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1-888-activu-1
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Case Study > New Jersey Statewide TMC

THE CLIENT

The New Jersey Turnpike is one of the most traveled arteries in the nation, encompassing 29 interchanges and 187 E-Z Pass toll lanes over 148 miles, and connected via two tunnels and three bridges to New York City. The 173 mile Garden State Parkway (managed by the Turnpike Authority) serves as the major north-south thoroughfare with 359 exits and entrances, and 31 toll collection stations.

A completely new Strategic Transportation Management Center (TMC) was built to bring New Jersey's main traffic management agencies – the New Jersey Turnpike Authority, New Jersey Department of Transportation and State Police – together under one roof to support better monitoring, coordination, dispatch and response.

"We're not going to be able to build our way out of congestion problems with new or bigger roads" says Kris Kolluri, the NJ Transportation Commission and Chairman of the Turnpike Authority board. "If we're going to improve congestion, we have to figure out how to operate our highways more efficiently."

THE CHALLENGE

This called for a new approach, leading to the approval of a unified traffic center as part of an "intelligent transportation system". While bringing these agencies together was expected to help correct process fragmentation, the next challenge was to ensure that information access and sharing would further reduce barriers to coordination.

The Turnpike Authority had invested heavily in building an extensive fiber optic network along the highways to support the E-Z Pass system, and this asset was something they wanted to exploit. At the same time, the DOT had installed a large web of cameras which, if fed into the TMC, would dramatically improve operations.

In addition to a large scale display wall in the main area, the Turnpike Authority wanted to ensure a broader level of interconnection between a mezzanine level conference room that serves as a Meeting and Situation room, as well as various managers' offices within the main TMC and in an adjoining building.

OUR SOLUTION

Activu was selected to design and build a distributed visualization system due, in large part, to its net-centric proposition. Activu was embedded into their internal network which was connected to the fiber optic network. This created a backbone that connected geographically dispersed information sources (such as roadside cameras and electronic sign boards) and personnel, resulting in a highly dynamic and borderless environment.

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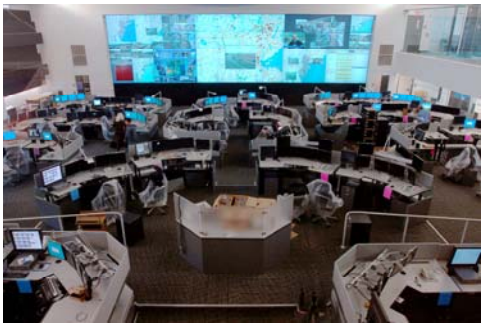
The TMC main floor was divided into sections for each group: the merged Turnpike/ Parkway team, the DOT and the State Police (total of 42 operators). Activu installed a wall made up of a 4x12 matrix of 67" rear access Mitsubishi DLP display cubes, measuring 22 feet by 57 feet. Information displayed on the wall is also divided into sections according to various needs, including content from camera feeds; maps with real time graphics indicating traffic density, accident locations or construction zones; incident logs and the KEA system (incident tickets); local news and weather information including web delivered satellite imagery; network-connected applications for monitoring and controlling electronic signage and tunnel fans. Since there is no limitation on the quantity, size or location of the information windows displayed, the wall composition can be dynamically changed at any time. Any user, regardless of physical location who is connected to the Activu system, has access to any information source directly from their desktop.

During the early design process, Activu custom designed special features to enhance convenience for individual users, and secondly, to resolve some issues inherent in a complex system of cameras.

Unlike other display systems designed purely to manage content on large display walls, a major Activu advantage is the Activu Toolbar which puts the power of the software directly into a person's own desktop workspace, with single button access to all functionality. A special convenience feature was added with the creation of a "Folder" button: rather than having to go outside of Activu to use local applications, users can launch these directly from a "Folder" list. Activu also enables users to save four applications in a single layout so that with a single click on the layout, all four applications are simultaneously launched on their desktop, eliminating the inconvenience of navigating in and out of systems.

With more than 350 cameras sending video into the TMC, it is neither possible nor desirable to view all simultaneously. Cameras were grouped together in what is called camera "touring" wherein the display rotates at five second intervals through a roster of video feeds. Activu designed a special GUI (graphical user interface) for use on the desktop and accessed via the Toolbar which makes it very easy to find and view any of the touring and static cameras; to control the camera (ie. pan, tilt, zoom); to dynamically create and change touring scenarios (including camera list composition and order); and to choose cameras from a list which can be dragged and dropped into a pre-configured viewing grid (ie. single, 4, 9 and16 window layouts). This gives operators a quick and simple to use means of accessing information as situations develop.



Activu gives the TMC Supervisor the ability to not only control content on the display wall, but to also turn the wall on or off, open and close window shades, change to back up servers during an emergency, control the audio system, DVD player and TV tuner.

In the overlooking conference room, Activu installed a 2x3 wall of 50" Mitsubishi DLP display cubes. Using a wireless tablet PC, any type of information can be pulled up onto the conference room wall (either single or multiple windows). Discussion is then enhanced with dynamic whiteboarding, with participants able to draw directly on the wall with an electronic pen or using a tablet PC. These whiteboard sessions can be recorded and or printed. Those elsewhere in the facility or the adjoining building can, using Activu, also view the main operations floor or conference room wall from their desktop and collaborate including remotely whiteboarding.

The Activu solution has removed many of the obstacles that previously hindered efficient real time response. No longer reliant upon the phone to get or give information between agencies, dispatchers now get a clearer view of the situation more quickly, can send emergency workers faster to the scene, update real time information on electronic signs, and inform the media in a more timely manner.

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