9-1-1 Data Analytics

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Problem Statement

- Minimal data collection currently
- Guiding principle to not degrade service
  - Need to be able to monitor system performance
  - Need a baseline of service before NG9-1-1
- No performance data on existing network
  - Routing of wireless calls
  - Location data provided (WPH1/WPH2)
 - Call set up/delivery times

Data Analytics Pilot

- Market research of potential solutions
- Approached two PSAP Grant recipients (Fluvanna & Waynesboro) and surrounding PSAPs
- Proposed three month pilot to test concept
- PSAPs can continue after pilot
- Determine if meets Commonwealth needs
- ECaTS selected for pilot

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Data Analytics

- A process of inspecting cleaning, transforming and modeling data with **goals of**:
  - Discovering useful information
  - Suggesting conclusions
  - **Supporting decision making**
- Provides **Business Intelligence** (BI)
  - Data analysis that focuses on specific business
  - Allows easy interpretation of large volumes of data
  - Used to identify areas and issues that require **proactive and effective management**

DATA → ANALYSIS → INSIGHTS → PLAN → ACTION
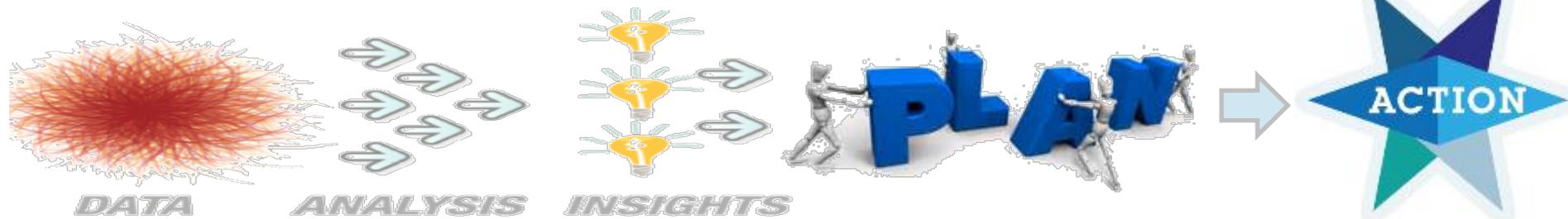
Emergency Call Tracking System (ECaTS)

- Collects analyses, and reports on a PSAP's Call Detail Record (CDR) data.

- Purpose is to deliver accurate call volume and operational statistics for all PSAPs, regardless of the manufacturer of the CPE.

- How it works:
  - A Remote Data Distribution Module (RDDM) is installed at each site
  - It collects and transmits raw call detail record data to the ECaTS data center where it is stored for analysis and reporting
  - Use any device with internet access to log onto the ECaTS portal and run and save reports.

Commonwealth Wide Reporting

- Critically important that we have a data supported understanding of:
  - Current functional levels of 9-1-1; operationally and systematically,
  - The impact of NG9-1-1 services on those functional levels.

- Standard reporting tool across PSAPs, that provides consistent, comparable data analytics.

Report Examples, Uses & Importance

- Annual true-up reporting
  - Each primary PSAP required to report on (and provide supporting documentation on) total incoming wireline and wireless 9-1-1 calls.
  - Current funding formula uses this data to determine the % of funding each PSAP will receive on a monthly basis.
  - Accuracy and comparability of this data across PSAPs, is essential for assuring equitable distribution of funding.

Calls by Circuit Report Generation

Calls by Circuit Reports (sample)

Calls By Circuit

Augusta County
18 Government Center Lane
Verona, 24482 — County: Augusta

Year: 2015
Agency Affiliation: Emergency Communications

Report Date:	01/07/2016 12:02:40
Report Date From:	11/01/2015
Report Date To:	12/31/2015
Period Group:	Month
Call Type:	911 Calls
Abandoned Filters:	Include Abandoned
Agency Affiliation:	All

	911 - Wireless				911- Wireline				
	CELL 1	CELL 2	CELL 3	CELL 4	LAND 1	LAND 2	LAND 3	LAND 4	Total
November 2015	152	161	813	814	7	8	240	242	2437
December 2015	167	163	865	850	15	13	263	263	2599
Total	319	324	1678	1664	22	21	503	505	5036

