

Rapid After Action Reviews with Integrated Data

2018 ITS Rural – ITS AZ

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Helping Operators Make Better Decisions and Improve Multi-Agency Cooperation

Agenda

- What is CATT Lab?
- After Action Review: I-70 Crash
- After Action Review: Woodrow Wilson Bridge Crash



Regional Integrated Transportation Information System process



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Many "Look Back" Tools Available



We get a LOT of data from agencies, but...

- Data is only useful when it is
 - easily accessible,
 - usable, and
 - understandable

To managers, planners, operations, and ITS applications...



- > Background...
 - Occurred on October 29, 2016 at around 4:30 AM
 - Located on I-70 West, past Exit 80 MD 32 Sykesville Rd
 - A car hit a deer, then a tractor trailer hit the car, and jack-knifed, resulting in one fatality
 - All lanes were closed in the WB direction for over 7 hrs
 - It took about 11 hrs to fully clear the incident and reopen all lanes





 Several RITIS / PDA tools were used to conduct impact analysis and provide visual content as part of an After Action Review...



- > Incident Timeline...
- Used to review responder response times, lane
 & event clearance times, and Operator notes.
- Timeline graphics are inserted in to AARs
- "Heat Map" is used to see trends in incident activity



EQT analyzes your ATMS event data for insight into event impacts on your roadway system, through auto-created tables, charts and maps. **Timeline** displays how an incident is being managed by showing the relationships between responder notifications & arrival times, lane status, traffic queues, clearance times, communication logs, CCTV, and DMS.



