

# The Buffalo-Niagara Bi-National Regional ITS Architecture Program



## Maintenance Plan

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### Revision History

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# **1 Introduction**

## **1.1 Background**

Consensus Systems Technologies Corp. (ConSysTec) entered into an agreement so as to update and develop a Buffalo-Niagara Bi-National Regional ITS Architecture (BNBRA). Under this agreement, ConSysTec was to develop the aforementioned regional ITS architecture in accordance with the April 8, 2001 Final FHWA Rule and FTA Policy on Intelligent Transportation System Architecture and Standards. This Rule/Policy requires that each region deploying ITS Projects funded through the highway trust fund must develop a “regional ITS architecture”. This regional ITS architecture, which is based on the U.S. National ITS Architecture, is intended to foster the deployment of integrated regional ITS systems in a cost-effective, practical manner.

With the participation and support of various transportation agencies in New York, Ontario, and specifically in the Buffalo-Niagara region, the Buffalo-Niagara Bi-National Regional ITS Architecture was revised from the 2001 Version of the Buffalo Regional ITS Architecture. The architecture was developed through a series of workshops, and discussions with individuals that are stakeholders within the region and are heavily involved in the deployment of ITS infrastructure. The results and outputs of the architecture, which include detailed information exchange requirements documented using the customized market packages (available on the project web site) and a Use Plan, are presented in separate documents.

However, the Final FHWA Rule and FTA Policy on Intelligent Transportation System Architecture and Standards also require that the each region and its participating stakeholders must maintain the regional ITS architecture once it has been developed. This document, the Buffalo-Niagara Bi-National Regional ITS Architecture - Maintenance Plan, presents the change management process to be utilized by the region’s stakeholders for modifying and updating the Buffalo-Niagara Bi-National Regional ITS Architecture, as projects are implemented, new transportation services are needed, and as regional priorities and goals change. This document describes the procedures to initiate a change to this ITS Architecture, the roles and responsibilities of the Stakeholders within the region (included in this document), and the process for which a proposed change is agreed upon and implemented.

This document is the third of three documents that comprise the Buffalo-Niagara Bi-National Regional Architecture Program. The first document, the Buffalo-Niagara Bi-National Regional ITS Architecture document, contains the descriptions of the ITS systems and the identified interfaces between these systems. The second document, the Buffalo-Niagara Bi-National Regional ITS Architecture – Use Plan, summarizes the outputs from the ITS Architecture and provides an implementation plan for using this ITS Architecture and an integration strategy.

## **1.2 Intended Audience**

This Maintenance Plan document is intended primarily for all stakeholders and stakeholder representatives directly involved with the maintenance of the Buffalo-Niagara Bi-National Regional ITS Architecture developed under this project. The majority of the persons participating with the development of this ITS Architecture will not be directly involved with the actual initiation of the change management policies and procedures contained in this Maintenance Plan. However, all stakeholders, including planners, managers, and implementers, should be familiar with the highlights of this maintenance plan. These highlights include the purpose of the maintenance plan, what constitutes a change, the components of the Bi-National Regional ITS Architecture that are subject to the maintenance process, and how to initiate a change to the Bi-National Regional ITS Architecture.

## **1.3 Purpose**

The Buffalo-Niagara Bi-National Regional ITS Architecture is not a static set of outputs. This ITS Architecture will change as new priorities and strategies emerge through changes in the regional transportation plans and policies, as ITS projects are implemented, and as new ITS needs and services evolve in the region. The Maintenance Plan describes a change management process to keep this ITS Architecture current to reflect the region's existing ITS capabilities, projects, plans and policies. The objective of the Maintenance Plan is to provide formal change control of the ITS Architecture throughout all stages of the process. The Maintenance Plan addresses the following key issues:

- What constitutes a change? What individual or group of individuals will be responsible for maintaining the ITS Architecture? What is each Stakeholder's role and responsibility in maintaining the ITS Architecture? Who will support the effort, and who will manage or have oversight for the maintenance effort?
- What is the architecture baseline? What outputs/documents will be maintained? How will the versions be kept?
- What is the change management process? How will changes be introduced and by whom? How often will changes to the ITS Architecture baseline be performed? Who will evaluate the changes for inclusion into the baseline? What group will review the change recommendations and make the decisions on what changes are accepted and which are not? Who will actually modify the ITS Architecture baseline?

## **1.4 Report Organization**

This Maintenance Plan has been prepared in support of the Buffalo-Niagara Bi-National Regional ITS Architecture Program. This Maintenance Plan is broken into 6 chapters to facilitate the different parts of the maintenance plan:

- **Chapter 1: Introduction** - Provides introductory and background information about this document, its purpose and why it is needed.
- **Chapter 2: Regional ITS Architecture** – This section contains a description of National ITS Architecture, a review of the FHWA Rule and FTA Policy, and a summary of the Buffalo-Niagara Bi-National Regional ITS Architecture Program.
- **Chapter 3: Changes** – This section describes the different types of changes that may require an update to the appropriate ITS Architecture.
- **Chapter 4: Roles and Responsibilities** – This section defines the roles and responsibilities of each Stakeholder in the maintenance of the ITS Architecture.
- **Chapter 5: Baseline** – This section describes what documents, and in what form, are to be maintained by the process and procedures documented in this Maintenance Plan.
- **Chapter 6: Change Management Process** – This section defines the process and the procedures to be used for initiating, accepting and updating any changes to the ITS Architecture.

Readers who are unfamiliar with regional ITS architectures and their benefits should skim through Chapter 1, Introduction and read Chapter 2, which provides information about regional ITS architectures and their uses. All readers should then skim through Chapters 3, 4 and 5 to familiarize themselves with what changes may affect the ITS Architecture, the roles and responsibilities of the Stakeholders, and what documents are subject to the change management procedures. Only readers who will be involved with the actual maintenance of the Buffalo-Niagara Bi-National Regional ITS Architecture need to be familiar with Chapter 6, which presents the change management process.

The success of the change management process outlined in this Maintenance Plan is highly dependent on the participation of all Stakeholders identified in the ITS Architecture. Without each Stakeholder's participation in properly updating the ITS Architecture, the success of the change management process and the utility of the Buffalo-Niagara Bi-National Regional ITS Architecture effort will diminish.

## 2 Regional ITS Architecture

### 2.1 What are Intelligent Transportation Systems (ITS)?

Until recently, the building and improvement of a transportation infrastructure meant the civil and mechanical construction or enlargement of roads, bridges and tunnels, as well as the associated enterprises that provide the vehicles (including public and private transit agencies, trucking, public safety and personal) that travel on the infrastructure. The use of ITS technologies to more efficiently operate and manage a region's transportation system is increasingly important as travel demand steadily increases and the opportunities to build new infrastructure becomes prohibitively expensive because of the high costs and lack of available resources, including land space. This makes the deployment of ITS technologies to make more efficient use of the existing transportation network an attractive alternative.

As one component of a larger transportation infrastructure, ITS refers to the application of data processing, data communications, and systems engineering methodologies with the purpose of improved management, safety and efficiency of the surface and public transportation network. These ITS technological and management advances can address the following: the overall mobility needs of a region, the travel requirements of the users of the transportation network, and the development, operation, management and maintenance needs of the transportation system providers, both public and private.

