

LEVERAGING IN-SERVICE PERFORMANCE EVALUATION TIED TO MOBILE DATA COLLECTION

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GIS-T 2019

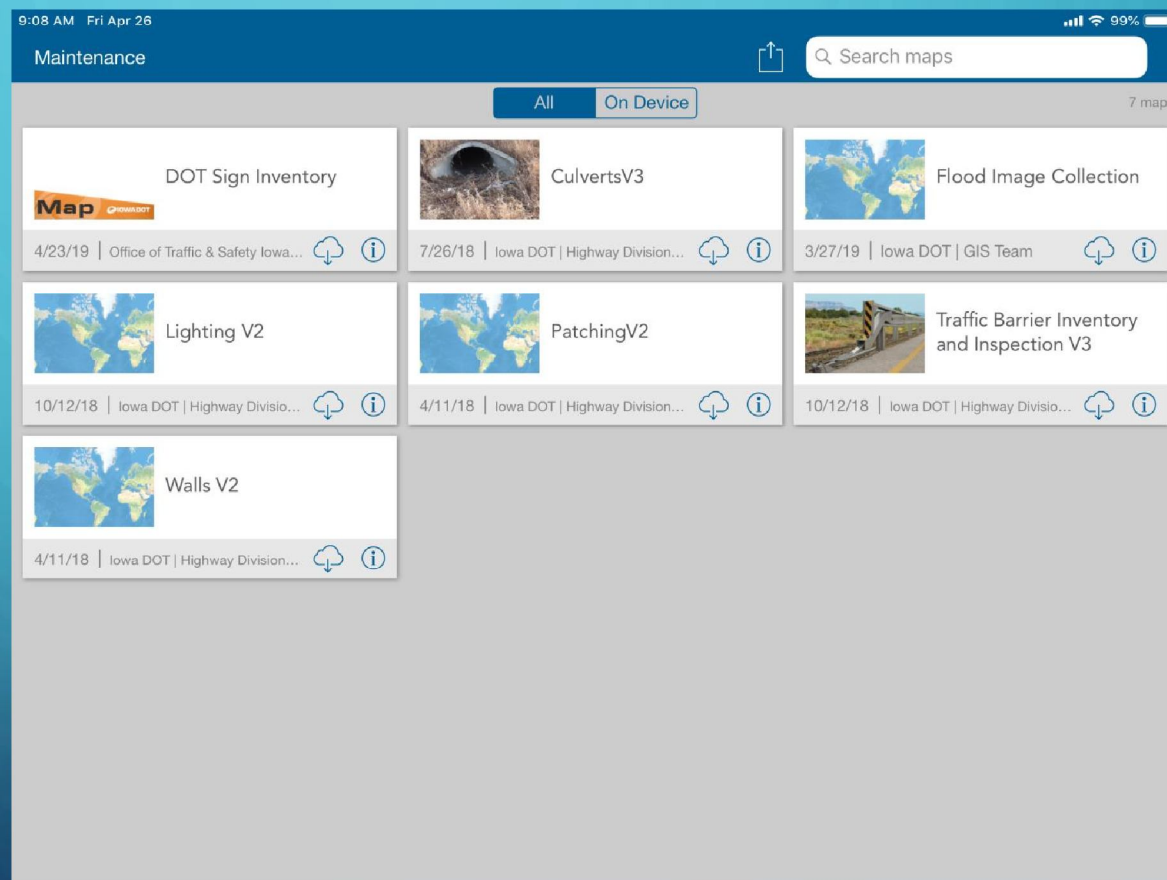


MOBILE DATA COLLECTION HISTORY COLLECTOR / SURVEY123

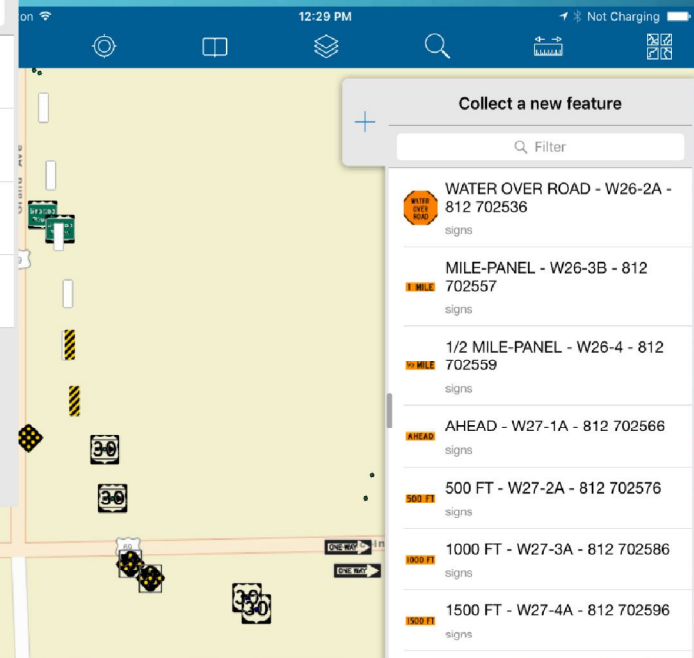
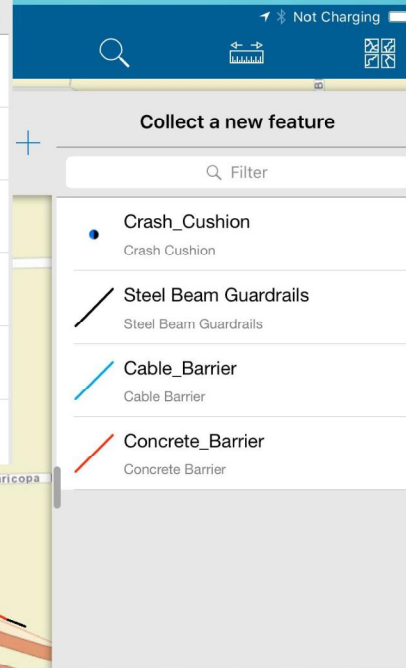
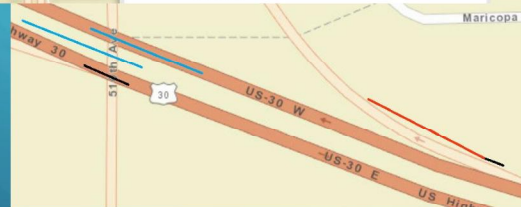
