3.0 Description of the Region

The Miami Valley Regional ITS Architecture includes ITS projects developed by various traffic, transit, and safety agencies within the counties of Montgomery, Greene, Miami and Clark. The area is served by two metropolitan planning organizations (MPO) operating within the region including the Miami Valley Regional Planning Commission and the Clark County Springfield Transportation Coordinating Committee. The region is served by several highways including I-70, I-75, I-675, US 35, and SR 4. The region is also served by several transit agencies including GDRTA, Springfield City Area Transit (SCAT), Greene CATS and Miami County Transit System. Specific details of the ITS projects operating and proposed are outlined in the remainder of the report.

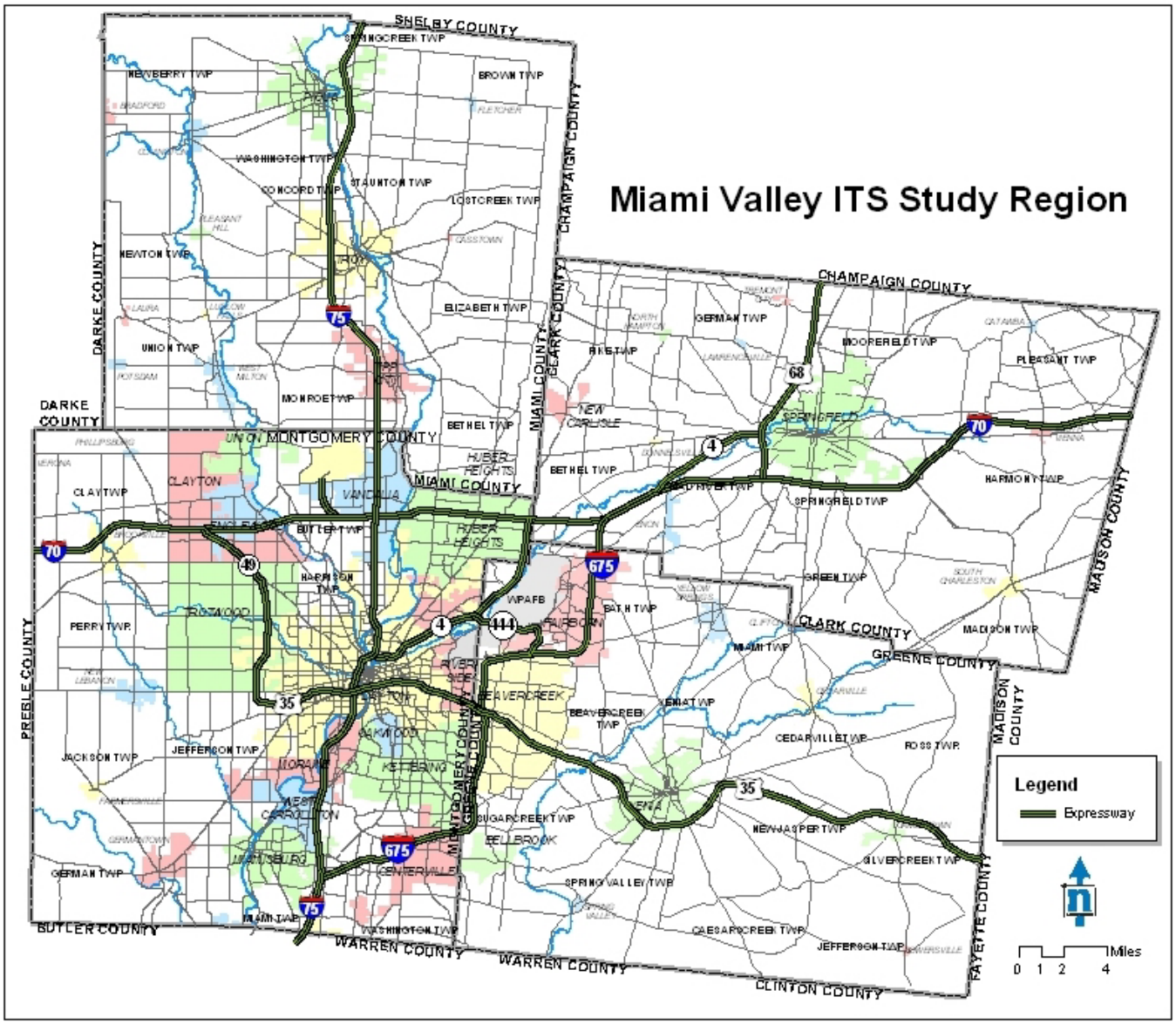

Figure 3.1 Miami Valley Regional ITS Architecture Study Area

3.1 Participating Agencies and Stakeholders and System Inventory

Representatives from the following agencies participated in the stakeholder meetings and workshops. The group consists of stakeholders from traffic, transit, and emergency agencies operating within the boundaries of the region. The media and special event promoters also provided input. Additional stakeholders were identified in the architecture itself by the workshop participants.