ITS provides agencies and their customers a means of addressing current urban traffic problems, as well as having the ability to anticipate and address future travel and traffic demands through a coordinated, intermodal approach to transportation. The application of ITS allows agencies to use modern technologies to better monitor their systems, providing these agencies with more accurate information so that they can make more informed decisions in order to operate their systems in a safer, more efficient manner. ITS also allows agencies to distribute this information to other agencies and to the public, so each can make more informed transportation decisions as well.

### 2.2 National ITS Architecture

The U.S. National ITS Architecture provides a common framework for planning, defining, and integrating intelligent transportation systems and defines:

- The functions (e.g., gather traffic information or request a route) that are required for ITS.
- The physical entities or subsystems where these functions reside (e.g., the roadside or the vehicle).
- The information flows and data flows that connect these functions and physical subsystems together into an integrated system.

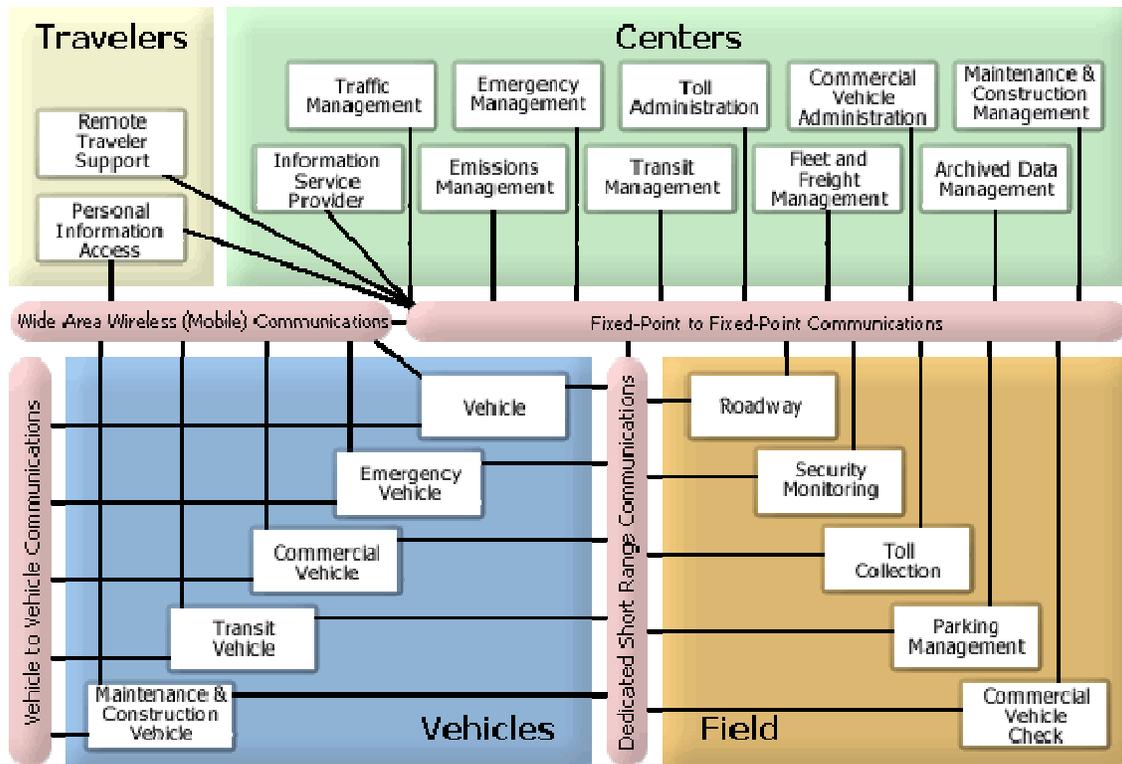


Figure 2-1. National ITS Architecture Sausage Diagram

The National ITS Architecture also introduces the concept of Market Packages. Market packages define potential ITS deployments in both narrative and diagrammatic form. Market package diagrams show which ITS systems are required to work together (across different operators, whether public or private) to deliver a given transportation service. Market packages are designed to address specific transportation needs or problems and relate back to the ITS services and their detailed requirements.

### 2.3 FHWA Final Rule and FTA Final Policy on ITS Architecture and Standards

In 1997, Congress passed the Transportation Equity Act for the 21st Century (TEA-21) to address the need to begin working toward regionally integrated transportation systems. To implement Section 5206(e) of TEA-21, which requires ITS projects to conform to the National ITS Architecture (NITSA) and Standards, the Federal Highway Administration (FHWA) issued 23 Code of Federal Regulations Parts (CFR) 655 and 940, entitled "Intelligent Transportation Systems (ITS) Architecture and Standards" on April 1, 2001. Concurrently, the Federal Transit Administration (FTA) issued a Final Policy entitled "National ITS Architecture Policy on Transit Projects". The intent of the FHWA Final Rule (commonly referred to as Rule 940) and Final FTA Policy is to provide policies and procedures by which to implement ITS projects in an efficient manner and to ensure conformance with the National ITS Architecture.

The purpose of the Final Rule/Final Policy is to accelerate the deployment of integrated Intelligent Transportation Systems (ITS) by requiring the development of a regional ITS architecture. This regional ITS architecture, which is based on the National ITS Architecture but customized to meet a region's particular needs, provides a plan by which a region can efficiently deploy ITS systems in a manner that allows for integration opportunities of these systems.

The Final Rule/Final Policy defines 9 required components that make up a regional ITS architecture. These components are:

1. Description of the region
2. Identification of participating agencies and other stakeholders
3. Operational concept
4. Agreements required for implementation
5. System functional requirements
6. Interface requirements
7. Identification of ITS standards
8. Sequence of projects required for implementation
9. Process for maintaining your Regional ITS Architecture

It is important to note that this document satisfies the last requirement of the FHWA Final Rule/FTA Final Policy.

#### ***2.4 Buffalo-Niagara Bi-National Regional ITS Architecture Program***

With the participation and support of the New York State DOT, various stakeholders in the Buffalo, NY and Niagara Falls, NY areas, and various regional stakeholders from Ontario, Canada, the Buffalo-Niagara Bi-National Regional ITS Architecture was developed. This architecture was created by first reviewing the existing Buffalo Regional ITS Architecture that was developed in 2001, then conducting a series of workshops with the regional stakeholders, as well as having individual discussions with regional stakeholders offline. The workshops, held at the Peace Bridge Administration Building, focused on the issues, services, and interfaces for stakeholders in the Buffalo-Niagara region.

In the Architecture Workshops, stakeholders were asked to review and modify existing market package diagrams (taken from the original Buffalo Regional ITS Architecture). Through the interactive review process of the workshop, stakeholders were able to make decisions about participating in specific ITS services as well as establish a framework for the Buffalo-Niagara Bi-National Regional ITS Architecture utilizing the services as reflected in Version 5.0 of the National ITS Architecture. The result of these interactive workshops was a set of "customized" Market Packages diagrams that represent the ITS services that either exist in the Buffalo-Niagara region or are planned for the region. The

emphasis of these customized market packages, and the Regional Architecture process itself, is the information exchanges between ITS elements with similar or dissimilar stakeholders. In addition, the regional ITS architecture development process was able to provide a sense of priority for various transportation services covered in the Buffalo-Niagara Bi-National Regional ITS Architecture. Shortly after the first Architecture workshops were completed on April 19<sup>th</sup> and 20<sup>th</sup>, 2005, a draft Architecture, covering all of the functional areas that are present or planned for the region, was published for stakeholder review on the ConSysTec website. Stakeholders were given an opportunity to comment on the draft ITS architecture and their comments were collected, categorized and analyzed.

