



A Vision for AZTech™ Center-to-Center Communications AZTech™ White Paper

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Interagency coordination and collaboration is critical to establishing a successful regional transportation system. Establishing interagency communications will facilitate regional coordination, as center-to-center communications are key to regional traveler information, incident and emergency management, regional data archiving, and arterial traffic signal control activities.

1. Current Status

Nine jurisdictions currently operate traffic management centers. Four of these jurisdictions are connected through the AZTech™ Network. Center-to-center communications support functions such as video surveillance, traveler information, traffic signal systems, emergency management systems, and regional data archiving.

Video Surveillance

- The Camera Cameleon software system to control different manufacturers' CCTV devices, was recently installed. However, Camera Cameleon has not been installed at all agencies that have cameras. The City of Chandler uses i2TMS for camera control.
- ADOT, MCDOT, Phoenix and Scottsdale are the agencies currently using the Camera Chameleon software for Center-Center applications.
- All four agencies currently in the AZTech™ network can view and control each others cameras.

Traveler Information

- Dynamic Message Signs (DMS) deployment has been expanding on the arterial roads. A pilot project was undertaken by AZTech™ to investigate the utilization of arterial DMS signs through inter-agency operations between the City of Phoenix and ADOT. The pilot study concluded that positive diversion of traffic occurred due to the messages posted on DMS. The region presently lacks center-to-center DMS operations. The Highway Condition and Reporting System (HCRS) provides the foundation for regional traveler information. HCRS exports event information to the Arizona 511 phone system and www.az511.com website. Local agencies have the ability to provide information on both freeway and arterial information into HCRS via the internet. However, many agencies do not consistently update HCRS because of shortage of staff, duplication of efforts as some cities have their own websites and/or the incompatibility of HCRS with their own permitting and roadway management systems.
- The Regional Public Transit System has deployed an advanced travel information system. The transit traveler information is currently not integrated with AZTech™ system.



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Incident and Emergency Management

- Public safety, emergency management, and emergency response agencies provide information to traffic and transportation agencies primarily through voice communications.
- ADOT has a DPS CAD display monitor and a fiber connection to the DPS facility.
- Phoenix Fire CAD data is available on the Regional Archive Data System (RADS)

Regional Archive Data System

- RADS serves as the archive and the source of regional data including freeway and arterial traffic volume, occupancy, speed, incident data and travel time. RADS servers are located in the ADOT Traffic Operations Center (TOC). The system is developed by MCDOT.

Arterial Traffic Signal Control

- Traffic signal timing parameters: There is currently no agreed-upon protocol for sharing traffic signal timing parameters between jurisdictions. Traffic signal timing parameters are shared on an informal basis between agencies and jurisdictions, most commonly through a telephone call.
- Volume, occupancy, and speed data can be collected by the 9 agencies with a central traffic signal system.
- There are approximately 2,500 arterial signalized intersections in the region.¹
- There are ten jurisdictions with 50 or more intersections - ADOT, Chandler, Gilbert, Glendale, MCDOT, Mesa, Phoenix, Peoria, Scottsdale, and Tempe.¹
- Approximately 78% of all the signalized intersections are tied into central systems.¹
- Nine jurisdictions currently have traffic management centers (TMC) and centralized signal systems.¹
- There are four centralized signal systems in the region- Siemens, Transcore, Icons and Naztec.¹
- Four of the nine jurisdictions are currently interconnected through the AZTech™ Network. The remaining six locations are all working to get connections.¹

2. Vision

Stakeholders in the metropolitan area have jointly developed a vision for regional center-to-center communications.

Video Surveillance

- All jurisdictions within the metropolitan region will be connected such that they are able to view images from other jurisdictions' cameras. Agreed upon protocols will provide control to public safety agencies, including Arizona DPS, local police agencies and other emergency responders. Priority control will also be provided to



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fire department and other emergency services as appropriate. Each transportation jurisdiction will have priority primary control over their respective cameras, and will provide control to other jurisdictions upon request, and per agreed upon protocols.

Traveler Information

- Inter-agency DMS operations utilizing Center-to-Center communications. Each agency will have the ability to post traffic advisory messages on other agencies DMS signs based on defined operational protocols.
- Each jurisdiction's road closure and planned event information data is pushed to RADS and this data is linked to HCRS. Either local jurisdiction maintenance or permitting systems is integrated with RADS or other methods are used to make the data available to RADS to avoid the duplicate entering of information.
- All traffic management centers will be connected such that any jurisdiction can obtain information on all arterials and freeways within the region. This information will include current restrictions, planned restrictions, expected duration, and a description of the expected impact on traffic. If appropriate, alternate routes may be recommended by the jurisdiction.
- Adjacent agencies should coordinate to ensure that alternate routes are consistent across jurisdictional boundaries.
- All arterial traffic data collected by traffic signal systems can be utilized to provide traveler information via 511, AZ511.com, and through private partners.¹
- Transit information will be available on 511 and AZ511.com and to AZTech™ private partners.

Incident and Emergency Management

- Center-to-center communications will be established between emergency management centers, Public Safety Answering Points (PSAPs), and transportation management centers. Filtered information will be provided to transportation agencies that contains details concerning road and lane closures. All personal information will be excluded.

Regional Data Archiving

- Data will be will be permanently archived and update frequency will be established for each Center-to-Center sub-system.¹
- All jurisdictions will have the ability to retrieve archived data to do historical reporting and analysis for any timeframe at any location .¹

Arterial Traffic Signal Control

- All local agency central traffic signal systems will be tied together in such a way that any jurisdiction can obtain data on their own and adjacent jurisdiction's intersections



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(Data will be updated per the requirements of the agencies and will be permanently archived).

3. Strategy

In order to achieve the vision, the following will be required

- A regional communication backbone infrastructure which provides connectivity to all of the jurisdictions and disciplines with an operations center
- A feasible funding mechanism to support and maintain such an infrastructure with a high degree of reliability
- A center-to-center software system that will facilitate data exchange and interoperability between the local agencies. This includes signal system data; DMS messages; road condition and incident data; and transit information.
- Integration of local road closure and restriction data on RADS.
- Interoperable radio communications between agencies

4. Benefits

Benefits of center-to-center communications include:

- Improved collaboration and cooperation between jurisdictions
- Improved traveler information quality and timeliness
- Decreased emergency response times, which reduces the impact to traffic and reduces the number of secondary crashes.
- Cost savings to emergency responders as the appropriate response equipment is identified much earlier, and inappropriate response equipment is not dispatched to the incident scene
- Improved response across jurisdictional boundaries. This includes reduced delay as traffic signals are optimized across jurisdictional boundaries
- All of the above benefits result in reduced delay and improved mobility for the traveler

Sources:

1. *Maricopa County Regional Signal System, A White Paper on a Possible Vision.* Prepared by Tim Wolfe