

System for Multi-Modal Incident Information Sharing and Collaboration

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UNIVERSITY OF MARYLAND CENTER FOR ADVANCED
TRANSPORTATION TECHNOLOGY

CATT Lab



What is the CATT Lab

- 60+ Undergrad Student Researchers

- Civil Engineering
- Computer Science
- Mechanical Engineering
- Aerospace Engineering
- Computer Engineering
- Geography & GIS
- Telecommunications
- Electrical Engineering
- Art
- Graphics
- Digital Entertainment
- English
- Archaeology

10 Graduate Students

25 Full-time Software
Developers



Research Areas...

Intelligent Transportation Systems

Transportation Data Archiving

Data Visualization Techniques

Visual Analytics

User Interface Design/Human Factors

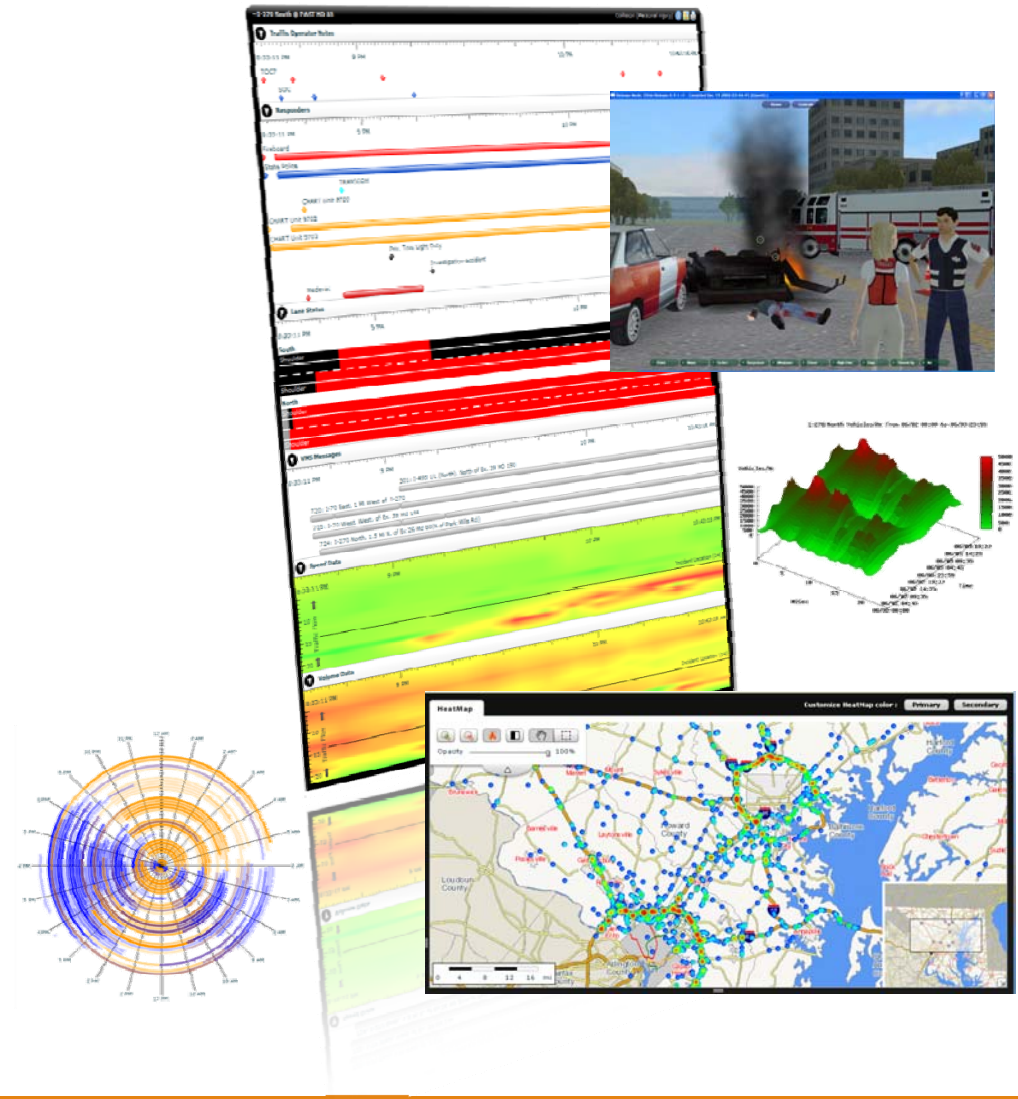
Serious Games Development

Data fusion, interpolation, and forecasting

Incident Management

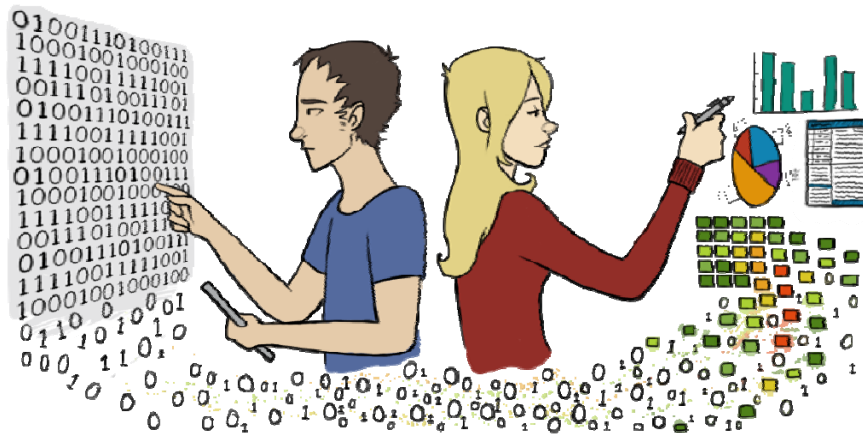
Traveler Information

Image processing



How can we make the data useful?