These comments were presented at the second set of workshops, the Maintenance and Use Plan workshops, held on June 15<sup>th</sup> and 16<sup>th</sup>, 2005. Upon completion of the review process at the second workshop, another draft of the Buffalo-Niagara Bi-National Regional ITS Architecture was published on the ConSysTec website, incorporating all stakeholder comments. Also during the Maintenance Plan and Use Plan workshops, a draft ITS Use Plan and Maintenance Plan were presented based on the information gathered at the previous workshop and discussions with stakeholders that were held offline to the workshop.

One final workshop was held on July 14<sup>th</sup>, 2005 to resolve any final comments and questions on the ITS architecture, Use Plan and Maintenance Plan. Stakeholder comments were collected and used afterwards to complete the Use Plan for the Buffalo-Niagara Region (covered as a separate document) and the Maintenance Plan document as presented in the following sections.

## 3 Changes

### 3.1 Introduction

The Buffalo-Niagara Bi-National Regional ITS Architecture is a blueprint for the deployment of ITS systems in the Buffalo-Niagara region (included the United States and Canada) for the next ten to fifteen years. The ITS Architecture was created as a consensus view of what ITS systems the Stakeholders in the respective regions have currently implemented and what systems they plan to implement in the future.

However, this ITS Architecture is not a static product or set of outputs. As ITS projects are deployed, priorities change, and the region's transportation needs evolve, this ITS architecture will need to be updated to properly reflect these changes.

Maintenance of the ITS Architecture is important to the continued use and development of the architecture. A properly updated architecture will allow this ITS Architecture to be used effectively by the entire ITS community, including transportation planners, project managers, and managers. This ITS Architecture can be used by the ITS community to develop priorities for implementing ITS projects, to write project requirements, and to develop agreements between stakeholders for the benefit of member agencies, and for the region as a whole. The Buffalo-Niagara Bi-National Regional ITS Architecture can also be used to obtain approval for federal funding of ITS projects.

In recognition of the need to update regional ITS architectures, the Final Rule/Final Policy specifically added a requirement, which states: *"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 in the region."*

This Section provides an introduction to the Maintenance Plan developed to maintain the Buffalo-Niagara Bi-National Regional ITS Architecture. This Section first defines why changes in the architecture can occur. This Section then defines how and what changes should be reflected in the architecture.

### 3.2 Why Changes Occur

There are many actions that may cause a need to update the Buffalo-Niagara Bi-National Regional ITS Architecture. The following are a list of several actions that may necessitate a change in the architecture. Each section describes the action that may necessitate the change, and generally will include an example of that action.

#### 3.2.1 Changes to the Project Definition

As funding for projects are identified, and as a projects are implemented, each project may add, subtract or modify ITS elements, interfaces, or information flows. Changes which affect the operational concepts that were agreed upon should also be reflected in the ITS Architecture.

For example, as a project is implemented, a new interface to an agency may be identified, and a previously identified ITS element may no longer be needed. The new interface to the agency and the information (data flow) to be transmitted should be added to the ITS architecture to reflect the consensus between the agencies, and the ITS element that is no longer needed can be deleted from the ITS architecture.

### **3.2.2 Project Addition/Deletion**

Occasionally an agency may identify a new transportation need or service that the agency wishes to provide, or that the transportation need or service is no longer needed. The agency will likely propose a new project, cancel an existing project, or modify an existing project, as appropriate. If the change in project affects the operational concepts described in the ITS Architecture, those aspects of the ITS Architecture should be added, deleted or modified.

For example, an agency determines there is a need for a new transportation service not currently defined in the ITS Architecture. The agency creates a new project, which includes a new system (ITS Element), and requires sharing information (interface, data flow) with another agency. The new ITS elements, interfaces, and data flows should be added to the ITS Architecture.

### **3.2.3 Changes in Project Status**

The Buffalo-Niagara Bi-National Regional ITS Architecture currently defines all ITS elements and data flows as Existing, or Planned. As projects are deployed, or as new projects are added, the status of the ITS elements, transportation services (market packages) and data flows should be updated as Planned or Existing. Elements, services and flows are considered existing when they are substantially complete and tested, or will be at the time of approval of the ITS architecture change.

This is a relatively minor change to the Buffalo-Niagara Bi-National Regional ITS Architecture, but the architecture should be updated nevertheless for clarity and consistency.

### **3.2.4 Changes in Project Priority or Regional Needs**

A requirement of the Final Rule/Final Policy is to develop a Project Sequence for implementing projects, or more specifically, transportation services. A Project Sequence is included as part of the ITS Architecture Document for the Buffalo-Niagara Bi-National Region (a separate document). However, due to funding constraints or technological changes, a project planned for the region may be delayed or accelerated. Such changes should be reflected in the architecture.

### **3.2.5 Changes in Agreements**

The ITS Architecture developed for the Buffalo-Niagara region is a consensus architecture. That is, all the stakeholders involved agree that these are the ITS systems to be provided in the region. Since many of the ITS systems in the Buffalo-Niagara Bi-

National Regional Architecture program involve interfaces between different agencies, there is an implicit agreement between those agencies on the existence of the interfaces and what information is to be shared between the agencies. This agreement may be implied, or the agreement may be formalized with a written memorandum of understanding. If the nature of these agreements change, the change may necessitate a change in the ITS Architecture.

### **3.2.6 Changes in Regional Needs**

Over time the needs in a region can change and the corresponding aspects of the ITS Architecture will have to be updated to reflect these changes. These changes might be expressed in updates to planning documents such as the Regional Transportation Plan.

### **3.2.7 New Stakeholders**

As ITS systems are deployed and the benefits of integration are realized, additional Stakeholders may be identified. New Stakeholders may provide new transportation services for the region, or be an organization that did not exist when previous version of the ITS Architecture was developed. As these new Stakeholders and their transportation services are identified, the architecture should be updated to reflect the new Stakeholder's role in the regional view of ITS. The ITS systems they operate and their interfaces should also be reflected in the ITS Architecture.

### **3.2.8 Changes in Other Architectures**

The Buffalo-Niagara Bi-National Regional ITS Architecture that has been developed includes not only elements and interfaces within the State of New York, or within the Province of Ontario, Canada, but also interfaces to elements in adjoining regions, states, or provinces. Changes in the ITS Architectures in adjoining regions, states, or provinces may necessitate changes in the Buffalo-Niagara Bi-National Regional ITS Architecture to maintain consistency between the two (or more) architectures. A Bi-National Regional ITS Architecture may also overlap with the New York Statewide ITS Architecture – so a change in one of the architectures may necessitate a change in the other.

For example, a stakeholder with ITS Elements in the Buffalo-Niagara region may have interfaces with an ITS Element in the Albany, NY region. If the status of that ITS Element or interface changes in the Albany, NY Regional ITS Architecture, it may be necessary to reflect the same changes in the Buffalo-Niagara Bi-National Regional ITS Architecture.

### **3.2.9 Changes in the National ITS Architecture**

The ITS Architecture developed for the Buffalo-Niagara Bi-National Region is currently based on Version 5.0 of the U.S. National ITS Architecture, and reflects the region's specific needs based on that version. The National ITS Architecture may be expanded and updated from time to time to include new user services or new information flows, based on experiences and needs identified throughout the nation.

As these new services and information flows are identified, the stakeholders in the region may decide it would like to provide these new services as well. At this point, the region may decide to update the Buffalo-Niagara Bi-National Regional ITS Architecture to reflect the new National ITS Architecture version.

