GIS-MO

CRAB Strategic Asset Management

www.crab.wa.gov/gis-mo

THESIS

1. Why Are We Doing This
2. Increasing Mobility
3. VUEWorks
4. Increasing Interoperability
5. Implementation Time Line

CRAB MISSION

The mission of the Washington State County Road Administration Board (CRAB) is to preserve and enhance the transportation infrastructure of Washington Counties by providing standards of good practice, fair administration of funding programs, visionary leadership, and integrated, progressive, and professional technical services.

RCW 36.78.070 (4) Advise counties on issues relating to county roads and the safe and efficient movement of people and goods over county roads and assist counties in developing uniform and efficient transportation-related information technology resources;

MAP-21

MAP-21 included requirements for the collection of roadway data based on the Model Inventory of Roadway Elements (MIRE)and the use of a linear referencing system (LRS). Subset of MIRE established as part of the HSIP Final Rule changes to 23 CFR Part 924. The FDEs are a recommended set of 37 roadway and traffic elements that include roadway segment, intersection, and ramp/ interchange data that are needed to conduct enhanced safety analyses

MIRE

The law required the Secretary of the U.S.Department of Transportation (DOT) to establish a subset of MIRE that is useful for the inventory of roadway safety and to ensure that States adopt and use the subset to improve data collection [23 U.S.C. 148(f)(2)]. FHWA established a subset of MIRE as part of the Highway Safety Improvement Program (HSIP) Final Rule changes to 23 CFR Part 924,effective April 14, 2016.

To meet HSIP U.S. 23 CFR 924, which notes that a state DOT should have access to a complete collection of roadway and traffic data for all public roads by September 2026,

Asset Management

Definition from the International Infrastructure Manual (IIMM)

- The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner

CRAB's Goals

- Establish and maintain a uniform system of bridge and roadway maintenance categories, and associated costs.

ASSESSMENT

- What do I own?
- Where is it?
- What condition is in and what is the performance?
- What is the remaining useful life?
- What is its remaining economic value?

➢ Work Management

- Service Request
- Work Order
- Resource Management

➢ Strategic Asset Management

- Condition
- Risk Analysis
- Budget Analysis

VUEWORKS SOLUTION OVERVIEW

- Forecast capital budget needs
- Create & manage capital projects
- Analyze different tactics using "what-if" scenarios

Plan Management

Request Management

- Document & track requests for action
- External or internal

Work Management

- Create & track work orders
- Manage time & expenses for labor & equipment
- Manage quantity, expenses & location for inventory

- Track condition, depreciation & value
- Analyze & prioritize consequences of failure

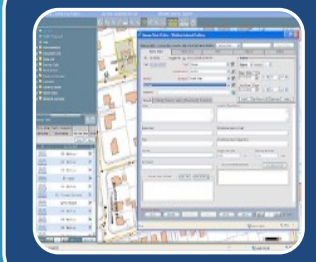
Risk-Based Asset Management

Handling the life-cycle of assets

VUEWORKS SOLUTION OVERVIEW

Strategic Asset Management

- Track condition, depreciation & value
- Prioritize consequences of failure
- Forecast capital budget needs
- Create & manage capital projects



Work Management

- Document & track citizen issues
- Create & track work orders
- Manage time & expenses for labor & equipment
- Manage quantity & expenses for inventory

Map & Data Sharing

- Web browser based
- View maps and data
- Manage users
- Search & report
- Display & manage layers
- List and edit attributes
- Link documents & data
- Manage facilities

vueworks.

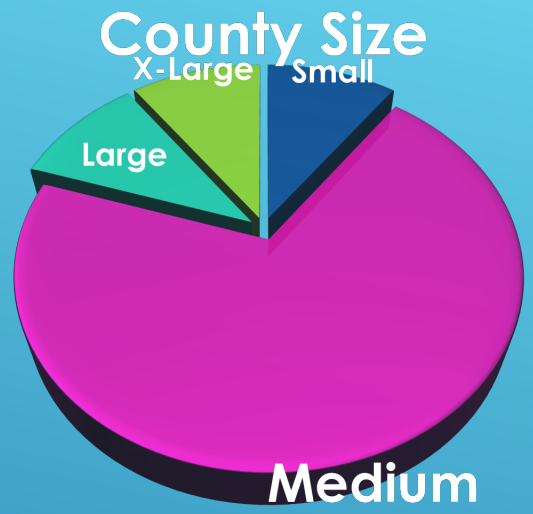
COUNTY ROAD ASSETS

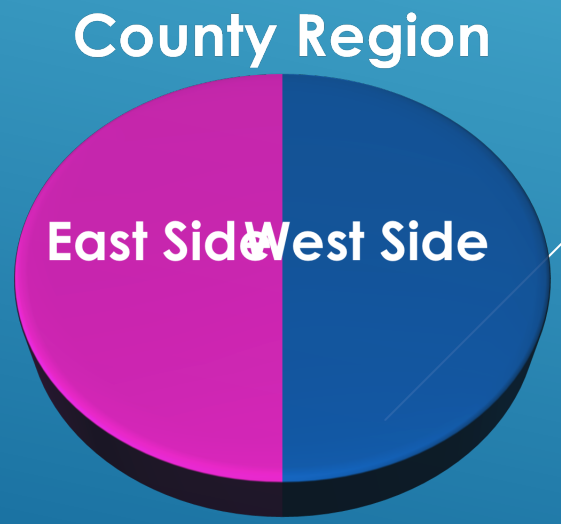
- 40k miles of county roads
- 120k culverts
- 4694 NBI & SS bridges (Non-NBI)
- 2000 miles of guardrail
- 300k Sign Posts
- Street Lights, Traffic Signals, Storm Systems, Curb Ramps, etc.

Asset quantities are estimates only!

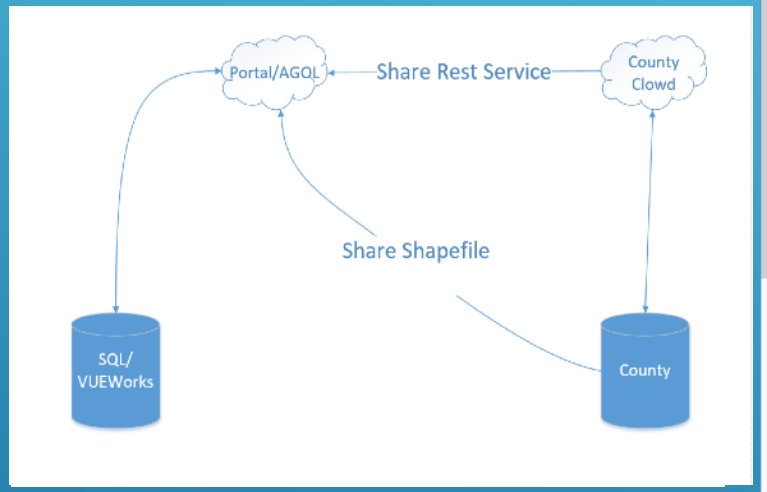
PARTNERS

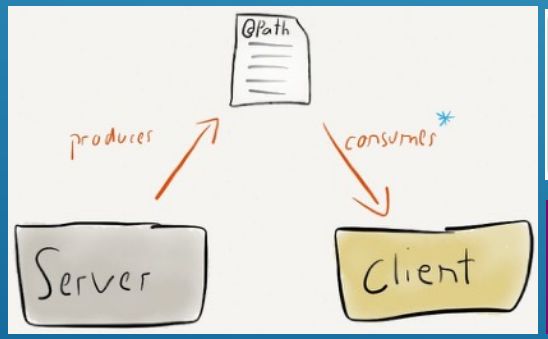
- All 39 Counties
- Stakeholder Steering Committee & Workgroups
- WSAC Funding $125k
- WTSC Funding $400k
- WSACE, WSDOT, FHWA, OCIO

