Our Team

Maintenance Division

• Joe Schmit – Technology Resource Manager
• Max Schade – Field and Tech Support
• Oai Tang – Data Management and GIS Manager
• Keisha Chinn – GIS Specialist

IT Division

• Josh Hudson – Lead App Developer
• Brian Blood – App Developer
• Reed Hunter – Lead GIS Developer
<table>
<thead>
<tr>
<th>Date Removed</th>
<th>State Route</th>
<th>Mile Post</th>
<th>Setting</th>
<th>R/W Fencing</th>
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**Cross Culvert Inventory for State Rt. 306 Control Section:**

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<th>MP</th>
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<th>Inlet</th>
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</tbody>
</table>
Get the right information into the right peoples hands in a format that allows them to quickly understand and make decisions.

Empowered, Efficient and Effective
Highway Activities Tracking System (HATS) - Application

• Web app (developed in house)
  • .NET MVC web front end
  • Microsoft SQL Server 2014 back end database
  • ESRI ArcGIS SDE, ArcGIS Server

• Mobile app (developed in house)
  • iOS Swift for iPad
  • ESRI iOS SDK for GIS
  • SQLite database (for mobile offline sync)
Data stored on device

Entire app and data consumes roughly 600 MB of 32 GB storage
HATS – Mobile Hardware

• 1,200 iPad Air 2
  • 32 GB storage
  • Cellular chip (Verizon) – provides integrated GPS and A-GPS capabilities
  • GPS is recreational grade (+/- 10m)
  • Ruggedized with LifeProof Nuud case, hand and shoulder straps and floatation jacket when working on/around water
  • Four year life cycle
Employee to iPad Breakdown

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Techs</th>
<th>Total iPads</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>221</td>
<td>122</td>
</tr>
<tr>
<td>NWR</td>
<td>354</td>
<td>221</td>
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<td>SWR</td>
<td>138</td>
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<td>NCR</td>
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<td>124</td>
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<tr>
<td>HQ</td>
<td>72</td>
<td>72</td>
</tr>
</tbody>
</table>

Legend:
- Green: Total Techs
- Blue: Total iPads
Wireless Infrastructure

• The project required an overhaul and build out of existing wireless network

• 270 - Cisco® Aironet® 2700 Series wireless access points installed – connected shops in the yard and crew room
  • 2.4GHz 2.2dBi swivel dipole antenna primarily used
  • $1100 per unit

• Implemented Controlled Based Wireless, Identity Services Engine (ISE) and Certificate Authority
  • WPA2, AES, WSDOT Active Directory username and password credentials, EAP-Fast and internally generated certificate
Cost Breakdown

• $1.5 million overall
  • $750k – iPad hardware and LifeProof protective gear
  • $300k – Application development
  • $300k – Wireless infrastructure
  • $130k – ESRI software licensing
  • $30k – Meraki MDM
Data Collection Breakdown

Total Records Collected Since July 1, 2015

123,335

Data analysis

Winter increase in “other record” activities due to snow and ice data collection.

Spring/summer increase in feature based activities due to BMP, NPDES and drainage inspection requirements.
## Data Collection Breakdown

<table>
<thead>
<tr>
<th>Item</th>
<th>Count</th>
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<tbody>
<tr>
<td>Catch Basin</td>
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<tr>
<td>Culvert</td>
<td>18,583</td>
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<tr>
<td>Rest Area</td>
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<tr>
<td>Culvert End (Retired)</td>
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<tr>
<td>Stormwater Drainage Inlet</td>
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<td>Guardrail</td>
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<td>Homeless Camp</td>
<td>701</td>
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<tr>
<td>Cable Barrier</td>
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<td>Snow and Ice</td>
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<td>Roadkill</td>
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<td>Pavement - HMA/BST</td>
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<td>Litter</td>
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<td>Sweeping</td>
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<td>Hazard Tree Removal</td>
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<tr>
<td>Tree/Brush Control</td>
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<tr>
<td>Guideposts</td>
<td>1,385</td>
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<tr>
<td>Catch Basin Lid Maintenance</td>
<td>1,186</td>
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</table>
Live Application Demo

• Screenshots follow in an effort to summarize the demonstration.
Access Instructions
Gate locked, Key in knox box, code is 1234#

Material Type
Please select one.
- Clay
- Concrete
- Other Add Note
- Polyvinyl Chloride – PVC
- Corrugated Polyethylene – PE
- High Density Polyethylene – HDPE
- Galvanized Steel
- Aluminum Alloy
- Aluminized Steel
- Ductile Iron
- Unknown
- Plain Steel

Diameter
24

Diameter Units
Please select one.
- Feet
Access Instructions
Gate locked, Key in knox box, code is 1234#

Material Type
- Please select one.
  - Clay
  - Concrete
  - Other Add Note
  - Polyvinyl Chloride – PVC
  - Corrugated Polyethylene – PE
  - High Density Polyethylene – HDPE
  - Galvanized Steel
  - Aluminum Alloy
  - Aluminized Steel
  - Ductile Iron
  - Unknown
  - Plain Steel

Culvert Added
Culvert has been added to this device's map inventory.
The new feature will be available on the web and other devices after the next sync.

Diameter
24

Diameter Units
Please select one.
- Feet
Material Type
Concrete
History - WSDOT0001010723

Activity: Repair
Orgcode: 333333
Name: Tang Tang
Comments: 03-31-2016 08:06 AM

Activity: Routine Inspection
Orgcode: 333333
Name: Tony Soprano
Comments: 10-07-2015 11:23 AM

Culvert failed
Details

WSDOT ID: WSDOT0001010723
005S110489 MP: 0.43 Dir: Ramp
Length: 248.01 ft
Source: HATS
Added: 10-07-2015 11:20 AM
SAFETY

Lead Tech’s Role In Safety

Describes a Lead Tech’s Role in the Safety Culture.

Region: All
Maintenance Area: All

Reasonable Suspicion Supervisor Training

What constitutes Reasonable Suspicion? How to approach the employee with the supervisor’s concerns. Documentation. What are the liabilities to employees and supervisors with regards to reasonable suspicion testing? Signs and symptoms.

Region: All
Maintenance Area: All

TRAINING VIDEOS

Add Feature Activity Records

Shows how to create a feature activity record for a feature.

Region: All
Maintenance Area: All

Hide Feature

Shows how to hide a feature on the map.

Region: All
Maintenance Area: All