

# Oregon 9-1-1 GIS Projects and Data Model



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- What Oregon city was the first in the United States to have one-way streets?

**A: Eugene, OR**

# Receiving Monthly Updates

- Funding Policy in effect July 1st
  - Receive follows layers or any other layers for which you have received funding.
    - Address Points
    - Street Centerlines
    - Emergency Service Boudnaries
      - Law Fire and Medical if maintained seperately
    - Cell Site/Sector

# Automated Uploads

- SFTP Site
  - Command line/bash scripts utilizing 7z and Putty to SFTP to our interal server.
  - Check server nightly, downloads and backups data.
  - Records feature classes and count.
    - Modify to track significant changes and integrate into an single database.

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- Oregon is home to the largest single organism in the world, located in the Blue Mountains, what type of organism is it?

**A: Fungus, the “Humungous Fungus” is over 2400 years old and encompasses 2,384 acres. Outpacing “Pando”, an Aspen Grove in Colorado.**

*“The maps our PSAPs use to identify where callers are calling from should not end at the county or state line. The airwaves that carry the vast majority of our emergency messages don’t understand geography, so we shouldn’t be wed to geographic demarcations developed decades ago. We have all heard of the tragedy in Georgia, where a woman trapped in a sinking car drowned because her mobile signal was picked up by an antenna in an adjacent PSAP’s territory, and that PSAP did not have the maps that would allow them to locate her. Congress could authorize establishment of a national maps database to ensure that every PSAP has access to the latest and most accurate maps and use them. As maps increasingly include the third dimension, approaching this issues in a consistent, effect and efficient manner will be time well spent.”*

*-FCC Chariman*

*Tom Wheeler*

# OEM GIS Data Model

- Preparing for Next Generation:
- Present Information Data Format Location Object (PIDF-LO)
  - XML Data Object used to store emergency service request location.
  - Read like the ANI today.
  - Tells how the location was discovered, even language of the caller.

# OEM GIS Data Model

- OEM Draft Standard Model
  - NENA Draft, Tennessee, Kansas models.
  - Required Layers
    - Road Centerlines
    - Address Points
    - Emergency Service Boundaries
    - PSAP Boundary
      - » Extent to which a PSAP is responsible for receiving an emergency service request
    - Authoritative Boundary

# OEM GIS Data Model

- Authoritative Boundary
  - *“Represents the geographic area within which a given 9-1-1 Authority is responsible for providing and maintaining data for use in ECRF/LVF.”*
  - Identifies entity responsible for updating GIS
  - FIPS Code, PSAP name, PSAP FCC ID
    - Layers maintained by different entities.
  - . Functions as a change tracking key.

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- Two cities in Oregon have Volcanoes within their city limits, Bend and Portland, what are their names?

**A: Mt. Tabor and Pilot Butte**

# OEM GIS Data Model

- PSAP Boundary

- *“Depicts the polygon boundary that defines the geographic area of a PSAP which has primary responsibilities for an emergency service request.”*
- Not represented by Law, Fire or EMS boundary, but can be derived from these layers.

# OEM GIS Data Model

- PSAP Boundary
  - Queried by ECRF for call routing.
  - Seamless statewide dataset, no gaps or overlaps.
    - Maintained by OEM.
    - BLM County Boundary
    - Tax Assessor Extent
    - Markup site for updating boundary.

# OEM GIS Data Model

- Emergency Service Boundary
  - *“Defines the geographic area for the primary providers of response services.”*
  - Spatial representation of the Law, Fire and EMS response. (EMZ, ESN layer).
    - Optionally: Poison Control, Wrecker, Forest Service, Coast Guard, Animal Control, etc.
  - Additional response areas split at PSAP boundary.
  - Queried by ECRF to determine emergency service provider.

# OEM GIS Data Model

- Emergency Service Boundary
  - One polygon split at each unique combination of service providers.
    - E.g. Attribution example:

POLICE	FIRE	MEDIC
MARION CO SO	STAYTON FIRE DISTRICT	SANTIAM

- A single polygon layer for each Service Provider.

# OEM GIS Data Model

- Road Alternate Name Table:
  - Strongly recommended by NENA
  - One Centerline, many names:
    - E. g. State Hwy 22, Santiam Hwy, Mission St.
    - Same name parsing as Road Centerlines
  - Road Alias Name Table
    - Unique ID between road alias name table and centerline table to associate.

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- The film “One Flew Over the Cuckoo’s Nest” was based and filmed in what Oregon city?

