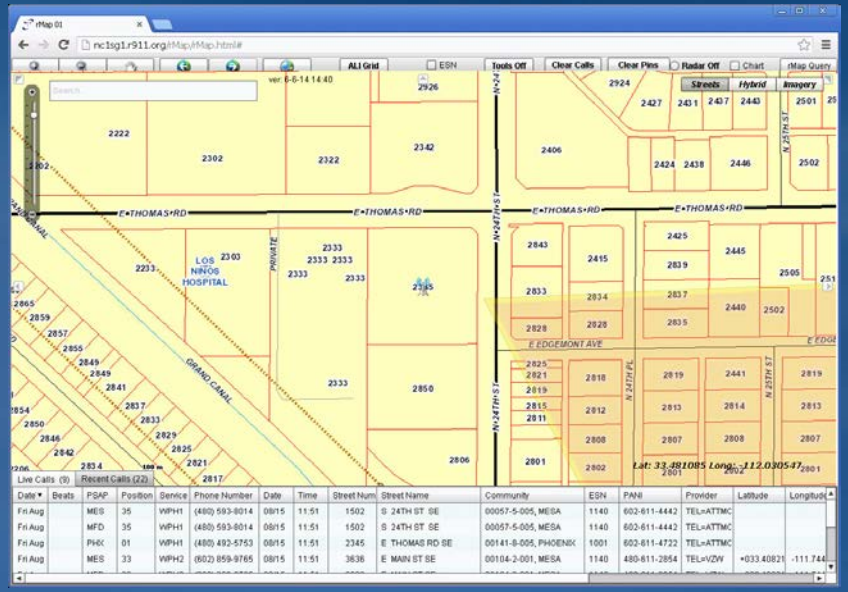
Push ALI (java) Data

ALI pushed

Adobe BlazeDS

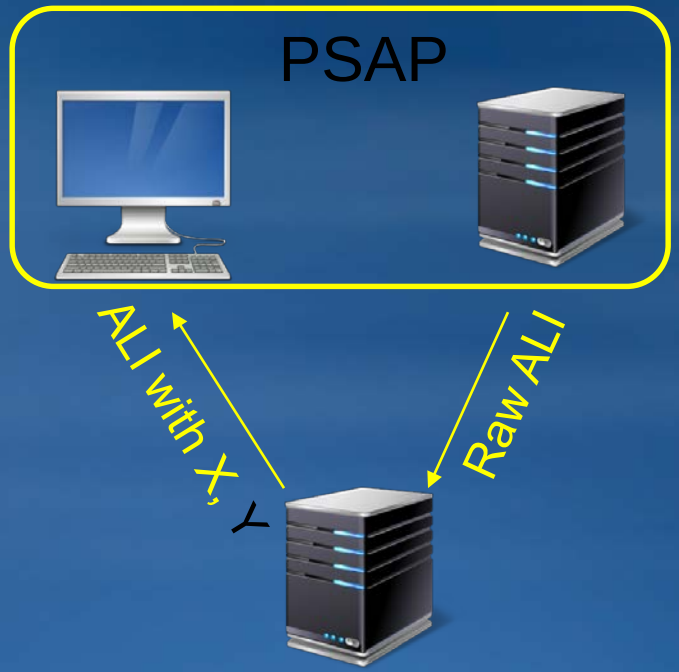
Migrated to GraniteDS
Actively supported and free

