**Field Trip # 2: *To Advanced Regional Traffic Interactive Management & Information System (ARTIMIS) Center***

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Report Prepare By:
Mr. Brad Hunt, Norwood High School, Norwood, OH
Ms. Kate Kulesa, Pre-service teacher, Xavier University, Cincinnati, OH


The RET participants went to visit the ARTIMIS facility on Wednesday, July 15, 2009. First, they watched a short video and presentation by Mr. Jim Hungler, Program Manager of ARTIMIS on what ARTIMIS is and what types of things ARTIMIS does (see Figure 1). ARTIMIS was originally started to help with the pollution problem in the tri-state area. It is now open twenty four hours a day, every day of the year. They now monitor congestion, traffic flow, and air pollution. ARTIMIS is funded by the Ohio Department of Transportation (ODOT), Kentucky Transportation Cabinet (KYTC), the City of Cincinnati, Federal Highway Administration, and the Ohio, Kentucky, and Indiana Regional Council of Governments. ODOT provides for 75% of the funding and KYTC accounts for 25% of the funding.


**Figure 1. Presentation by Mr. Jim Hungler (left) and Special Reference Signs (right)**

The goals of ARTIMIS include: improving motorist safety, improving travel times, and improving air quality. The intelligent transportation (IT) systems includes over eighty cameras, fifty seven miles of fiber-optic cable, about 1100 detectors, and forty changeable message signs. In addition to the forty changeable message signs that remain in a fixed location, there are three moveable message signs. An additional service that ARTIMIS provides is five vans that patrol the highways in order to help vehicles in need. The total cost of the operation of all of the vans per year is about one million dollars. The drivers of the vans are highly qualified as certified mechanics as well as certified as EMTs.

The ARTIMIS control center, shown in Figure 2, has the technology in place so that it can continuously check on the roadways. In some areas there are sensors in the roadway. These sensors can detect slowing traffic, or stopped traffic and it will alert an operator of this. Also, ARTIMIS can access the cameras on closed circuit TV. These cameras can zoom up to three miles and many of them can change direction in a full range of motion. The camera images are displayed on a wall of TVs that are on a continuous loop. There are six smaller screens on each side, and in the middle there are two large screens. On the large screens frequent problem areas can be displayed, and on the smaller TVs the rest of the camera data will be shown as the screens change to show various cameras.


**Figure 2. ARTIMIS Control Room**

Additionally, ARTIMIS implemented blue and white reference markers every 500 feet along the highway (see Figure 1 (right)). These markers can be easily referenced in the case of reporting an incident or notifying the authorities of the exact location of an incident. These reference markers serve essentially like an address. ARTIMIS was the first in the nation to implement these reference markers. They have proven to be very successful in bridging communication between the drivers, ARTIMIS, and the authorities. Following the tri-state's lead, other areas in the nation are implementing similar markers.

After watching the video and listening to a short lecture by Mr. Jim Hungler the teachers were given a tour into the control room of the facility. In the control room were three operators that were monitoring the TV screens as well as a map and some additional tools on their computer screens. There was also radio communication going on with the authorities through which the people in the control room were listening about new incidents, as well as providing any information to the authorities when possible. The room was covered with various maps of the tri-state area and various road signs.

The teachers commented that visiting the control room was a great experience and they will arrange a field trip for their students. It was interesting to them to get the background on what ARTIMIS does and then get to actually see those things as they take place. It was a very hands-on experience because they were given the opportunity to look at the different cameras and also got the opportunity to try their hand at controlling them. Some were little surprised at the great communication that ARTIMIS has with the community. ARTIMIS not only has a phone line to call, but also a website, updates on the radio, and maps shown on local news broadcasts. ARTIMIS also have great communication with the police.

While the teachers were at ARTIMIS, an incident was reported and the police were able to quickly tell about it to the operators in the control room. In the matter of a few seconds, one of the operators had found the affected area on the map, and was beginning to look for the closest changeable message sign. Meanwhile, the other operator was still getting details from the police and checking to see if that area could be seen from the cameras or not. In a matter of minutes the changeable message sign was activated to let drivers know that there was an accident ahead blocking the right two lanes. The teachers were surprised at how quickly everything happened and how quickly the drivers could be notified. The people in the control room told them that everything is updated so fast that when a person leaves the house to go to work there are no problems but in the middle of the trip the situation could be completely different.

The teachers enjoyed this field trip because it was something where they could directly see a connection to transportation and civil engineering. The RET transportation project team got to see first hand some of the issues, such as traffic volume at a particularly instant, that they were quantifying data for.