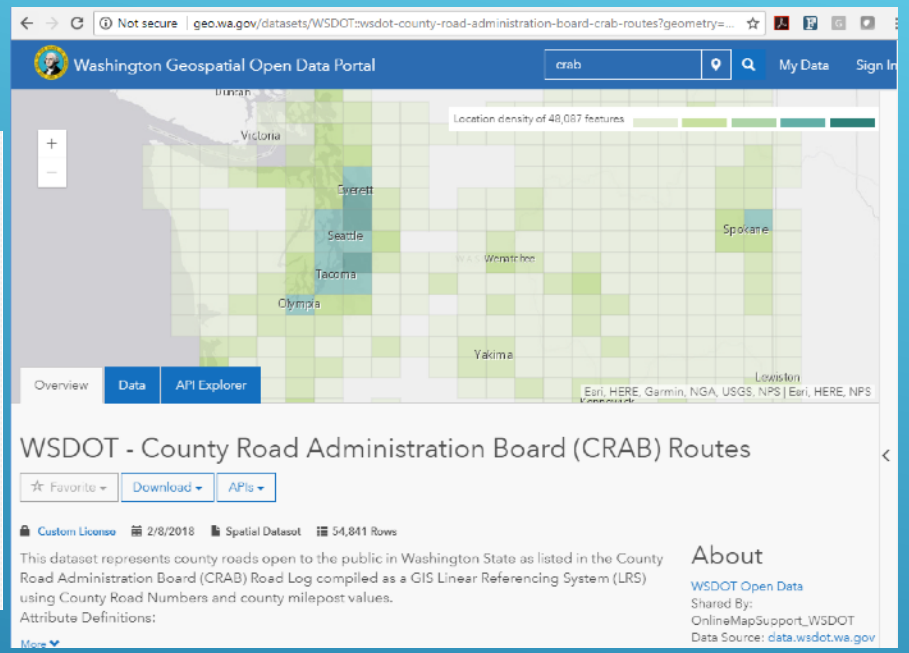




INTEROPERABILITY (COUNTY SYSTEMS, WSDOT, ETC)







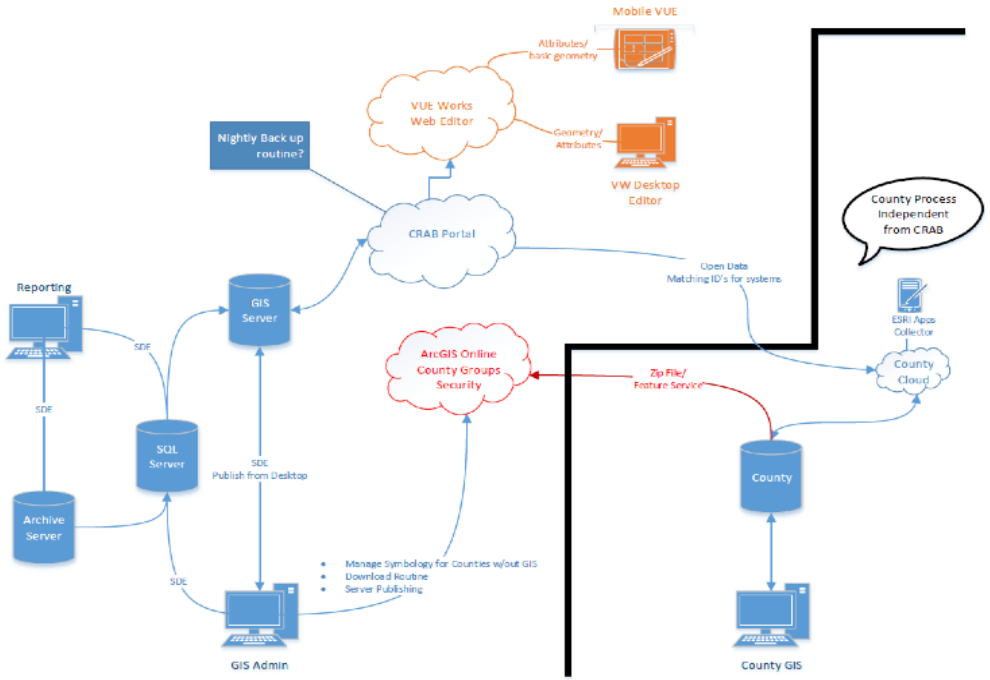
geo.wa.gov

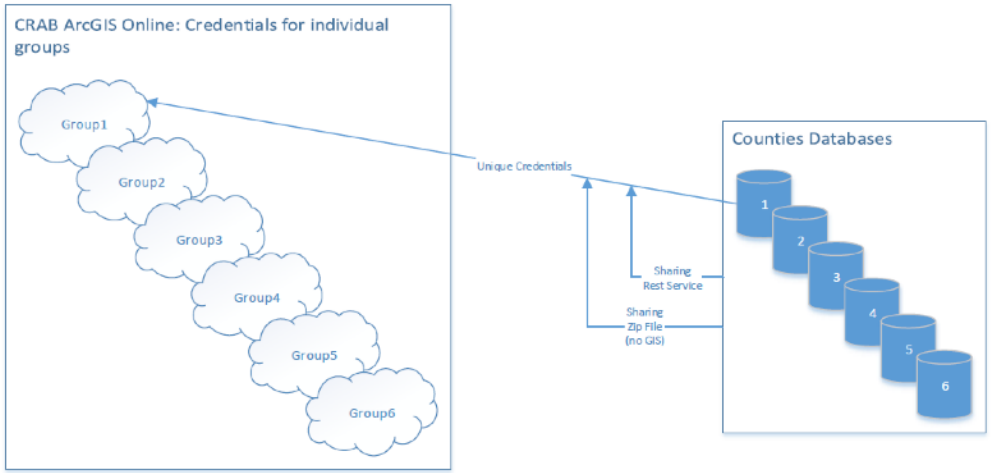
Table 1. MIRE FDE for All Public Roads with AADT ≥ 400 Vehicles per Day.

