

Developing a Roadway Inventory:

Collection, Validation and Maintenance



Louisiana
Parish Engineers
and Supervisors Association
Spring Meeting 2021



Roadway Inventory Requirements



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Why Collect & Maintain

STATE & FEDERAL REQUIREMENTS

- CODE OF FEDERAL REGULATIONS, TITLE 23
- MAP-21 - MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY ACT



- Provide the ARNOLD to FHWA for Nationwide Connectivity (All Roads Network of Linear Referenced Data)
- HPMS Reporting to FHWA includes select roadway attribute data on ALL Public Roads
- MIRE Fundamental Data Elements to Improve Safety of Travel (Model Inventory of Roadway Elements)
- Traffic Count Data to Improve Mobility and Safety of Travel
- Data Driven Decision Making – Data Analytics

Roadway Inventory Collections

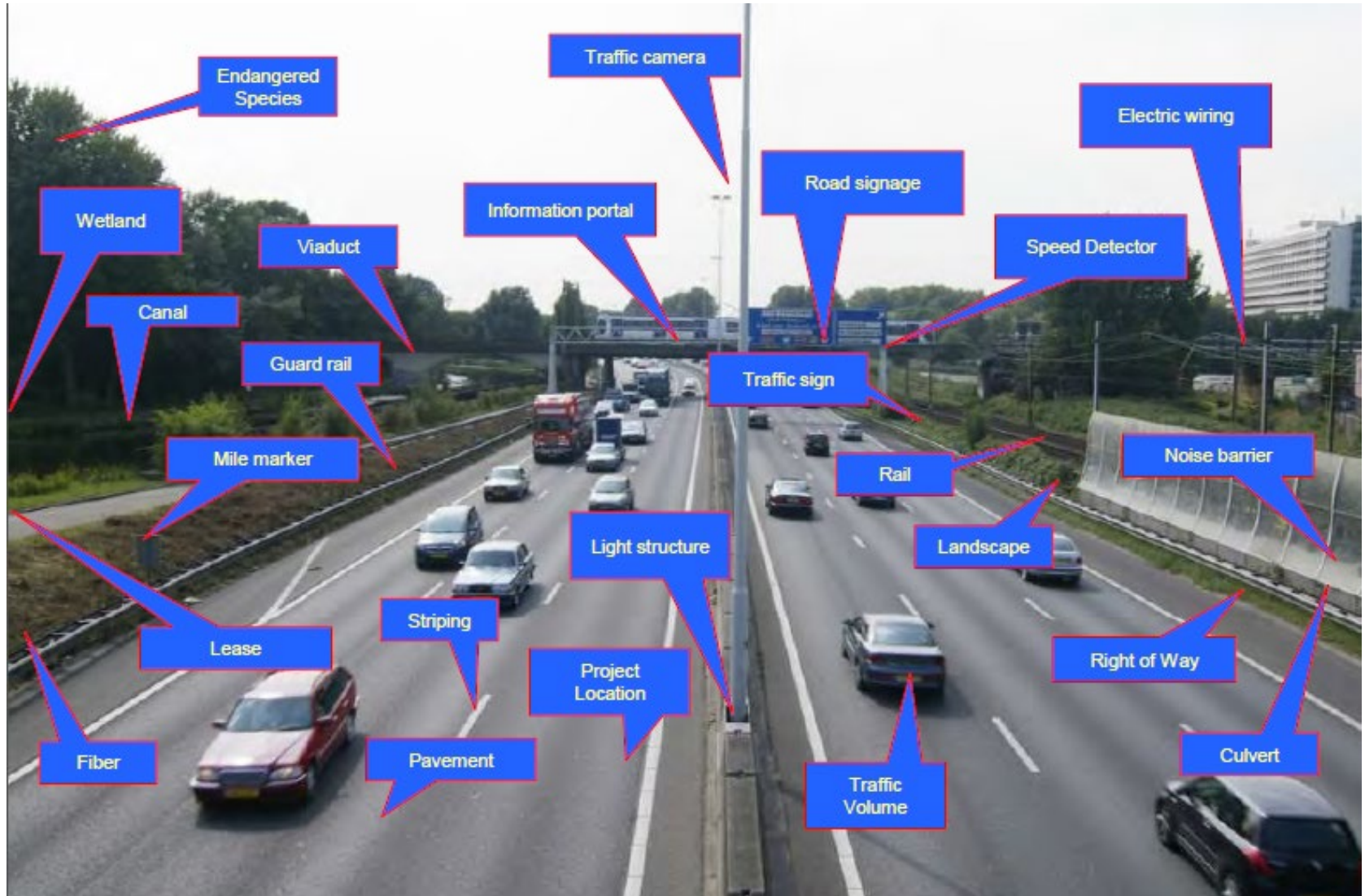


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What Roadway Characteristics are Inventory Data?

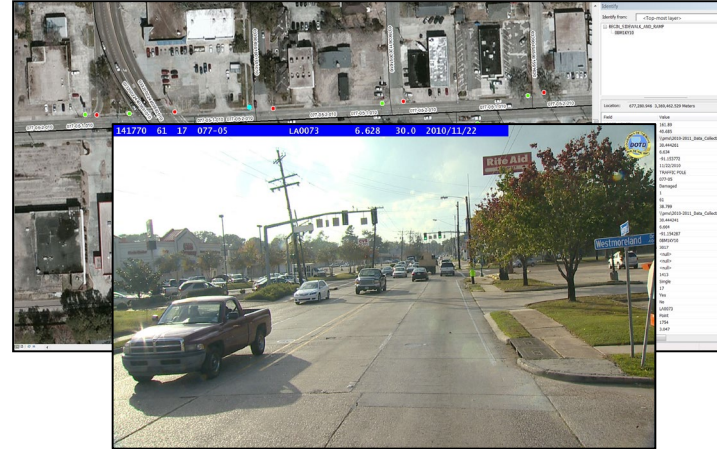




What Do We Collect & Maintain



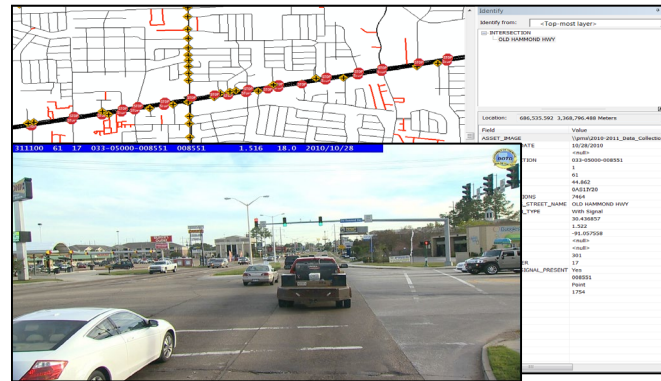
Sidewalks



Speed Limit Signs



Intersections





GOOD NEWS!

Roadway Characteristics Collected

1. Surface Types
2. Lane Widths
3. Number of Lanes
4. Median Types
5. Median Widths
6. Shoulder Types
7. Shoulder Widths
8. Turn Lane Locations
9. Curb Locations
10. Sidewalks and Ramps
11. Bridge Locations
12. Railroad Crossings
13. Intersections
14. Grades
15. Horizontal Curves
16. Vertical Curves
17. Sight Distance
18. Terrain Type
19. Speed Limit Signs
20. Roadside Cultural Features

The roadway assets listed above were collected in 2015 and loaded within the Transportation Features for all roadways that have been identified as “public roadways” based on FHWA definition in 2018. So we need your assistance!

Access, QC and Validate the Data DOTD Has Collected



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LADOTD OPEN DATA PORTAL

<https://data-ladotd.opendata.arcgis.com/>

LaDOTD Open Data Portal

Search, Visualize, Filter, Download

Explore Data by Categories



LADOTD OPEN DATA PORTAL

Explore Data by Categories

Welcome to the LaDOTD Open Data Portal. The purpose of this site is to make data from LaDOTD systems and other authoritative sources widely available through an ever-growing suite of maps, applications, dashboards, and data services.



Transportation



Elevation



Land Cover



Boundaries



PLS



Hydrography



Structures



Other



BETTER NEWS!