Transform data into actionable information

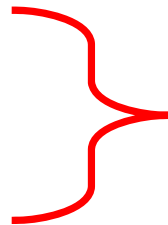


Our Mission

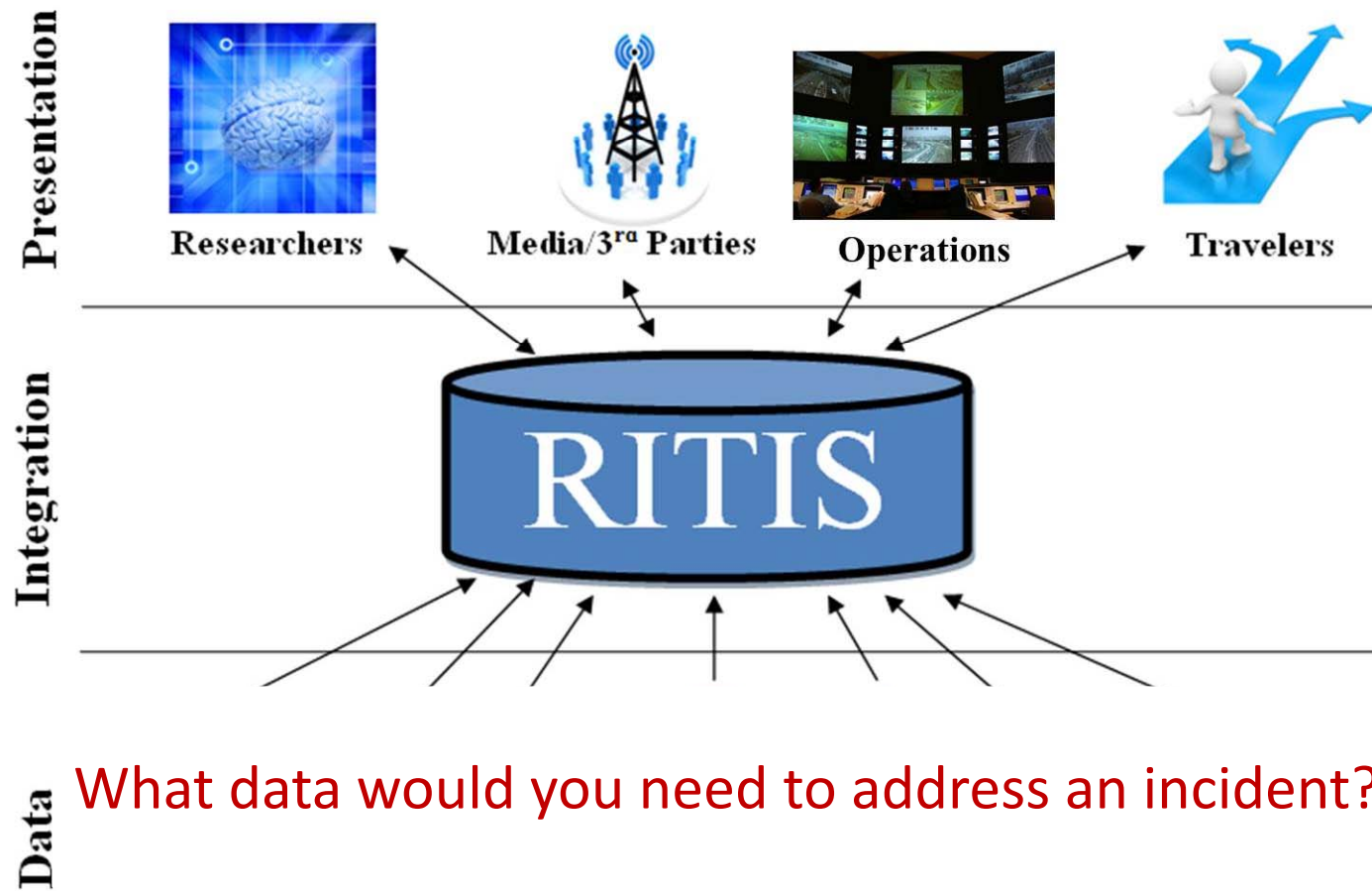
Improve accessibility to data

Improve data quality

Facilitate Operations Coordination



- Reduce Agency Operations Integration Costs
- Reduce 3rd Party Developer Costs
- Encourage and Facilitate Innovation by Others
- Create an accessible transportation data archive for
 - Performance Reporting
 - Research
 - Operations
 - Planning
- Decrease % of Wasted Research Dollars

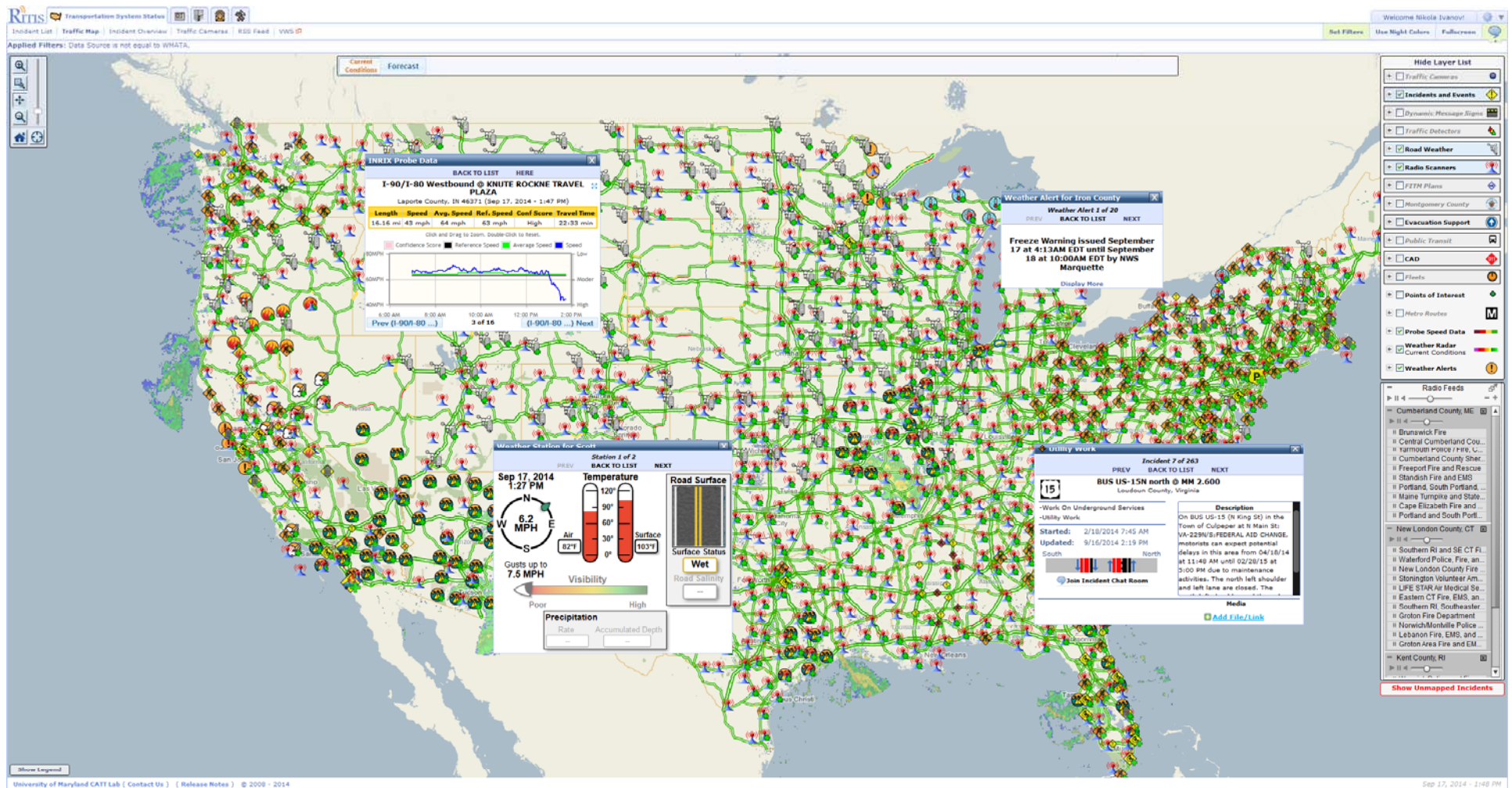


Transportation in and Around Washington D.C.