Calls by Circuit (Augusta County chart)
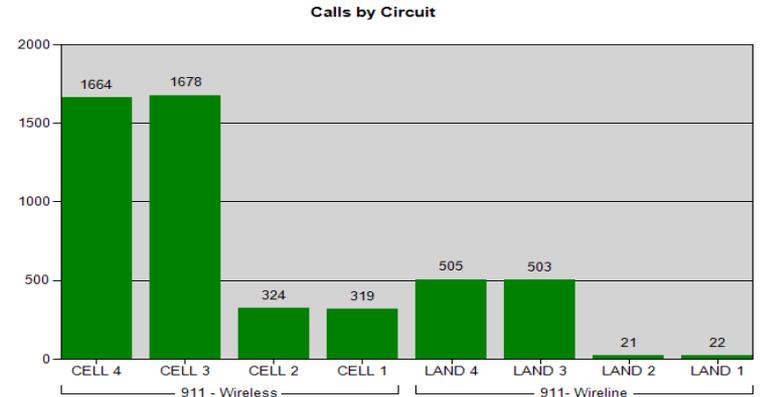
Calls By Circuit

Waynesboro City
250 S Wayne Ave
Waynesboro, 22980 — County: Waynesboro City

Year: 2015
Agency Affiliation: Emergency Communications

Report Date:	01/07/2016 12:02:40
Report Date From:	11/01/2015
Report Date To:	12/31/2015
Period Group:	Month
Call Type:	911 Calls
Abandoned Filters:	Include Abandoned
Agency Affiliation:	All

	911 - Wireless				911 - Wireline				
	Cell-1	Cell-2	Cell-3	Cell-4	1	2	3	4	Total
November 2015	202	267	213	256	63	57	63	0	1121
December 2015	219	289	226	294	65	66	64	0	1223
Total	421	556	439	550	128	123	127	0	2344

Calls by Circuit (Waynesboro City chart)
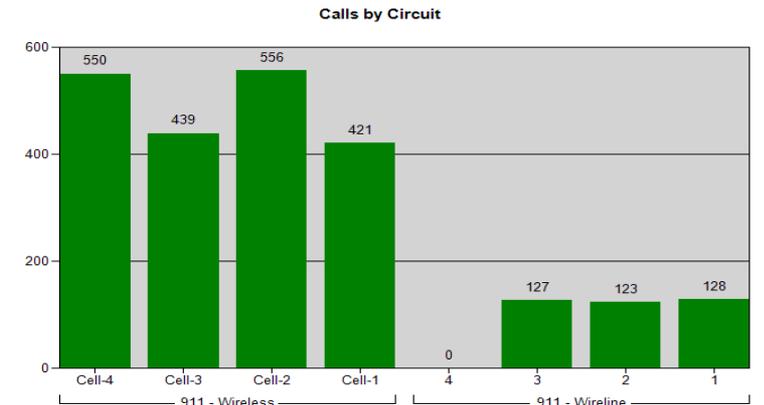
Call Transfers

- According to the Commonwealth's NG 9-1-1 Feasibility Study survey, **about 9% of all 9-1-1 calls get transferred**.

- Call transfers consume time and ultimately delay response.

- In November 2015 there were 406, 9-1-1 call transfers just among pilot participants.

  – Does not include transfers to other PSAPs or agencies

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Call Transfer Report

- The Call Transfer Report
  - Traces a transferred call from one PSAP with ECaTS to another.
  - From the initial time that the call is delivered to the time it is terminated by the caller.
  - This report presents tracking information for transferred calls between PSAPs.

Call Transfers in November (sample)