Roadway Characteristic Maintenance

Louisiana Roadways

These roadway characteristics are ready for **Quality Control (QC)** to be performed and **Maintenance** to begin by Local Government.

BUT
We want to assist by providing the TOOLS!

- Number of Travel Lanes
- Lane Width
- Surface Type
- Medians
- Intersection Control Type
- Curbs
- Shoulders
- Sidewalks
- Turn Lanes
- Posted Speed Limit
- Rail Crossings

Maintenance of the Roadway Data for State & Federal Reporting through DOTD



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Maintenance Method #1

Event Editor

What is Event Editor?

- Event Editor (EE), aka Roadway Characteristics Editor (RCE)
- Event Editor is a web-based solution that can:
 - Distribute the workload
 - Visualize event data
 - Support linear-referenced event data editing
 - Manage event history (temporality)
 - Run quality-control checks
- Provides flexibility of entering data
 - Create events quickly using map view
 - Fix values in “attribute table” (grid view)
 - Use referents (other events) to locate events

OBJECTID	FromDate	ToDate	EventID	RouteID	FromMeasure	ToMeasure	Station_ID
149260	12/18/2020	<null>	{58AFB72D-68A5-45E7-A07A-146B5C4F5811}	121_S WESTPORT DR_1_1_020	0	2.1892	61100031
158216	12/18/2020	<null>	{C4B4E624-A7E1-40EE-B48D-C63AFC917DB8}	999_I-10_1_1_010	152.3579053	153.801506	203200
158221	12/18/2020	<null>	{B5917902-D8AD-4AB1-9262-D90F5C7B5081}	999_I-10_2_2_010	120.8280261	122.3377444	I10002

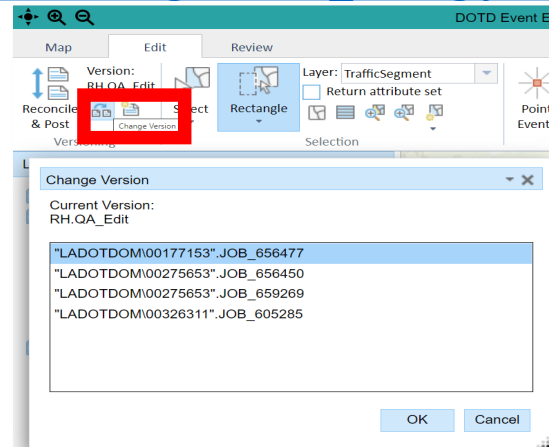
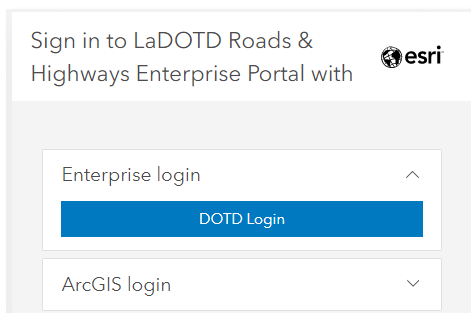
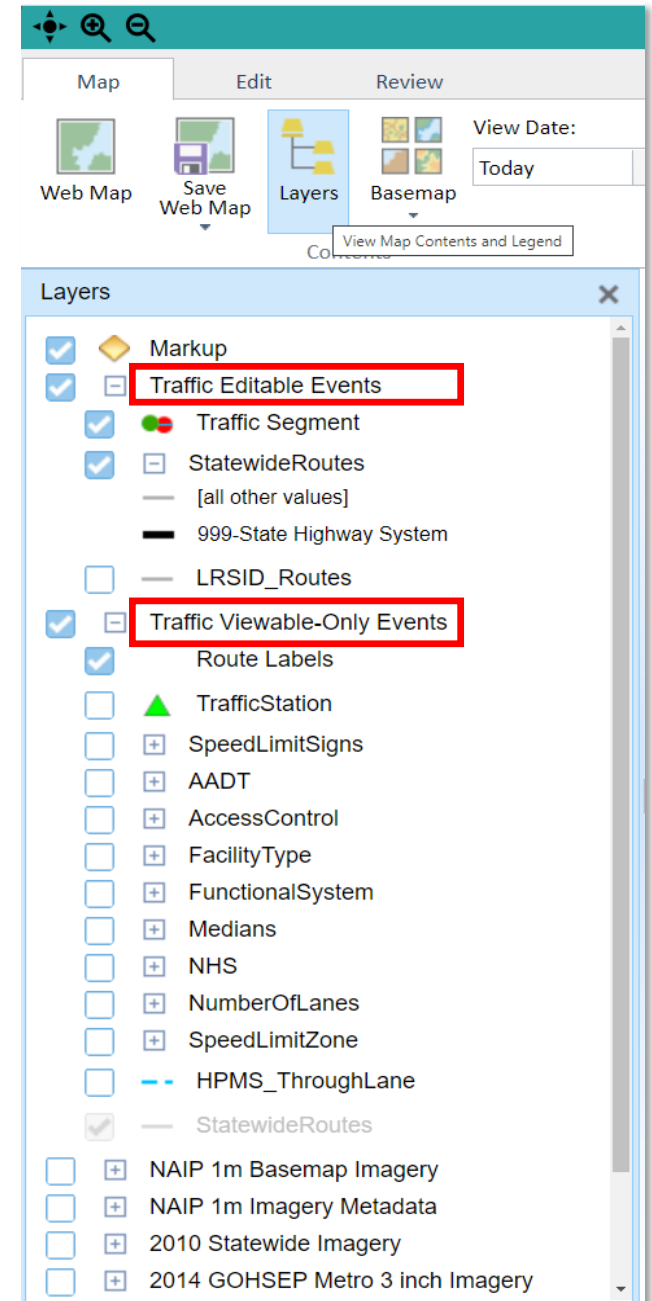