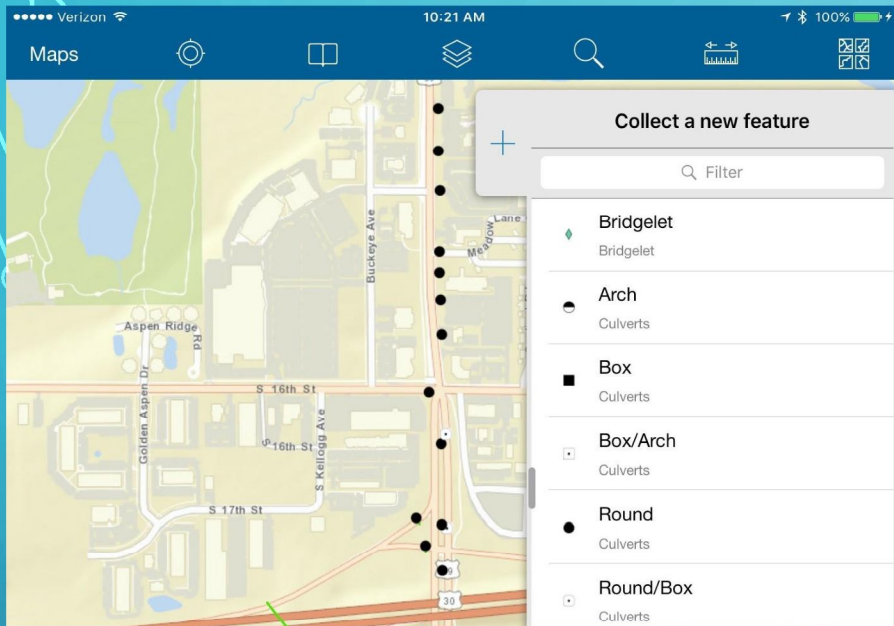
- Started collecting data in 2011 with Culverts on iPads
- Migrated to ArcGIS Online and Collector in 2013 with Culverts data
- Since have added Lighting, Traffic Barriers, Walls, Fencing, Patching and Signs migrated from an older system
- Also leveraging Survey123 for sample collection in 2018

