GOTUG

Snow Plows, AVL and Public Data Consumption

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Iowa Department of Transportation
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Be distracted while I talk

http://trackaplow.iowadot.gov

http://iowadot.maps.arcgis.com

http://arcg.is/ZXPJJsV
Why do it

- 900+ Snow Plows
- 9,479 center line miles of road
- 24,215 lane miles of roadway
- 24,000,000 gallons of brine
- 185,000 tons of salt used

10% reduction of salt is 1.3 million dollars
Why do it?

- Cost Control
- Laborious record keeping
- Auditing real use of materials
- Response consistency
- Impact of winter operations on pavement
Data Collected

Speed
Location
Blade position
Material types and rates
Air and pavement temperature
Engine bus
Photos
Robust Architecture

Oracle Spatial Database gives real time access to plow data

Web Services

Database central/software neutral

Create once use many
Analysis

- Fleet management
- Storm response and return to normal
- Material usage and pavement condition
- Traffic speed and response to treatment
- Blade longevity
- Predictability of travel
Storm Response Tool - WOPR
Near Real time analysis - bridge to predictive

2-HOUR STORM RESPONSE LAYER
I 35 N | Last pass at: 12/23/2014, 6:35:01 AM

Number of Passes: 7
Number of Pings: 199
Segment Length: 8 Miles
Average Velocity: 22 MPH
Average Air Temp: 33
Average Road Temp: 30

MATERIAL PER LANE-MILE
Solid: 63 Lbs.
Liquid: 4 Gal.
Prewet: 3 Gal.

AVERAGE PER SEGMENT
Solid: 94 Lbs.
Liquid: 4 Gal.
Prewet: 5 Gal.

TOTAL PER SEGMENT
Solid: 3664 Lbs | Cost: $144
Liquid: 222 Gal. | Cost: $24
Prewet: 160 Gal. | Cost: $18

EQUIPMENT COST: $119

View Additional Details | Edit Feature
Mobile WOPR

Leverage GeoCortex Essentials - All HTML 5

Retired and reused for traffic operations 2016
Public Information Evolution

- Rolled plow information to the public in January 2014
  - January 2014 Used KML stored in Azure
  - October 2014 pushed to AGOL feature service
- Leveraged ArcGIS Online for high availability
- Pulled data from spatial database using FME
- 2015 Optimized process

2013/2014 Winter

2014/2015 Winter
ArcGIS Online Optimization

We were hitting AGOL Limits

- Real time edits were an issue
  - Layer set to edit all the time
  - Updated to turning editing on and off
- Had layers with filters on map
  - Removed filters
Social Media and Public Interaction
WINTER TRAVEL RESOURCES

The websites below are the Iowa DOT’s main information sources to help you make safer travel decisions this winter.

WWW.511IA.ORG

CURRENT WINTER ROAD CONDITIONS
- Seasonal
- Partially Covered
- Completely Covered
- Travel Not Advised
- Impassable

ROAD CLOSURES
TOW BANS

NATIONAL WEATHER SERVICE WARNINGS

CRASH AHEAD DETOUR EXIT 90

ELECTRONIC ROAD SIGNS

IMAGES AND VIDEO FROM STATIONARY TRAFFIC CAMERAS

TRAFFIC SPEEDS
- Slow
- Fast

SMARTPHONE APPS FOR IOWA 511 & 511 TRUCKER

TRACKAPLOW.IOWADOT.GOV

CURRENT NUMBER AND LOCATION OF ACTIVE IOWA DOT SNOWPLows

PHOTOS AUTOMATICALLY TAKEN FROM THE DASH OF A SNOWPLOW

Air Temp: 24

AIR TEMPERATURE AND 511 WINTER ROAD CONDITIONS

WHAT MATERIALS SNOWPLOWS ARE APPLYING

None
Liquid
Solid
Liquid & Solid
Partners who leverage feeds

- Iowa State University Mesonet
- MACH - Law Enforcement
- Traffic Operations Software
- CARS
- TV/Radio
- Emergency management
- General Public
- DNR
- Neighboring States
Nikesha Thomas: What time is this supposed go start
Like · Reply · 17 minutes ago

KWWL: about an hour ago

IDOT snowplow image: I-35 and Hwy 20. Some snow starting to coat roadway. Heading our way. #kwwlx #lawx

KWWL: about an hour ago

3 people like this.

Shirley Kohler: Oh, yay, just in time for my drive to work!
Like · Reply · about an hour ago
Dickinson County Emergency Management

Photo from 1:25pm today on Hwy 71 in Milford - taken by an Iowa DOT snow plow. See images from snow plows at http://trackaplow.iowadot.gov/

3 hrs

The Chamber of the Iowa Great Lakes, Eric Rademacher, Jennifer Jensen and 19 others like this.

24 shares

Emilee Buchholz Doesn't make me feel better knowing they're paying attention to their cell phone and not the road!!!

1 • 2 hours ago

Dickinson County Emergency Management The cameras are fixed and the photos are taken automatically.

1 • 2 hours ago

Emilee Buchholz Haha ... Ok.. that's much better then!

1 • 2 hours ago

Mike Bergendahl opps my bad...should have read all the comments first!