## 4 Roles and Responsibilities

### 4.1 Introduction

It is important to clearly define the roles and responsibilities of agencies and their personnel for maintaining the Buffalo-Niagara Bi-National Regional ITS Architecture. Without each Stakeholder understanding their roles and properly performing their responsibilities, maintenance of the Buffalo-Niagara ITS Architecture Program will be difficult and may fail, rendering the ITS Architecture useless in the future.

This Section addresses the issue of the roles and responsibilities of the various stakeholders in the maintenance of the Buffalo-Niagara Bi-National Regional ITS Architecture. The Maintenance Plan for the ITS Architecture defines roles and responsibilities for the following stakeholders or groups of stakeholders:

- **Responsible Agency** – The agency responsible for owning and maintaining the ITS architecture as well as keeping the official architecture documentation, both hardcopy and softcopy. In addition, the responsible agency allocates the resources to maintain the architecture baseline and has the responsibility to assign, and fund, the Maintenance Manager. Can also act as a contracting agency if needed. Currently, NITTEC is the Responsible Agency, and is responsible for the baseline and revised Buffalo-Niagara Bi-National Regional ITS Architecture developed under this ITS Architecture program.
- **Librarian** – An employee of the responsible agency (from above) who is responsible for the baseline document for this Buffalo-Niagara Bi-National Regional ITS Architecture. In addition, they are responsible for maintaining any subsequent changes to the baseline architecture as approved by the maintenance working group (below) and implemented by the maintenance manager (below).
- **Maintenance Manager** – An employee of the responsible agency (from above) who is responsible for overseeing and guiding the maintenance efforts. The maintenance manager receives the Change Request forms and requests for documentation from Stakeholders, notifies stakeholders of updates, maintains the “official” records, including Change Request Database, updates the status of Change Request Forms, and manages the consultant (if applicable).
- **Maintenance Working Group** – The group of persons responsible for reviewing proposed changes to the Buffalo-Niagara Bi-National Regional ITS Architecture. Currently, it is thought that the technical working group of NITTEC shall be the maintenance working group for this regional ITS architecture. Generally speaking, each agency or stakeholder may designate a representative to the maintenance working group – who must be a member agency of NITTEC.
- **Stakeholders** - Any government agency or private organization that has a role in providing transportation services in the region (both USA and Canada). Each

Stakeholder responsible for updating its projects and ITS elements in the architecture as their ITS projects come online (or get approved funding). Each Stakeholder will designate an Authorized Representative who may make policy decisions for that agency, or who has the authority to endorse all changes to the architecture that directly affects his/her agency.

- Consultant – A private firm hired to provide technical advice and services to the Lead Agencies and/or the Maintenance Working Group

Figure 4-1 depicts the relationships for each of these groups and summarizes the roles and responsibilities that will be covered below.

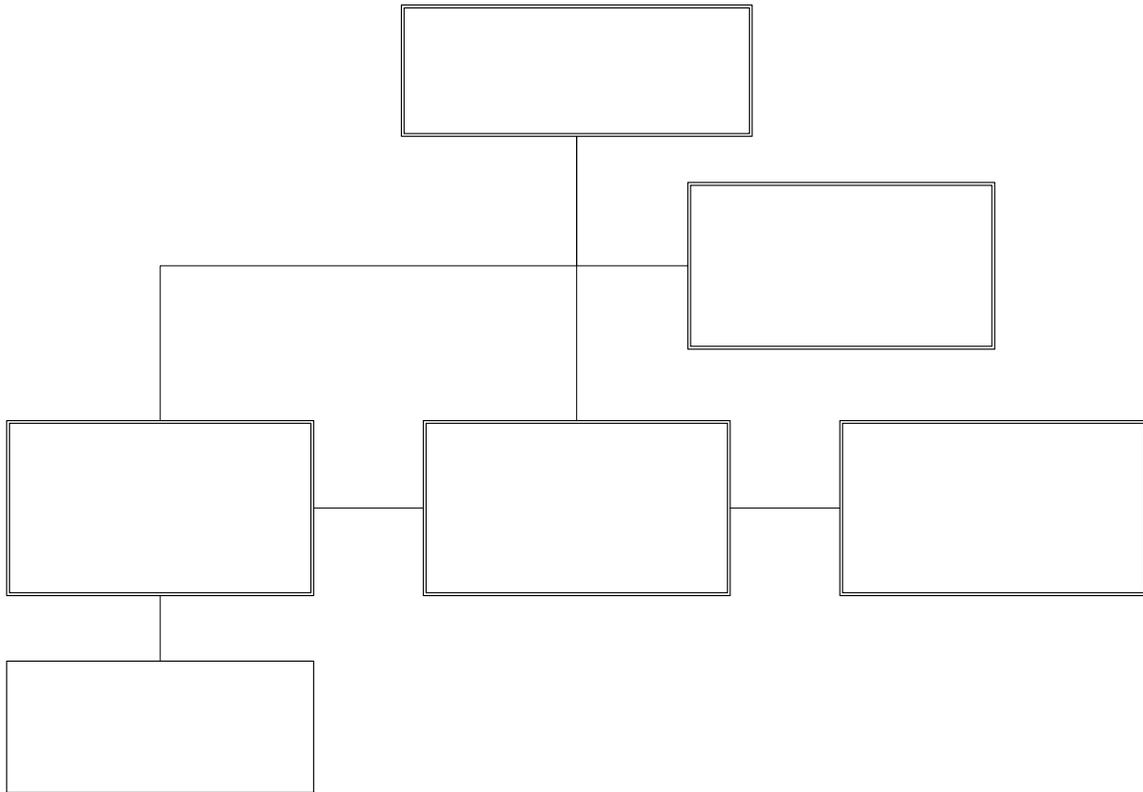


Figure 4-1. Roles and Responsibilities

## 4.2 Responsible Agency

### 4.2.1 Introduction

The ITS Architecture Responsible Agency consists of a public/private agency that formally agreed to own, develop and maintain the Buffalo-Niagara Bi-National Regional ITS Architecture for the region, as required by FHWA Final Rule/FTA Final Policy.

The Responsible Agency assigns the resources for making the physical changes to the ITS Architecture baseline, and for coordinating the maintenance of the ITS Architecture,

if necessary. The Responsible Agency may also act as the contracting agency for procuring a consultant, and any other contracting needs that may occur towards the maintenance of the ITS Architecture.

The Responsible Agency shall also assign a person to be the Maintenance Manager for its ITS Architecture. The Maintenance Manager shall coordinate the activities of the maintenance activities for that ITS Architecture (See Section 4.5, Maintenance Manager).

#### **4.2.2 Roles and Responsibilities**

For the maintenance of the Buffalo-Niagara Bi-National Regional ITS Architecture, the Responsible Agency has the following responsibilities:

- Has overall responsibility for updating and maintaining the ITS Architecture
- Allocates the resources, such as funding, necessary to maintain the ITS Architecture
- Assigns a person to be the Librarian and the Maintenance Manager for the ITS Architecture

#### **4.2.3 Current Responsible Agency**

Currently, the Responsible Agency for the Buffalo-Niagara Bi-National Regional ITS Architecture is NITTEC.

