**Case Project – Desert City Freeway and Arterial System of Traveler Information**

**Background –**
Desert City has a resident population of about 1.3 million. In addition, there are on average, 200,000 tourists in Desert City each day. Over the past five to ten years, the area has been experiencing one of the fastest growth rates in the nation. A by-product of growth is increased pressure on the transportation system as traffic needs and roadway conditions continue to change, thereby creating a demand for increased capacity and improved efficiency.

The Desert City transportation network is well-developed and multi-modal. There is an extensive freeway and signalized arterial network. The City is served by a regional airport and local transit system.

The capacity of the local freeways is consistently exceeded during peak hours resulting in stop-and-go traffic. During the same peak hours, the efficiency of the arterial network is significantly degraded due to the high volumes of traffic and unbalanced directional demand for capacity. A recent study puts Desert City in the “top five” of the Institute’s list of rush hour time difference (a 20-minute trip mid-day takes 29 minutes during rush hour). Desert City is also ranked 11th in the nation in terms of roadway congestion.

Due to the increasingly high cost of constructing new highways, expanding existing highways, and the limited financial and human resources of public agencies, it was necessary to develop new methods of utilizing the Desert City area highway system more efficiently. This system represents a major part of the solutions that will be developed to improve travel conditions in the area.

The system will be a regional, multi-jurisdictional, multi-modal intelligent transportation system for the Desert City Valley. The system will be comprised of a freeway management component, a regional signal system and arterial management component, a traveler information collection and dissemination component, and interfaces to various other components such as transit, regional planning, emergency management, and media services.

**Goals -**

The primary goal of the system in Desert City is to improve overall transportation mobility and better serve the rapidly growing travel demand in the area.

Other objectives of the system are to:

- Improve efficiency and mobility by optimizing travelers' choices of mode, route, or time of travel;
- Reduce incident response and clearance time
- Increase agency staff productivity by providing low-maintenance, high-quality communications and computational tools to assist them in effectively coordinating daily traffic management activities.
**Stakeholders**

The Desert City Freeway and Arterial System of Traveler Information is a product of a multi-jurisdictional partnership that is comprised of representatives from each of the member organizations to provide operations oversight and direction, make policy decisions, and manage the financial aspects of the partnership.

These agencies include:
- State DOT
- Regional Transportation Commission
- Desert City Department of Public Works
- City of North Valley Department of Public Works
- Town of Sand Hills

Other stakeholders include:
- State Highway Patrol
- Sandstone County Sheriff
- Desert City Public Safety
- City of North Valley Public Safety
- Sand Hills Public Safety
- Sky Desert Regional Airport (the local airport)
- Regional Transit Authority (operates the Sunshine Connection)
- Private Sector Information Service Providers

**System Description**

The Desert City TMC will be a focal point for traffic monitoring, incident management, road condition reporting, traveler information dissemination, advisory communication, and statewide off-shift radio/emergency operations. The TMC will accommodate the needs of the system implementation covering the entire urban area, which equates to approximately 220 centerline kilometers of freeway.

Freeway and arterial management will be accomplished through various field devices and development and implementation of a communications master plan.
Exercises:

Exercise 1 – Stakeholder Needs

The purpose of this exercise is to identify stakeholder needs. You will use the project descriptions to identify missing stakeholders. The instructor will call out the names of specific stakeholder agencies. You are asked to identify the needs of the stakeholder.

Some things to consider:

- What problem (of yours) is the system meant to solve?
- What do you want the system to do for you?
- How do you want to interact with the system?
- Will you have responsibility for operating or maintaining the systems?
- Will you provide or use information from the system?
- Which needs are priority?

Exercise 2 – Operational Scenarios

The purpose of this exercise is to develop operational scenarios for Incident Management. Use the case study description and the results of exercise one to help you.

Remember to develop the operational scenarios from all perspectives and to develop scenarios for both failure events and normal conditions.

Exercise 3 – Requirements

The purpose of this exercise is to develop a set of requirements for Incident Management. Use the operational scenarios developed in the previous exercises.

Consider the following requirements:

- Functional
- Performance
- Environmental and non-functional

Use the Requirements Guidelines in Section 7.5.6 of the Guidebook.

Exercise 4 – Project Architecture

The purpose of this exercise is to develop a portion of a project architecture focused on video sharing.

Consider the following:

- System features
- Interfaces – who will need to communicate with whom?
- Information flows – what needs to be done first? Are there dependencies?
- Hardware

Exercise 5 – Putting it all Together

This exercise will go through all parts of the Vee. The first part will use the case study to develop a full SEMP. The next part we will apply what we have learned to your work.