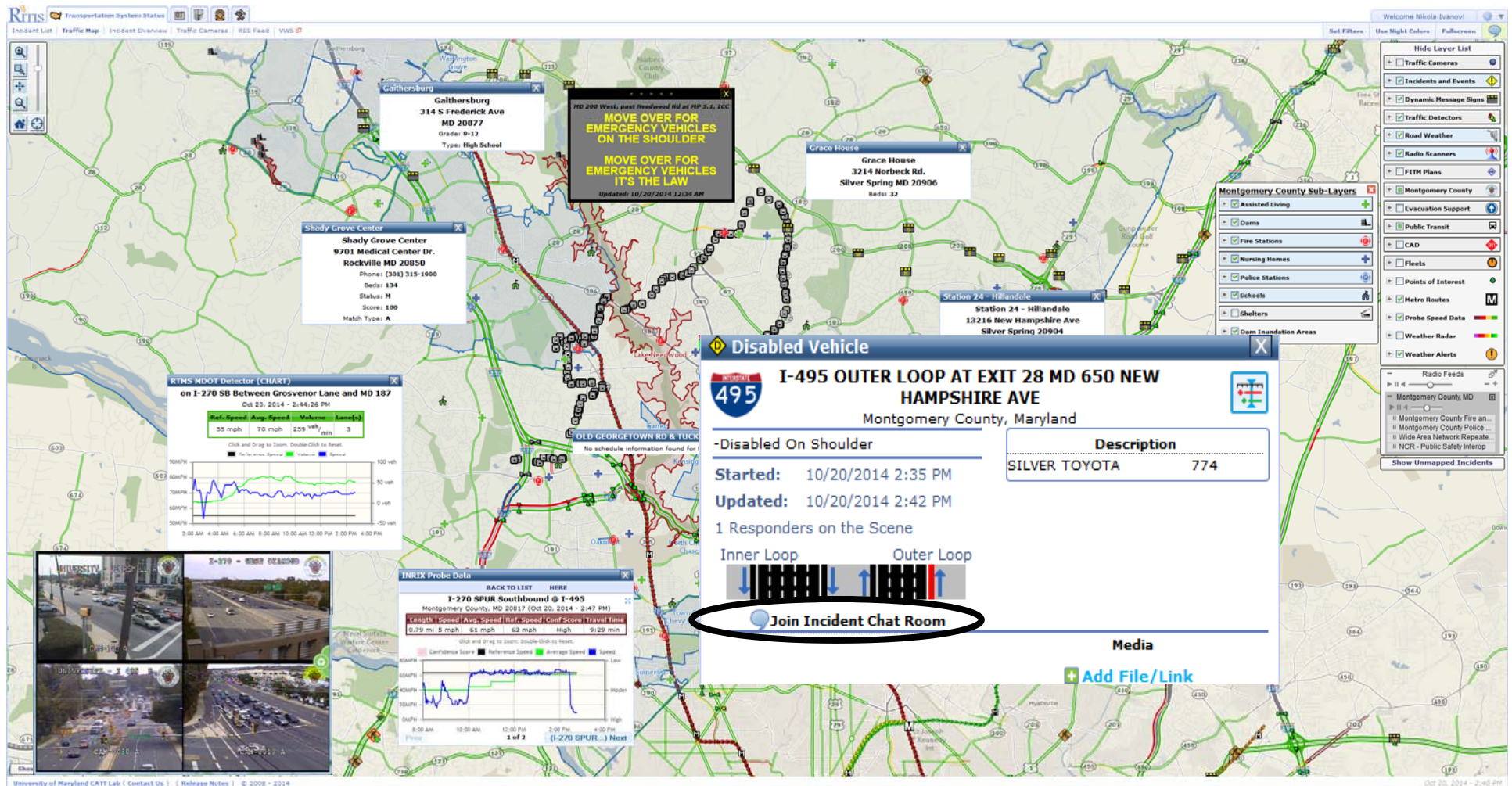
- Many traffic management centers collecting large amounts of data:
 - Washington, D.C. TMC
 - Maryland CHART TMC
 - Northern Virginia TMC
 - Several Large County TMCs
 - Several Transit Agencies
 - Emergency Management Agencies
 - Computer Aided Dispatch
- **Coordination?!—does it exist?**
- **How is safety and performance measured/analyzed?**
- **How are investment decisions made?**
- **Why isn't there more innovation—private sector or otherwise?**



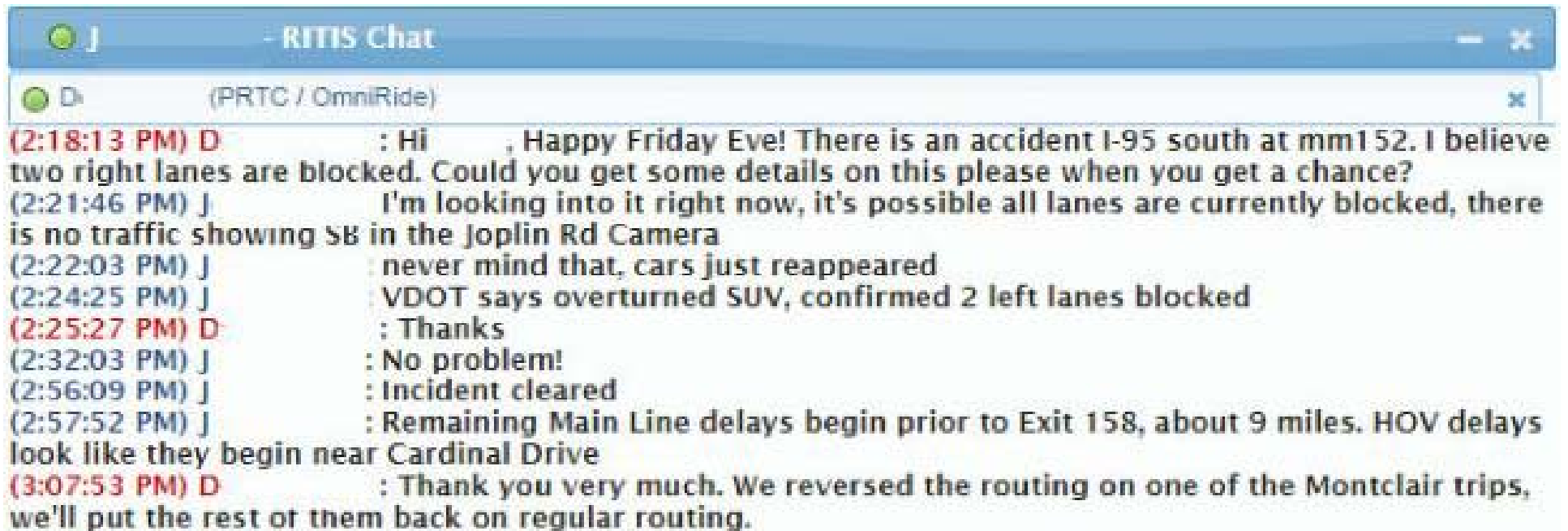
Regional Integrated Transportation Information System (RITIS)



