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• T3Webinars:
  http://www.pcb.its.dot.gov/t3_webinars.aspx
Study Purpose

• What sources of social media and crowdsourced data are being used for TMC operations?

• What are the best opportunities for integrating crowdsourced data from social media to support TMC TSM&O activities?

• How can agencies use SWOT Analysis to strategize projects for integrating crowdsourced data into their real-time operations?

• What measures of effectiveness can be used to provide a value proposition for assessing the return on investment?

Overview

• Study Background
• Current TMC Data practices
• Trends in Social Media and Crowdsourcing
• How to plan and evaluate social media and crowdsourcing projects to support TSM&O
Traffic Operations and Data Sources

- Citizen Calls
- ITS Field Devices
- Third-Party Data
- Data from Partners
- Service Patrols
- Crowdsourced Data

TMC Operations
- Manual Data Entry
- Data Integration
- ATMS/TIS Platform

Perceived Issues with Conventional Data Sources

Acquired Data
Shared Data
Self Generated
Manual Data

No Barriers
Limited Coverage
Poor Quality
Too Costly
Tough Integration
Other
Crowdsourcing and Social Media

- Mining Social Media
  - YouTube
  - Facebook
  - Google+ (8+)

- Third-Party Crowdsourced data
  - Bee
  - INRIX
  - Waze

- Specialized Apps
  - Android
  - iPhone

Crowdsourced Data Value Assessment

- Low Cost
- Private Sector Innovation
- Wider Coverage
- Fill in Gaps
- Help meet mandates (1201)

- Least benefit
- Less benefit
- Benefit
- More benefit
- Most Benefit
### TSM&O Activities and Crowdsourcing

<table>
<thead>
<tr>
<th>Activity</th>
<th>Criticality</th>
<th>Social Media</th>
<th>Third-Party Data</th>
<th>Specialized Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incident Management</td>
<td>Very High</td>
<td>Moderate</td>
<td>Very High</td>
<td>High</td>
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<tr>
<td>Traveler Information</td>
<td>Very High</td>
<td>Moderate</td>
<td>High</td>
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<tr>
<td>Work Zone Management</td>
<td>High</td>
<td>Moderate</td>
<td>High</td>
<td>Low</td>
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<tr>
<td>Special Events</td>
<td>High</td>
<td>Moderate</td>
<td>Medium</td>
<td>Low</td>
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<tr>
<td>Freeway Operations</td>
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<td>Arterial Management</td>
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<td>Moderate</td>
<td>High</td>
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<td>Road Weather</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
<td>High</td>
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<td>Managed Lanes</td>
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<tr>
<td>Maintenance Mgmt.</td>
<td>Low</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
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</tbody>
</table>

### Traveler Information via Social Media

<table>
<thead>
<tr>
<th>State Agencies</th>
<th>IOS</th>
<th>Android</th>
<th>Twitter</th>
<th>Facebook</th>
<th>Pinterest</th>
<th>Flickr</th>
<th>YouTube</th>
<th>RSS</th>
<th>Email/Text Alerts</th>
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<tbody>
<tr>
<td>Maine DOT</td>
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<td>Rhode Island DOT</td>
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<td>New York State DOT</td>
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Alaska 511 Twitter Page

Iowa DOT — Engaging Citizens via Twitter

- Slowly evolved Iowa DOT’s presence since 2008
  - 1 Twitter account -> 12 Twitter, 6 Facebook (511/traveler information accounts)
- Early December 2012 purchased Radian6 to monitor and engage
- December 2012 everything changed with 1 winter storm
- Started actively monitoring & engaging during normal business hours (Public Affairs office & Traveler Information coordinator) while ramping up for 24/7 coverage during bad storms.
- January 2014 started monitoring & engaging 24/7 with the help of our Statewide TOC.
- Twitter: 11,638 (511), 22,800 (IowaDOT)
- Facebook: 9,746 (511), 4,579 (IowaDOT)
Iowa 511 Twitter Feed