### **4.3 Stakeholders**

#### **4.3.1 Introduction**

A Stakeholder is any government agency or private organization involved with providing transportation services in the region. In the context of the Buffalo-Niagara Bi-National Regional ITS Architecture, a Stakeholder, owns, operates, and/or maintains at least one ITS element in the ITS Architecture. Thus, that Stakeholder is called out in the corresponding Turbo Architecture database to the ITS Architecture. The Maintenance Manager shall maintain a list of current Stakeholders for the ITS Architecture.

The success of the change management process outlined in this Maintenance Plan is highly dependent on the participation of the Stakeholders identified in the ITS Architecture. Each Stakeholder is responsible for completing and submitting Change Request Forms regarding any changes to that Stakeholder's ITS Elements so the ITS Architecture can be properly updated to reflect those changes. Without each Stakeholder's cooperation in updating its own ITS systems in the ITS Architecture, the change management process will not succeed and the accuracy and usefulness of the ITS Architecture effort will diminish over time.

Each Stakeholder shall assign an Authorized Representative for their agency. This Authorized Representative is authorized to make policy-related decisions for his/her agency. Any proposed changes to the ITS Architecture that directly affect the Stakeholder must be approved and signed by the Authorized Representative.

The Authorized Representative may also assign point-of-contacts for the agency to assist with day-to-day communications. The point-of-contacts will receive updates regarding the status of the ITS Architecture and will be responsible for distributing these updates to the appropriate persons within their agency or organization. These communications updates may include proposed changes to the ITS Architecture, information about upcoming meetings or updates to the website. The point-of-contact will also receive annual reminders to update that Stakeholder's ITS Elements or interfaces in the ITS Architecture, if any.

#### **4.3.2 Roles and Responsibilities**

For the maintenance of the Buffalo-Niagara Bi-National Regional ITS Architecture, each Stakeholder has the following responsibilities:

- Appoints an Authorized Representative allowed to make decisions regarding the Stakeholder's parts/interests within the architecture. The Authorized Representative must approve and sign all proposed changes to the ITS Architecture that affects the Stakeholder.
- May appoint point-of-contacts to receive communications regarding updates and status of the ITS Architecture.
- Reviews and updates their ITS Elements and interfaces in the ITS Architecture on an annual basis. If the need arises, Stakeholders may request that their ITS Elements and interfaces be updated more frequently.
- Provides the Maintenance Manager with an updated contact list of all Authorized Representative(s) and point-of-contact(s)

#### **4.3.3 Current Stakeholders**

The list of current stakeholders for the Buffalo-Niagara Bi-National Regional ITS Architecture are shown in the Architecture Document (separate document) and will be maintained by the respective Maintenance Manager (See Section 4.5).

### **4.4 Maintenance Working Group**

#### **4.4.1 Introduction**

The ITS Architecture Maintenance Working Group, or the Maintenance Working Group, consists of Stakeholders in the ITS Architecture responsible for reviewing submitted Change Request Forms. There shall be only one Maintenance Working Group for the Buffalo-Niagara Bi-National Regional ITS Architecture. An opportunity shall be given to

the Maintenance Working Group to review all Change Request Forms before any proposed changes are accepted and the ITS Architecture is updated.

Currently, the Maintenance Working Group shall consist of the members of the NITTEC Technical Working Group, and shall review any proposed changes to the ITS Architecture during the regular NITTEC Technical Working Group meetings.

Any agency or organization identified as a Stakeholder in the ITS Architecture (See Section 4.3, Stakeholders) may participate in the discussion of proposed changes to the ITS Architecture maintenance activities, however only members of the NITTEC Technical Working Group shall have voting privileges.

However, it is important that all Stakeholders participate in the Maintenance Working Group discussions, because input from the Stakeholders allows the ITS Architecture to remain a consensus architecture, reflecting the wishes of the Stakeholders in the region. Participation in the Maintenance Working Group allows the Stakeholder to be part of the process, and to view and comment on other proposed ITS activities in the region. FHWA and FTA representatives, and consultants hired to assist with the maintenance of the ITS Architecture, may also participate in the Maintenance Working Group discussions, but shall have no voting privileges.

The Maintenance Working Group shall assign someone to keep minutes of meetings and discussions related to ITS Architecture maintenance activities.

The Maintenance Manager shall maintain a list of current participants of the Maintenance Working Group.

#### **4.4.2 Roles and Responsibilities**

For the maintenance of the ITS Architecture, the Maintenance Working Group has the following responsibilities:

- Review submitted Change Request Forms from a technical standpoint and consider the effects of the proposed changes to the ITS Architecture and the Stakeholders
- Determines when a change will cause a new major version
- Oversees the implementation of proposed ITS Architecture changes

### **4.5 Maintenance Manager**

#### **4.5.1 Introduction**

The Buffalo-Niagara Bi-National Regional ITS Architecture Responsible Agency shall appoint a person to the role of Maintenance Manager to coordinate the maintenance activities of the ITS Architecture. The Maintenance Manager shall be the coordinator and main point of contact for all maintenance activities, including receiving Change Request Forms, tracking Change Request Forms, “framing the issues” of each proposed

change and submitting the Change Request Form to the Maintenance Working Group, distributing documentation, maintaining lists, and sending annual reminders to update the ITS Architecture. If a consultant is hired to assist with the maintenance of the ITS Architecture, the Maintenance Manager shall be responsible for managing the consultant.

The Maintenance Manager is ideally an employee of the Responsible Agency (NITTEC), but it is not a requirement.

#### **4.5.2 Roles and Responsibilities**

For the maintenance of the ITS Architecture, the Maintenance Manager has the following responsibilities:

- Updates the “official” records of the ITS Architecture, including the baseline documents, meeting minutes, the Change Request Database, the list of current Stakeholders, the Authorized Representatives and contact persons for each Stakeholder, and the list of members of the Maintenance Working Group
- Receives Change Request Forms and updates the Change Request Database
- “Frames” the issues of each Change Request Form and submits it to the Maintenance Working Group for its consideration
- Distributes updates to Stakeholders
- Sends annual reminders to the Stakeholders to update the ITS Architecture
- Manages any Consultant’s activities

Some of the Maintenance Manager’s responsibilities may be delegated to a consultant, although the Maintenance Manager is ultimately responsible for the performance of these tasks.

### **4.6 Librarian**

#### **4.6.1 Introduction**

The Librarian is responsible for keeping the “official documentation” for the Buffalo-Niagara Bi-National Regional ITS Architectures developed and updated under this program. This “official documentation” may include the Reports, minutes of meetings, the website materials, the Turbo Architecture Database, and the Customized Market Package Diagrams. The documentation may be in hardcopy, electronic copy, or both.

It shall be the responsibility of the Librarian to maintain and log control of the documentation. This includes having stakeholders “check-out” and “check-in” the current version of each document so no two Stakeholders or persons are making changes to the documentation simultaneously.

The Librarian shall be assigned by NITTEC.

#### **4.6.2 Responsibilities**

- Keeps the “official” documents for the Buffalo-Niagara B-National Regional ITS Architecture.
- Maintains control of documents (check-out, check-in) when the documents are undergoing changes to incorporate the approved change proposals.
- Distributes baseline documentation from Librarian.

### **4.7 Consultant**

#### **4.7.1 Introduction**

Each Responsible Agency, or the Maintenance Working Group, may elect to have a technical consultant advise and assist with the maintenance of the ITS Architecture and the baseline documents. This consultant may attend the Maintenance Working Group meetings in an advisory role, but has no vote in any matters.