Total Calls Transferred: 201

		ALI Information				Call Record Information			Talk Secs	Duration Secs
	ANI	City	Class	ESN	Call Sector	Call Type	PSAP	Seizure Date Time		
Source	540-671-1551	WAYNESBORO	WPH2	00547	1150 SHENANDOAH VILLAGE DRS SECTOR	911 Calls	Waynesboro City	11/1/2015 4:54:27 AM	38	43
Transfer To	540-671-1551	WAYNESBORO	WPH2	00547	1150 SHENANDOAH VILLAGE DRS SECTOR	911 Calls	Augusta County	11/1/2015 4:54:59 AM	145	150
								TOTAL:	183	193
Source	240-832-5521	STAUNTON	WPH2	00888	HUCKLEBERRY HILL TOWER SITEE SECTOR	911 Calls	Augusta County	11/1/2015 10:43:05 PM	144	149
Transfer To	240-832-5521	STAUNTON	WPH2	00888	HUCKLEBERRY HILL TOWER SITEE SECTOR	911 Calls	Staunton City	11/1/2015 10:45:09 PM	105	114
								TOTAL:	249	263
Source	540-241-0683	WAYNESBORO	WPH1	00547	1541 S DELPHINE AVESW SECTOR	911 Calls	Waynesboro City	11/2/2015 1:10:16 AM	82	87
Transfer To	540-241-0683	WAYNESBORO	WPH2	00547	1541 S DELPHINE AVESW SECTOR	911 Calls	Augusta County	11/2/2015 1:11:30 AM	9	15
								TOTAL:	91	102
Source	540-255-3998	VERONA	WPH1	00539	375 WILLOW SPROUT RD - S Sector	911 Calls	Augusta County	11/2/2015 7:42:13 AM	80	86
Transfer To	540-255-3998	VERONA	WPH1	00539	375 WILLOW SPROUT RD - S Sector	911 Calls	Staunton City	11/2/2015 7:42:52 AM	41	49
								TOTAL:	121	135
Source	434-906-9015	VERONA	WPH2	00888	12 MID VALLEY LNW SECTOR	911 Calls	Augusta County	11/2/2015 1:45:55 PM	122	131
Transfer To	434-906-9015	VERONA	WPH2	00888	12 MID VALLEY LNW SECTOR	911 Calls	Staunton City	11/2/2015 1:47:46 PM	353	368
								TOTAL:	475	499

Cell Tower Sector Routing

- Determine which cell tower sectors transferred calls originate from.

- Use this information to determine if re-routing cell tower sectors to another PSAP, will reduce the need for call transfers.
  - Streamline call processing
  - Increase response time

Wireless Call Sector Report

- The Wireless Call Sector report
  - provides transfer information based on cell sectors for the specified date range.
  - If a PSAP transfers 50% or more of their calls from a specific cell sector to the same destination PSAP, it will show up on this report.

Wireless Call Sector Report (sample)

| Originating PSAP	"Transferred to" PSAP	Cell Sector	Telco	Total 9-1-1Calls	Total 9-1-1 Calls Transferred	Percentage of Calls Transferred
Augusta County	Staunton City	119 AUGUSTA WOODS DRNW SECTOR	CFWDI	66	34	51.52%
Augusta County	Staunton City	HUCKLEBERRY HILL TOWER SITESW SECTOR	VZW	42	14	33.33%
Augusta County	Staunton City	5322 A LEE HWYNW SECTOR	VZW	34	11	32.35%
Augusta County	Staunton City	199 Equestrian Dr - NE Sector	ATTMO	18	12	66.67%
Augusta County	Waynesboro City	2158 JEFFERSON HWYS SECTOR	CFWDI	18	7	38.89%
Augusta County	Waynesboro City	2761 HERMITAGE RDSE SECTOR	CFWDI	15	10	66.67%
Augusta County	Staunton City	1380 NEW HOPE RDSW SECTOR	CFWDI	8	3	37.50%
Augusta County	Staunton City	199 EQUESTRIAN DRE SECTOR	CFWDI	8	4	50.00%
Augusta County	Staunton City	199 EQUESTRIAN DRN SECTOR	CFWDI	7	6	85.71%
Augusta County	Waynesboro City	51 THREE NOTCHED MOUNTAIN HGWY RT250N SECTOR	VZW	7	4	57.14%
Augusta County	Waynesboro City	51 THREE NOTCHED MOUNTAIN	CFWDI	7	4	57.14%

Report & Visualize Wireless Transfers

- Can run reports and also create maps to review the data and results of all transfers.

Originating PSAP	Tower Address	Sector	Carrier	Total 9-1-1 Calls	Transfer Details		Plot Calls
					Transfer PSAP	% Transferred	
Augusta County	166 CRIMORA STATION RD	W	VZW	3	!*20	33.33%	Visualize
Augusta County	2203 LEE JACKSON HWY	S	TMOB	9	!*20	33.33%	Visualize
Augusta County	250 N JEFFERSON ST	NW	VZW	3	!*23	33.33%	Visualize
Augusta County	375 WILLOW SPROUT RD - NE Sector	NE	ATTMO	3	!*20	33.33%	Visualize
Augusta County	375 WILLOW SPROUT RD - S Sector	S	ATTMO	2	!18005722260	50.00%	Visualize
Augusta County	418 BROADHEAD SCHOOL RD	E	VZW	2	!*20	50.00%	Visualize
Augusta County	438 HANKEY MOUNTAIN HWY	SW	CFWDI	5	Staunton City	60.00%	Visualize
Augusta County	559 Spottswood Rd - NE Sector	NE	ATTMO	10	!*20	30.00%	Visualize
Augusta County	59 Construction Ln - NW Sector	NW	ATTMO	1	Staunton City	100.00%	Visualize
Augusta County	760 TROXELL GAP ROAD	E	VZW	22	!*24	40.91%	Visualize
Augusta County	767 DICES SPRING RD - N	N	CFWDI	3	!*20	33.33%	Visualize