10/29/2015 OTEC 2015 - SOCIAL MEDIA AND CROWDSOURCED DATA

Integrating 3rd Party Crowdsourced Data

10/29/2015 OTEC 2015 - SOCIAL MEDIA AND CROWDSOURCED DATA

https://www.511pa.gov

http://www.i95coalition.org/projects/vehicle-probe-project/
OHGO Traffic Map
(http://www.ohgo.com/dashboard/columbus)

Waze Connected Citizens Programs

• Over 30 partners (Cities, State Agencies)
• System-Generated Data
  – Speeds
  – Traffic jam information
• User Reported Incidents
  – Accidents
  – Jams
  – Hazards
  – Construction
  – Potholes
Florida DOT
Waze Data Integration into TMC

Crowdsourced Road Condition Information

- Wyoming (phone)
- Minnesota (511 System)
- Utah (Specialized App)
- Idaho (via 511 system)
- Iowa (via 511 system)
Utah Citizen Reporter App

SWOT Model Framework

<table>
<thead>
<tr>
<th>Implementation Considerations</th>
<th>Strengths &amp; Weaknesses</th>
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<tbody>
<tr>
<td><strong>Operational</strong></td>
<td><strong>Institutional</strong></td>
</tr>
<tr>
<td>- Staffing</td>
<td>- Social Media Policies</td>
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<tr>
<td>- Experience</td>
<td>- Social Media Staffing</td>
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<tr>
<td>- Business Process</td>
<td>- Agency Culture</td>
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<tr>
<td>- Culture</td>
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<tr>
<td>- Training</td>
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<tr>
<td>- Performance Measures</td>
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<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
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<tbody>
<tr>
<td>- Achieving TSM&amp;O Objectives</td>
<td>- Data Quality</td>
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<tr>
<td>- Overcome Data Deficiencies</td>
<td>- Data Validity and Credibility</td>
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<tr>
<td>- Improve Institutional Cooperation</td>
<td>- Data Privacy</td>
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<tr>
<td>- Social Media Monitoring Tools</td>
<td>- Data Ownership</td>
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<tr>
<td>- Humanizing DOT</td>
<td>- Distracted Driving</td>
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<tr>
<td>- Gamification and Incentivizing Citizens</td>
<td>- Emerging Innovations</td>
</tr>
</tbody>
</table>

Kristins korrektur
### Example SWOT Analysis — UDOT

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive Agency</td>
<td>Limited experience working with Citizens</td>
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<tr>
<td>Project Champion</td>
<td>Designing mobile apps</td>
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<tr>
<td>Strong technical foundation</td>
<td>Processing data from citizens</td>
</tr>
<tr>
<td>Strong training focus at UDOT</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Road Condition Reporting</td>
<td>Data Accuracy</td>
</tr>
<tr>
<td>Motivated Citizen Base</td>
<td>Internal Networking</td>
</tr>
<tr>
<td>Mobile technologies</td>
<td>“Hands Free” laws</td>
</tr>
</tbody>
</table>

### Measures of Effectiveness

- **TMC Resources**
  - Monetary costs associated with social media activities

- **Agency Reputation**
  - Measure the reach of social media outlets
  - Assess user confidence

- **Ability to Meet TSM&O Objectives**
  - “Before and after” assessment of key metrics

- **Data Effectiveness**
  - Crowdsourced data reliability and quality
  - Reduced latency
Summary and Conclusions

- Agencies seeking for newer, and less costly data sources to improve TSM&O Activities
- Crowdsourced data looks appealing but agencies need to understand the direct and indirect costs
- SWOT analysis is a useful tool to help agencies assess their capabilities and readiness to plan and execute crowdsourced data projects
- Agencies operating TMCs should embrace projects that are best suited to their strengths and provide the best opportunities for success.
- New MOEs are needed to provide a value assessment and generate return on investment