Map client must zoom to active 911 call

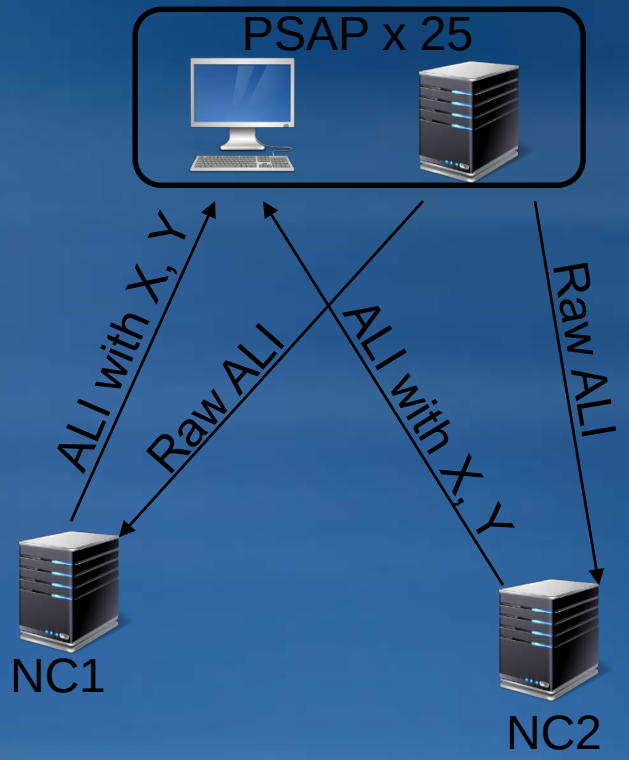


Adobe Local Shared Object

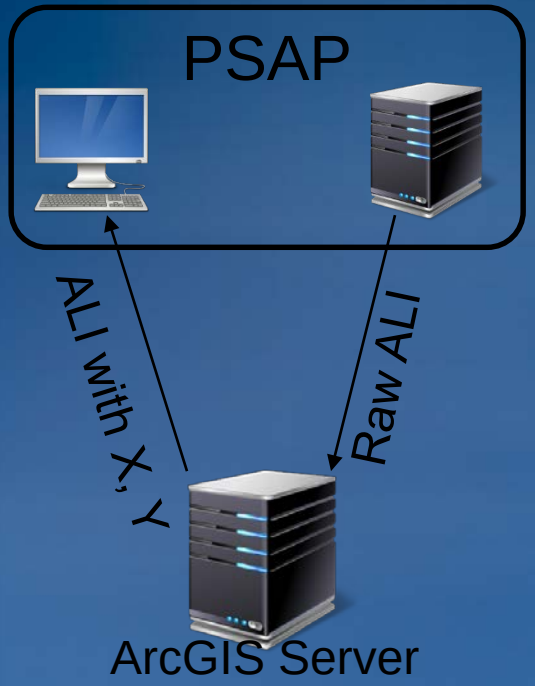
Basic configuration



Maricopa Region 9-1-1 configuration



The Details

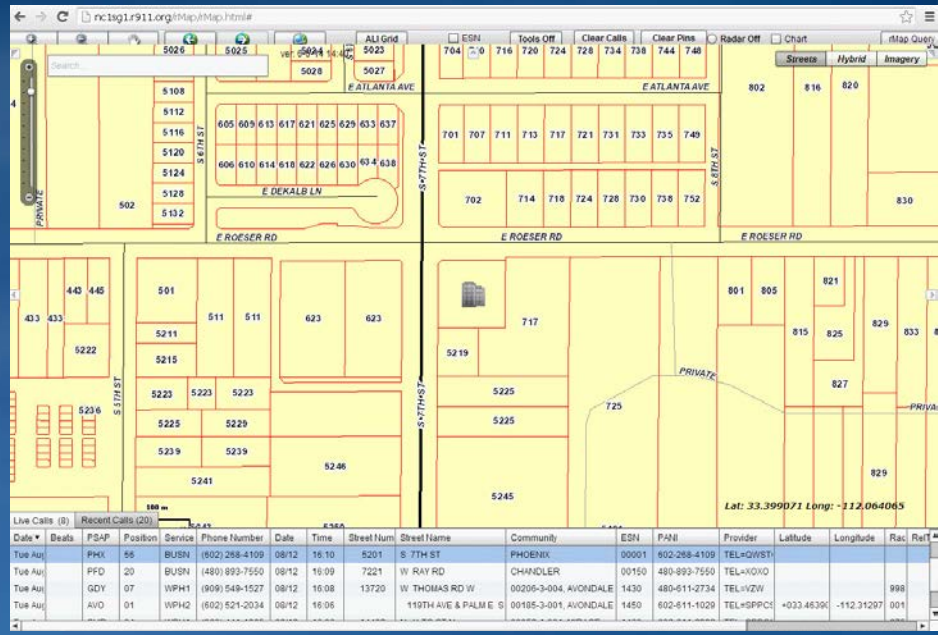


1. 911 Phone systems have a serial CADOut
2. TS4 converts serial data to IP traffic
3. Virtual port at server converts IP traffic to serial data
4. Java class x25 parses serial data and sends to Geocode
5. Geocode java servlet sends raw ALI data to a geocoding service and gets back x, y coordinates
6. Georeferenced ALI data pushed to clients based on a topic - clients subscribe to a topic name (PSAP ID)
7. All calls within a PSAP are plotted on the map, the map only auto-zooms to calls

Georeferenced ALI

Landline calls get x,y coordinates from geocoding service

231
(602) 867-5309 RESD 08/08 13:28
JENNY A TUTONE
150 P#602-867-5309
S 12TH ST
00001
AZ PHOENIX
TEL=COX
PSAP=PHX --PHOENIX