#### **4.7.2 Role and Responsibilities**

For the maintenance of the ITS Architecture, the role and responsibilities of the Consultant will vary. However, the responsibilities of the Consultant may include:

- Updates the Change Request Database
- Takes minutes of meetings and provide technical advice to the Maintenance Working Group
- Updates the ITS Architecture baseline, as approved by the ITS Architecture Lead Agency. This may include the Turbo Architecture Database, Word documents, list of contacts, market package diagrams, and the Web Site.
- Distributes the baselined documents, database, etc., of the ITS Architecture to Authorized Representatives, as directed by the Maintenance Manager
- Proposes changes to the ITS Architecture based on external activities, including ITS Standards and National ITS Architecture work.

## 5 Baseline

### 5.1 Introduction

Establishing an architecture baseline requires clear identification of the architecture products that will be maintained, including specific format and version information. This Section defines what documents, databases, etc. are subject to the change management process outlined in this Maintenance Plan, and establishes the specific formats and version information for the initial maintenance activities.

### 5.2 Baseline Documents and Outputs

Several documents and outputs make up the Buffalo-Niagara Bi-National Regional ITS Architecture Program. These documents and outputs are listed in the Table 1. Each of these components and documents was considered for inclusion in the baseline. Rationale is provided for each component or document on why it belongs or does not belong in the baseline.

One of the key outputs to be maintained is the Turbo Architecture database. Only one version of the Turbo Architecture is maintained for the Buffalo-Niagara Bi-National Region. This database contains several components of the regional ITS architecture specifically required by Rule 940. These components include:

- Description of the Region (and State)
- List of Stakeholders, including key contact information
- Inventory of existing and planned ITS systems in the region.
- Documented regional needs and ITS services associated with supporting systems in the region (Market Packages)
- Existing and planned interconnects and information flows for the region
- System functional requirements
- Applicable ITS Standards

Additionally, the ITS Architecture contains several other components and documents that should be updated at regular intervals. These documents include:

- Architecture Plan Document
- Use Plan Document
- Maintenance Plan Document
- Website materials with hypertext links
- Customized Market Package Diagrams

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Output	Type of Output	In Baseline	Document/Output Description	Comments
Transportation Improvement Program 2006 - 2010, Greater Buffalo-Niagara Regional Transportation Council	Word Document	N		This document is included for reference and is not subject to this change process.
Transport Canada's ITS Strategic Plan	Word Document	N		This document is included for reference and is not subject to this change process.
Description of the Region	Turbo Architecture	Y		Part of the Turbo Architecture Database. Also provided as part of the Final Report.
List of Stakeholders	Turbo Architecture	Y	List of Stakeholders, including descriptions	Part of the Turbo Architecture Database.
List of Authorized Representatives	Excel Spreadsheet	Y	List of Authorized Representatives, including points of contact and contact information for submitting and receiving change proposals and other documents.	Maintained by the Maintenance Manager
List of Maintenance Working Group	Excel Spreadsheet	Y	List of members of the Maintenance Working Group, including contact information.	Maintained by the Maintenance Manager
Inventory of Elements/Projects	Turbo Architecture	Y	Inventory of Existing and Planned ITS systems in the region. Fields include project definition, scope of work, and scheduled start and end dates.	Part of the Turbo Architecture Database.
Transportation Services and Market Package Database	Turbo Architecture	Y	Inventory of transportation services provided or to be provided by the region.	Part of the Turbo Architecture Database.
Functional Requirements Database	Turbo Database, Hyperlinked files	Y		Part of the Turbo Architecture Database. Also provided as part of the Website and the Final Report.
Turbo Architecture Database	Access Database	Y	Indicate what version of Turbo (currently Version 3.0) and National ITS Architecture version (currently Version 5.0).	
Interface Requirements	EMF files	Y	Contains diagrams and information from the Turbo Architecture Database.	Part of the Turbo Architecture Database. Also provided as part of the Website.
Sausage Diagram	Powerpoint File	Y		Provided as part of the Website.
Customized Market Package Diagrams	Adobe PDF File	Y		Provided as part of the Website.

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Output	Type of Output	In Baseline	Document/Output Description	Comments
Project Sequencing - Dependencies and actual sequence	Word Document	Y	Changes to the sequence shall be documented. Changes may be due to funding constraints. Indicates the dependencies.	Provided as part of the Final Report.
List of Agency Agreements	Word Document	Y	Part of Federal Rule Requirements for Architecture	Provided as part of the Final Report.
List of Applicable ITS Standards	Word Document	Y		Provided as part of the Final Report.
Deployment Plan	Word Document	Y	Contains the Project Sequencing, List of Applicable ITS Standards, the List of Agency Agreements, an implementation plan and an integration strategy.	Provided as part of the Final Report.
Maintenance Plan	Word Document	Y	Change management process to maintain the ITS Architecture.	This document should itself be under configuration control.
Comment Database	Access Database	N		These are comments received during the initial ITS Architecture development process, and their disposition.
Meeting Minutes	PDF Files	N	Minutes of Maintenance Working Group meetings.	These are to be minutes from meetings held by the Maintenance Working Group the event the Architecture need to be updated.
Website	Hyperlinked files	Y	Includes links to the customized market packages, minutes, and other documents identified in this baseline.	
List of Baseline Documents		Y	List of files and documents subject to the change management process.	
Change Request Database	Access Database	Y		

### **5.3 Version Control**

Over time, the contents of each component and document in the baseline may change. In addition, documents and outputs may be deleted or added to the baseline list. To manage the changes to the components and documents, version numbers are to be assigned to each document and output as changes are approved. This Section defines the guidelines to assign version numbers.

All baseline documents subject to the change management process outlined in this Maintenance Plan shall have a version number and a revision date clearly identified. As changes to documents and outputs are made and accepted, each revised version of a document will be assigned a new version number. The version number shall be assigned by the Maintenance Manager in accordance with the version control guidelines provided. The revision date shall be the date the document was approved and distributed.

#### **5.3.1 Version Control Guidelines**

The version control guidelines are as follows:

- Each approved, baseline document shall have a version number consisting of at least 3 digits, in the format *p.ss*, where *p* is the major revision number, and *ss* is the minor revision number.
- The version number and the revision date shall be assigned by the Maintenance Manager.
- The first, approved version of a baseline document is Version 1.00.
- Minor revisions approved shall be incremented in the second order, that is, *p.ss*, such that the first minor revision will be *p.01*. Minor revisions may include grammatical or spelling corrections, or modifications to a limited number of architecture flows, elements or stakeholders. These changes may include changes in status (e.g., from future to existing).
- Approved significant changes to the ITS Architecture or to a document are considered to be a major revision. Major changes involve multiple and significant modifications to the ITS Architecture or to baseline documents. These changes may be a result of a new Regional Transportation Plan, Transportation Improvement Plan, or significant changes to the regional transportation goals or strategies. The Maintenance Working Group shall decide when a revision is considered a major revision. When a major revision is approved, the version number shall be incremented in the first order. Thus, the first approved major revision will be Version 2.00.

### **5.3.2 Revision History**

Each baseline document shall include at least one page with a Revision History, indicating the history of the document since the last approved major version. The Revision History shall include the following columns:

- Version number – Version number of the document as assigned by the Maintenance Manager.
- Revision Date – Date the changes was approved
- Filename – File name of the document. To aid the ITS Architecture in architecture version document control, the filename of the database should contain the last revision date.
- Author – Principal author of the revisions. This should be the name of the person who compiled and made the approved changes to the document.
- Comments – A comments field to provide a short description of the modifications made since the last major or minor revision.

