

# **Scope of Work**

## **Phase I Development of the Northeastern Illinois Regional ITS Architecture**

### Background

A preliminary northeastern Illinois regional ITS architecture has been prepared through the Gary-Chicago-Milwaukee Corridor Multi-Modal Traveler Information System (GCM/MMTIS) and the metropolitan planning organization's Strategic Early Deployment Plan (SEDP) process. This preliminary architecture is documented at a high level and has been found by the USDOT to be consistent with the national ITS architecture as the GCM Gateway project architecture. This preliminary architecture forms the basis of the SEDP regional architecture and will be used to further develop the northeastern Illinois regional architecture in Phase I.

A FHWA Tier I regional architecture workshop was held in July 2000 to continue the development of the preliminary regional architecture. This one-day workshop gathered local transportation stakeholders and introduced the basic steps and concepts necessary to continue the development of a regional ITS architecture.

GCM and SEDP documentation, along with an updated inventory of existing and planned ITS systems and services, set the stage for the FHWA Tier II architecture workshop, held March 20-22, 2001. The National Architecture Team documented the inventory with key input from the workshop participants, using the Turbo Architecture tool.

The Tier II workshop focused on architecture details such as identifying where exchanges of information are needed between different systems, tailoring architecture flows to northeastern Illinois conditions, and identifying specific information to be exchanged on selected system interfaces. An initial regional architecture database has been created from the Tier II workshop with the Turbo Architecture tool.

### Need and Requirements

The Chicago Area Transportation Study (CATS) and the Illinois Department of Transportation (IDOT) are jointly responsible for the development and maintenance of a regional architecture for northeastern Illinois. CATS and IDOT have determined a need to retain technical consultant services to complete development and documentation of the draft regional architecture.

The technical consultant services will be accomplished in two phases. Phase I will complete the development of the base regional ITS architecture using the GCM and SEDP documents, the Tier I and II workshop results, and important follow-up with area ITS stakeholders. Phase I will also produce an Architecture Maintenance and Operating Plan, which will be implemented in a Phase II effort. Phase II will involve updating, refining and maintaining the northeastern Illinois regional architecture, and is expected to commence shortly after completion of Phase I. This scope of services addresses only the Phase I effort.

The Phase I northeastern Illinois ITS regional architecture shall be:

- based on the GCM/MMTIS, Gateway and SEDP preliminary architecture.
- consistent with the existing programmed and planned ITS deployments in the region.
- consistent with the federal regulations for ITS Architecture and Standards published in the Federal Register on January 8, 2001.

## Scope of Work

The scope of the technical consultant services for the Phase I regional architecture development is comprised of the following tasks.

### **1) *Project management***

The Project Manager (PM) for the northeastern Illinois regional ITS architecture project will be responsible for directing both the development and communication aspects of the project. The PM will assign adequate staff resources to the project to execute the project work plan on schedule. The PM shall review work, facilitate work sessions and bring consensus to the effort.

Management efforts will include the coordination of internal staff and, coordination with sub-consultant, coordination meetings with CATS and IDOT and preparation of monthly progress reports and invoices..

Deliverable: Monthly progress reports in electronic format.

### **2) *Technical review of existing documentation***

This task involves gathering and reviewing existing architecture documentation that has been developed in the northeastern Illinois region. CATS and IDOT will assist HNTB in gathering the architecture documentation. CATS and IDOT will provide HNTB with the Turbo Architecture electronic files for the Chicago DOT and Regional Transportation Authority (RTA). This documentation includes the GCM Corridor reports, Gateway preliminary architecture, SEDP for ITS in northeastern Illinois, RTA RTIP Architecture, and Chicago TMC documentation, along with documented

inventory and the results from the Tier I and II Architecture workshops. HNTB shall summarize the results in a technical memorandum and present at a CATS Advanced Technology Task Force (ATTF) meeting.

Deliverable: Technical memorandum, in electronic format, summarizing ITS documentation and Turbo results from the Tier II architecture workshop.

### **3) Outreach**

This effort is critical to further define and clarify architecture elements, integration opportunities, information resources, and information exchanges (architecture flows). Targeted educational outreach may be needed for stakeholders who did not attend the Tier II workshop, or who had very limited representation.

Prior to the initiation of the effort, HNTB shall develop a management plan for outreach and present at the ATTF meeting scheduled in Task 1.

The starting architecture shall be documented into a web-based internet version to be hosted at a CATS or IDOT server. HNTB shall also reverse engineer from the Tier 2 Turbo Database customized market packages and publish them to the website to illustrate the operational concepts and actual information exchanges between specific stakeholder entities needed to supply specific groups of ITS services. HNTB shall develop one set of outreach material in electronic format. CATS shall make copies of the outreach material and mail them to stakeholders.

CATS and IDOT shall provide HNTB with a preliminary list of regional stakeholders. This list includes three categories.

1. *Regional Implementers* – includes agencies that operate in multiple counties and could develop major ITS projects that directly impact regional integration.
2. *Sub Regional Implementers* – includes the City of Chicago, Counties, Councils of Mayors and similar scale jurisdictions.
3. *Other Sub Regional Stakeholders* – Includes municipal agencies and service providers and other private and public terminators.