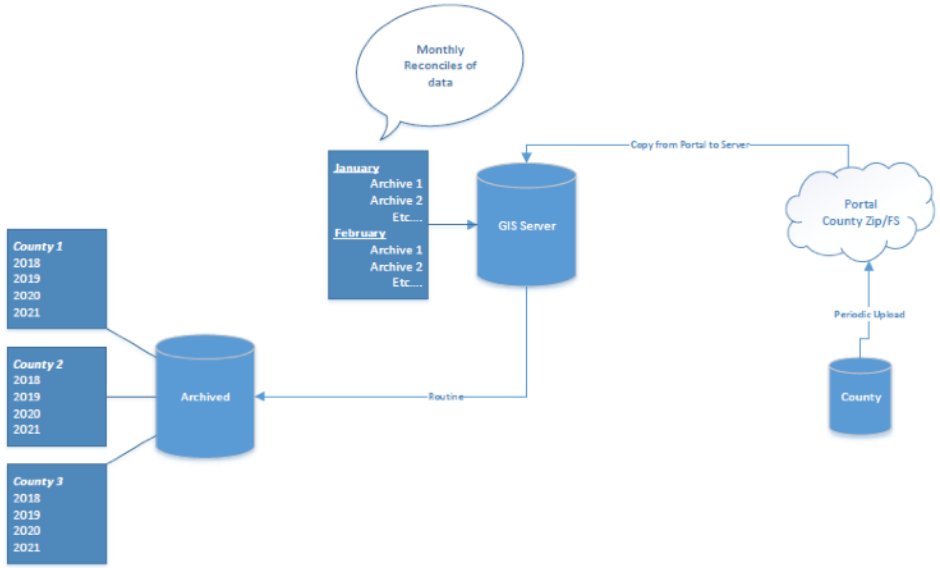
FDE (MIRE Number)^	Definition
Roadway Segment	
Segment Identifier (12)	
Route Number (8)⁰	
Route/Street Name (9)⁰	
Federal-aid/ Route Type (21)*	
Rural/Urban Designation (20)*	
Surface Type (23)	
Begin Point Segment Descriptor (1	
End Point Segment Descriptor (11	
Segment Length (13)	
Direction of Inventory (18)	
Functional Class (19)*	
Median Type (54)	
Access Control (22)†	
One/Two-Way Operations (91)*	Indication of whether the segment operates as a one- or two-way roadway.
Number of Through Lanes (31)*	The total number of through lanes on the segment. This excludes turn lanes and auxiliary lanes.
Average Annual Daily Traffic (AADT) (79)*	The average number of vehicles passing through a segment from both directions of the mainline route for all days of a specified year.
AADT Year (80)	Year of AADT.
Type of Government Ownership (4)*	Type of governmental ownership.

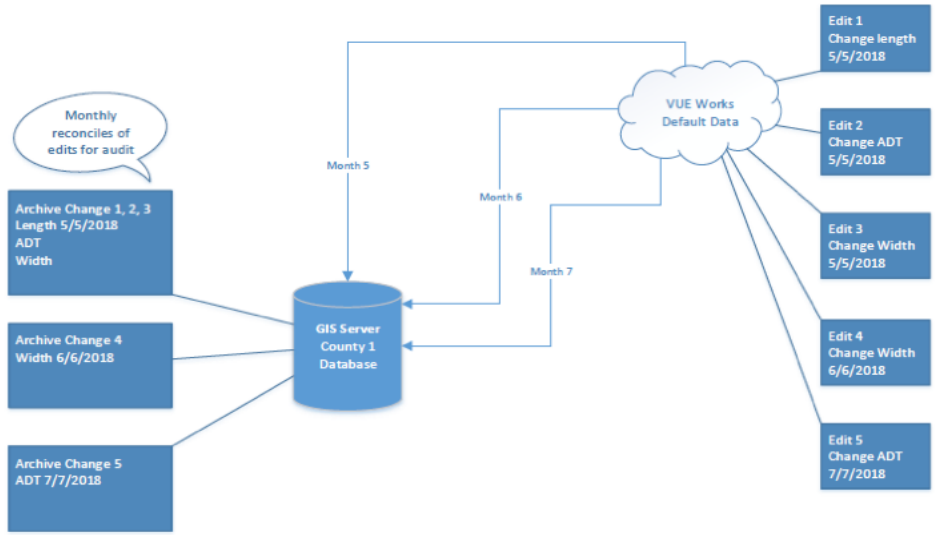
WSDOT (state)	94%	+/- 90%
WSDOT (local)	20%	+/- 60%
CRAB (county)	65%	+/- 80%
Federal	20%	+/- 60%
Tribal	20%	+/- 60%
Non-DOT (state)	50%	+/- 60%