RITIS – Local and County Level Operations and Situational Awareness



RITIS Chat



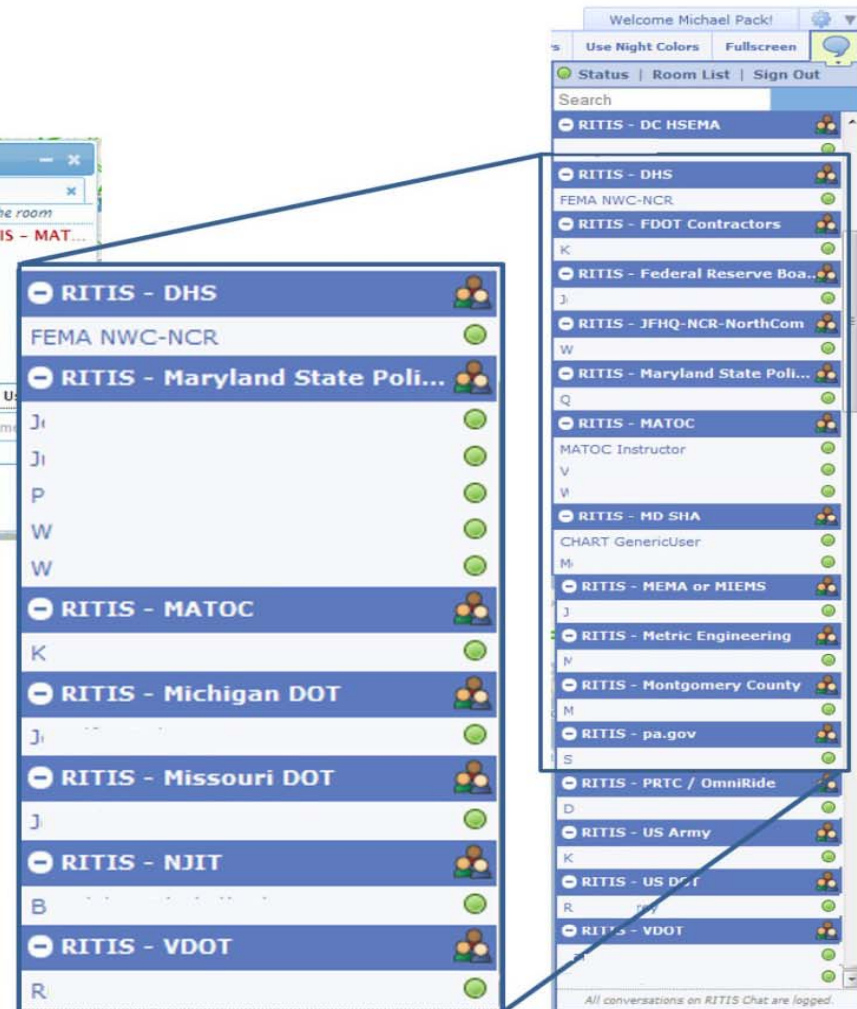
The screenshot shows a chat window titled "RITIS Chat" with a participant list at the top showing "J" and "D" (PRTC / OmniRide). The chat history contains the following messages:

- (2:18:13 PM) D : Hi , Happy Friday Eve! There is an accident I-95 south at mm152. I believe two right lanes are blocked. Could you get some details on this please when you get a chance?
- (2:21:46 PM) J : I'm looking into it right now, it's possible all lanes are currently blocked, there is no traffic showing SB in the Joplin Rd Camera
- (2:22:03 PM) J : never mind that, cars just reappeared
- (2:24:25 PM) J : VDOT says overturned SUV, confirmed 2 left lanes blocked
- (2:25:27 PM) D : Thanks
- (2:32:03 PM) J : No problem!
- (2:56:09 PM) J : Incident cleared
- (2:57:52 PM) J : Remaining Main Line delays begin prior to Exit 158, about 9 miles. HOV delays look like they begin near Cardinal Drive
- (3:07:53 PM) D : Thank you very much. We reversed the routing on one of the Montclair trips, we'll put the rest of them back on regular routing.

Metropolitan Area Transportation Operations Coordination, MATOC
(J)

Potomac and Rappahannock Transportation Commission (D)

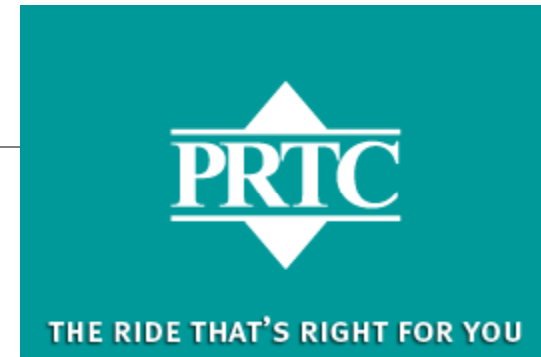
RITIS Chat Options



RITIS Chat Evaluation Activity



Participants



DEPARTMENT OF DEFENSE

WASHINGTON HEADQUARTERS SERVICES

SERVICES THAT MAKE A DIFFERENCE



Pre-activity Questions

Phone, email, text, and radio is used to contact internal personnel

Sometimes RITIS Chat is used to contact other agencies

Both agencies act immediately if an event happening service occurs

Both agencies use multiple sources, including RITIS/MATOC to gather event information

Activity

Showed a series of time-stamped slides that took participants from beginning to end

Participants used RITIS Chat and telecon to communicate

- Motorists traveling on the I-395 NB HOV lanes are reporting significant debris in the travel lanes.
- Multiple disabled vehicles stopped on shoulders
- Noticeable bottleneck forming



- The emergency repairs finished ahead of schedule, HOV facility and Seminary Rd overpass will be available to motorists by 2PM. Cleaning up work zone now.
- Weekend and off-peak closures will still be needed for permanent repairs to the overpass
- Expect complete repairs to take 3-4 months



Post-Activity Questions

Participants emphasized the importance of knowing when and the affects of events

Participants satisfied with RITIS Chat

Recommended mobile version, alerts, ability to add attachments to RITIS Chat*, and up to date address book

All parties found the activity useful



RITIS Chat and the News

(Ebola)

Taran Hutchinson - RITIS Chat

I-395N north @ MM 8.000

(12:19:46 PM) **The topic is: Incident at I-395N north @ MM 8.000**

(12:38:34 PM) T : 10-4. Does the name "K" sound familiar? it's on the back of the bus in question

(12:39:08 PM) D : Not to me.

(12:40:47 PM) J : is this it? <http://www.k.com/>

(12:41:36 PM) T : May be a contractor for MTA Commuter Bus

(12:42:22 PM) D : Does anyone know what they will be doing with the bus? Towing it someplace? Trying to gauge whether it will disrupt service at the Pentagon beginning around the 14:00 hour.

(12:42:28 PM) J : Yeah, description on the site says they provide commuter bus service

(12:44:16 PM) T : The bus is located in SE DC at the moment, just off the SE Freeway on I St SE

(12:44:28 PM) T : MPD is on scene

(12:45:03 PM) D : Do you know whether or not any buses are there? We have someone on the phone that says they are at the Pentagon and there are other buses there.

(12:47:14 PM) T : No info on the number of buses at the Pentagon at the moment

(12:50:54 PM) D : Please confirm, the affected bus has been moved from the Pentagon.