Maintenance Method #1 Event Editor

- Launch Event Editor (EE) using a Web Browser (Chrome is recommended)
- Sign in using credentials
- Verify versions and editing tools
- Verify necessary data is in the editor
 - Editable Layers
 - Read Only Layers
 - Imagery Layers
 - Redline Tool to Identify new Event Features

EXAMPLE: Event Editor Web link:

https://rhweb01.dotd.state.la.us/DOTD_RCE/?config=Traffic_config.json





Maintenance Method #1 Event Editor

DOTD Event Editor - v10.7.1.3052 - Traffic Web Map (Default View) RHAdmin Sign Out

Map Edit Review

Version: RHPUB.TEST_Traffic_MJHC

Layer: TrafficSegment

Return attribute set

Reconcile & Post

Select Rectangle

Point Events Line Events Event Replacer

Versioning Selection

Merge Events

Network: StatewideRoutes

Route ID: 999_US 90_2_4_004

From Measure (miles): 0

To Measure (miles): 1.58459

Target Event: {C53CA32C-26D5-4799-B588-46785A660876}

Start Date: 2/2/2021

Use route start date

End Date:

Use route end date

Attribute	Value
Station_ID	<null>
LRSID	<null>
DataSource	Arcadis
DataYear	2020
SAMPLE_ID	<null>
AADT_CODE	<null>
AADT	<null>
HIGH_HOUR_30T	<null>

Retire overlaps

Save

OBJECTID	FromDate	ToDate	EventID	RouteID	FromMeasure	ToMeasure	Station_ID	LRSID	Data Source	DataYear	FromReferentMethod	FromReferentLocation	FromReferentOffset	ToReferentMethod	ToReferentLocation	ToReferentOff
76717	12/18/2020	<null>	{C53CA32C-26D5-4799-B588-46785A660876}	999_US 90_2_4_004	0	0.4336163	<null>	<null>	Arcadis	2020	<null>	<null>	<null>	<null>	<null>	<null>
76853	12/18/2020	<null>	{19340C22-4CF0-4CD9-9837-FC5B6D7E80C7}	999_US 90_2_4_004	0.4336163	1.58459	<null>	<null>	Arcadis	2020	<null>	<null>	<null>	<null>	<null>	<null>
76861	12/18/2020	<null>	{75005A63-C658-48B9-9A5D-A44B304FCC2B}	999_US 90_2_4_004	1.58459	2.0157248	<null>	<null>	Arcadis	2020	<null>	<null>	<null>	<null>	<null>	<null>
76718	12/18/2020	<null>	{825525A0-3EE8-4C9D-BF62-9061D5EA65C2}	999_US 90_2_4_004	2.0157248	4.8512911	<null>	<null>	Arcadis	2020	<null>	<null>	<null>	<null>	<null>	<null>
76925	12/18/2020	<null>	{427CB4EB-8288-4D4D-A41C-4D7DC6F8130F}	999_US 90_2_4_004	4.8512911	5.8870086	<null>	<null>	Arcadis	2020	<null>	<null>	<null>	<null>	<null>	<null>
153040	12/18/2020	<null>	{4B7D667A-2FB9-408E-93E3-98AF0FD4EDB0}	999_US 90_2_4_004	5.8870086	6.5799351	<null>	<null>	Arcadis	2020	<null>	<null>	<null>	<null>	<null>	<null>