23 CFR, Part 924.11 "have access to complete collection of the MIRE FDE on all public roads by September 30, 2026."

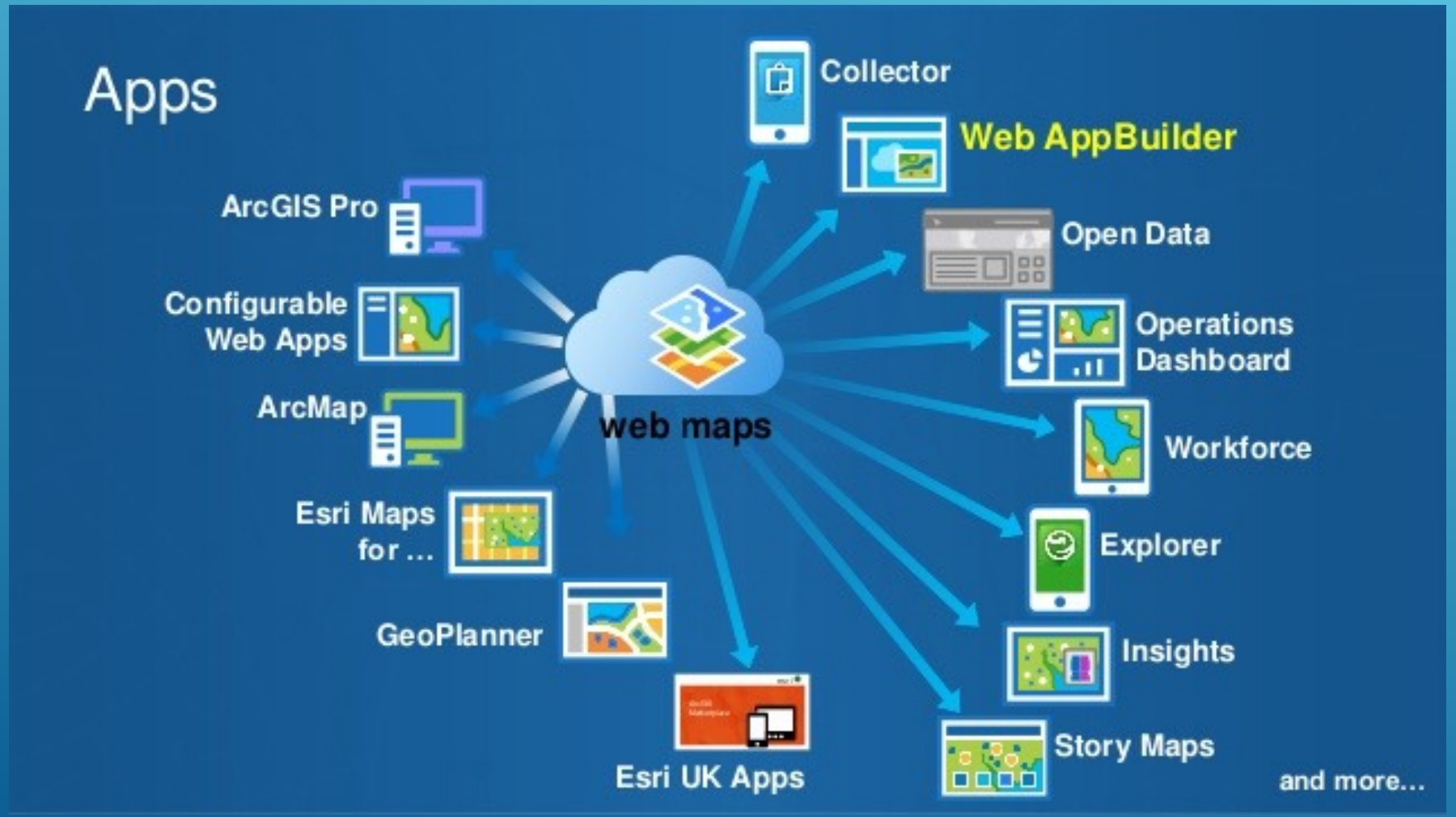

Mobile VUE
Attributes/ basic geometry
VUE Works Web Editor
Geometry/ Attributes
VW Desktop Editor
Nightly Back up routine?
CRAB Portal
County Process Independent from CRAB
Open Data Matching ID's for systems
Reporting
GIS Server
SDE
ESRI Apps Collector
ArcGIS Online County Groups Security
Zip File/ Feature Service
County Cloud
SDE
SQL Server
SDE Publish from Desktop
County
Archive Server
Manage Symbology for Counties w/out GIS
Download Routine
Server Publishing
SDE
GIS Admin
County GIS


CRAB ArcGIS Online: Credentials for individual groups
Group1
Group2
Group3
Group4
Group5
Group6
Unique Credentials
Counties Databases
1
2
3
4
5
6
Sharing Rest Service
Sharing Zip File (no GIS)


Monthly Reconciles of data
Copy from Portal to Server
January
Archive 1
Archive 2
Etc....
February
Archive 1
Archive 2
Etc....
GIS Server
Portal County Zip/FS
County 1
2018
2019
2020
2021
County 2
2018
2019
2020
2021
County 3
2018
2019
2020
2021
Archived
Routine
Periodic Upload
County

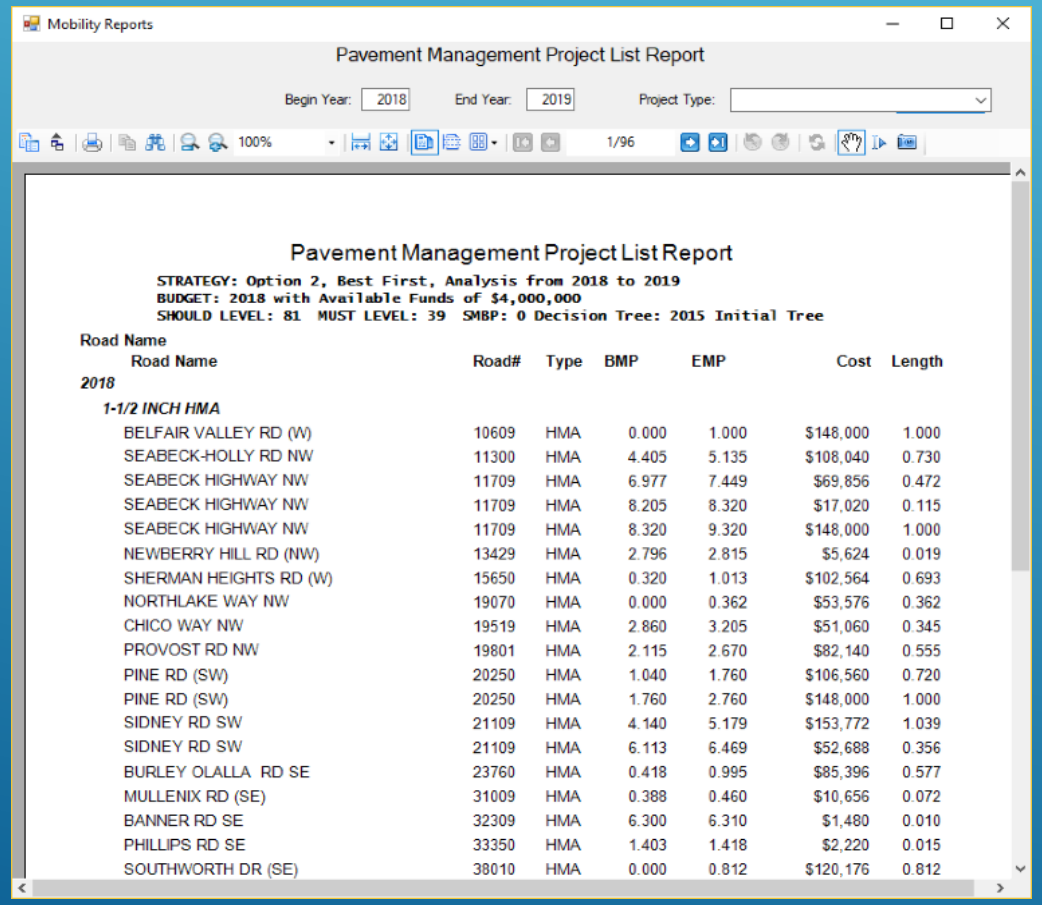

Monthly reconciles of edits for audit
Archive Change 1, 2, 3
Length 5/5/2018
ADT
Width
Archive Change 4
Width 6/6/2018
Archive Change 5
ADT 7/7/2018
GIS Server County 1 Database
Month 5
Month 6
Month 7
VUE Works Default Data
Edit 1
Change length
5/5/2018
Edit 2
Change ADT
5/5/2018
Edit 3
Change Width
5/5/2018
Edit 4
Change Width
6/6/2018
Edit 5
Change ADT
7/7/2018

WHO HERE USES ESRI MAPPING?