(1:03:07 PM) T : All we know is that they have a the bus pulled over on I St SE in

(1:05:16 PM) D : Ok, thanks.

(1:13:09 PM) D : H 1/J is there any way to get a status update for the Pentagon b

(1:17:11 PM) J : No updates on that but we'll check

(1:27:00 PM) T : L says Pentagon Bus Bays are not affected and are open

(1:27:10 PM) T : no need to redirect at the moment

(1:29:14 PM) D : Thanks. We can't confirm which streets are closed around the Pentagon know if our normal routing needs to be changed. Any word on that?

(1:30:09 PM) T : We now the ramp from VA-27 to Pentagon South Parking is block

(1:30:34 PM) T : she is checking on other access points to South Parking

(1:31:05 PM) D : Yes, we're aware of that. We've heard Fern is closed and the ramps to 395 HOV lanes are closed. Haven't been able to confirm this.

(2:15:21 PM) T : PD units left ramp from VA-27 to South Parking

(2:15:46 PM) T : Ramp has reopened

(2:16:19 PM) T : Ramps to/from I-395 HOV are open


(2:17:41 PM) T : All closures lifted 5 minutes ago. Decontamination underway for responders, the Pentagon grounds should be returning to normal access, per PFFA Police

3 people in the room

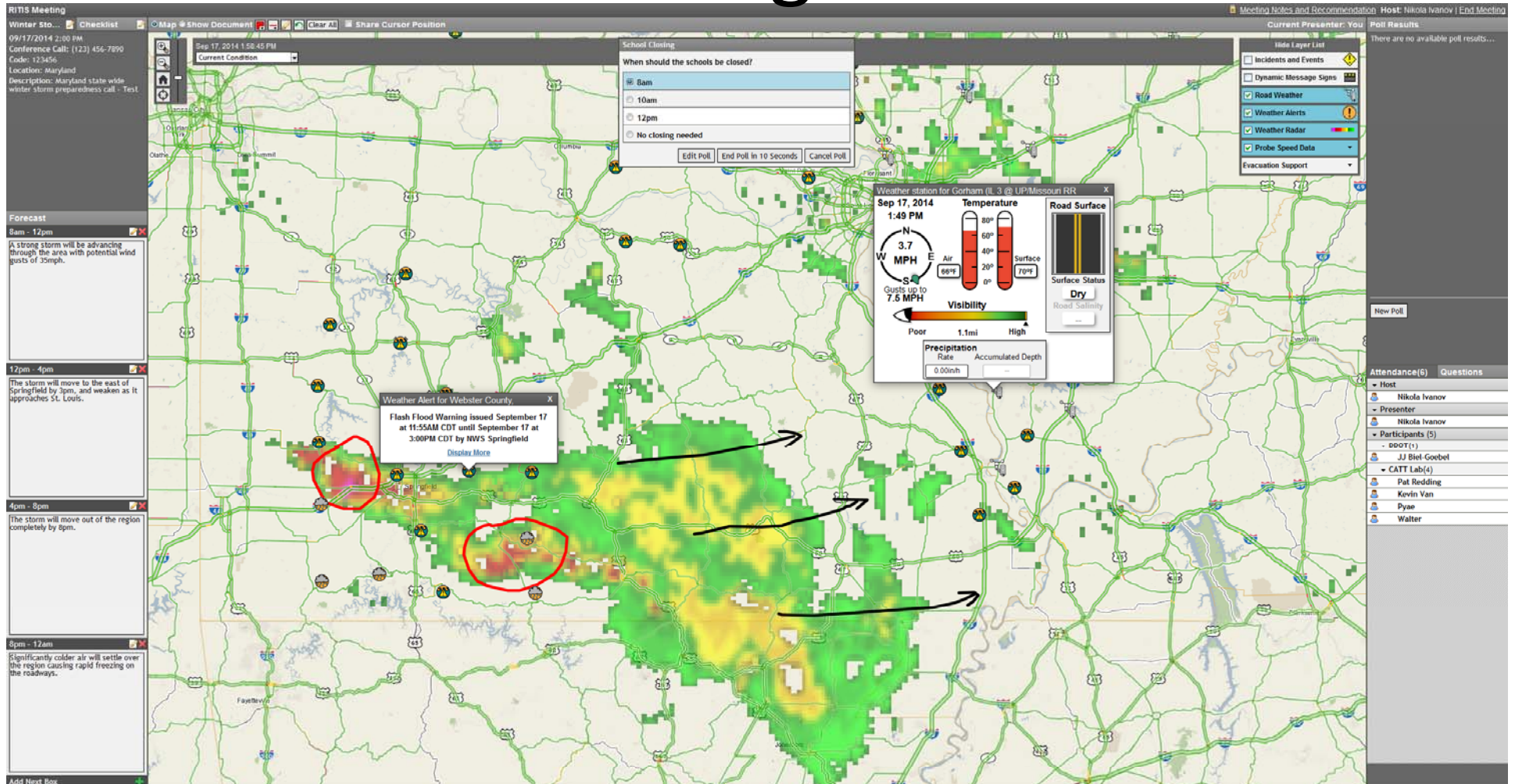
E

J

T



Collaborative Decision Tool – Meeting in Progress



Collaborative Decision Tool – Meeting in Progress

RTS Meeting

Winter Sto... Checklist

09/17/2014 2:00 PM
Conference Call: (123) 456-7890
Code: 123456
Location: Maryland
Description: Maryland state wide winter storm preparedness call - Test

Forecast

8am - 12pm
A strong storm will be advancing through the area with potential wind gusts of 35mph.

12pm - 4pm
The storm will move to the east of Springfield by 3pm, and weaken as it approaches St. Louis.

4pm - 8pm
The storm will move out of the region completely by 8pm.

8pm - 12am
Significantly colder air will settle over the region causing rapid freezing on the roadways.

Add Next Box

Meeting Notes and Recommendation Host: Nikola Ivanov | End Meeting

Current Presenter: You

Poll Results

School Closing

When should the schools be closed?

8am ☐ (2)

10am ☐ (0)

12pm ☐ (2)

No closing needed ☐ (0)

4 of 6 participants voted

New Poll

Attendance(7) **Questions**

Host: Nikola Ivanov

Presenter: Nikola Ivanov

Participants (6)

DOT (1)

JJ Biel Goebel

CATT Lab (5)

Pat Redding

Kevin Van

Pyae

Walter

Ben Chang

Collaborative Decision Tool – Meeting Results

Winter Storm Preparedness - Test

9/17/14 2:00 PM
Host: Nikola Ivanov
Maryland

Maryland state wide winter storm preparedness call - Test

Recommendation:
Close everything at 8am.

Number of Attending: 7

Forecast:

8am - 12pm

A strong storm will be advancing through the area with potential wind gusts of 35mph.

12pm - 4pm

The storm will move to the east of Springfield by 3pm, and weaken as it approaches St. Louis.

4pm - 8pm

The storm will move out of the region completely by 8pm.

8pm - 12am

Significantly colder air will settle over the region causing rapid freezing on the roadways.