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Visualization of Call Transfers
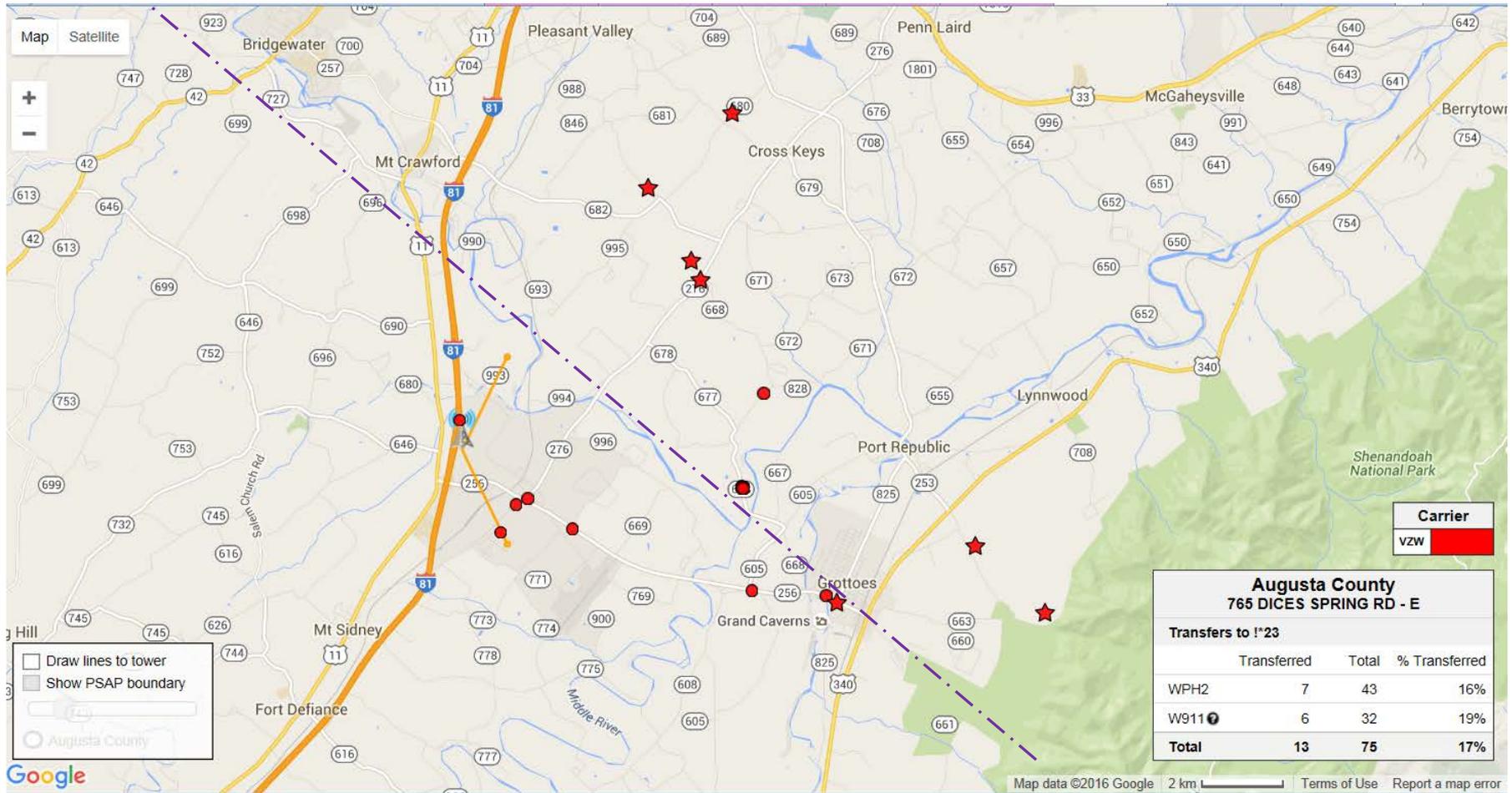
Demonstration

LIVE ECATS

- Demonstration of system capabilities
  - Focus on:
    1. Wireless Transfer Summary Report
    2. PSAP Answer Time Report
    3. Circuit Utilization Report
    4. Class of Service Report