ASSET VISUALIZATION AND SPATIAL ANALYSIS

Mobility – PMS Projects –LRS Linear Referencing System



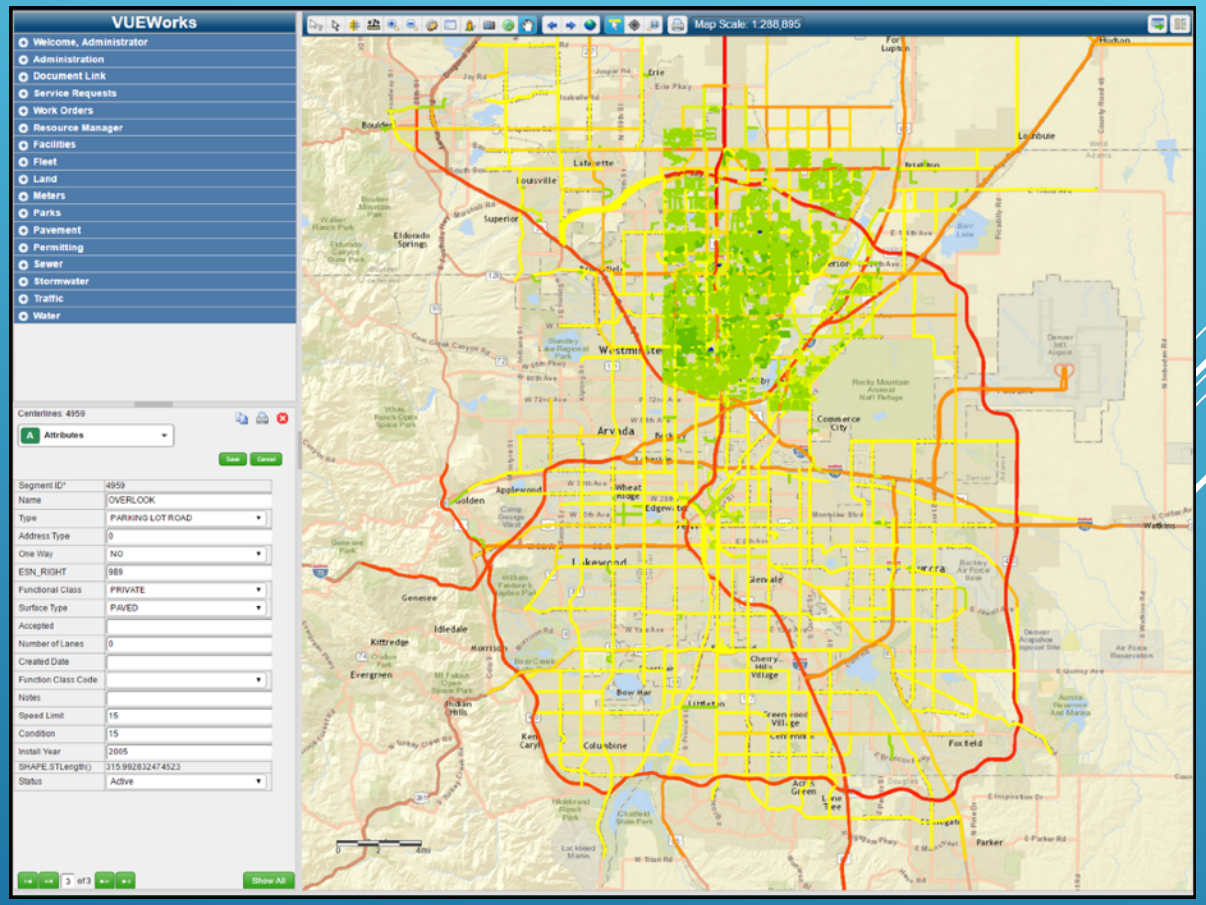
Pavement Management Project List Report

STRATEGY: Option 2, Best First, Analysis from 2018 to 2019
BUDGET: 2018 with Available Funds of $4,000,000
SHOULD LEVEL: 81 MUST LEVEL: 39 SMBP: 0 Decision Tree: 2015 Initial Tree