Polls:

School Closing		2:12 PM
When should the schools be closed?		
8am		(2)
10am		(0)
12pm		(2)
No closing needed		(0)
4 of 6 Attendance Voted		

Thanks		2:20 PM
Thank you all - you may log out!		
Yes		(0)
No		(0)
0 of 6 Attendance Voted		

Shared Media:

1 / 3

Attendance:

Host
Nikola Ivanov

Organization	Participant	Email
CATT Lab	Ben Chang	benchang06@gmail.com
DDOT	JJ Biel-Goebel	jbielgoe@umd.edu
CATT Lab	Kevin Van	kevinvan@umd.edu
CATT Lab	Nikola Ivanov	ivanovn@umd.edu
CATT Lab	Pat Redding	reddingp@umd.edu
CATT Lab	Pyae	pkyaw@umd.edu
CATT Lab	Walter	walter@cattlab.umd.edu

Poll Information:

School Closing: When should the schools be closed?	
Participant	Vote
Nikola Ivanov	8am
Kevin Van	8am
Walter	12pm
Pat Redding	12pm

3 / 3

RITIS for Rural Settings

Information is power

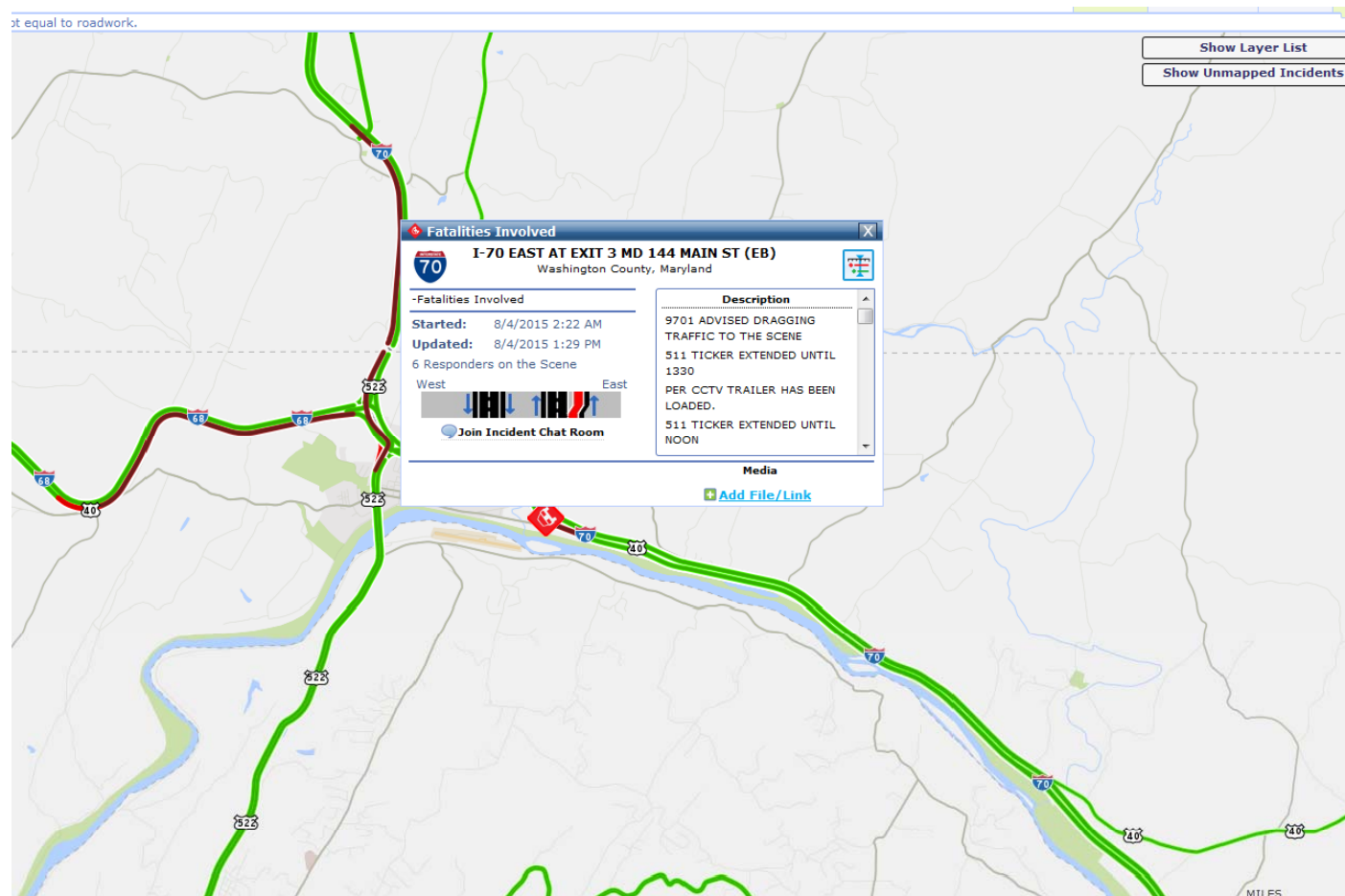
Many agencies involved in incidents

Ensures everyone is on the same page (weather, construction, etc.)