The revision history shall have an entry for each major revision since and including the original baseline (Version 1.00); and an entry for each minor revision since the last major revision.

A database or list shall be maintained by the Maintenance Manager containing the entire revision history of each baseline document, including all major and minor revisions. This list shall be made available to all Stakeholders. Distribution may be hardcopy and/or electronic means.

A list or database shall also be kept by the Maintenance Manager on all changes made to any of the baselined documents. Where the software allows, the Tracking feature shall be used to reflect the changes since the last revision.

### **5.4 Baseline Availability**

The most current version of each baseline document shall be available to all Stakeholders. It is the responsibility of the Librarian to have access to the versions of the baseline documents and make it available for distribution. All baseline documents shall be available by hardcopy and/or electronic means, as appropriate.

## 6 Change Management Process

### 6.1 Introduction

Once a baseline is defined, the process for making changes to this baseline must be established. The purpose of this Section is to define the procedures to initiate, approve and document proposed changes to the ITS Architecture or any other documentation included in the baseline. All Stakeholders shall be obligated to use the change management process outlined in this Section to initiate changes to the ITS Architecture.

These procedures will apply to all changes to any of the documents or outputs identified in the ITS Architecture baseline. This Maintenance Plan is part of the ITS Architecture baseline, and is also subject to the change management process. As the ITS Architecture is used, implemented and maintained, new change management processes may be added or existing procedures may be modified as required.

### 6.2 Philosophy

The change management process for the Buffalo-Niagara Bi-National Regional ITS Architecture is depicted in Figure 6-1. The change management process outlined in this Maintenance Plan is based on the following guiding principles:

- Change proposals to the ITS Architecture shall require the approval of the Stakeholders directly affected by the proposed changes
- The Responsible Agency shall have the option to approve proposed changes that may have significant effects to the ITS Architecture (major revision)
- The procedures shall allow proposed and approved changes to be carefully tracked for future reference
- The procedures shall provide other Stakeholders an opportunity to review and comment on the proposed changes

In general, only changes that affect the existing ITS Architecture documents, or involves data flows with other agencies, must be updated in the architecture. Such changes include:

- Changes in operational concepts agreed upon in the ITS Architecture, such as how a transportation service is provided
- Changes in the nature of data flows between agencies. Such changes may include adding or deleting data flows, or modifying the information to be exchanged between agencies.

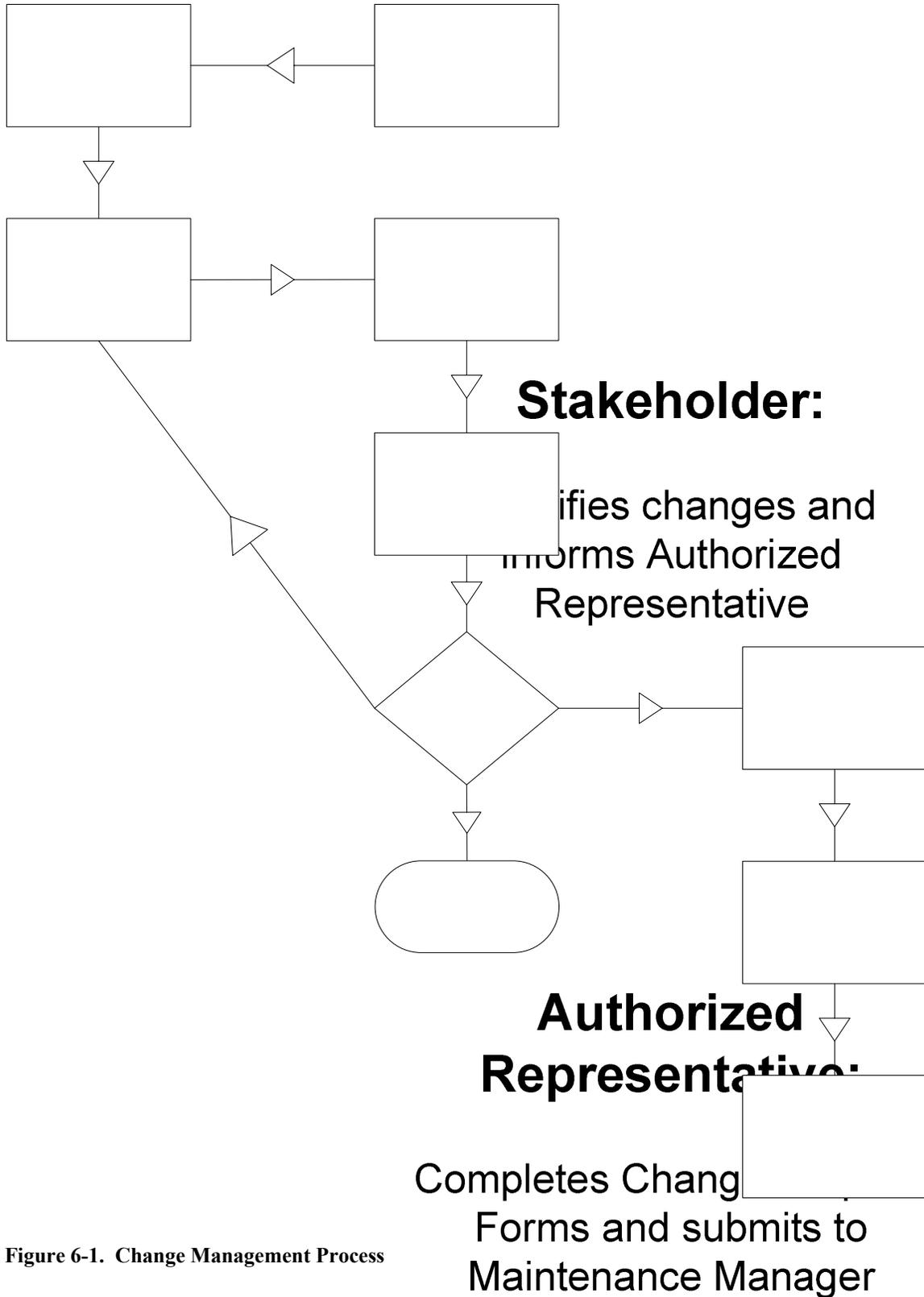


Figure 6-1. Change Management Process

Individual agency “projects”, that is, ITS projects that do not involve other agencies, do not have to be updated in the ITS Architecture.

### **6.3 Update Intervals**

#### **6.3.1 Introduction**

There is no fixed time period or exact event on when the ITS Architecture should be updated. When such a change occurs, it does not necessarily require that the ITS Architecture be updated immediately. For example, it is not necessary to update the Regional ITS Architecture just because a new version of the U.S. National ITS Architecture is released, particularly if it has no direct effect on the existing Buffalo-Niagara Bi-National Regional ITS Architecture. On the other hand, If there are no significant changes in policies or status on the deployment of ITS Systems in the region, it may not be necessary to update the ITS Architecture for several years. However, the update is necessary to ensure that the ITS Architecture continues to accurately represent the regional view of ITS Systems.

A comprehensive architecture update of the ITS Architecture is recommended every three years, concurrent with the formal update of the RTP. This is a natural result of the ITS Architecture being a component of the regional planning process. The comprehensive update may include adding new Stakeholders, reviewing transportation needs and services for the region, updating the status of projects, and reflecting new goals and strategies, as appropriate. Operational concepts, system functional requirements, project sequencing, ITS standards, and list of agency agreements may also be updated at this time.