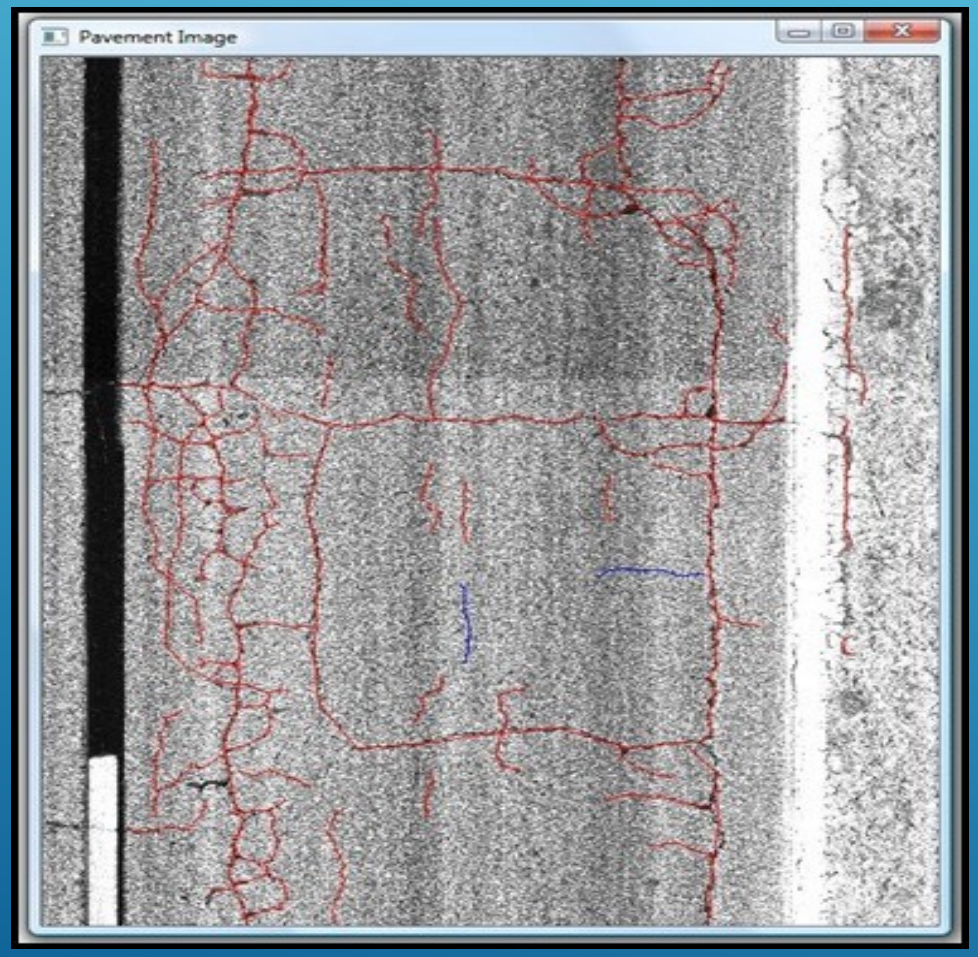
Road Name

Road Name	Road#	Type	BMP	EMP	Cost	Length
2018						
1-1/2 INCH HMA						
BELFAIR VALLEY RD (W)	10609	HMA	0.000	1.000	$148,000	1.000
SEABECK-HOLLY RD NW	11300	HMA	4.405	5.135	$108,040	0.730
SEABECK HIGHWAY NW	11709	HMA	6.977	7.449	$69,856	0.472
SEABECK HIGHWAY NW	11709	HMA	8.205	8.320	$17,020	0.115
SEABECK HIGHWAY NW	11709	HMA	8.320	9.320	$148,000	1.000
NEWBERRY HILL RD (NW)	13429	HMA	2.796	2.815	$5,624	0.019
SHERMAN HEIGHTS RD (W)	15650	HMA	0.320	1.013	$102,564	0.693
NORTHLAKE WAY NW	19070	HMA	0.000	0.362	$53,576	0.362
CHICO WAY NW	19519	HMA	2.860	3.205	$51,060	0.345
PROVOST RD NW	19801	HMA	2.115	2.670	$82,140	0.555
PINE RD (SW)	20250	HMA	1.040	1.760	$106,560	0.720
PINE RD (SW)	20250	HMA	1.760	2.760	$148,000	1.000
SIDNEY RD SW	21109	HMA	4.140	5.179	$153,772	1.039
SIDNEY RD SW	21109	HMA	6.113	6.469	$52,688	0.356
BURLEY OLALLA RD SE	23760	HMA	0.418	0.995	$85,396	0.577
MULLENIX RD (SE)	31009	HMA	0.388	0.460	$10,656	0.072
BANNER RD SE	32309	HMA	6.300	6.310	$1,480	0.010
PHILLIPS RD SE	33350	HMA	1.403	1.418	$2,220	0.015
SOUTHWORTH DR (SE)	38010	HMA	0.000	0.812	$120,176	0.812

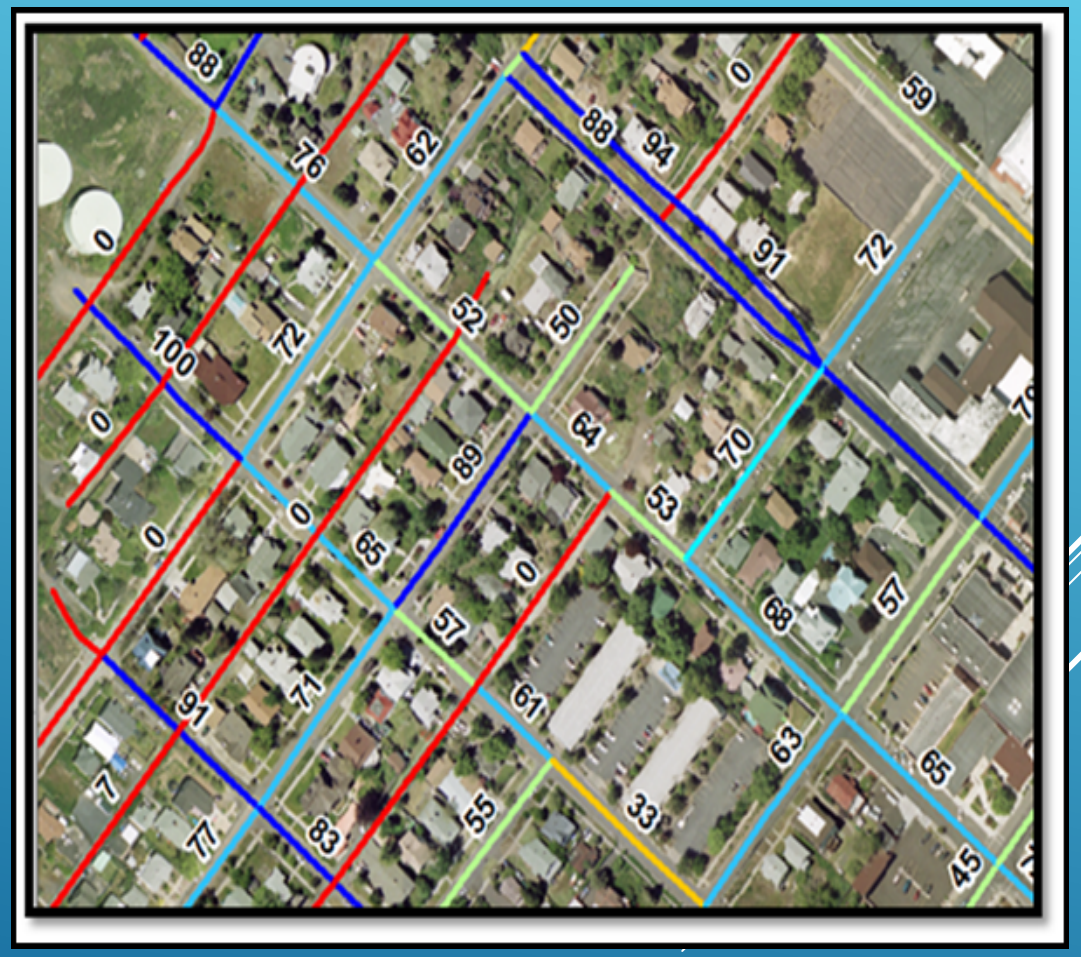
GIS-Mo – PMS Projects – GIS Geographic Information System



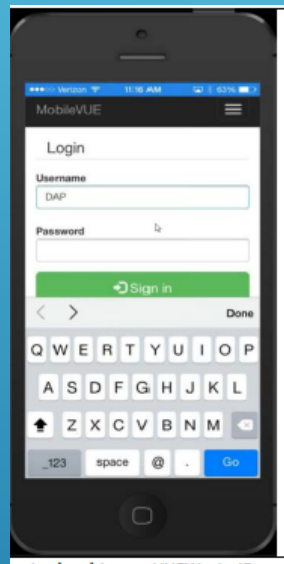
PAVEMENT DISTRESS IMAGE



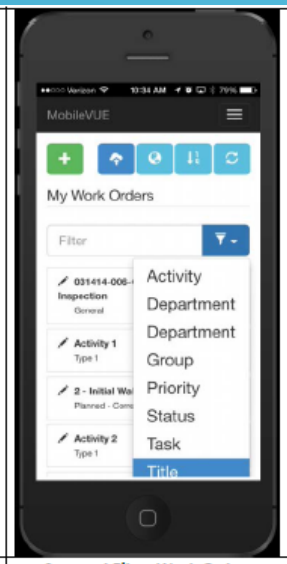
Using PSC data and Developing maps



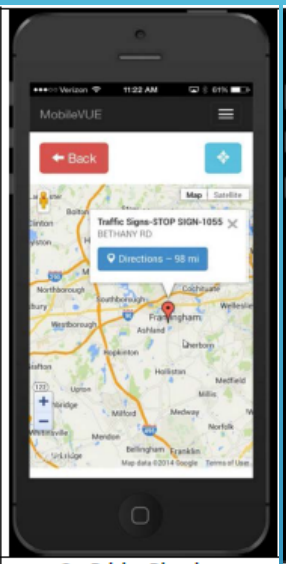
MOBILE DATA COLLECTION (MAINTENANCE & CONDITION)