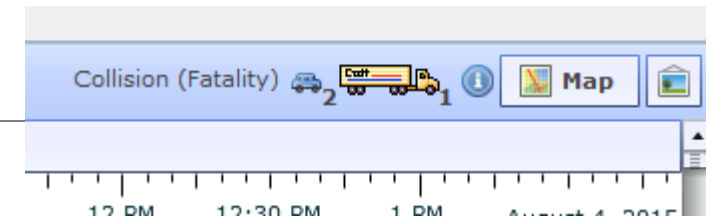
Same tools can be used in rural setting

System can be purchased statewide, adopted by rural areas

Example of Rural Incident



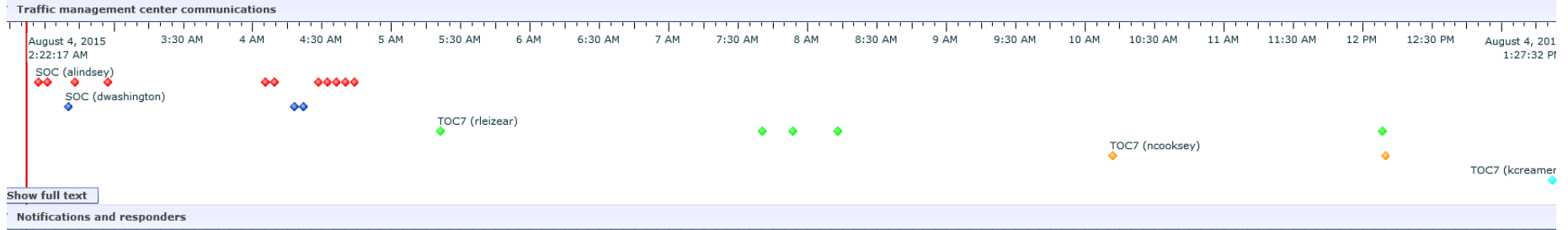
Overview of Event Information



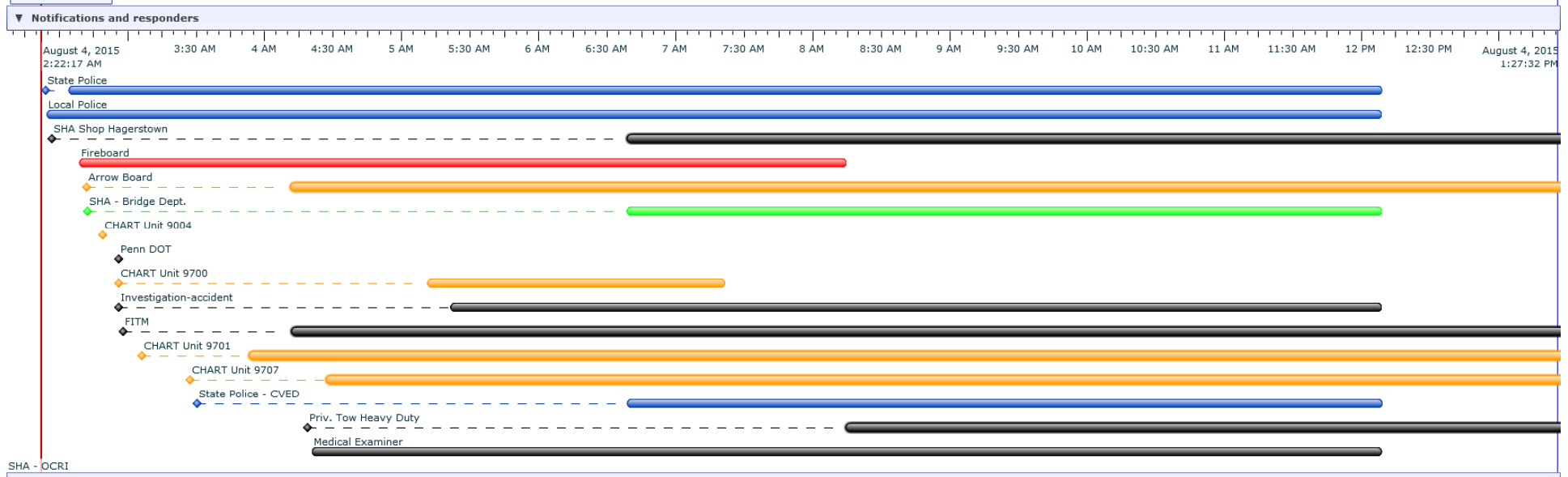
TMC Communications

Event Timelines

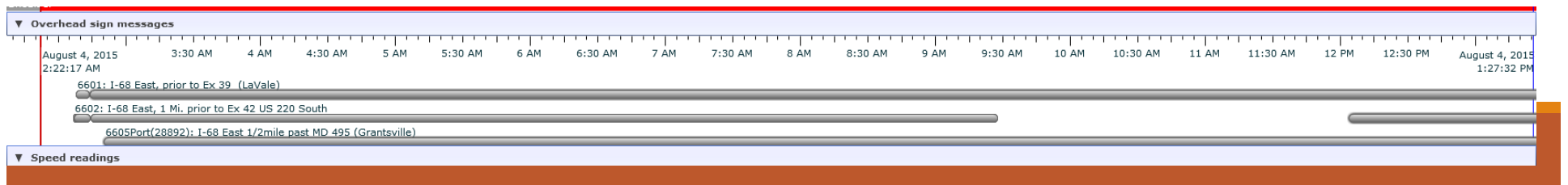
0 EAST AT EXIT 3 MD 144 MAIN ST (EB) - Collision (Fatality)



Notifications and Responders



Dynamic Message Signs



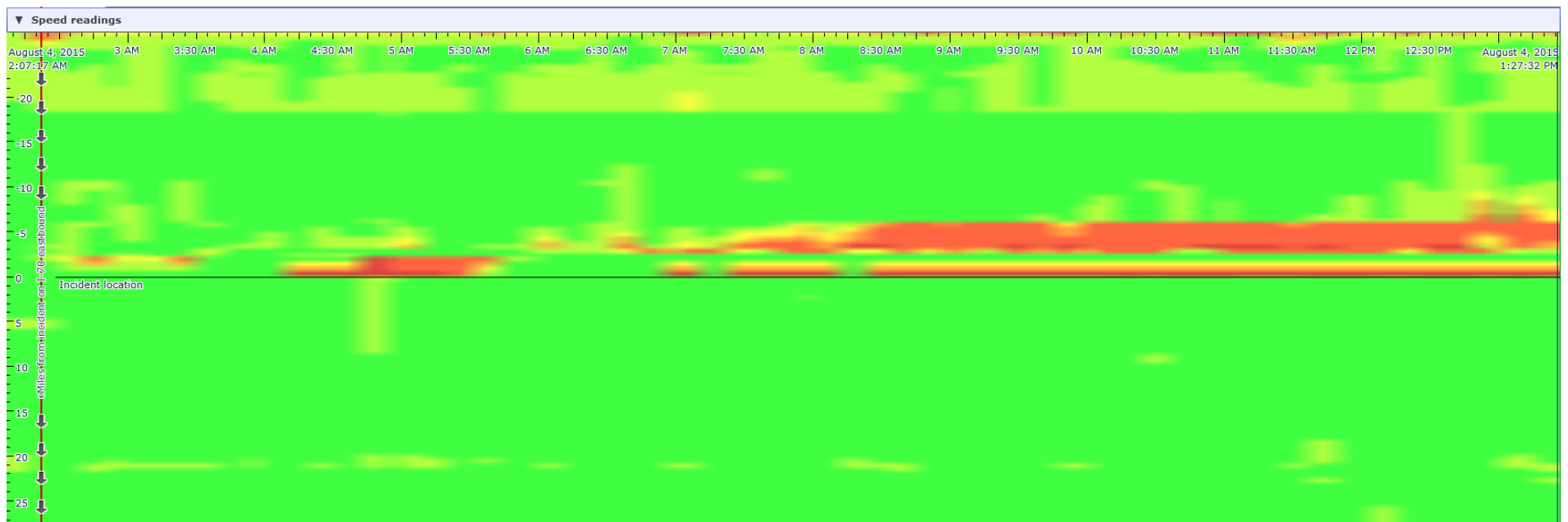
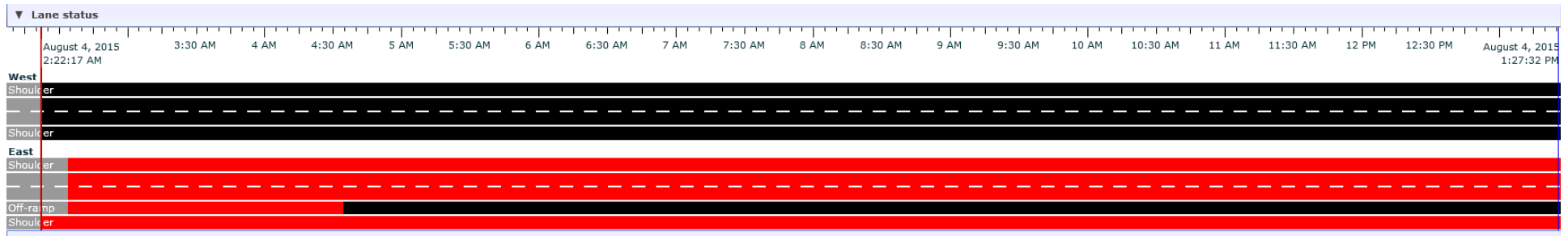
Advanced Traffic Management System Log