Centerville	Miami County Engineers
City of Dayton	Miami County Transit
City of Kettering	Miami County Sheriff
City of Moraine	Miami Township
City of Riverside	Montgomery County Office of Emergency Management
City of Springboro	Montgomery County Engineers
City of Union	Montgomery County Sheriff
Clark County Springfield TCC	ODOT Central Office
Clear Channel	ODOT District 7
Cox Radio/WHIO-TV Dayton	ODOT District 8
Dayton Police Department	Ohio State Highway Patrol
Federal Highway Administration	Springfield City Area Transit
Greater Dayton Regional Transit Authority	University of Dayton Arena
Greene CATS	Vandalia Police
Kettering Fire Department	Warren County Transit
Kettering Police Department	Westwood One
Metro Networks	WDTN-TV
Miami Valley Regional Planning Commission	

Table 3.1 Miami Valley Regional ITS Architecture Stakeholders

3.2 System Inventory

Through the meeting and workshop process, the participating stakeholders produced a detailed inventory of the ITS systems currently operating in the region as well as those planned for future deployments. Due to the size of this information, MVRPC has posted on their website a list that contains the full list stakeholders and their associated ITS projects. It is meant to be used in conjunction with this document. This information is presented in much more detail in Section 5 of the document which illustrates not only the System Inventory but how those ITS projects operate and interface with each other.

4.0 Concept of Operations and Functional Requirements

An operational concept for the Miami Valley Regional ITS Architecture was developed that identifies goals and objectives of the system and the roles and responsibilities of stakeholders. The goals, objectives, and general desired capabilities of a potential system (new or improved) are presented without indicating how the system or product can be implemented. The roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems are also included in the Regional ITS Architecture. For a Regional ITS Architecture, it will be at a very high level and technology neutral.

Based on the input from the Regional ITS Architecture stakeholders, a concept of operations was developed that would address the region's requirements for ITS integration and project development.

The Regional ITS Architecture will provide the following user services or functional capabilities:

- Traffic Management
- Emergency Management
- Transit Management
- Traveler Information
- Multimodal Integration

Operational elements anticipated to be key components of the Regional ITS Architecture include: Traffic Management, Emergency Management, Transit Management, Maintenance and Construction Management, Traveler Information Operations, and Regional Transportation Coordination Operations. These elements, as summarized below, define the concept of operations for the region.

4.1 Traffic Management

The Miami Valley traffic agencies have a variety of ITS projects completed and planned in the region. The cities of Kettering and Moraine have an existing traffic signal coordination agreement to effectively control traffic in these neighboring jurisdictions. Several communities including Dayton, Springfield, Piqua and Englewood, have installed vehicle video detection systems to better manage traffic at key locations in their respective communities. In addition, traffic signal interconnect projects are being implemented throughout the region to improve traffic flow and reduce congestion. The premier planned project is the D/SFMS. The D/SFMS system will enhance incident detection, traffic monitoring, maintenance of traffic and traffic information dissemination for the major freeways in the region including I-70, I-75, I-675, US-35 and SR-4. Traffic and incident information will be collected from CCTV and cell phone calls from the traveling public via PSAPs in the region.

4.2 Emergency Management

Several emergency management agencies in the region are planning to install AVL equipment in patrol vehicles to aid in emergency response. Again, the D/SFMS will provide the Miami Valley emergency agencies with improved traffic and incident information. The D/SFMS will receive incident notification through a software connection with local PSAPs in the area. D/SFMS operators will be able to verify and validate the nature and severity of the incident and transmit traveler information alerts through DMS and HAR. Furthermore, video information will be shared with interested local emergency dispatching operators so they can utilize the CCTV images in dispatching the appropriate resources to the scene. The D/SFMS will also share video feed with the local county Emergency Management Agencies so they could utilize the surveillance capabilities during any large-scale incidents. Finally, video information shared with the media will be designed such that D/SFMS operators could blackout images that the media should not receive i.e. during a serious personal injury or fatality. These ITS applications will allow police and fire to respond more rapidly and motorists the opportunity to select diversionary routes to avoid the incident.