Page 1 of 1 | Record 1 to 6 | Total 6 Records

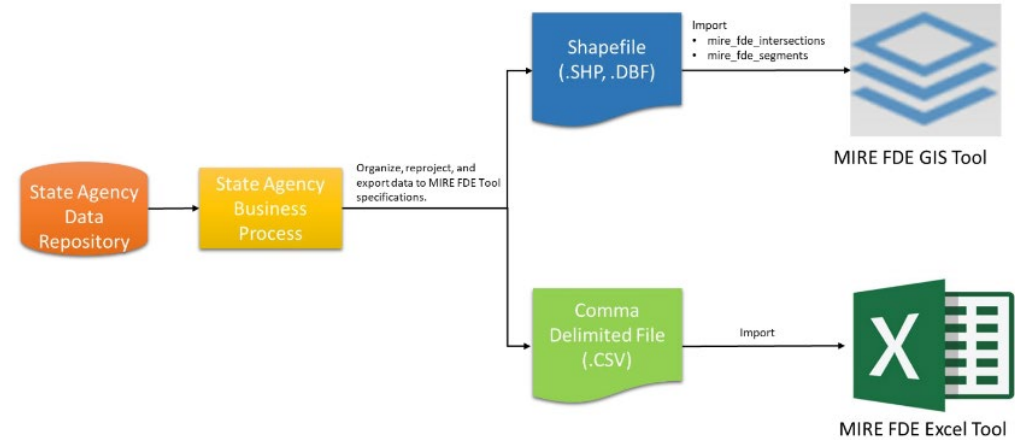


Maintenance Method #2

MIRE FDE TOOL

What is MIRE FDE Tool?

- MIRE FDE, aka Fundamental Data Element
- MIRE FDE is a Shapefile or an **Excel** solution that can:
 - Distribute copies of data
 - Visualize event data with Shapefile or Tabular Spreadsheet
- Segment Entry Form
 - Uses Google Earth to locate the line segment
 - Enter values in “attribute table”
 - Save the entries



Save Records

Segments

Timestamp: Updated Delete

Segment Identifier (12) 20055

Type of Government Ownership (4) Town or Township Highway Agency

Functional Class (19) Minor Arterial

Surface Type (24)

Route Number (8) 0

Route/Street Name (9) EAST MAIN ST

Begin Point Segment Descriptor (10) 0.000

End Point Segment Descriptor (11) 0.110

Segment Length (13) 0.110 mile(s)

Federal Aid (21) Route is Federal-aid, but not on National Highway System (NHS)

Route Type (22)

Direction of Inventory (18) BOTH

One/Two-Way Operations (93) Two-way

Rural/Urban Designation (20) Urban

Median Type (55)

Access Control (23)

Number of Through Lanes (32)

Avg Annual Daily Traffic (AADT) (81) 5700

AADT Year (82) 2012

Comment

Search...

Locate on Google Earth

Record 19 of 66879

Save Close

Clicking the Save button will save all changes made to the Excel worksheet.



