Preparing GIS Data for NG9-1-1 in the Commonwealth of Virginia

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Overview:

Sharing ways Virginia is preparing for Next Generation 9-1-1 (NG9-1-1) through:

- Statewide Coordination
- PSAP Grant Program
- GIS Data Readiness

VITA Integrated Services Program

- Formed 2006:
  - Combining Public Safety Communications (PSC) and Virginia Geographic Information Network (VGIN) Divisions

- Local Outreach:
  - Regional coordinators interact on a daily basis with 119 PSAP Managers and 133 GIS managers

- Staff Support
  - ISP staff supports statewide GIS and 9-1-1 goals/initiatives

![VITA - Virginia Information Technologies Agency]

Statewide GIS Datasets

Theme (Year Started)

- Orthophotography (2002)
- Road Centerlines (2006)*
- Administrative Boundaries (2015)*
- Address Points (2015)*
- Building Footprints (2015)*
- Tax Parcels (2015)*
- Land Cover (2016)

* Layer updates requested 2x per year

State Data Standards

Completed/Adopted Standards:

- Model Map Accuracy Standards (2009)
- Administrative Boundaries (2015)
- Road Centerlines (2016)

Standards Under Development:

- Address Points
- PSAP Boundaries

Virginia's PSAP Grant Program

- 9-1-1 Services Board administers a multi-million dollar grant program
- Purpose is to financially assist PSAPs with the purchase of equipment and services supporting E9-1-1 and NG9-1-1
- At least 10% of total wireless fund receipts are reserved for the PSAP Grant Program.
- Unused funds roll into the grant program

Grant Applications

- Primary PSAPs (119) can submit an application
- Applications are ranked (1-38) based on the priority, tier & program
- FY2018 Results:
  - $7 million in total awards
  - NG9-1-1 GIS Projects
    - 18 awards
    - 41 PSAPs (34%)
    - $2.3 million

APPENDIX B: RANKINGS

	RANKINGS FOR GRANT PROJECTS		
Rank	**Priority**	**Tier**	**Program Type**
1	Call Handling Equipment	OS	Shared Services
2	Call Handling Equipment	OS	Individual PSAP
3	Mapping Systems	OS	Shared Services
4	Mapping Systems	OS	Individual PSAP
5	CAD	OS	Shared Services
6	CAD	OS	Individual PSAP
7	Voice Logging Recorder	OS	Shared Services
8	Voice Logging Recorder	OS	Individual PSAP
9	Call Handling Equipment	NVS	Shared Services
10	Call Handling Equipment	NVS	Individual PSAP
11	NG 9-1-1 GIS	N/A	Shared Services
12	NG 9-1-1 GIS	N/A	Individual PSAP
13	Mapping Systems	NVS	Shared Services
14	Mapping Systems	NVS	Individual PSAP
15	CAD	NVS	Shared Services
16	CAD	NVS	Individual PSAP
17	Voice Logging Recorder	NVS	Shared Services
18	Voice Logging Recorder	NVS	Individual PSAP

Grant Requests: NG9-1-1 GIS Data

- Must focus on the top three datasets for NG9-1-1 (centerlines, address points and PSAP boundaries)

- Must relate directly to the preparation of GIS data for NG9-1-1

- Should not include day-to-day GIS data maintenance activities

- Must include a data maintenance plan once the project has completed

Proposed Changes to the Program

- As we approach NG9-1-1 deployment, the current proposal is for the PSAP Grant Program to be used almost exclusively to help support NG9-1-1 non-recurring costs:

  - One-time ESInet set-up fees
  - Transition from selective routers to NG9-1-1 Core Services
  - GIS data preparation (need a baseline in order to maximize grant funding)

Preparing GIS data for NG9-1-1
(Statewide MSAG/ALI/GIS Analysis)

MSAG/ALI/GIS Analysis

Goals: Why do the analysis?

- Support E9-1-1 & NG9-1-1
  - Where is GIS data not in sync with MSAG/ALI?
  - Where is GIS data not internally consistent (RCL & Address Points)?
  - Baseline the quality of GIS data that will be used for NG9-1-1.

- Support Geospatial Data Standards
  - How compliant is locality RCL data with the state data standard?