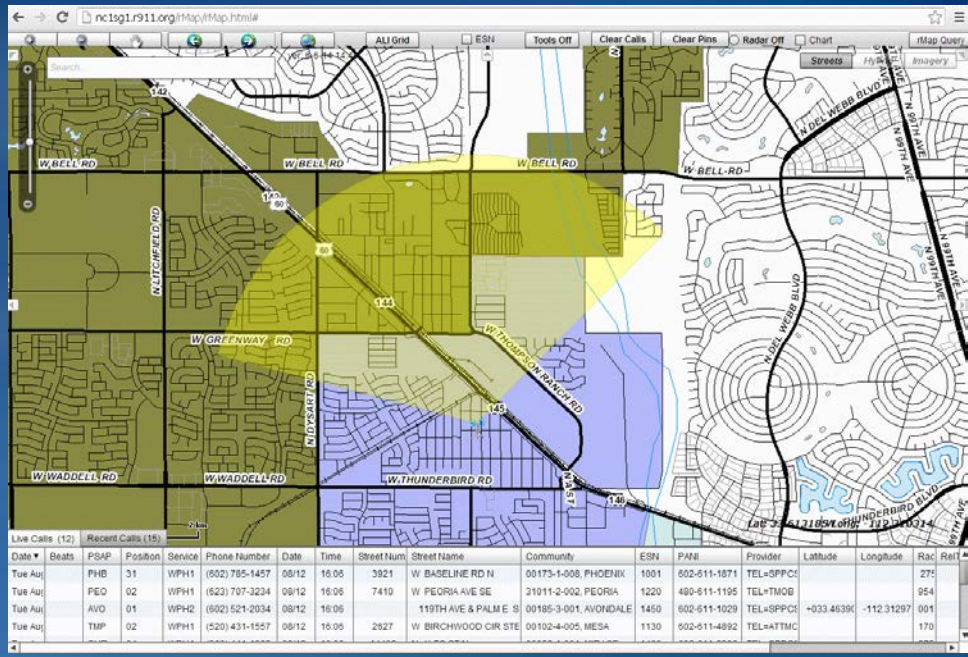


Georeferenced ALI

WPH1 - Tower X,Y and Cell Sector (feature class)

230
(602) 987-6543 WPH1 08/08 13:26
VERIZON WRLS 800-451-5242
12220 P#480-611-2736
W Grand Ave N

1430
AZ 00206-3-004, El Mirage
TEL=VZW
10%9981
PSAP=GOODYEAR PD

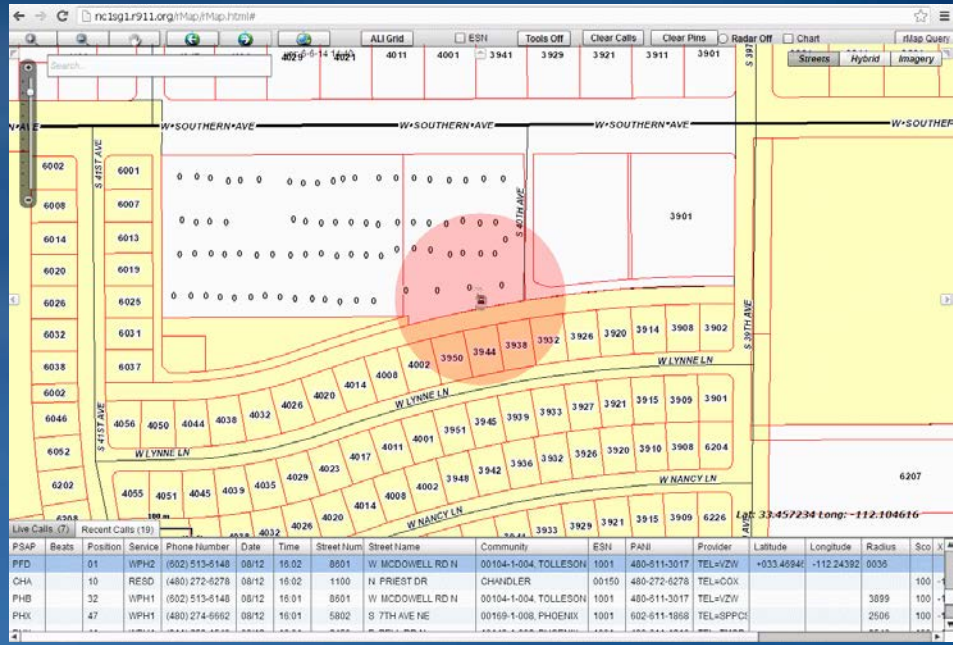


Georeferenced ALI

WPH2 - Lat / Long - Radius (geometry service)

223
(602) 555-1212 WPH2 08/08 13:27
AT&T MOBILITY 800-635-6840
1710 P#602-611-4681
W SOUTHERN AVE N

1001
AZ 06226-1-000, PHOENIX
TEL=ATTMO
+033.40169 -112.09663 0041
PSAP=PHOENIX PD



24x7

Update map cache / no shapefiles at client

ArcGIS Server

Apache Tomcat 7

YAJSW - yet another java service wrapper

Google Chrome

Cost $$

Programming classes Flex/Java ~ $2000

ArcGIS Server

Serial Port servers (ts4) ~ $500 each

Apache Tomcat 7 $0

ESRI Flex/Javascript API $0

Web Client - Google Chrome $0

Adding positions / adding new functionality $0

Time $$

Next steps

Javascript client

New server push method:
Nodejs / websockets

New position name method

Takeaways

No limits to map size / imagery

Flexibility works with any CPE, easily add layers/functionality

Region wide messaging

Access to external data

NG911 ready!

DEMO....?

Questions?

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