Maintenance Method #2

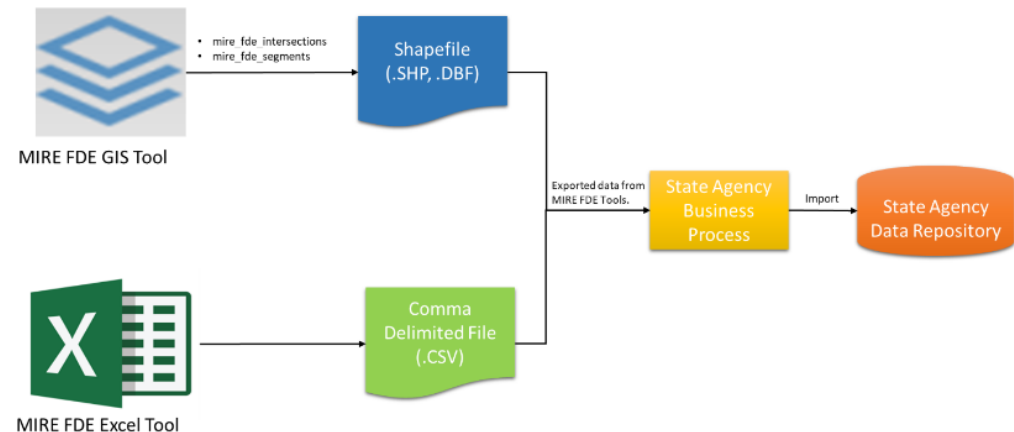
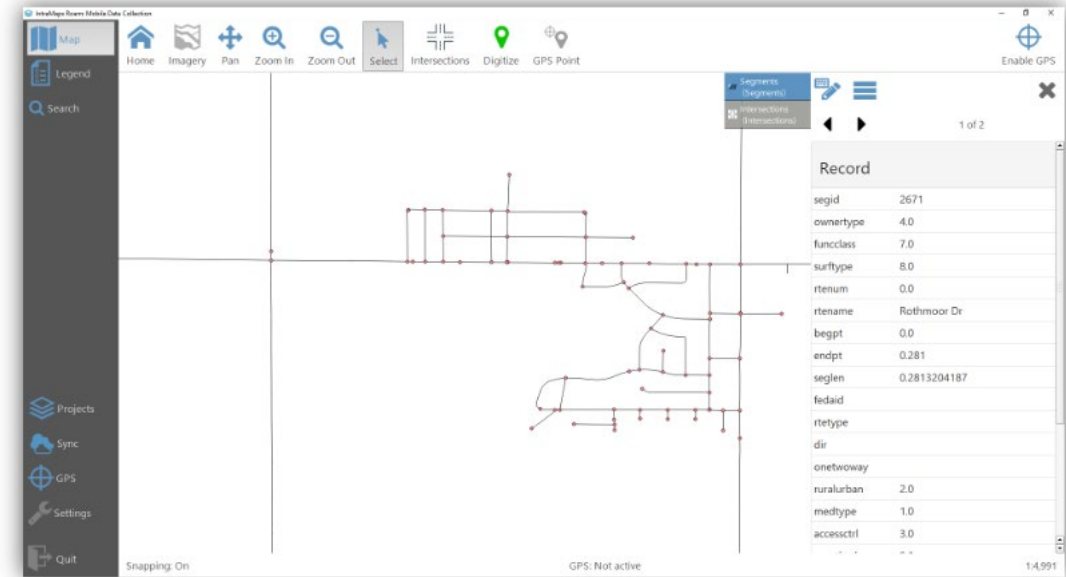
MIRE FDE TOOL

Segments Data

Record Selection

What is MIRE FDE Tool?

- MIRE FDE, aka Fundamental Data Element
 - MIRE FDE is a **Shapefile** or an Excel solution that can:
 - Distribute copies of data
 - Visualize event data with Shapefile or Tabular Spreadsheet
 - Segment Entry Form
 - Uses Google Earth to locate the line segment
 - Enter values in “attribute table”
 - Save the entries
- Upload the completed Shapefile or Excel table





Maintenance Method #3

ArcGIS Pro & File Geodatabases

Disconnected Editing

- Use ArcGIS Pro to perform maintenance
- Download a copy of the data
- Perform edits
- Upload the latest version once a month and use change detection to replace old information with new information
- Provide Redline changes to Roadways so DOTD can maintain the changes to them

The screenshot shows the ArcGIS Pro interface. The main map area displays a road network with a cyan line representing a road. The Table of Contents on the left shows a layer named 'NumberOfLanes'. The Table view at the bottom displays the following data:

OBJECTID *	FromDate *	ToDate *	EventID *	RouteID *	FromMeasure	ToMeasure	NumberOfLanes	DataSource	DataYear	HPMSDataItem	FromR
446776	1/31/2020	<Null>	{3A827B08-97AB-4ABB-AE73-A2592E3DD801}	033_GURNEY RD_1_1_010	0	1.477693	1	FUGRO Supplemental	2014	<Null>	<Null>
446778	1/31/2020	<Null>	{3A827B08-97AB-4ABB-AE73-A2592E3DD801}	033_GURNEY RD_1_1_010	1.477693	1.494642	1	FUGRO Supplemental	2014	<Null>	<Null>
446790	1/31/2020	<Null>	{3A827B08-97AB-4ABB-AE73-A2592E3DD801}	033_GURNEY RD_1_1_010	1.504393	1.87831	1	FUGRO Supplemental	2014	<Null>	<Null>
446797	1/31/2020	<Null>	{018D57AB-60A0-4311-8C09-71053BCD0AC0}	033_GURNEY RD_2_2_010	0.055638	0.429555	1	FUGRO Supplemental	2014	<Null>	<Null>
446798	1/31/2020	<Null>	{018D57AB-60A0-4311-8C09-71053BCD0AC0}	033_GURNEY RD_2_2_010	0.456106	1.933321	1	FUGRO Supplemental	2014	<Null>	<Null>
451978	2/13/2020	<Null>	{21199895-9327-433C-966C-221A93D05EE6}	033_JOOR RD_1_1_010	0.151	1.029631	1	FUGRO Supplemental	2014	<Null>	<Null>

Maintenance Program



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Maintenance Program Approach

303 Municipalities

64 Parishes

8 Regional Planning Districts

- Do you have a working relationship with your specific Regional Planning District?
- Do you have a working relationship with your Parish and Municipal Roadway Maintenance Departments?
- Do you have a working relationship with your local 911 Dispatchers?



- 1 – Regional Planning Commission
- 2 – Capital Region Planning Commission
- 3 – South Central Planning & Development Commission
- 4 – Acadiana Planning Commission
- 5 – Imperial Calcasieu Regional Planning & Development District
- 6 – Kisatchie-Delta Regional Planning & Development District
- 7 – The Coordinating & Development Corporation
- 8 – North Delta Regional Planning & Development District



Bring the Key Players to the Table

- ❖ Reach out to Regional Planning Districts
- ❖ Coordinate Data Exchange Cycles Between State – Regional – Parish – Municipal Agencies
- ❖ Organize Centralized Data Hub
- ❖ Establish Systematic Approach to Receive Periodic Updates via Web Interfaces or Other Methods



- ❖ DOTD has Integrated Statewide Roadway Collection of Data into One Enterprise System
- ❖ DOTD has Established Statewide Data Distribution through Online Web Applications & Rest Services