2015 Pilot - MSAG/ALI/GIS Analysis

- **Analysis for 30 Localities**
  - PSAPs requested MSAG/ALI from 9-1-1 providers
  - Localities provided GIS data to VITA
  - Use results to inform statewide policy decisions
- **Key findings:**
  - Analysis was very helpful to the localities
  - Data cleanup needs were present in all localities (not just large localities or small localities)
  - Data from each locality had different strengths and weaknesses

2016 - MSAG/ALI/GIS Analysis

- **Repeated Statewide**
  - Statewide extract of MSAG & ALI provided by 9-1-1 service providers (VZ & CL)
  - Used GIS data (AP & RCL) from the Q3 statewide data request
  - Results were provided back to localities in the order that GIS data was received
  - Entire process took roughly four months
    - One month to import/format/parse MSAG and ALI
    - Three months to complete all 130 deliverables

MSAG/ALI/GIS Analysis: Deliverables

- Data package returned to each locality
  - File Geodatabases (GIS, MSAG, ALI)
  - Layer Files
  - PDF Summary Reports

ALI
- ALI_ANALYSIS_REPORT
- ALI_IMPORT
- ALI_IMPORT_MATCHABLE
- ALI_IMPORT_UNMATCHABLE
- ALI_MATCHED_TO_ADDRESS_POINTS
- ALI_MATCHED_TO_AP_CHECK_SN_INCONSISTENCY
- ALI_MATCHED_TO_RCL
- ALI_MATCHED_TO_RCL_AP_UNMATCHED
- ALI_MATCHED_TO_RCL_CHECK_SN_INCONSISTENCY
- ALI_TO_MSAG_MATCHED_OUTOFRANGE
- ALI_TO_MSAG_MISMATCH
- ALI_UNMATCHED_AP_AND_RCL
- ALI_UNMATCHED_TO_AP
- ALI_UNMATCHED_TO_RCL

MSAG
- LOCAL_T1
- LOCAL_T1_MSAG
- MSAG_ANALYSIS_REPORT
- MSAG_IMPORT
- MSAG_TO_RCL_UNMATCHED

GIS
- Address_Point_Inconsistencies
- Fishbone_Lines
- GIS_Analysis_Report
- Road_Centerline_Inconsistencies_Line
- Road_Centerline_Inconsistencies_Point

Key Findings: GIS Analysis (AP/RCL)

- Persistent Unique IDs: typically not present in locality data

- Geocoding: AP may not geocode to RCL street name / address range

- Street name: mismatch between AP/RCL

- RCL Address Ranges: Duplicates ranges are present

- AP / RCL parity match: AP may not be on the expected side of the road (based on RCL ranges)

- Intersections: RCL may not be correctly segmented or snapped

Key Findings: MSAG Analysis

- Don't overlook "unmatched" records
  - MSAG_TO_RCL_Unmatched
    - 19,000+ MSAG entries statewide (~5%)
    - May include old street names or address ranges that were never purged from MSAG
    - May also include new roads not yet in GIS data

MSAG
- LOCAL_T1
- LOCAL_T1_MSAG
- MSAG_ANALYSIS_REPORT
- MSAG_IMPORT
→ MSAG_TO_RCL_UNMATCHED
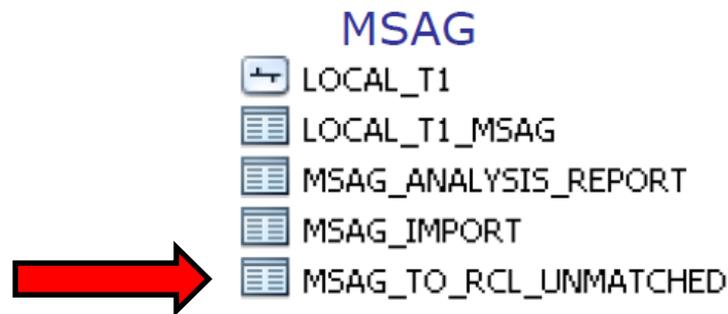
Key Findings: ALI Analysis

- Goal: match rate above 98%
  - ALI match to AP – 93.4%
  - ALI match to RCL – 94.4%
  - ALI match to either AP or RCL - 95.5%
- Geocoding: "Exact" vs. "Close" Matches
  - NG9-1-1 needs to have clean, consistent data
  - Nearly 3% of our matches above involved matching a variations of the street name
- Common challenges:
  - Inconsistent Naming Conventions
  - "Old" ALI records that have incorrect addresses
  - How to maintain data for subaddresses

Final Thoughts

- Know the health of your GIS data
- Build a strong working relationship with your 9-1-1 program
- Learn from others
- Ask questions
- Get involved

Questions