DATA COLLECTION HISTORY COLLECTOR / SURVEY123

A look at what
our field crews
see in Collector.



COLLECTOR APPS EXAMPLES



FEATURE DATA GATHERED BY MAINTENANCE AND CONSTRUCTION STAFF

- Culvert Data within ROW (75% collected – 72,000)
- Guardrail, Crash Cushions (95% collected – Cable 1800, Concrete 815, Steelbeam 9787, Crash Cushions 192)
- Signs (95% collected statewide – 250000 signs, 166000 poles)
- Lighting (65% collected statewide – poles 18600, cabinets 256, handholes 736)
- Patching Locations
- Fences new in 2019

MOBILE DATA COLLECTION HISTORY USING ESRI COLLECTOR ON IPADS

- Most of the data is feeding directly to Oracle SDE or SQL Server SDE enabled databases
- Data is AD authenticated so users just need a DOT email address/userIDs and DOT password to access information
- Maps hosted leveraging rest services from DOT servers on AGOL
- 500+ users between Maintenance and Construction staff

MOBILE DATA COLLECTION HISTORY USING ESRI COLLECTOR ON IPADS

- Collector systems are a series of related tables for inventory and inspection which include photos
- QA/QC is ongoing, nightly/weekly processes being established to maintain data quality
- All data is tied to our RAMS (Roads and Highways network) system on the back end which lets the data be tied to many other datasets on the system

TRANSITIONING SYSTEMS

Current workflow changes:

- Migration of databases from Oracle pluggable and Oracle SDE to SQL Server transactional and replicated geolibraries
- Migration of rest services from AGOL to Portal
- Learning ArcGIS Pro to manage data and rest services
- Leveraging existing systems to add additional data elements
- Training field staff on workflows and login procedures
- Providing tools to interact with the data after collection

HOW ARE WE USING THE DATA?

- Direct tie to crash incidents (borrowed from Indiana DOT)
 - Pink Tags – Enforcement officers, tagging signs, lights, fence, or traffic barriers involved in a crash
- TRACS ID, tied to collector feature inspection
- Statewide Jan. 2019 with enforcement officers across the state





THE KITS

[Http://www.iowadot.gov/crashtag](http://www.iowadot.gov/crashtag)

Partner agencies carry a crash tag kit which includes:

- Weather proof pink tags
- Sharpies
- Zip ties
- Gardening wire
- A vinyl bank bag
- Damage detail list

Officers can get kits from Highway Patrol or DOT warehouses as well as DOT garages

PINK TAG DATABASE ADDITIONS

Details

Length

53.1 ft

INVU

Inventory Comments

Test

Project Number

Steel Deficiency Point

View

New

Steel Beam Guardrail Inspection

View

New

SBG Inspection:10/9/2017
11:12 AM

Inspection Date (Required)

