Technical Memorandum #4:

Northeastern Illinois Regional ITS Architecture Maintenance Plan Evaluation

Prepared for:

Chicago Metropolitan Agency for Planning

CMAP

RELEASE/REVISION:	RELEASE/REVISION DATE:
1	**November 27 2007**
2	**January 9,2008**

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Document Information

Document Type **Technical Memorandum**	Draft Release Date **11/27/07**	Contract Number: DOT06-OPP-CATS-08
Preparing Organization **Trichord, Incorporated**	Final Release Date 1/9/08	Hardware and Software Used MSWord
Notes and Limitations		

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Introduction

The purpose of this memorandum is to evaluate the current Northeastern Illinois ITS Architecture Maintenance Plan and to make recommendations on ways to improve the Plan. The goal of this process is to provide a less cumbersome, better understood process for architecture use and maintenance, one that regional ITS stakeholders can follow to improve their ITS projects and to encourage regional integration and cooperation in project deployment and operations.

Assessment of Current Maintenance Plan

According to the Federal Highway Administration (FHWA) Final Rule on ITS Architecture and Standards, "the agencies and other stakeholders participating in the development of the regional ITS architecture shall develop and implement procedures and responsibilities for maintaining it, as needs evolve within the region." In response, the Northeastern Illinois Regional ITS Architecture Documentation defines the key elements of an architecture maintenance plan, specifically 1) who will maintain the architecture; 2) what will be maintained; and 3) how it will be maintained (i.e., the configuration control process to be used). The current recommended architecture maintenance process consists of the following steps:

- A potential architecture change is brought to the attention of the Advanced Technology Task Force (ATTF) through a Change Request Form.
- The change request is recorded by the Chicago Metropolitan Agency for Planning (CMAP), the architecture maintainer
- The potential change is evaluated by the Change Control Group, an ITS architecture subgroup of the ATTF led by CMAP, that meets on a quarterly basis (or via email, as appropriate) to discuss
- Approved changes are implemented by updating the baseline architecture (i.e., Turbo Architecture® database, Northeastern IL Regional ITS Architecture Document, architecture website)

When followed, this process should be effective in identifying warranted changes to the architecture. However, this process could be made more "user friendly" through the recommendations listed in subsequent sections. These recommendations are based around the five ITS architecture maintenance steps identified in the FHWA's *Regional ITS Architecture Guidance Document* (Figure 1).
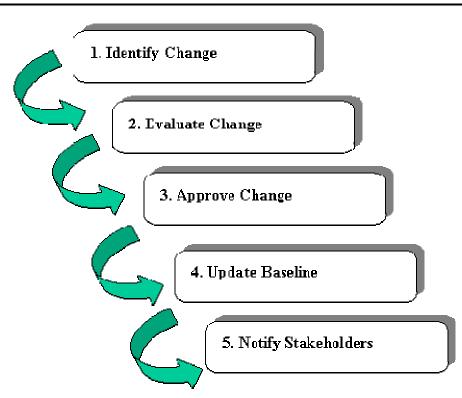
Figure 1 Process for Change Identification[1]

Recommendations: Identify Change

As stated in the Northeastern Illinois Regional ITS Architecture Document and evidenced by the recent architecture update, major architecture changes occur primarily as a result of ITS projects being added/deleted, modified, or reprioritized. While some changes result from other reasons, (e.g., adjustments in regional needs, stakeholder changes, or updates to the National ITS Architecture), focusing on regional ITS projects in the architecture maintenance process will be both more intuitive and more productive. This focus has been incorporated into the newly updated regional architecture by identifying specific projects from the 2005 Northeastern Illinois ITS Strategic Early Deployment Plan (SEDP) Update.