1 • about an hour ago

Kassie Guthrie It's a dash mounted camera

1 • 50 minutes ago
We have 217 plows out in eastern Iowa where snowy roads are causing some travel troubles. This is U.S. 18 just east of Charles City today (11/24/2014 at 8:27 a.m.)

Check out the current plow location and photos from the windshield of some of the plows at http://trackaplow.iowadot.gov/

You can find road conditions and incident reports at www.511ia.org.
The Iowa DOT currently has 174 trucks out in eastern Iowa. We'll have some photos directly from the windshield of the plows once the sun comes up. To check for plows in your area, go to http://trackaplow.dot.iowa.gov.

Travis Edrington: Are there any other state DOTs as awesome as this one?

Iowa Department of Transportation: shared Zero Fatalities Iowa's photo.
Adam Rash @adamrash · 12m
Don't go SB from Ames on I-35. Several vehicle pile up with several semis involved. Backed up for miles. @iowadot iawx

imjustabrian @imjustabrian · 18m
This is much too distracting.
@iowadot lets you track Iowa snowplow locations online.
trackaplow.iowadot.gov (via @catrocketship)

Mackenzie Wanatee @meskwaki_ikwe · 21m
@KCRG_FirstAlert @iowadot yikes I'm staying indoors. Be safe if you've got to be out in it.
We have 423 snowplows on IA roads. Track the plows and view images taken from the dashboard @trackaplow.iowadot.gov

Karen @karenl_m · 9m
@iowadot Wow! What a cool feature

Rusty Dawkins @rustywx · 11m
Absolutely love this. See where the snowplows are in Iowa, click on blue to see their view! iowadot.maps.arcgis.com/apps/webappvie... H/T @ChrisKuball

Statewide Iowa 511 @statewideia511 · 19m
We have 423 snowplows on IA roads. Track the plows and view images taken from the dashboard @trackaplow.iowadot.gov
Nina Friis @friisey · 3h
@iowadot Will do; I'm copilot today.

Kurt Beyer @beyerku · 3h
One of my favorite things about the Iowa DOT: Live snowplow tracking and live snapshots from the plows trackaplow.iowadot.gov #awesomesauce

Iowa DOT @iowadot · 3h
@friisey Sorry, but this dry snow blows around and it's just going to get worse as the day goes on. Please be safe.
IDOT plow trucks have cameras. You can track a snow truck.

iowadot.gov/travel.html#/

#13now
Iowa Department of Transportation

That was quite a snowfall! We've been out all night and currently (1/6/2015 at 4:13 a.m.) have 274 plows on the road to get ready for the morning commute. Please be safe and buckle up, allow some extra time to get where you are going and extra space between your vehicle and the car in front of you. Check current plow locations at http://trackaplow.iowadot.gov/

Like · Comment · Share · Edit · 1 hr

Deb Muell, Gary Snyder and Tracy Parker Tollefson like this.

Kevin Scott Thanks gang you all do good work. Make sure the drivers know at least someone appreciates what they do.

Like · Reply · 8 minutes ago

Iowa Department of Transportation Thanks for the comment. I will pass along your comment to our snowfighters.

Like · Reply · Commented on by TJ Bramble · about a minute ago

Write a comment...
Stacie Hennings @HenningsStacie · 7m
Why haven’t the plows been out on highway 18. The Kia can only push so much snow. @iowadot

Jayson Prentice @SeverePlains · 16m
Follow @IowaDoT snowplows as they clear the first snow of season with GPS & 'live' images of road conditions iowadot.maps.arcgis.com/apps/webappview... IAwx

Jordan Bell @muwxman · 12m
@SeverePlains @IowaDoT Awesome application of GIS and situational awareness.
Paige @paige_stoner 30m
@Ben_Kelly18 @mwood_34 @jake_jpcraw @zharrisindee @JerryGallagher @iowadot no I don't see anything

Jon Bernhardt @mrbernhardt 1h
Having fun watching the plows in IA: trackaplow.iowadot.gov Check out Hwy 71 N of Spencer from @iadot iawx

IT107 @ITone07 1h
"@ChrisGloninger: LATEST from iowa DOT - #snow covered roads. #headingourway bit.ly/1Ms03lY"

Chris Gloninger WISN @ChrisGloninger 1h
LATEST from Iowa DOT - #snow covered roads. #headingourway
NWS Des Moines @NWSDesMoines · 9m
Light snow falling along US 30 between Ames & Boone. Pic from @iowadot
#iawx

Eric Smith @ericsmith13 · 19m
We have arrived! Snow plow webcams:
iowadot.maps.arcgis.com/apps/webappviewer...

City of Ankeny @CityOfAnkeny · 21m
@frontyardninja The good news is we're working with the @iowadot to fix it!
Read more: ankenyiowa.gov/government/faq...
Zoom in for more good stuff
High Availability Feeds as Public AGOL REST

Plows
Plow camera
Fixed Camera
Road Conditions (Iowa, NE, MN)
DMS
511 Events
Plow Analytic
Traffic
Future

- More data to the public and supervisors
- Plow and DMS notification
- New Modems and sensors
- Predictive Analytic
- Cost
- Plow frequency and return time with spyglass
Thanks

Demo time

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http://iowadot.gov/gis
http://trackaplow.iowadot.gov
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