Provide Topographic Mapping Layers

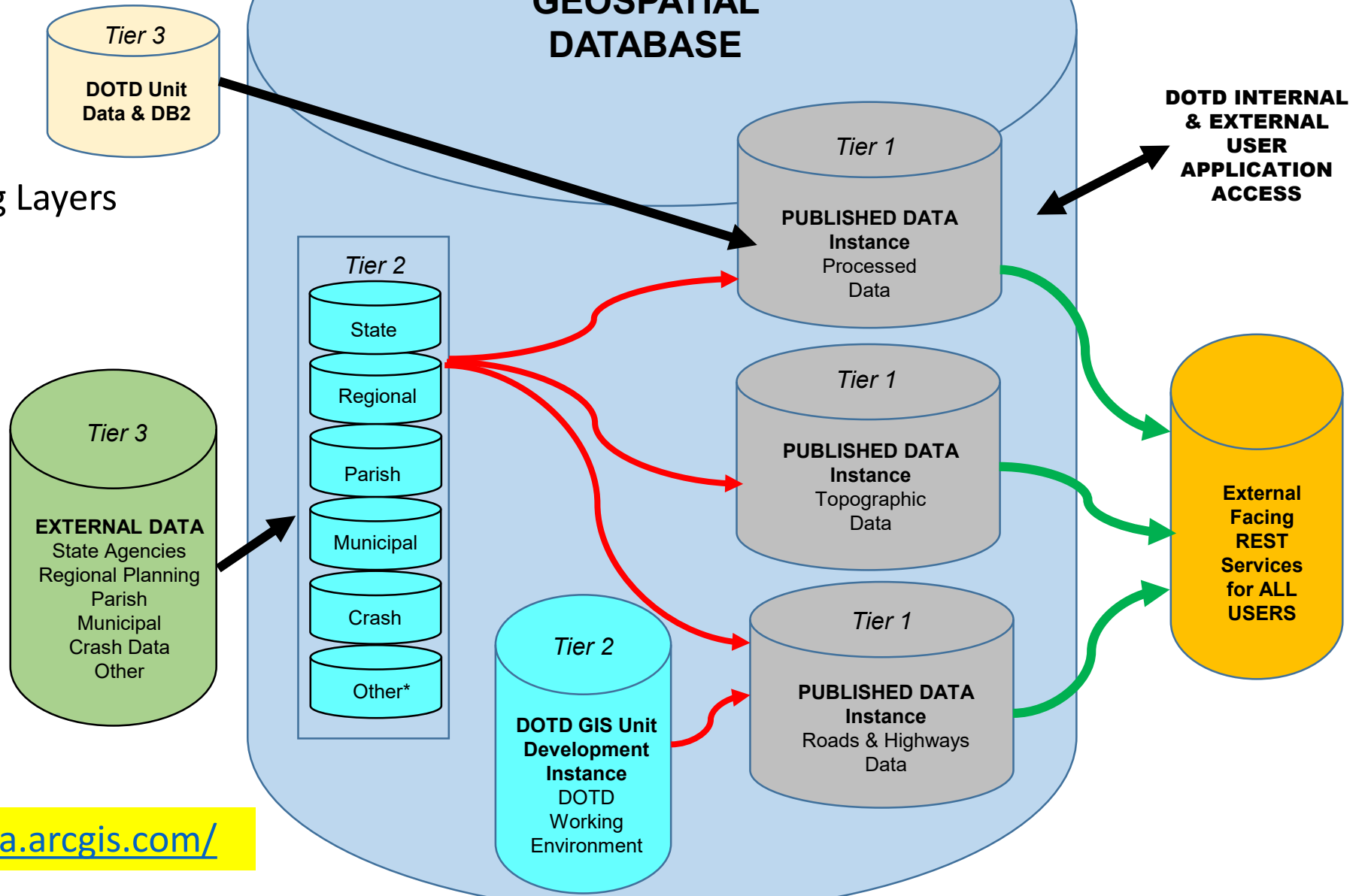
Challenges:

There are 8+ "Layers"

The 8 "Layers" are made up of dozens of feature

Develop methods to get necessary local participation

Use modern infrastructure for data exchange



<https://data-ladotd.opendata.arcgis.com/>



Data Access – Layer Files

ftp://gisweb.dotd.la.gov/planning/1_ArcMap_LayerFiles/

The screenshot shows a web browser window displaying an FTP directory listing for `ftp://gisweb.dotd.la.gov/planning/1_ArcMap_LayerFiles/`. The browser's address bar and menu bar are visible. The directory listing includes the following entries:

Date	Time	Size	Filename
05/25/2021	08:54AM	13,824	Emergency_Relief_Funding_Eligibility.lyr
05/25/2021	08:54AM	97,280	LADOTD_Louisiana_Imagery_Service.lyr
05/25/2021	09:39AM	73,728	Watershed_Boundary_Datasets.lyr

Overlaid on the browser window is a 'Table Of Contents' window from a GIS application. It lists the following layers:

- Emergency Relief Funding Eligibility
- FHWA Eligible Reimbursemen
- FEMA Eligible Reimbursemen
- Roads_and_Highways_Realtime
- LADOTD_Louisiana_Imagery_Ser

To the right of the Table Of Contents is a map of Louisiana showing a network of roads. The roads are colored in red and black, representing the different layers listed in the Table Of Contents.



QUESTIONS

SUGGESTIONS

DISCUSSION

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