TOC Communications

V 1	Fraffic management center communications	4
1.1		
	October 29, 2016 5:30 AM 6 AM 6:30 AM 7 AM 7:30 AM 8 AM 8:30 AM 9 AM 9:30 AM 10 AM 10:30 AM 11 AM 11:30 AM 12 PM 12:30 PM 1 PM 1:30 PM 2 PM 2:30 PM 0ctober 29, 2016	
	4:32:17 AM	
	SOC (alindsey)	
	SOC (tribers)	
5		
Ť	SOC (mgrollman)	
	SOC (ecoffman)	
	TOC7 (kcreamer)	=
		=
SOC	(alindsey) (5:12:40 AM): 9413 EVENT PAST 32 ABLE TO ACCESS EXIT RAMP	
SUC	(alindsey) (5:13:59 AN): CAR HI A DEER THEN THE TI CAME AND HIT THE CAR PRIORITY 4	
500	(alindesey) (3:22:25 AM), WAITING TOR NOOSTETE TROM 9413 DEFORE ADVISE OCKI	
SOC	(alindsey) (5:31:59 AM): OUL PAN ON THE TRACTOR MY BE COMPROMISED HAZMAT IS ON SCENE PUMPING THE TANKS	
SOC	(alindsey) (5:32:11 AM): MSP ADVISED REQUESTING MDE	
SOC	(alindsey) (5:46:53 AM): MSP ADVISED NO ETC AT THIS TIME AND CONFIRMED THAT THIS IS A F	
SOC	(tgibson) (5:47:48 AM): DETOUR WILL BE 70 W TO MD 32 TO MD 144 TO MD 97 TO 70	
SOC	(tgibson) (5:48:14 AM): 7315 ON SCENE TO SET UP DETOUR	
500	(alindsey) (5:50:30 AM); DETOUR YOW TO 32 TO 144 TO 97 BACK OWTO /UW	
SOC	(anitiosey) (331.20 AP); AT ACIDE LOCATION IS RIGHT ENTRANCE FOR THE SCALE HOUSE	
SOC	(mgrollman) (6:21:49 AM): 9701 HAS BEEN NOTE FED OF THE UPDATES	
SOC	(mgrollman) (6:32:10 AM): 9413 ADV AT THIS POINT HE DOES NOT KNOW WHAT THE TT IS LOADED WITH	
SOC	(mgrollman) (6:32:21 AM): 9413 ADV HE CONTACTED 9004 BUT WAS UNABLE TO REACH 9701	
SOC	(mgroliman) (6:33:45 AM): 9413 ADV TT WAS HAULING AMAZON PACKAGES	
SOC	(mgrollman) (6:34:52 AM): 9413 ADV HE LEFT HIS STATE PHONE IN HIS REGULAR TRUCK, # TO REACH HIM AT IS 443 698 2648	
SUC	(mgrollman) (6:36:10 AM): 9/01 ADV OF 9413'S PHONE #	
500	(ingrolinal) (6:34:47 AT); OCRE UPDATED ON EVENT	
SOC	(mgrollman) (7:2:15 AM) 19413 ADV DERIS HAS BEEN REMOVED OIL OF IN/1 AND SAND TRICK IS GETTING READY TO MAKE A PASS	
SOC	(mgrollman) (7:45:03 AM): 9413 ADV AN ETC OF 10 MINS TO REOPEN THE LEFT LANE, HOWEVER DID NOT MENTION AT FIRST IT WAS JUST TO RELIEVE THE TRAFFIC STUCK IN THE QUEUE	
SOC	(mgrollman) (7:45:05 AM): UPDATED PAGE SENT OUT	
SOC	(mgroliman) (7:45:19 AM): 9413 ADV CRASH TEAM IS STILL ANOTHER HOUR OUT DUE TO COMING FROM THE EASTERN SHORE	
SOC	(mgroliman) (8:01:37 AM): 9703 ADV HE IS ENROUTE TO ASSIST 9413	
SOC	(ecoffman) (8:02:49 AM): 9315 ADV DETOUR IN PLACE WB 32 TO MD 97	
500	(more limeral) (8:16:09 AM): 9413 ADV CRASH TEAM THAT WAS ORIGINALLY COMING IS NO LONGER GOING TO BE ENROULE, MSP ON SCENE WILL HANDLE THE REST OF THE PICTORES AND INVESTIGATION TOW HAS BEEN CALLED	
500	(ingrolinal) (0:10:12 AM), 943 ADV 31E OLELIE AS BEEN CLEARED	
SOC	(mgrollman) (8:47:45 AM): 9703 ADV WB DELAYS BEGIN AT SANDS HILL RD	
SOC	(mgrollman) (8:47:54 AM): 9703 ADV RUNNING CODE	
SOC	(mgrollman) (9:35:22 AM): 9703 ADV THE INVESTIGATION IS COMPLETE PASSENGER CAR IS GOING TO REMOVED FIRST AND THEN THEY ARE GOING TO CUT MORE GUARDRAIL TO FREE THE TT	
SOC	(mgrollman) (9:35:25 AM): NO ETC	
SUC	(mgroliman) (9:19:20 AM): MSP HEADQUARTERS SENT OUT AN EMALT HAIT ALO (mgroliman) (9:19:27 AM): CONSIMER WITH 02:37 THAT ALL HAITES WERE STUDIED FOR A STUDI	
SOL	(ingrolinal) (9:47:37 AT), CONTINUED WITH 770 THAT ALL LANGES THAT ALL LANGES THAT ALL LANGES STILL REMAINED CLOSED	
SOC	(mgrollman) (9:50:29 AM); W/B I-70 @ MD RT 32 is now open	
1		
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PC 4	neadquarters Ducy Oniter	
410-	63-4200	
MSP.	HODO@Maryland.gov	
SOC	(mgrollman) (11:14:19 AM): 9703 ADV RECOVERY PROCESS IS NOT GOING WELL THEY ARE TRYING TO GET THINGS CLEARED OUT OF THE WAY SO THEY CAN REOPEN LN/1 IN THE NEXT 30 MINS	
TOC	7 (kcreamer) (11:30:25 AM): 9711 ADVISED MD 144 IS BACKED UP TO MD 32	
SOC	(mgroliman) (11:39:14 AM): 9703 ADV ROTATOR IS ENROUTE	
SUC	(mgroliman) (11:39:33 Am): 9703 ADV LEFT LN IS OPEN AT THE SCENE AND THEY ARE LETTING THE SHOP KNOW TO LIFT THEIR DETOUR	
500	(mgreining) (12:51:51 PT): 10 M5P 044425 (mgreining) (12:51:36 PM): 50:50 ET OF GUARDRAIL DAMAGE	
SOC	(mgrollman) (12:55:37 PM): 9703 ADV 2 ROTATORS ARE ON SCENE FROM MORTONS	
SOC	(ecoffman) (1:10:41 PM): SHOP ADV DETOUR REMOVED	
SOC	(mgrollman) (2:26:31 PM): 9703 ADV TT IS BACK UP ON ITS WHEELS	
SOC	(mgrollman) (2:26:36 PM): APPROX 15 MINS TO REOPEN LN/2	
soc	(mgroliman) (3:08:48 PM): 9703 ADV THE TT HAS BEEN TOWED TO THE SCALEHOUSE AND LN/2 IS NOW REOPEN HOWEVER LN/1 WILL REMAIN CLOSED FOR CLEANUP	•

Notifications & Responders

I-70 WEST PAST EXIT 80 MD 32 SYKESVILLE RD (EB)	🔰 Map 👔
▼ Notifications and responders	
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CHART Unit 9700 SG01009	
CHART Unit 9703 SC00643	
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Priv. Tow Heavy Duty	
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	4	4407: I-695 O/L (South), prior to Ex. 17 M	1D 122 Security Blvd			Ŷ											
		4410: I-695 I/L (North), past Ex. 12 Md 37	2 Wilkens Ave			**											
			4430: I-70 West, prio	r to Ex 87 US 29					X X								
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Event Query Tool • Heat Map



- > Region Explorer...
 - Used to determine the choke points of traffic during the incident, and future detour points
 - Helps improve Quick Clearance practices by honing in on the effects on tertiary roadways



An interactive traffic conditions app that can be used to explore the impacts of bottlenecks and incidents along a road, in real-time, or previous point in time.