ATTF members in the regional and sub regional categories will lead policy level contact. Technical meetings will follow that will focus on the development of Turbo Architecture documentation. The technical meetings shall be conducted under Task 4- Phase I Base Architecture. Lastly, workshops will be held to demonstrate a draft of the effort, and obtain additional policy and technical input.

Architecture Outreach meetings shall be held in two formats.

1. Meetings with individual regional and sub regional agency stakeholders for policy and educational issues. These meetings will be led by local agency staff and will require some materials- preparation and attendance by HNTB (five meetings).
2. Group Outreach Workshops (two workshops).

The policy and education meetings are intended to inform policy level representatives about the architecture development process and to solicit agency support for ITS interoperation and integration.

HNTB shall conduct the two workshops that are intended as closing efforts in the outreach process. One will include broad architecture development concepts designed for policy level staff and should last no longer than two hours. The second will include technical staff that will provide final input on technical interface and information exchange requirements. The technical workshop should last not more than four hours.

#### Other Outreach Meetings

HNTB shall attend one meeting with the GCM Corridor Architecture Workgroup. This meeting would include architecture development staff from Indiana and Wisconsin and should be designed to define and clarify the relationship between the GCM Architecture and the northeastern Illinois Architecture.

#### Outreach Article

HNTB shall develop a one-page article in electronic format. CATS shall make copies of the article and mail them to the stakeholders or publish it in the ITS Midwest Newsletter.

Deliverables: A management plan for outreach in electronic format, hyperlinked Tier II architecture on the internet, outreach meeting minutes in electronic format, and a one-page outreach article in electronic format.

#### **4) Phase I Base Architecture**

This task involves the final development of the base regional ITS architecture using the Turbo Architecture tool and the preparation of primary and supporting documentation. As part of this task, fourteen technical meetings shall be conducted with stakeholders for technical interface and information exchange requirements. These meetings shall be grouped into two meetings per day. The technical interface and information exchange requirements meetings are designed for technical staff that will work directly with the Turbo tool.

The regional ITS architecture shall include the following:

- A description of the region, participating agencies and other stakeholders.
- A description of the Needs (e.g. user services) and ITS Services (e.g. market packages) that the regional ITS architecture will provide.
- An operational concept that identifies the roles and responsibilities of participating agencies and other stakeholders in the operation and implementation of the elements included in the regional ITS architecture.
- Identification of system functional requirements.
- A description of the interface requirements and information exchanges with planned and existing systems and subsystems and architecture flows as defined in the National ITS Architecture.
  - Includes initial Turbo Architecture database development
  - Production of architecture documentation for review
  - One revision
  - Reconcile documentation
- Identification of projects that may require sequencing for implementation.
- Identification of existing ITS standards to support regional and national interoperability.
- Identification of agreements that may need to be considered for operations including those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the regional ITS architecture.

HNTB shall attend two review meetings with the ATTF Consultant workgroup. HNTB shall present the final results at an ATTF meeting.

Deliverables: Turbo Architecture database for northeastern Illinois (primary and supporting documents) on a CD-ROM and the internet.

### **5) *Communications White Paper***

Research and prepare a white paper to summarize the existing communications infrastructure, identify the additional analysis needed to support the regional architecture, and evaluate its usefulness in supporting the regional architecture. HNTB shall present the white paper at an ATTF meeting.

Deliverable: A white paper, in electronic format, which summarizes the existing infrastructure, identifies needs and evaluates its usefulness.

### **6) *Architecture Maintenance and Operating Plan***

Building on the operational concept contained in the base architecture, this task will detail the process and requirements for future continued architecture maintenance.

The Architecture Maintenance and Operating Plan shall include:

- Development of a process for updating/maintaining the regional architecture.
- Development of a process to ensure on-going architecture compliance (projects affecting the regional architecture).
- Development of a draft memorandum of understanding for key agencies responsible for maintaining the regional architecture.
- Identification of relevant ITS standards and requirements with which the northeastern Illinois architecture must maintain compliance.
- Recommendation of any additional standards, project staging, or project assimilation as appropriate to ensure interoperability, integration and to promote efficiencies of scale.

HNTB shall attend a review meeting with the ATTF Consultant Workgroup. HNTB shall present the results of this Task at an ATTF meeting. HNTB shall prepare and conduct a presentation to the CATS Work Policy Committee.

The final base regional ITS architecture for northeastern Illinois and the Architecture Maintenance and Operating Plan will be used as a starting point for the future on-going maintenance of the regional architecture. The continued maintenance of the northeastern Illinois regional ITS architecture will be undertaken separately as Phase II.

Deliverable(s): Architecture Maintenance and Operating Plan and a draft Memorandum of Understanding in electronic formats.

## **7) QA/QC**

QA/QC reviews shall be held before the various submittal stages. These reviews provide a means of coordinating between disciplines by providing the opportunity for quality assurance staff members to review documents.

Deliverable: none.

## **General Terms**

- HNTB shall make one revision for deliverables before final release.
- CATS and IDOT shall review draft deliverables within two weeks.
- HNTB shall provide one copy of the electronic files of the final deliverables.