**A: Salem, OR**

# OEM GIS Data Model

- Street Centerlines
  - Required by NENA as component of location validation
    - PID-Flo Format
  - Estimated current center of roadway.
  - Append current database with OEM attribution.
    - Preserve need of local stakeholders through field mappings.

# OEM GIS Data Model

- ## Street Name Parsing

- Premodifier – PREMOD – *Old* Highway 101, *Alternate* N Ave
- Pretype – PRETYPE – *Bldv* Napoleon, *Ave* of the Americas
- Predirectional – PREDIR – N, E, W, S, NW, SW, SE, NE, etc.
- Name – Street name key, *Oak* St, *Crater Lake* Hwy, etc.
- Street Name Post Type – TYPE - Ave, St, Xing, matching with USPS abbreviation standards
  - Some missing from USPS, Alcove, Close, Connector, Downs, Premenade, etc.
- Suffix Directional – SUFDIR – NE, SW, W, E, etc.
- Post-modifier – POSTMOD – Spur, Ext, Alt

# OEM GIS Data Model

- Street Centerlines:
  - Parity: The tendency for one side of road to have consistently even or odd addresses.
  - PAIRTY\_L, PARITY\_R – The parity of the left and right side of the roadway respectively.
    - “E” – Even
    - “O” – Odd
    - “M” – Mixed
    - “Z” - Zero

# OEM GIS Data Model

- Left and right attribution:
  - ESN\_L, ESN\_R
    - ESN\_C
  - POSTCOMM\_L, POSTCOMM\_R
  - MSAGCOMM\_L, MSAGCOMM\_R
  - ZIP\_L, ZIP\_R
  - COUNTY\_L, COUNTY\_R
  - STATE\_L, STATE\_R

# OEM GIS Data Model

- Road Classifications:
  - MTFCC – Current US census standard to identify geographic features. Found [here](#).
    - Less Roadway Flexibility
      - Primary, Secondary, Local Neighborhood Road
    - Concurrent with PSAP mapping display upgrades.
  - Federal Functional Classification found here:
    - More flexibility:
      - Interstates, Other Freeways, Other Principal Arterials, Major and Minor Collectors, Local Roads.
      - [Link](#)

# OEM GIS Data Model

- Speed Limits:
  - Sourcing Speed limit data.
    - ODOT only tracks speed limits on state highways
    - Extrapolating from routing information.
- To-From Elevation:
  - Z-Values : When a roadway travels under another roadway we attribute the “nodes of intersection with 1 for the road overpassing.

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- What river in Lincoln City is the shortest river in the world?

**A: D River, 121 ft.**

# OEM GIS Data Model

- Site Structure Points:
  - Location of Point:
    - Point of Entry: Driveway End, Gate Entrance
    - Structure Location: Located on top of structure
    - Parcel Centroid: Low quality, ideally only used when underconstructions
  - Can also represent landmarks, i.e. common place.

# OEM GIS Data Model

- Site Structure Points:
  - R\_SEGID – Centerline ID from which an emergency service would reach request.
  - A\_SEGID – Centerline ID from which a structure is addresses.
  - TAXLOT – Associated tax parcel ID.
  - STNUM – Address number of location.
  - STNUM Suffix – 100 ½ Oak St.
  - Street name parsing identical to street centerlines.

# OEM GIS Data Model

- Site Structure Points:
  - Addition Site Information:
    - Floor – Floor number or level name
    - Unit – Unit Number or designator.
    - Building – Building designator.
    - Room – Room number or designator.
    - Seat – Seat number
    - Loc\_Info – Addiontional Location Information
    - Landmark – Official Landmark Name, e.g. Oregon State Capitol

# OEM GIS Data Model

- Site Structure Points:
  - Milepost – Can be used to store a variety of information, trailheads, interstate milemarkers, etc.
  - PLC - Place Type – RFC 4589 Location Type Registry
    - E.g. Arena, Bus-Station, Hotel, Government

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- What type of towns does Oregon have more of than anywhere else in the nation?

**54 Ghost towns**

# OEM GIS Data Model

- Other NENA Recommended Layers:
  - Cell Site and Sectors
  - Municipal Boundaries
  - State & County Boundaries

# Future Goals

## Enterprise GIS solution for OR 9-1-1

- OEM Format allows us to develop an Enterprise solution.
- Reconcile ALI & MSAG discrepancies.
  - Quality Checks, Address and Street Synchronization, fishbone analysis.
- Disseminate data for display in other PSAPs.
- Analyze Coverage Gaps