10/9/2017 11:12 AM

Reason for Inspection

Crash Related

Overall Condition

Excellent - Like New

Post Condition

Good

INCIDENTID

Accident Date

4/26/2019 9:10 AM

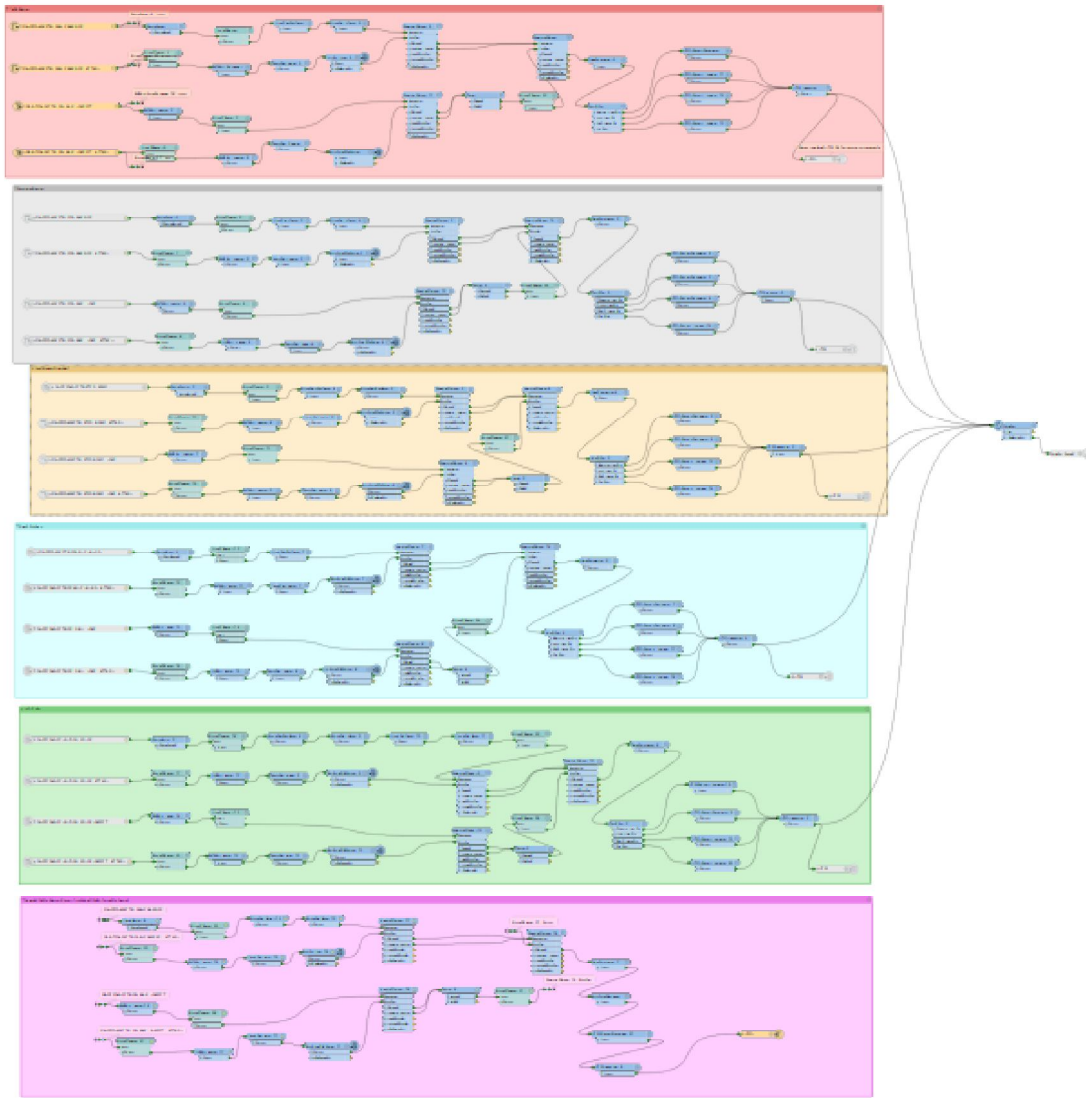
Agency

Iowa State Patrol - Dist 01

Responding Officer

THE PROCESS

- The Enforcement Officers use the provided tags in the kits
- Maintenance Staff remove the tag, log the information and an inspection with photos
- The database pulls the data to generate daily reports to Maintenance and Claims
- Working on analytics to look at feature performance.



Pink Tag Report

Incident ID	Accident Date	Agency	Responding Officer
2018031354	12/06/2018 12:14	P22	ISP Rob Battles

Location Info

Route Name	CostCenter	County	Barrier Purpose	Inventory Comments	Inspection Comments	Type
I 80 W	551804	50	Opposing_Traffic		Red ribbon 1 j hook bent, several turn buckles bent	Gibraltar

Inspection Picture



Working to get the tag related data tied to the DOT crash system to link offender to the damage.

