

T-REX Executive Summary

Traffic Management Centers are staffed by operators that rely on a suite of technologies that monitor traffic conditions in real time. However, with the increased demand for more accurate and timely information from agency executives and the motoring public, these same Traffic Management Centers need to consolidate, streamline work, and provide greater granularity of information in a shorter amount of time.

This is where the TRANSCOM Regional Event Information Exchange, or, “T-REX” will help Traffic Management Center Staff do their jobs *better* and more efficiently.

What is T-REX? Simply put, **T-REX is a secure web browser-based multimodal event management tool.** The T-REX system can be operated from your desktop, laptop, or tablet. It has been developed using the industry's best practices. It has been designed to allow *faster*, more *precise* data entry and in turn more accurate information.

Because T-REX is entirely web-based, Traffic Management Center operators can log into the system simply by opening up a browser (Chrome, Firefox, Edge, Safari, etc.) on the device of choice and connecting to the T-REX application.

T-REX provides users with the ability to create and **manage active highway incidents, scheduled highway construction events, scheduled highway special events, active transit incidents, scheduled transit construction events, and scheduled transit special events.** Agency operators can also maintain their notifications and other actions taken during an event. This information can be extremely helpful during a post event analysis.

It also **allows users to perform other actions such as sending e-mail notifications and SMS messages, CCTV, locate the nearest safety service patrol vehicle locations,** find and locate event information on a map, as well as, system administrator functions and so much more.

In addition, because of this flexibility, T-REX expands the operational capabilities of agencies to be available remotely at on-site construction zones and major events such football games, marathons, etc. Further, operators have the ability to provide as -needed additional support from home, thus expanding the operational capacity for the agencies during dynamic events such as major snowstorms, etc.

The flexibility that has been built into T-REX allowed TRANSCOM to maintain a virtual TMC during major events such as the COVID-19 Coronavirus pandemic. **Moving forward, the same virtual TMC can be used by agencies during major weather-related events like snowstorms and hurricanes.**

In addition, T-REX addresses the needs of the agencies with several additional new features and functions which include:

- **“One-click” map-based event location selection** – When an operator selects a point on a map, it will pre-populate the facility, location description and even direction.
- **Arterial Location Selection** – An operator can select the direction of an arterial roadway. For example, north/south, or, east/west.



- **Specialized Roadways** – When applicable, T-REX can allow a user to choose a roadway with unique characteristics such as **upper/lower, inner/outer, Bus/HOV lane** as well as local/express.
- **Lane Selection** - Operators can also select the specific lanes that are affected by roadway conditions. This data item is required for the desired Operational Prediction capabilities noted in the NYU Report.
- **Traffic Impact** - Traffic impact association is no longer estimated by the operator based upon qualitative assessments such as looking at cameras. Instead, T-REX uses real time Data Fusion Engine (DFE) data to quantitatively measure and assess the changes in travel time through the event location and thus, define the precise impact to traffic and associate it with the event. This same data is currently in use for existing applications like agency DMS travel times, agency travel time apps and traveler information systems. Having data continuity across platforms will ensure that there will be a consistency of data across applications.
- Helps improve and **enhance interagency coordination**. T-REX will allow agencies to share access to the system with partner multimodal transportation agencies, law enforcement and first responder agencies.
- **Main Dashboard** - Provides a quick overview for current highway and transit conditions between staff. This is especially effective during shift changes as it maintains continuity of operations particularly during active incidents.
- Produce various **usage reports**.
- **Agency Custom Data** – Agency Mile Marker database, custom specialized roadways and ramp location integrator tool allow easy integration for accurate event creation.

Traffic Incident Management (TIM) Measures are also part of T-REX. The TIM Performance Measure feature can provide an agency with a view of the incident timeline from when the incident occurs to when response arrives on scene and up until traffic conditions return to normal for that time of the day.

The Impact Tool is another feature of T-REX. This tool provides an operator with the capability to designate a start and end point for a construction project or an incident, rather than just a singular point. Further, it allows an agency to know where delays from an event start and end, along with the direct path of the roadway. In general, T-Rex will allow for information entry/update throughout the event/incident timeline – starting at Time of Detection and ending with Time to Return to Normal Flow for those events that have traffic impacts associated with it.

In addition, it has become critically important for member agencies to support each other with coordination/response during events. **The Impact Tool is an incredibly powerful new feature that allows agencies with adjoining jurisdictional boundaries to observe, in real-time, both the original event on one agency facility and the impact on the adjoining agency facility.**



For example, imagine an event at the George Washington Bridge eastbound. Delays back up all the way to I-80. T-REX's Impact Tool, directly links the Port Authority, NJ Turnpike and the NJ Department of Transportation and facilitates the coordination, update efforts, and clearance of the incident.

Having an accurate **geographic illustration (geo Linestring)** for these types of incidents is critical if the information is to be used beyond roadway monitoring. This type of granular information can be used for analysis with both roadway and transit events. This feature also **allows member agencies to provide accurate and specific formatted data that is needed by third parties such as Waze.**

Lastly, the **geo linestring information is critical for the development of many future applications. Examples can be Operation Prediction, Corridor Management, Construction Conflicts, Construction Work Zones, Highway and Rail maintenance, Connected and Autonomous vehicles** and so much more.

T-REX also supports the transit event management function. Development was based on the harmonized General Transit Feed Specification (GTFS) data structure currently in use by many of the transit agencies (both public and private) worldwide. This approach enables the **TRANSCOM agencies to generate T-REX transit event messages that align with the GTFS-real-time information** that has been aggregated together via the TRANSCOM Data Fusion Engine (DFE) system for the MTA Family (NYCT Bus/Subway, LIRR, MNR, MTA Bus), NJ Transit Bus and Rail, PATH, as well as, the Westchester Bee-Line. This integrated approach supports the ongoing Integrated Corridor Management (ICM) efforts underway by many of the TRANSCOM Member Agencies.

T-REX also **supports direct integration with agency event management systems and has a TMDD conformant interface**, which reduces duplicate entry for agency operators.

T-REX event database will serve as a data provider for regional traveler information programs.

Finally, the role of the TMC operations center during events is evolving. Just clearing an incident off the roadway, or, off of a rail line, as quickly as possible, is not enough. Agencies Executives, as well as, the public are demanding more specific details or information about incidents and events that cause delays or congestion on these facilities. In today's transportation environment, clearing the event, restoring traffic flow, as well as, clearly defining and managing impacts of the event throughout the impacted corridor(s), and documenting the process have become paramount.

An incident that affects both directions of a facility now needs to be clearly tracked and reported, *by direction*. This includes the impacts of the delays that occur. The Federal Highway Administration has directed state Departments of Transportation that they need to report these metrics. T-REX allows agencies to comply with these requests.

Lastly, T-REX has been designed to conform with the latest transportation data standards. Therefore, the output from T-REX is TMDD and NTCIP 2306 conformant. This will be a critical component for impending initiatives like the Connected and Autonomous Vehicle Initiatives.