Apps are just the beginning!

How can the 9-1-1 PSAP handle the new flood of information from the "Internet of Things"?
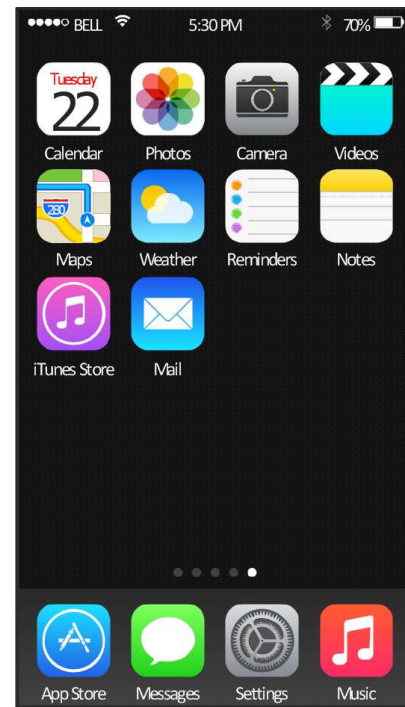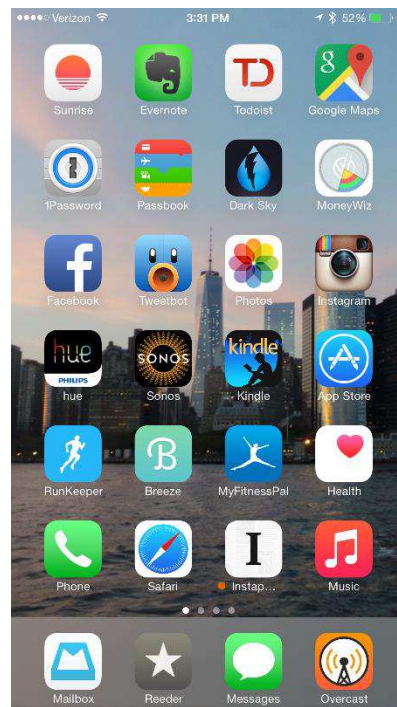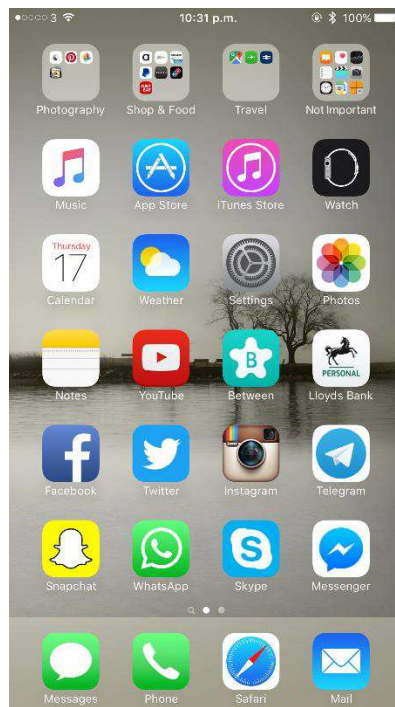

APCO International

Leaders in Public Safety Communications®

The public's expectation is changing

- But why?
- 9-1-1 Works..

911: Last Week Tonight with John Oliver (HBO)

LastWeekTonight

Subscribed   4,093,323

5,997,843 views

Add to   Share   ••• More   68,677   2,096

Isn't The Phone Just Another App on your iPhone?

Apps are just the beginning – Reinhard Ekl, RapidSOS · November 1-2, 2016 • Seattle, Washington

Smartphones have changed the way we live

Estimated

- ~~Precise location (Cell tower, GPS, WiFi Access Points, etc., Altitude reading)~~

- ~~Real-time health / medical information~~

- ~~Connection over any medium: PSTN, LTE/4G Data, WiFi~~

- ~~Camera feed~~

- Texting *in 15% of PSAPs (typically with Phase 1 location data)*

- Voice

- ~~Camera (Picture and video stream)~~

- ~~Route planning / directions~~

- ~~Emergency contacts~~

- ~~Etc~~

Apps are just the beginning – Reinhard Ekl, RapidSOS

November 1-2, 2016 • Seattle, Washington

We Can Use Apps as a Technology Showcase (E911)