4.3 Transit Management

Transit management in the Miami Valley region is conducted by several agencies and includes fixed route and demand response service. The GDRTA operates several systems that improve operational efficiency including computer aided dispatch (CAD), AVL on the fixed route fleet, and is installing automated passenger counters (APC) to improve reporting statistics to the FTA. Security monitoring at several transit centers occurs on a site-by-site basis and in the future will be tied into the dispatching system. Real time bus arrival information at major bus stops is also displayed. GDRTA is working towards establishing a web based itinerary planner on their website to provide fare and route information to customers. Greene CATS uses a computer aided scheduling and dispatching system and plans to install AVL technology within the next five years. Springfield City Area Transit (SCAT) and Miami County are currently in the planning stages for deploying ITS systems. SCAT plans to install AVL and APC technology within the next five years. The county demand response services plan to develop partnerships with the larger transit agencies to cooperatively share data for projects such as a regional transit information website including an itinerary planner.

4.4 Maintenance and Construction Management

Maintenance and construction along freeways can be a major source of congestion for a region. The implementation of the D/SFMS will realize several benefits to the ODOT highway maintenance and construction crews as well as regional travelers. First, during weather emergencies, CCTV images in conjunction with ODOT's freeway weather stations may assist in the distribution of service crews. Secondly, during reconstruction efforts, DMS and HAR if updated in a timely manner can be

utilized to inform travelers of the length and travel restrictions of the given project. In addition, with the traveler information devices in use, worker safety is improved. Lastly, during an incident that might require removal of debris, the D/SFMS' CCTV will be used to verify the location and type of debris thereby ensuring that proper maintenance assets are dispatched.

4.5 Traveler Information Operations

Traffic information that is collected from the field devices will be directed to the D/SFMS control center where the data will be processed and packaged into traveler information. This information will be distributed to the motorists in their vehicles through DMS and HAR messages. Motorists will also be able to receive more accurate and timely traveler information from local radio stations that will be developing their traffic reports based on information shared from the D/SFMS. The media will also share their traffic images with the D/SFMS. This link with the media is critical to the success of the system in providing useful traveler information.

The D/SFMS will have its own regionally based traveler information web site providing pre-trip traveler information. The website will also provide links to the transit services within the region for trip planning and service information dissemination. This webpage will be a critical component to Buckeye Traffic, ODOT's new statewide traveler information website.

4.6 Regional Transportation Coordination Operations

An important aspect in developing a Regional ITS Architecture is the opportunity to share traveler information with surrounding systems, in particular construction, incident and transit information. As a contiguous information stream, it will provide through and regional travelers with seamless information. The D/SFMS will share incident information and video images with other regional and ODOT control centers. GDRTA, SCAT, Greene CATS, Miami County, and nearby county demand response transit services have identified the need to begin working towards integrating transit information within the region.

4.7 Regional ITS Projects

As stated previously, the Miami Valley regional stakeholders have already completed several ITS related projects. The Final SFY 2004-2007 Transportation Improvement Program (TIP) as adopted in May, 2003 was also reviewed to determine the types of ITS projects scheduled in the region. The ITS projects primarily involve traffic signal interconnects and coordination among neighboring jurisdictions such as between Kettering and Moraine and the installation of video detection systems at heavily trafficked locations. In addition, through the Regional ITS Architecture stakeholder meetings, several ITS projects were identified as being planned, with the D/SFMS being the premier regional project. Finally, some projects such as the Construction Coordination System have been identified based upon

stakeholder discussion and feedback during the meetings. Table 4.1 highlights the major ITS projects that exist or were identified (in italics) as planned projects by the Miami Valley region stakeholders. The sequencing of these projects is discussed in Section 9.0.

Stakeholder	**Project**
GDRTA	Automated Vehicle Location *Automatic Passenger Counters* *Automated Voice Annunciators* *Smart Card* Advanced Traveler Information System (real time next bus, kiosks)
SCAT	*Automated Vehicle Location* *Automatic Passenger Counters*
Greene CATS	*Automated Vehicle Location*
Dayton Police	*Automated Vehicle Location/Mobile Data Terminal*
Montgomery County EMA	*Automated Vehicle Location/Mobile Data Terminal*
ODOT	Buckeye Traffic Automated Vehicle Location – District 8 Snowplows Road and Weather Information System *D/SFMS* *Variable speed limit signs*
OSHP	1-888-2OHROAD *Multi Agency Radio Communications System (MARCS) (AVL/MDT)*
Kettering	Traffic signal coordination
Moraine	Traffic signal coordination
Regional ITS Projects	*Montgomery County Emergency Management Center Construction Coordination System*

Table 4.1 Miami Valley Regional ITS Projects Timeline