The ATTF provides further opportunities to identify ITS projects. Architecture Change Request Forms should be distributed electronically to all ATTF members as an attachment to meeting invitations, which ATTF members can then use to identify new regional ITS projects. At ATTF meetings, regional ITS updates by the Illinois Department of Transportation (IDOT), Illinois State Toll Highway Authority (ISTHA), Regional Transportation Authority (RTA), counties, municipalities, and other ATTF

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[1] Regional ITS Architecture Guidance – "Developing, Using, and Maintaining an ITS Architecture for Your Region," Version 2.0, USDOT FHWA, July, 2006.

members should reference the architecture (using the Change Request Forms as formal submittals), when applicable. CMAP architecture staff, an architecture subgroup of the ATTF, or a separate architecture support contractor could facilitate this process. Through this approach, the ATTF members can identify appropriate elements, market packages, interconnect diagrams, standards, agreements, etc. from the architecture that may be affected – *and identify potential integration opportunities*. Results of these discussions could be reported at subsequent meetings as a way to describe progress for the ITS projects.

To improve the flexibility of architecture change identification, the Change Request Forms should be modified to allow for attachments (e.g., spreadsheet, text document) for instances when the text areas on the form are too small. This will provide a regional ITS stakeholder with more space to clarify a requested change.

Recommendation: Evaluate/Approve Change

As a result of recommendations in the Architecture Document, an ATTF architecture subgroup was formed for ongoing maintenance of the regional architecture. It is critical that this group actively seek out architecture changes, provide support to regional ITS stakeholders as they incorporate the architecture into their processes, and serve as the decision makers for regional architecture changes. This subgroup should consist of members that are familiar with ITS architecture and the systems engineering process, trained in Turbo Architecture® (now a free software), and highly aware of regional ITS activities. This group should be led by a designated CMAP representative, and could be supported by an architecture support contractor. This group should meet quarterly, possibly after each ATTF meeting, to discuss potential changes to the architecture and set a schedule for regular architecture updates. Potential architecture changes could come from other ITS stakeholders as described above, or from the group members themselves.

The goal of these steps is to make the architecture a "living" document, one that regional ITS stakeholders can feel comfortable using.

Recommendation: Update Baseline

The baseline regional architecture consists of the Architecture Document, the Turbo Architecture® database, and the regional ITS architecture website. To implement approved changes, CMAP staff assigned to carry out this work will need training for Turbo Architecture® and web design. The FHWA provides free Turbo training workshops (Course #: FHWA-NHI-137029A), which can be requested via the National ITS Architecture website at http://www.iteris.com/itsarch/html/training/training.htm. As with other steps in the architecture maintenance process, Turbo Architecture® and web design support could also be provided by an architecture support contractor.

In addition, any approved changes to the baseline architecture should be documented in the change log (developed as part of the current update process) and all version controls tables should be updated accordingly.

Recommendation: Notify Stakeholders

Once an architecture change has been identified, evaluated, and implemented, it is important that both the requesting agency and other regional ITS stakeholders be made aware of the change for a number of reasons, such as the following:

- The requesting agency may be relying on Highway Trust Fund dollars to support implementation of the project, which requires inclusion in the regional architecture.
- The change may affect other related projects or ITS architectures.
- Alerting regional ITS stakeholders about architecture changes will encourage them to use the architecture and participate in its maintenance process.

Changes should be summarized by the ATTF architecture subgroup and distributed via email, posted on the architecture website, and/or discussed at quarterly ATTF meetings.

In addition, requested architecture changes that are not approved should also be relayed back to the requesting agency. This notification should provide an explanation (e.g., the ITS project is already included in the regional architecture) and the opportunity for the agency to clarify or resubmit its request.

Conclusion

For the Northeastern Illinois Regional ITS Architecture to fulfill its potential as an ITS planning and deployment tool, regional stakeholders must be aware of it, understand its purpose, and know how to use it. The current architecture Maintenance Plan provides a strong starting point for reaching these goals, and the recommendations contained in this document should provide CMAP with the steps necessary to maximize the utility of the Northeastern Illinois Regional ITS Architecture.

To summarize, key recommendations are:

- Identify Change – focus on ITS projects; take advantage of the ATTF to facilitate the use and maintenance of the regional architecture; update the Change Request Form
- Evaluate/Approve Change – rekindle the ATTF architecture subgroup to play a more active role in architecture maintenance
- Update Baseline – training or outside support should be provided to facilitate architecture maintenance
- Notify Stakeholders – approved architecture changes should be distributed to regional ITS stakeholders to keep them updated and to encourage use of the architecture