- Device-based hybrid location at call time
  - GPS, WiFi Access Points, Cell tower triangulation, Bluetooth Beacons, etc. (Median Accuracy: 16m)
  - Call routing based on handset location, not cell tower location
  - Civic dispatchable address + x/y/z provisioned into the ALI database in real time
- Type of emergency in the ALI display
- Texting as Text-to-Speech for every PSAPs
- Relevant medical & demographic data when the user can't speak or gets disconnected

```
 11/1/2016  09:42:28
 (650) 804-0878  VMBL   ID= 123
DOE, JOHN – RAPIDSOS MOBILE
    1415          ESN 12345
5TH AVE

4TH FLOOR- MEDICAL

SEATTLE              WA
 CO=RSOS      P# (555) 555-5555

X=-122.335592 Y=+47.610100
```

We Can Use Apps as a Technology Showcase (NG911)

- Device-based hybrid location at call time
  - GPS, WiFi Access Points, Cell tower triangulation, Bluetooth Beacons, etc. (Median Accuracy: 16m)
  - Call routing based on handset location, not cell tower location
  - Civic dispatchable address + x/y/z with breadcrumbs in real time
- Type of emergency, Medical & Demographic data, Emergency Contacts on CPE/CAD screen
- Two-way real-time texting, Photo stills, Video stream
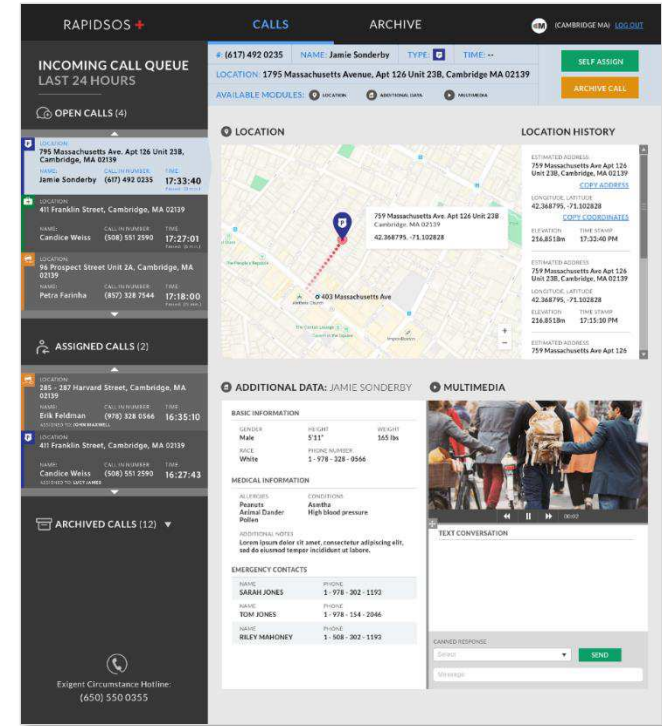
Apps are just the beginning