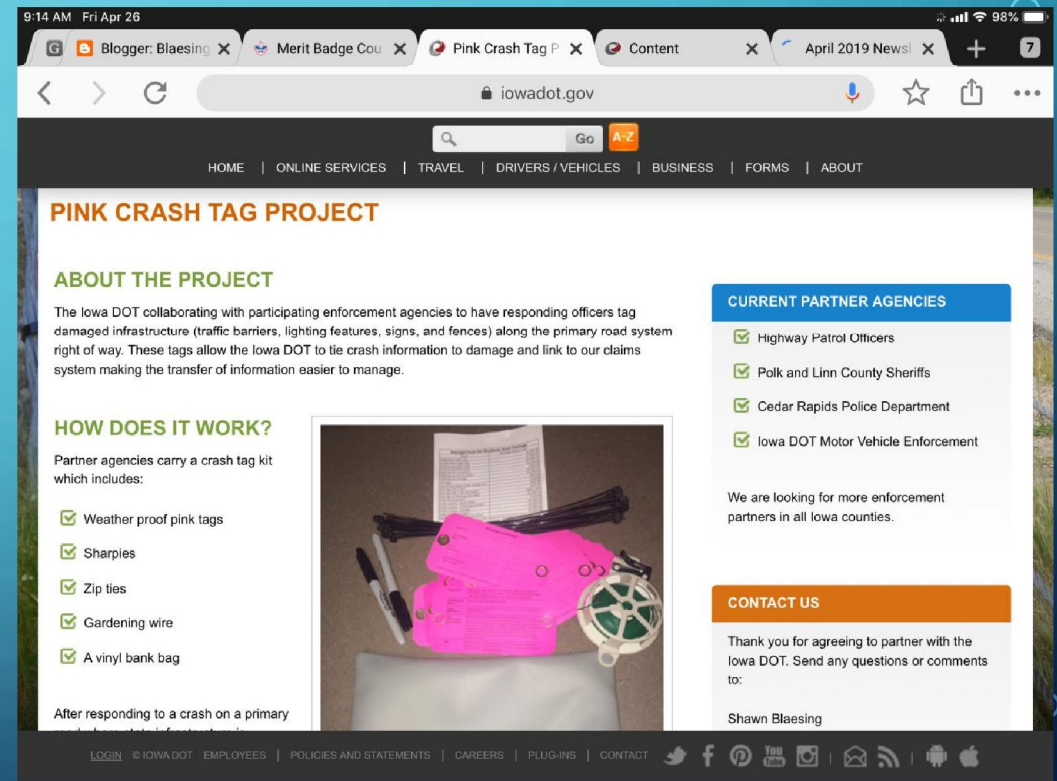
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GOALS FOR PINK TAG PROCESS

- Collaboration, integration and streamlining of data from crash damage in the right of way (ROW)
- Assess long-term and short-term performance of assets
- Logging of all damage to infrastructure in the ROW

WEB-BASED OUTREACH METHOD

- <https://iowadot.gov/crashtag/>
 - <https://youtu.be/77nfVxclkPY>.
- Maintenance training video