Login with your VUEWorks ID



Sort and Filter Work Orders

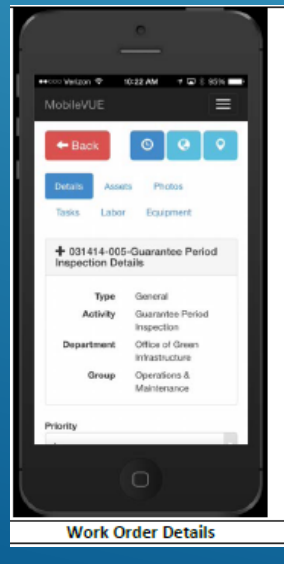


Get Driving Directions

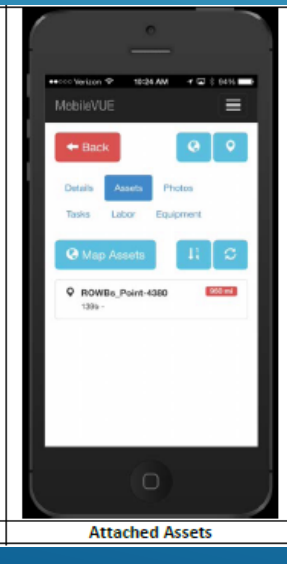
Condition Inspection

Edit GIS Data in the Field

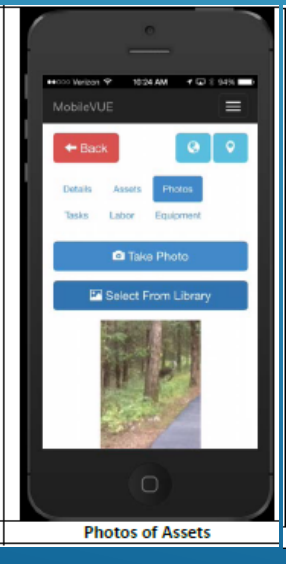
Take Pictures of Assets



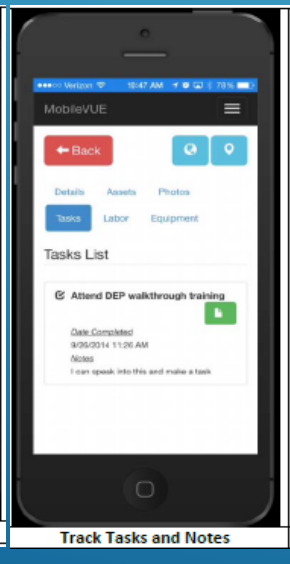
Work Order Details



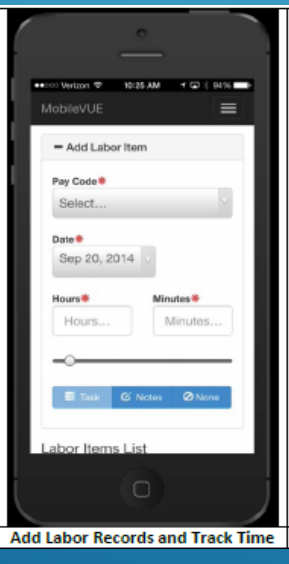
Attached Assets



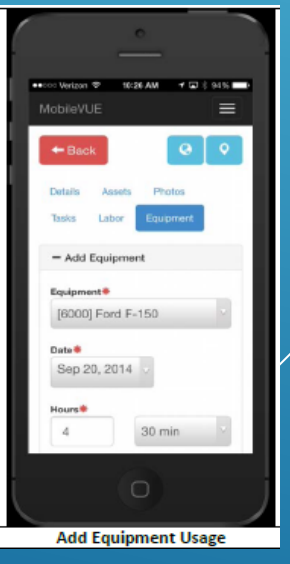
Photos of Assets



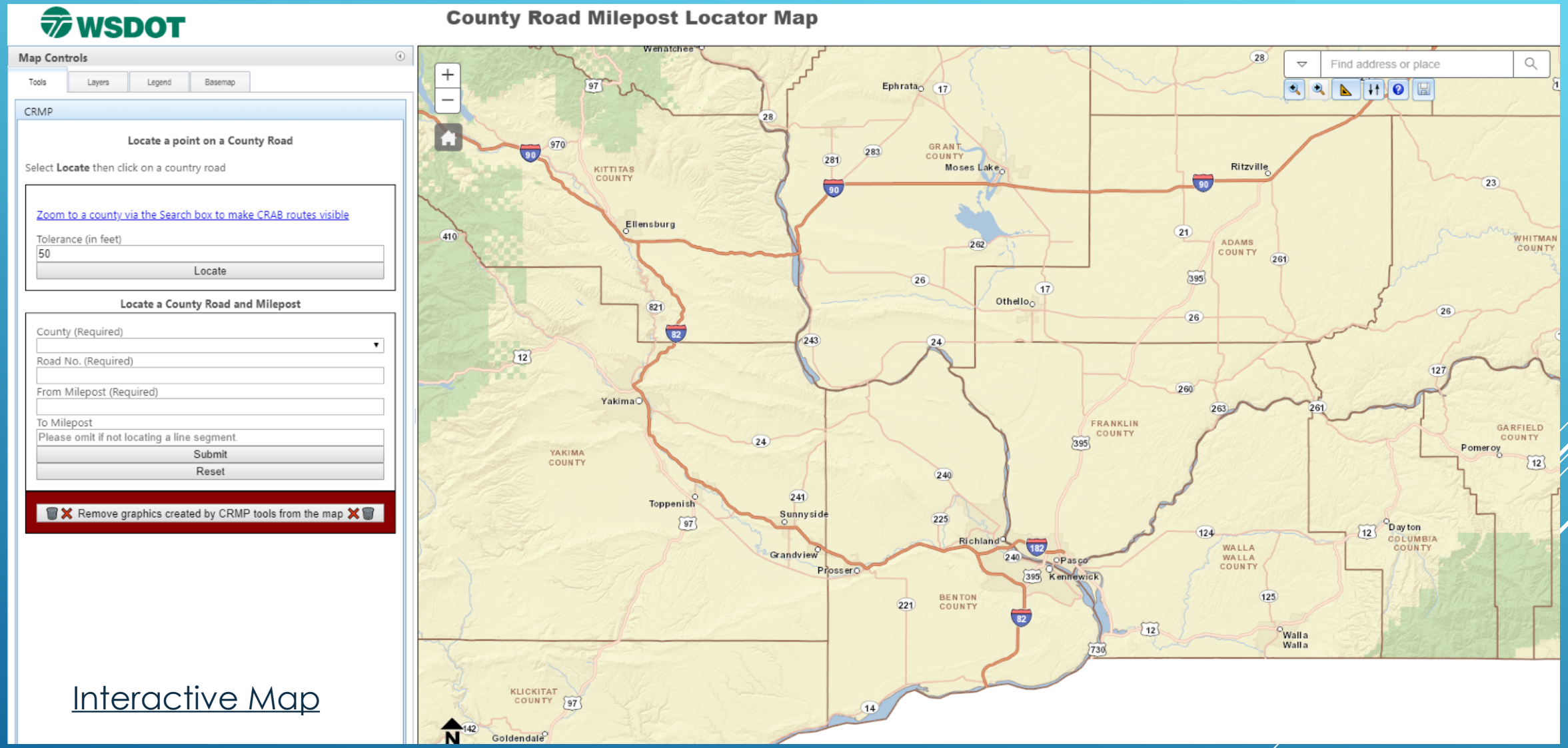
Track Tasks and Notes



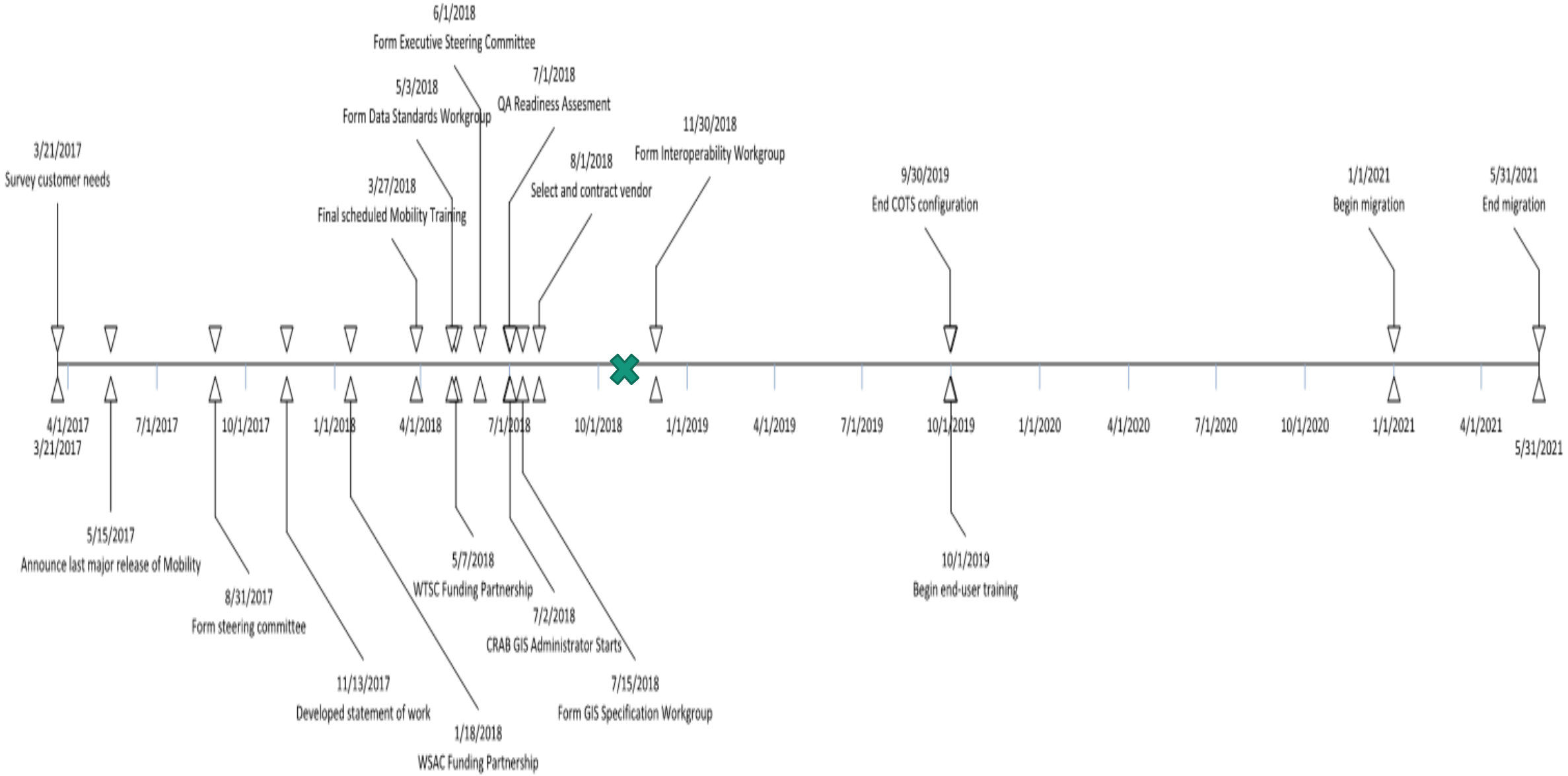
Add Labor Records and Track Time



Add Equipment Usage



Interactive Map


6/1/2018
Form Executive Steering Committee
5/3/2018
Form Data Standards Workgroup
7/1/2018
QA Readiness Assesment
11/30/2018
Form Interoperability Workgroup
3/21/2017
Survey customer needs
8/1/2018
Select and contract vendor
3/27/2018
Final scheduled Mobility Training
9/30/2019
End COTS configuration
1/1/2021
Begin migration
5/31/2021
End migration
4/1/2017
3/21/2017
7/1/2017
10/1/2017
1/1/2018
4/1/2018
7/1/2018