Apps morph into
1   **Internet of Things**

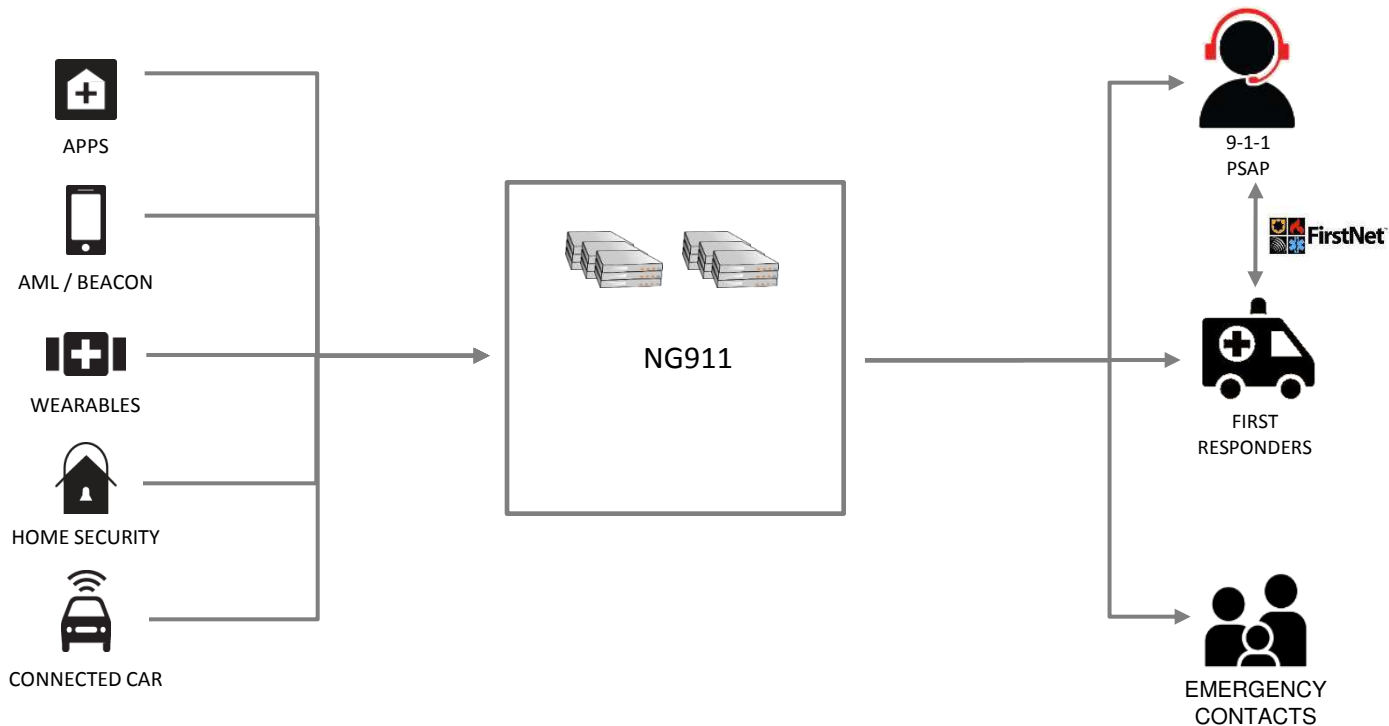*"If you can make an App call 9-1-1, you can make anything call 9-1-1"*

Apps incubate technology for
2   **Wireless 9-1-1 Calls**

"Why isn't this standard for every wireless 9-1-1 call?"

The Internet of Things and 9-1-1

APPS

AML / BEACON

WEARABLES

HOME SECURITY

CONNECTED CAR

NG911

9-1-1
PSAP

FirstNet

FIRST
RESPONDERS

EMERGENCY
CONTACTS

The Internet of Things and 9-1-1

APPS		▶	LOCATION	MEDICAL DATA	TEXT	PHOTO	VIDEO
BEACON		▶	LOCATION	MEDICAL DATA			
WEARABLES		▶	LOCATION	HEART RATE	BLOOD PRESSURE	GLUCOSE	SP02
HOME SECURITY		▶	LOCATION	VIDEO	VIDEO	TEMPERATURE	SMOKE
CONNECTED CAR		▶	LOCATION	VIDEO	VIDEO	AIRBAG	SPEED

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Who Cares?

Data Module	Category	Story "from the trenches"
A **Location** Device-based hybrid location from Cell Network, GPS, WiFi Access Point, Bluetooth Beacons, Barometric Pressure, User-input & Context More accurate, faster, updates automatically	**1** *Unknown location* **2** *Unable to speak* **3** *Caller in motion*	Car crash – "I don't know where I am" Domestic violence / open line Abduction, fast-moving target
B **Additional data** Medical & demographic data, emergency contacts	**4** *Medical history* **5** *Disability indicator* **6** *Emergency contacts*	Diabetes- medical dispatch Deaf / hard of hearing Contact next of kin / imminent danger
C **Multimedia** Two way texting, Photo stream, Live Video	**7** *Photo stills* **8** *Video stream* **9** *Texting*	Active shooter event Building fire Speech impairment (e.g., Stroke)