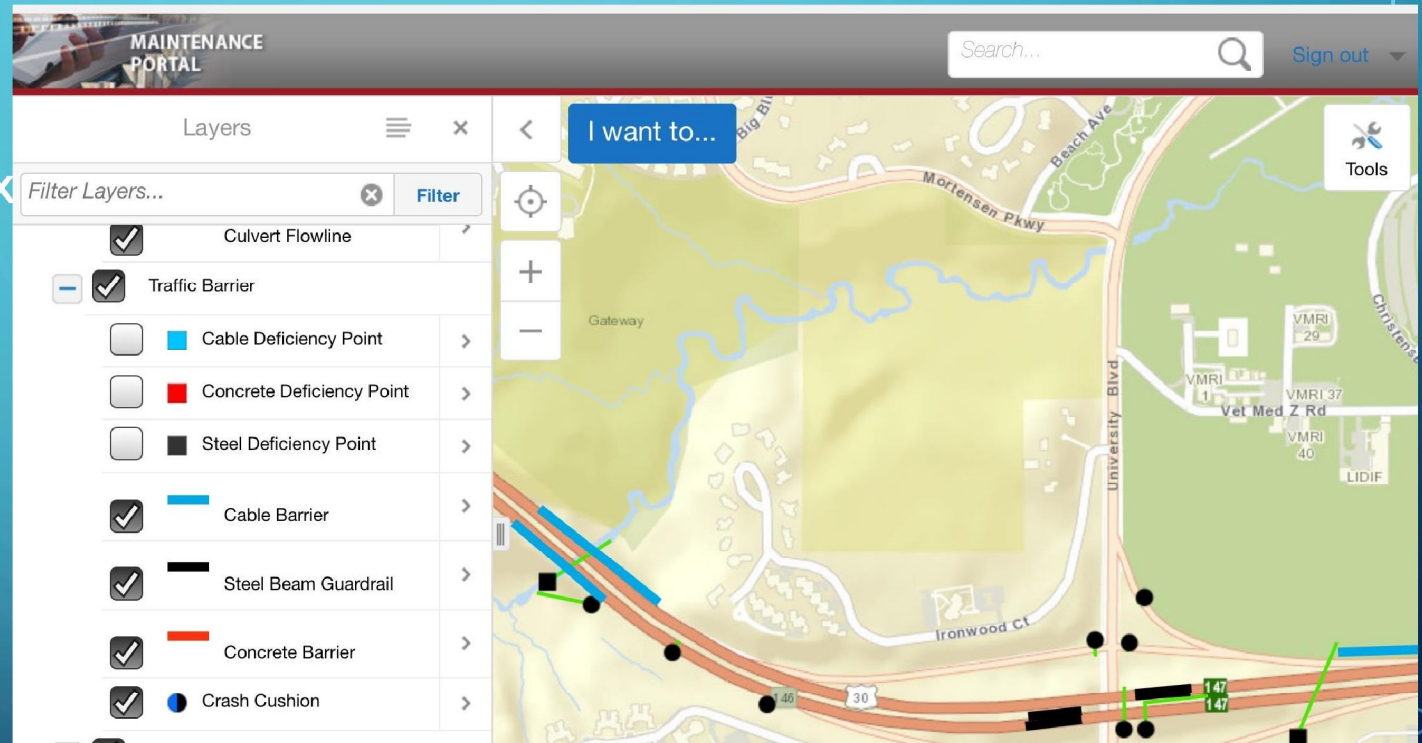


NEXT STEPS FOR PINK TAGS

- Have to overcome workflow changes with staff
- Doing expanded outreach with enforcement partners
- Additional database updates to accommodate cost memo needs
- Expanded dashboard and reporting tools