Bottleneck Locations at 12:00 PM on 10.29.2016



You're looking at data from October 29, 2016 @ 12:00 PM. Bottlenecks are shown at their maximum length. There are 8 bottlenecks and 12 events.

- > Trend Map...
- Used it to determine the significance of the delay over the time of the incident's duration
- Using it as a case to promote Quick Clearance practices



An animated congestion and event conditions map that dynamically displays changes over time.

Congested Locations at 12:15 PM on 10.29.2016



- > Congestion Scan...
- Used to view historical extent of the queue
- Queue graphics are inserted into AARs for emphasis



Analyze temporal and spatial conditions on one or more stretches for road, selecting from several mobility and reliability performance metrics.

Comparing Oct. 29th to the prior Saturday



- > User Delay Cost...
 - The tool we use more heavily
 - Helps put things into dollars and cents, to prove the value of our TSM&O program
 - Crucial to our program's funding is to prove the benefit of Quick Clearance practices
 - By analyzing the cost of a long-duration incident, we can better make the case for additional or improved resources

Example: for this incident, we were able to make the case that the State Police need an adjustment to how it manages it's tow list (i.e.; a company should be able to prove that it has the necessary equipment for heavy duty operations)



Combine speed data with volume data to estimate the cost of delay (and other measures) due to congestion.

What's the User Delay Cost on the following roads



Assuming an Average Value of time of: \$16.79 per hour (Passenger Vehicles) \$86.81 per hour (Commercial Vehicles)

(NOTE: User Delay is calculated any time speeds fall below free-flow)

User delay on I-70 and nearby arterials

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10/27/16		\$0.1K	\$0K	\$0K	\$0K	\$0.2K	\$2.6K	\$6K	\$2.5K	\$0.5K	\$0.4K	\$0.2K	\$0.3K	\$0.2K	\$3.9K		\$0.8K	\$0.2K	\$0.1K	\$0.1K	\$0.1K	\$44.6K
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10/30/16	\$0.1K	\$0.1K	\$0.1K	\$0.1K	\$0.3K	\$0.1K	\$0.3K	\$0.5K	\$0.4K	\$0.3K	\$0.2K	\$0.3K	\$0.2K	\$0.1K	\$0.2K	\$61.9K	\$0.3K	\$0.3K	\$0.2K	\$0.1K	\$0.2K	\$7.2K
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> Takeaways...

Now I get it

 Tools provide quick access to data and show the benefits of quick clearance practices and the value of TSM&O Programs

- It is all about justification

• Gives ammunition for requests for funding, positions, and equipment

- It is not a perception, it's a reality

- Tools provide data-backed conclusions for After-Action Reports
- Assists with making cases to external (and internal) partners about improving current practices
- Over time, we can analyze trends along individual corridors

Woodrow Wilson Bridge "Snooper Truck" Incident

- Date: Wednesday June 20, 2018
- Time of Crash: 10:45am
- Incident Duration: 12 hours



WWB "Snooper Truck "Crash Response Timeline

I-95 OUTER LOOP AT MP 0 (WOODROW WILSON BRIDGE)

1 🖚 1 🖚 1 🏎 1 Collision 🕕 🔟 Map 🛛 🖧 CCTV 👔

	June 20, 2018 10:51:59 AM VDOT	12 PM	12:30 PM	1 PM	1:30 PM	2 PM	2:30 PM	3 PM	3:30 PM	4 PM	4:30 PM	5 PM	5:30 PM	6 PM	6:30 PM	7 PM	7:30 PM	Jun 20	8:30 PM	9 PM	9:30 PM	June 20, 2018 10:31:10 PM	11 PM
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Woodrow Wilson Bridge Crash Impacts

Showing event impact

> The Probe Data Analytics Suite was used to produce tables and visualizations showing the impact of the crash on the bridge :

Trend Map

User Delay Cost Analysis

Woodrow Wilson Bridge "Snooper" Crash Impacts

Woodrow Wilson Bridge "Snooper" Crash AAR Report

Tractor Trailer Crash & Fire Woodrow Wilson Bridge (June 20, 2018)

Summary of Findings

DRAFT

Prepared for: MATOC Operations Subcommittee

Prepared by: MATOC Staff, September 2018

a.

M

"Working together to reduce incident-related travel delays through improved coordination, cooperation and information sharing."

User Delay Cost: WWB "Triangle" (1-495, 1-395, 1-695, 1-295)

Generated via Probe Data Analytics Suite Using INRIX speed data

	Daily Totals									
2018	Vehicle Hours of Delay	Total Cost (\$)								
Wed, May 9	31,809	\$960,564								
Wed, May 16	45,140	\$1,363,134								
Wed, May 23	39,511	\$1,193,130								
Wed, May 30	20,922	\$631,794								
Wed, June 6	33,479	\$1,010,999								
Wed, June 13	45,028	\$1,359,735								
Wed, June 20	104,440	\$3,153,861								
Wed, June 27	30,916	\$933,589								

For Additional Information, contact:

Mark L. Franz

Faculty Specialist – Transportation Analyst

UMD CATT Lab

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