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How could this look like in the PSAP?
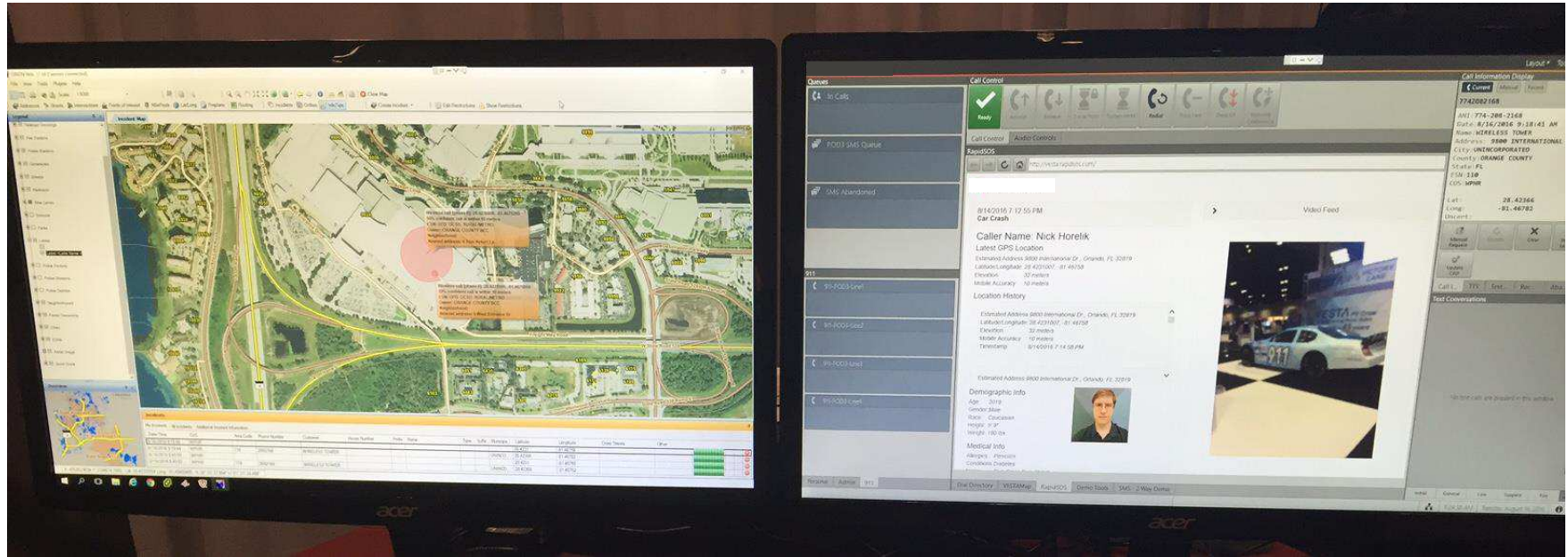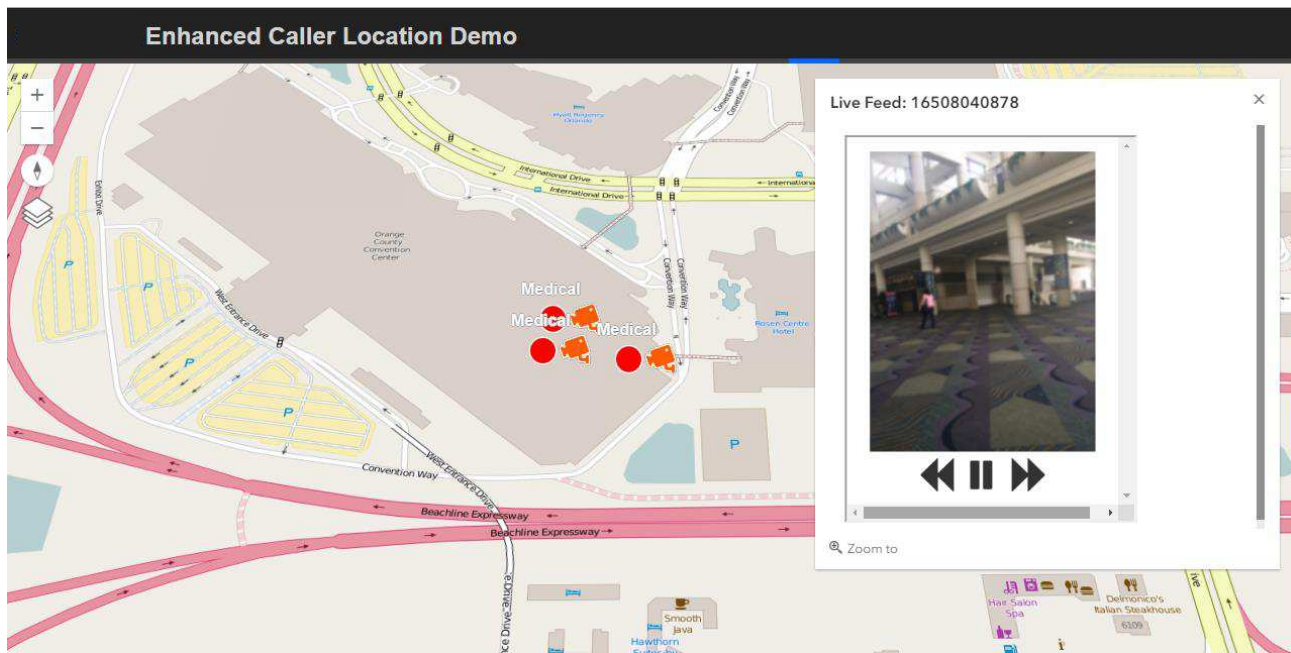

1) Better location   2) Additional data   3) Multimedia content

How could this look like in the PSAP?

