

Scope of services

Subject: Additions and modifications to the ATC Standard

1 Background

The Advanced Transportation controller is receiving wide-scale attention as agencies move to modernize their traffic control systems. There are large-scale deployments in Nevada, Texas and California, along with smaller deployments throughout the country. Several agencies, like Georgia DOT for instance, are currently making decisions on moving to the ATC 2070 or the ATC Advanced Transportation Controller as their statewide standard traffic controller. However, it should be noted that the Advanced Transportation Controller is not limited to simply traffic control. Agencies, like Texas DOT and Utah DOT for instance, are testing the capabilities of the ATC for use as a general-purpose field computing device for use in other ITS applications. The future is bright for this standard and the companion effort for a higher-level ATC standard.

The ATC Advanced Transportation Controller standard provides hardware requirements for those agencies interesting in specifying a rigid hardware solution. These agencies often cite reductions in maintenance costs associated with completely interchangeable components, along with decreases in expenditures in technician training as the chief reasons for using a standard such as the ATC Advanced Transportation Controller.

The overall purpose of this Work Plan is to accelerate the development of a standard for the next generation of Advanced Transportation Controllers.

A contract for developing an accelerated standard, developed in 2001 and awarded in the fall of 2002 to a consortium of vendors and system integrators, began with a kick-off meeting on November 21, 2002.

For perspective, in the Spring of 2001, the FHWA 's goal was that a contractor proceed more swiftly toward completion of the ATC standard than had been the case with volunteer committee activities. As a result, the working group in charge of this effort developed an expedited plan to accelerate the completion of a next version of the ATC standard that would meet the following general requirements:

- Be able to adapt to changing technology
- Provide a platform that would support incremental enhancements
- Provide a platform which would support a variety of processors and operating systems
- Provide a platform that would be backward compatible with the 2070 to some degree
- Provide a general purpose field controller unit that would serve for the next generation of NEMA and 170/2070 controllers.
- Provide a basis for cost effective customization to reduce the apparent cost of the traffic controller and allow it to be tailored for specific applications (e.g. freeway, large intersections, small intersections).

After considerable delays between the Standards Development Organizations and the Joint Program Office, a negotiated scope of services was developed to solicit bids for the development of the new ATC standard. Because both the time and budget were inadequate for a true ground-up development/prototyping effort, one of the premises for this project was to

build from the work being done by the vendor community and the work from the CALTRANS 2070 standard.

During the early phases of the 2070 standard development, it was determined that the working group efforts would be best served by a 'position' to build on the CALTRANS 2070 program. The benefits were that the CALTRANS program was actively working toward hardware development and their QPL working group would meet on a regular basis during the initial development to ensure that the standard was practical, complete, and workable. This finally resulted in a working 2070 standard that has been used for procurement in a number of locations around the country. Today, there are thousands of 2070's in use although they are at varying levels of compatibility with the CALTRANS specification due to the on-going changes and refinements.

Note that the original scope of services for the expedited standards development contract did not mandate that the contractor follow the Systems Engineering Process (SEP) now required. However, the contractor, recognizing this need, provided limited SEP in the contract deliverable to the extent that original budget would allow. At the kick-off meeting of the original contract, the prime contractor (Siemens) presented a collection of "requirements" garnered from working group meeting notes and minutes. The working group monitoring that effort then held several meetings to review the contractor output. The resulting work reflects a general consensus regarding most of the attributes of the new ATC standard. However, due to budget constraints, the elements added to the standard in response to user needs and resulting requirements are not well coordinated in a systematic way and need significant revision to meet SEP requirements.

This particular work plan (described in this document) provides for the specific inclusion of the detailed Systems Engineering Process within the ATC Expedited efforts consistent with the needs for both the Public and Private Sectors.

2 Scope of services

Under this task, a small team consisting of the following individuals will develop the user needs and functional requirements in a more complete fashion:

- Project manager – Robert Rausch (TransCore)
- Principal Investigator – Janie Page (Contractor to Siemens)
- Contributors:
 - Dave Miller (Siemens)
 - James Kinnard (Contractor to Siemens)
 - Ron Johnson (Contractor to Siemens)

Using the nominal group technique, this team will identify critical user needs, concept(s) of operations, and an associated Requirements Traceability Matrix for the expedited ATC standard.

3 Deliverable Work Items

This Work Plan includes the costs for developing appropriate SEP documentation that is sufficient for the ATC Controller Development. This effort will apply the Systems Engineering Process to the ATC Advanced Transportation Controller standard. Specifically, this will add a Concept of Operations, and re-work the existing specification details to form the Functional Requirements to the standard along with the associated Requirements Traceability Matrix. All working group costs will now be associated with deliverable work items. If a particular item is associated with two or more deliverable documents, the travel and meeting planning costs will be allocated between those particular deliverables.

Deliverables:

- Concept of Operations
- Rework existing specification details to form Functional Requirements
- Requirements Traceability Matrix

These documents will be completed within the context and sensitivity of the ATC Controller Expedited Development Efforts

4 Schedule

The approximate schedule for this activity:

- Kick-off for the start of the work in Atlanta following the 10/28 ATC steering committee meeting.
- December 2003: Nominal group technique via teleconference in December 2003 to identify top functional requirements
- January 2004: First draft of functional requirements, concept of operations, and requirements traceability matrix; internal review for consistency
- February 2004: Drafts of all three documents to be sent to working group members four weeks prior to working group meeting; gather comments from working group
- March 2004: Meet with working group to discuss disposition of received comments (At the meeting, we will respond to those comments submitted prior to the meeting by members of the working group, beginning with those for which commenters have also included proposed solutions.); location TBD. Following this meeting, the joint committee will be asked to vote to send the documents out for user comment.
- April 2004: User comment period (4 weeks)
- May 2004: Team dispositions comments and makes revisions as needed. Revised documents sent to working group for review prior to Joint Committee meeting.
- June 2004: Team meeting with Joint Committee (location TBD) to discuss and resolve any remaining issues (submitted to the team in advance of the meeting) and to request vote to send these documents to SDO's for inclusion with ATC draft standard.