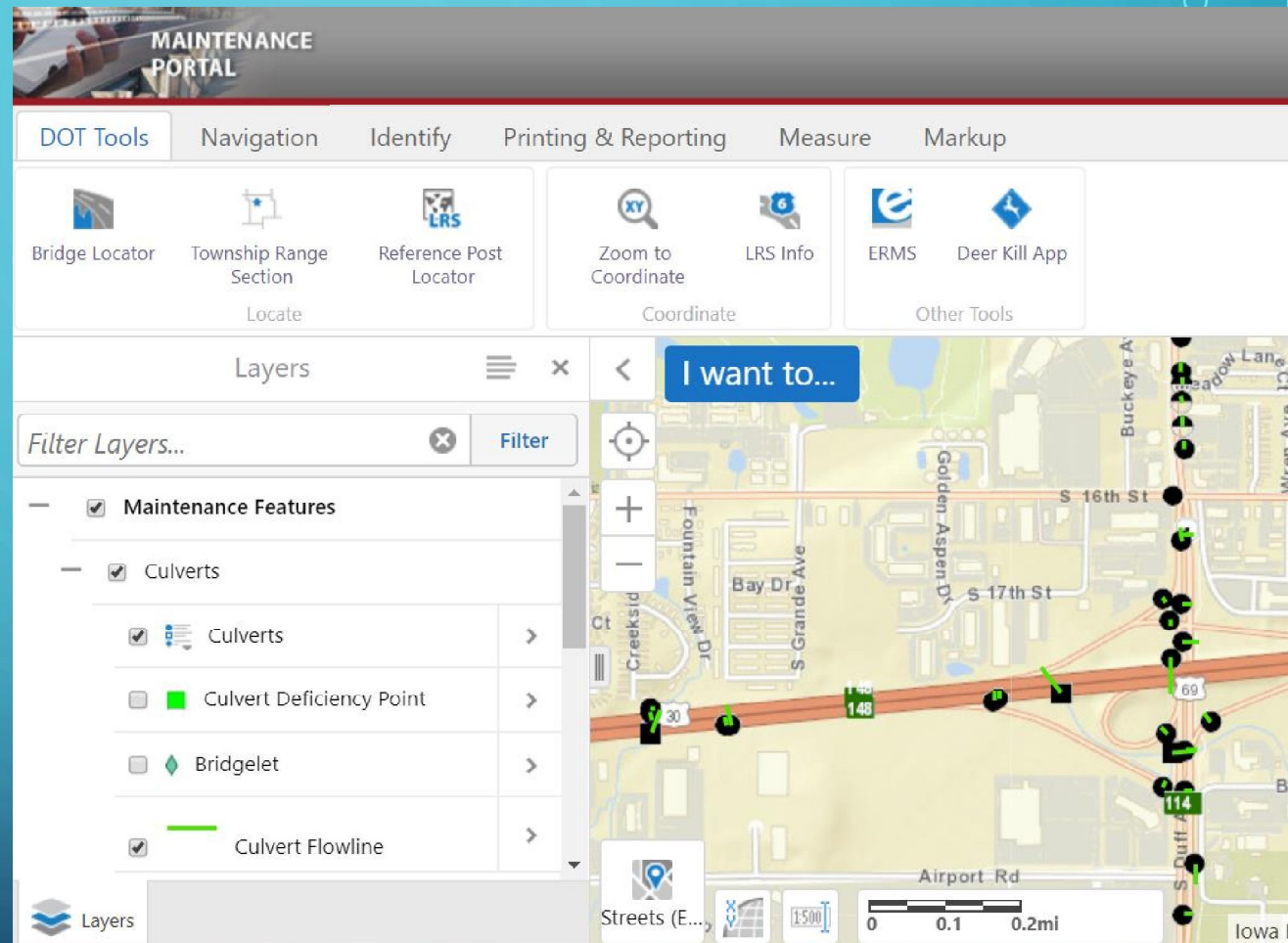
OTHER WAYS ARE WE USING THE DATA?

- DOT Staff Maintenance Portal - Geocortex tools sitting on ArcGIS server
- Live feed from Collector – includes inventory and Inspections



MAINTENANCE PORTAL

- Custom Geolocation Tools
- Custom Map Tools
- Ability to Query Data (issue with related tables)



OTHER WAYS ARE WE USING THE DATA?

- Research – Study looked at crash cushions and crash data within proximity -
<http://www.intrans.iastate.edu/research/projects/detail/?projectId=748702236>
- Research – Study looking at cable barriers -
<http://www.intrans.iastate.edu/research/projects/detail/?projectId=237656017>
- Research – Looking at culvert extensions -
<http://www.intrans.iastate.edu/research/projects/detail/?projectId=-664380356>
- District design engineers leveraging feature locations and condition information for corridor project analysis – still have challenges related to making the data MicroStation enabled

LOOKING AT TOOLS FOR THE FUTURE

- Currently leveraging dashboards for salt usage reports, flood reporting, etc.
- Testing AGOL Portal to leverage Insights
- Evaluating operations dashboard
- Looking for ideas on how other organizations are leveraging tools to provide information to management, develop work orders, etc.

QUESTIONS

Thank you!

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