1) Better location   2) Additional data   3) Multimedia content

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How could this look like in the PSAP?

1) Better location   2) Additional data   3) Multimedia content

NG911 Transport Mechanisms, separate from call

Highly simplified

PSAP

Carrier
(Originating Service Provider)

CPE,
CAD,
GIS

Additional
Data

Location Information Server
& Additional Data Repository

Query to LIS & ADR

A. Advanced Location
B. Additional Data
C. Multimedia
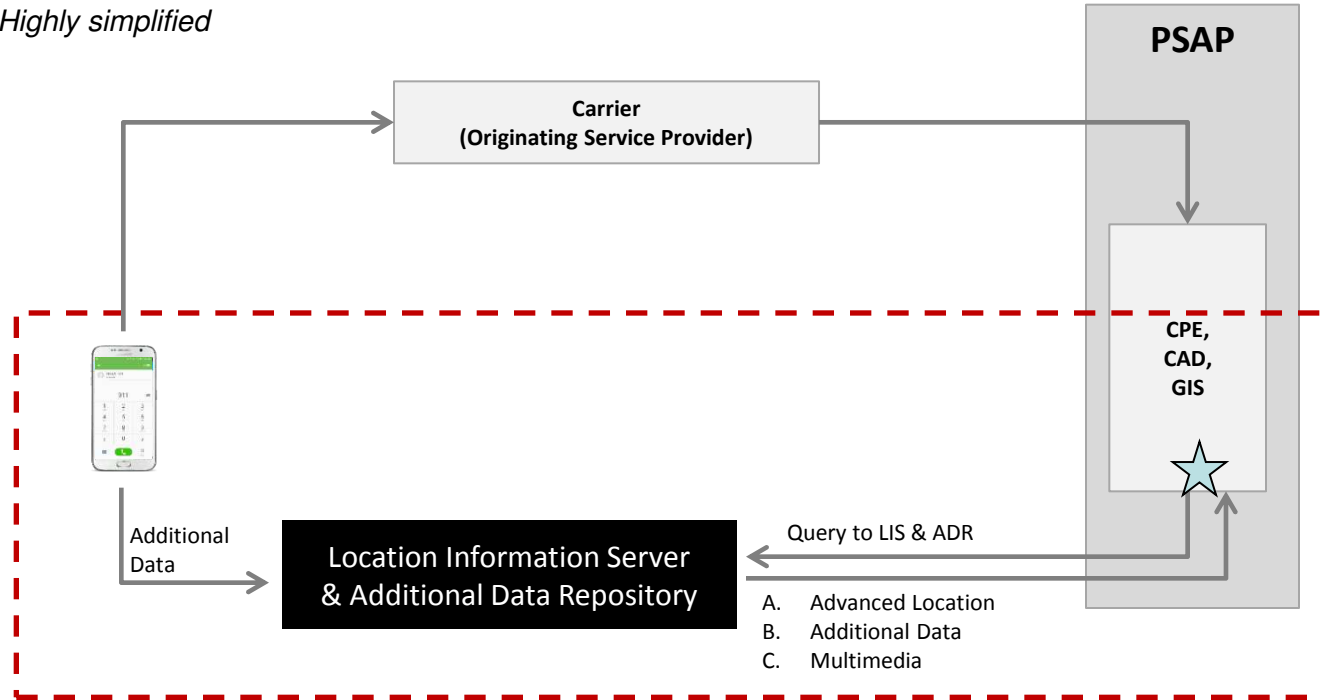
Enhanced location & additional data/multimedia, separate from regular 911 call flow

Simplified

PSAP

Basic location → **MPC / GLMC / VPC** ← Basic location → **Location Information Server** → HELD Query