TOC7 (kcreamer)

SOC (alindsey) (2:27:37 AM): MSP ADVISED THAT 3 VEH HEAD ON WITH POSSIBLE FATALITY
SOC (alindsey) (2:28:33 AM): NO TROOPER ON THE SCENE YET BUT AND NO INFORMATION REGARDING LANE CLOSURE AT THIS TIME WOULD ADVISE FURTHER WHEN THEY GET TO THE SCENE
SOC (dwashington) (2:40:35 AM): DOUBLE FATALITY: TT OT ALL LANES CLOSED EASTBOUND, CAR TRAVELING WRONG WAY. TT DRIVER DEAD, PASSENGER DEAD IN CAR. BRIDGE AT EXIT 3 WAS STRUCK.
SOC (alindsey) (2:43:29 AM): ADVISED BRIDGE DEPT THAT THE TT HIT THE OVERPASS OF THE BRIDGE
SOC (alindsey) (2:57:42 AM): ADVISED PENN DOT OF EVENT AND CLOSURE
SOC (alindsey) (4:05:49 AM): LVMM FOR OCRI
SOC (alindsey) (4:08:23 AM): ADVISED PDOT REGARDING SITUATION PRIMARY AND SECONDARIES AND MIGHT WANT TO ADVISE MOTORIST TO SEEK ALT ROUTES
SOC (dwashington) (4:18:20 AM): DETOUR WILL BE IN PLACE IN ABOUT 30 MINUTES PER 6250 THE DETOUR IS SB US 522 THEN LEFT ONTO MD 144 EAST BACK TO I-70 EAST
SOC (dwashington) (4:18:58 AM): 511 FLOODGATE AND TICKER HAVE BEEN ACTIVATED, THEY SET TO GO OFF AT 10 AM.
SOC (alindsey) (4:28:42 AM): 9701 ADVISED THAT PART OPENING EXIT RAMP TO FEED TRAFFIC OFF THE ROADWAY
SOC (alindsey) (4:29:07 AM): TT IS ACROSS ALL LANES
SOC (alindsey) (4:29:17 AM): THE TRAILER PORTION
SOC (alindsey) (4:30:03 AM): CORECTION THE TRAILER PORTION OF THE UNIT IS ACROSS THE ROADWAY THE TRACTOR IS BY THE OVERPASS
SOC (alindsey) (4:35:30 AM): DID NOT ADVISED IF LOAD HAD BEEN LOST
TOC7 (rleizear) (5:21:32 AM): 9701 ADVISES THE ACCIDENT IS UNDER INVESTIGATION. THE ROADWAY WILL REMAIN CLOSED FOR SEVERAL MORE HOURS. THEY HAVE CLEARED OUT THE TRAFFIC ON 70 VIA THE DETOUR. DETOUR WILL BE MD 522 TO MD 144 BACK TO I-70.
TOC7 (rleizear) (7:40:39 AM): 9701 ADVISES MEDICAL TRANSPORT IS ON SCENE.
TOC7 (rleizear) (7:53:59 AM): 9701 ADVISES TROOPER 5 IS OVER THE SCENE TO TAKE AERIAL PICTURES OF THE SCENE.
TOC7 (rleizear) (8:13:19 AM): 9701 ADVISES THE VICTIMS HAVE BEEN REMOVED FROM THE SCENE. D&D TOWING IS NOW ON SCENE FOR THE RECOVERY OF THE TRACTOR TRAILER.
TOC7 (ncooksey) (10:12:17 AM): 511 TICKER EXTENDED UNTIL NOON
TOC7 (rleizear) (12:08:55 PM): PER CCTV TRAILER HAS BEEN LOADED.
TOC7 (ncooksey) (12:10:14 PM): 511 TICKER EXTENDED UNTIL 1330
TOC7 (kcreamer) (1:22:26 PM): 9701 ADVISED DRAGGING TRAFFIC TO THE SCENE

People with access to RITIS can read (not edit) log

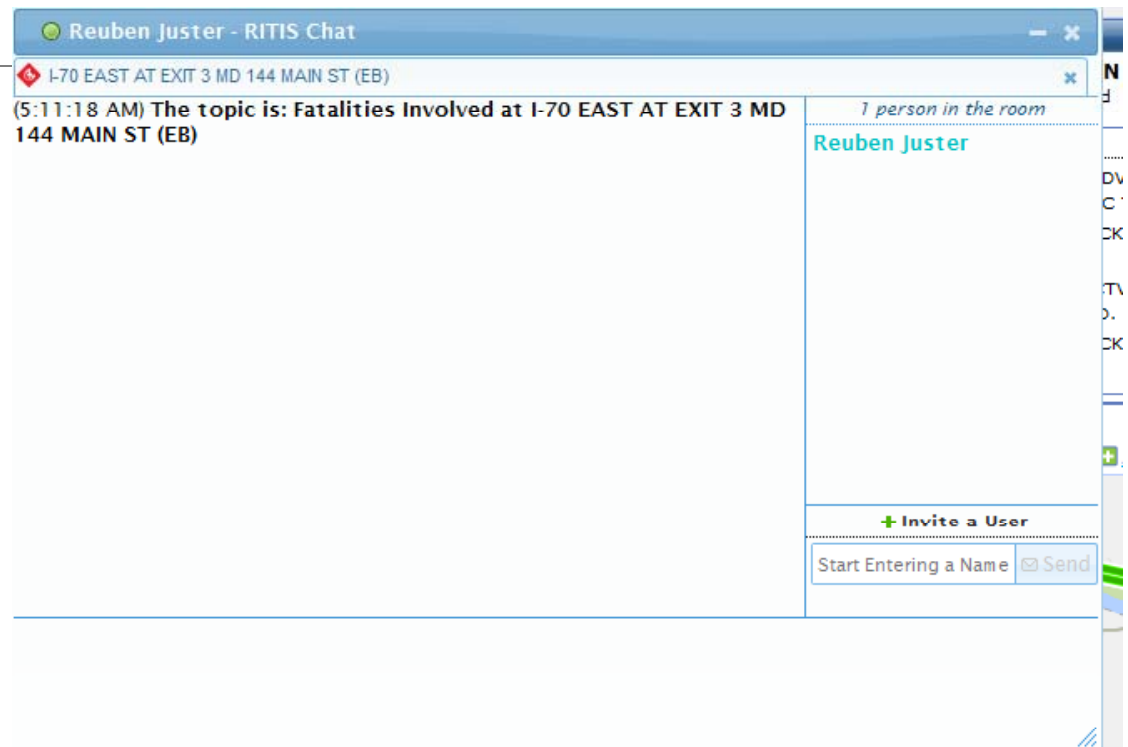
Roadway Conditions Timelines



RITIS Chat?

Could be used by other agencies to get information

- Fire Protection
- EMS
- Police
- Transit
- Schools*



Questions?

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