10/1/2018
1/1/2019
4/1/2019
7/1/2019
10/1/2019
1/1/2020
4/1/2020
7/1/2020
10/1/2020
1/1/2021
4/1/2021
5/31/2021
5/15/2017
Announce last major release of Mobility
8/31/2017
Form steering committee
11/13/2017
Developed statement of work
1/18/2018
WSAC Funding Partnership
5/7/2018
WTSC Funding Partnership
7/2/2018
CRAB GIS Administrator Starts
7/15/2018
Form GIS Specification Workgroup
10/1/2019
Begin end-user training

TIMELINE

PROGRESS UPDATE

- WTSC Grant Awarded for $400k on May 7, 2018
- Office of Cyber Security (OCS) Security Review initiated
- May 9, 2018
- Kickoff Meeting for GIS-MO Data Standards Workgroup
- May 14, 2018
- Sole Source Justification filed with DES on May 16, 2018
- Independent Project Quality Assurance (QA) contractor started May 16, 2018

COMING SOON

- Contract Signed
- Database Development
- County Integration
- County Training

QUESTIONS FOR TREATS

Q: What does Esri acronym stand for?

A: _____

Q: What does GIS stand for?

A: _____

Q What does Lidar Stand for?

A: _____

Q: What is the Most Important Road Asset?

A: _____

QUESTIONS?