PIDF-LO

Wireless Carrier / VoIP Service Provider

SIP Call

9-1-1 Call

ECRF / ERSP / BCF (etc.) → Voice

CPE, CAD, GIS

Additional Data

Location Information Server & Additional Data Repository ← Query to LIS & ADR

A. Advanced Location
B. Additional Data
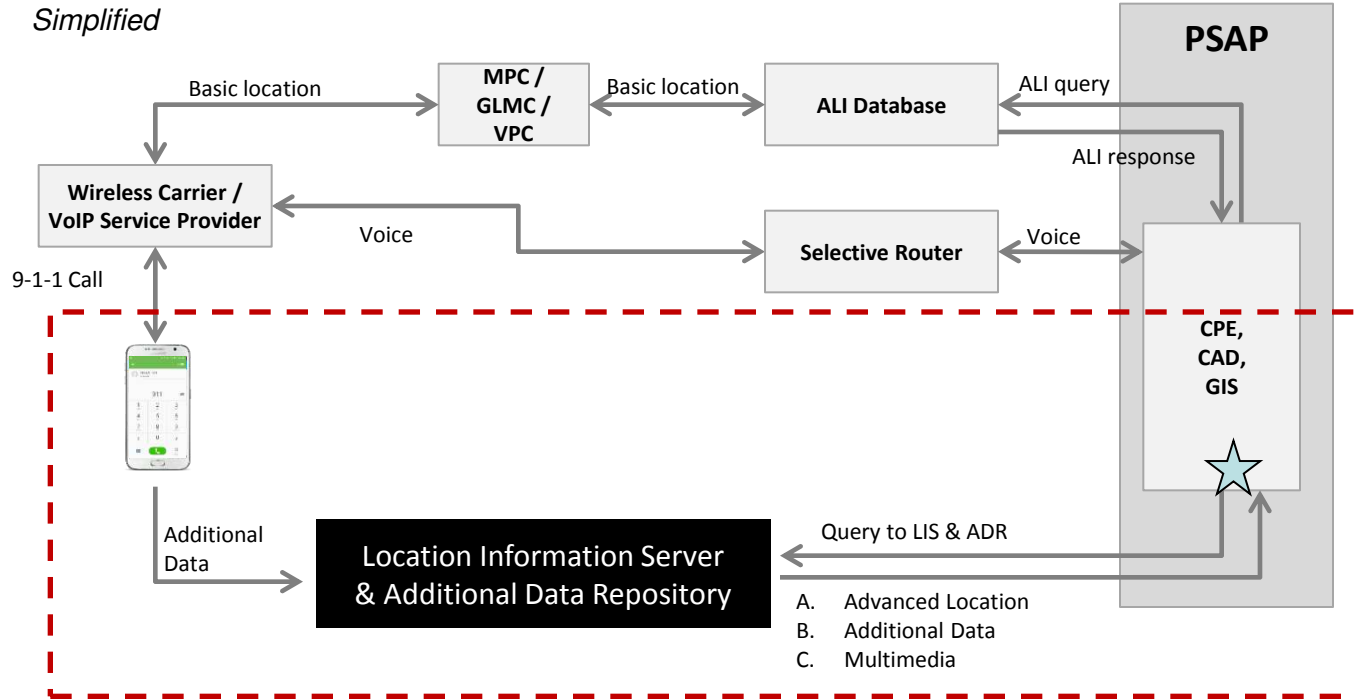C. Multimedia

Enhanced location & additional data/multimedia, separate from regular NG911 call flow

NG911 Transport Mechanisms, separate from call (E911)

Simplified

Basic location → MPC / GLMC / VPC ← Basic location → ALI Database ← ALI query

PSAP

ALI response

Wireless Carrier / VoIP Service Provider

Voice ← Selective Router ← Voice

CPE, CAD, GIS

9-1-1 Call

Additional Data → Location Information Server & Additional Data Repository ← Query to LIS & ADR

A. Advanced Location
B. Additional Data
C. Multimedia

Enhanced location & additional data/multimedia, separate from regular E911 call flow

Apps are just the beginning – Reinhard Ekl, RapidSOS

November 1-2, 2016 • Seattle, Washington

Closing the Loop: Wireless 9-1-1 Location

Cell Tower Triangulation:
Reliable, but not very accurate

GPS:
Highly accurate & reliable (outdoors)

WiFi Access Points:
Highly accurate indoors, and it's getting better and better

Bluetooth Beacons:
Potentially highly accurate indoors (Let's see)

Barometric Pressure:
Altitude reading (z-axis)

Device-based hybrid location is faster & more accurate

Closing thoughts

- If an app can do it, any connected device should be able to do it.

- If an app can do it, any wireless call should ultimately be able to do it.

- After all, isn't the native dialer just another app on your smartphone?