Between major updates of the ITS Architecture, it is recommended that the ITS Architecture be reviewed on an annual basis for minor corrections and modifications to reflect other changes that may affect the ITS Architecture. These modifications may be a result of changes in project status, new stakeholders, or updates to agency agreements.

The Maintenance Plan should also be reviewed periodically for required changes. Use of the ITS Architecture and modifications to it may differ from what was anticipated during the initial development of the Maintenance Plan. Revising the Maintenance Plan may ensure that the change management process defined is effective.

#### **6.3.2 Current Update Interval**

The Maintenance Working Group shall meet at least once a year to review Change Request Forms that have been received during that time period. It is also intended that this minimum annual meeting will somewhat correspond with the current TIP (Transportation Improvement Plan) cycle for the Buffalo/Niagara Falls, NY regions in the United States, and the Region Niagara, Ontario region in Canada.

A reminder to all Stakeholders by each Maintenance Manager shall be sent prior to the scheduled review meeting. The reminder shall ask each Stakeholder to complete and submit the Change Request Forms, for review by the Maintenance Working Group, any proposed changes to the ITS Architecture.

Although Change Request Forms will normally be reviewed by the Maintenance Working Group only on an annual basis, the Maintenance Working Group will consider event-driven maintenance requests from significant Stakeholders.

## **6.4 Change Requests**

This Section outlines the steps for implementing a change proposal of the Buffalo-Niagara Bi-National Regional ITS Architecture. The procedure for submitting a Change Request Form consists of:

- Identifying who can submit a Change Request Form
- Defining the proposed changes
- Assessing the impact of the changes
- Reviewing the proposed changes
- Implementing the decision

### **6.4.1 Who can Request a Change**

For regions with as many stakeholders as the Buffalo-Niagara Bi-National Regional ITS Architecture, the question of who can submit Change Request Forms is an important one. If literally anyone can propose changes, the Maintenance Working Group runs the risk of being overrun by requests that will tax scarce resources to review and decide upon. On the other end of the spectrum, if too much formality or paperwork is added to the process then many valid or needed changes may go unexpressed.

Any Stakeholder identified in the ITS Architecture is allowed to submit a Change Request Form. A Stakeholder, for the purposes of the Maintenance Plan, is any agency or private organization identified as a participant in the ITS Architecture. This effectively indicates that all changes have the approval of an existing, defined stakeholder in the ITS Architecture. If the proposed change is to add a new Stakeholder and that Stakeholder's ITS Elements and Interfaces, a member agency of NITTEC must submit the Change Request Form on behalf of that potentially new stakeholder.

Change Request Forms submitted to the Maintenance Manager must have the signatures of the Authorized Representative(s) of all Stakeholders directly affected by the proposed change. Stakeholders are considered as "directly affected" if the proposed change(s):

- Involves an ITS Element "owned" by the Stakeholder

- Adds an information flow or interface with an ITS Element “owned” by the Stakeholder
- Whose information (the source stakeholder) is being processed by an intermediary stakeholder’s ITS Element, who then forwards information on behalf of the source

#### **6.4.2 Defining the Change**

Stakeholders should propose changes using the Change Request Form, and send the completed form to the appropriate Maintenance Manager so the Change Request Database can be updated. A Change Request Form is shown in Figure 6-2. The Change Request Form consists of the following fields:

- Originator Name – Name of person submitting the Change Request (CR) Form. This will be the person to contact if there are any questions.
- Date Submitted – Date CR Form was submitted to Maintenance Manager.
- Originator Telephone/Fax/E-Mail – Contact information for the Originator.
- Originator Agency – Agency submitting the Change Request Form
- Agency Authorized Signature/Signature Date – Signature of the Authorized Representative for the Originator Agency, followed by the date of signature.
- Functional Area – The functional area(s) in which the change will affect.
- Description of Proposed Change - The aspects of the ITS Architecture to be added, deleted or revised.
- Rationale for Change – Reason for the proposed change(s).
- Affected Agency – Any Agency that is directly affected by the proposed change(s). This field is particularly applicable when the proposed change(s) include data interface(s) with another agency. Additional signatures, if necessary, should be attached to the Change Request Form.
- Authorized Signature/Signature Date – Signature of the Authorized Representative for the Affected Agency, followed by the date of signature.
- List of Attachments – To support the understanding of the proposed changes, copies of the sections, lists or diagrams marked with the proposed changes should be included with the Change Request Form. List the materials and attachments here.
- Baseline Documents Affected – Checklist to indicate which baseline documents are affected by the proposed change(s).

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**Change Request (CR) Form**

Originator Name:		Date Submitted
Originator Telephone:	Originator Fax:	Originator E-Mail:
Originator Agency:		Functional Area:
Agency Authorized Signature:		Signature Date:

Description of Proposed Change:		
Rationale for Proposed Change:		
Affected Agency:	Authorized Signature:	Signature Date:
Affected Agency:	Authorized Signature:	Signature Date:
List Attachments:		
Baseline Documents Affected:		
<input type="checkbox"/> Website <input type="checkbox"/> Turbo Architecture <input type="checkbox"/> Customized MPs <input type="checkbox"/> Document <input type="checkbox"/> Other (describe)		

To Be Completed By Maintenance Manager		
Change Request Number:	Date CR Received:	Date CR Logged:
Date Initially Discussed:	Disposition: <input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> More Info	Disposition Comments
Date Discussed:	Disposition: <input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> More Info	Disposition Comments
Date Discussed:	Disposition: <input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> More Info	Disposition Comments
Date of Board Approval (If Applicable):		
Baseline Documents Affected/Version implemented		
<input type="checkbox"/> Turbo Architecture	Date: _____	Version: _____
<input type="checkbox"/> Website	Date: _____	Version: _____
<input type="checkbox"/> Customized MPs	Date: _____	Version: _____
<input type="checkbox"/> _____	Date: _____	Version: _____

**Figure 6-2. Change Request Form**

Information on the Change Request Form to be completed by the Maintenance Manager include:

- Change Request Number - To be assigned by the Maintenance Manager. For tracking purposes.
- Date CR Received – Date the Change Request Form was received by the Maintenance Manager.
- Date CR Logged – Date the Change Request Form was logged into the Change Request Database.
- Date Initially Discussed – Date the proposed change(s) was discussed by the Maintenance Working Group, or the date the proposed change(s) was distributed to the Maintenance Working Group for review.
- Date Discussed – Subsequent dates the proposed change(s) was reviewed by the Maintenance Working Group, if appropriate.
- Disposition – Disposition of the proposed change(s) after the discussion. Approved, Withdrawn, More information needed.
- Disposition Comments – Additional comments, if applicable. If the disposition was More Information needed, indicate the information here.
- Date Approved by Board – This is an optional field for major revisions, if major revisions require the approval of an Executive Council. If the approval of the Council is required, the signature of an appropriate representative shall be affixed to indicate approval of the Council. If no approval is necessary, the initials “N/A” for Not Applicable shall be entered here.
- Baseline Documents Affected/Version Implemented – If the proposed change(s) was accepted, indicate what Baseline Documents were changed to reflect the accepted change(s), and in which version (Date and Version number) was the accepted change(s) implemented in.

A Change Request Database shall be maintained by the Maintenance Manager to track Change Request Forms. The Change Request Database shall include all the information entered on the Change Request Forms.

**6.4.3 Assessing the Impact**

Upon receiving a Change Request Form by the Maintenance Manager, an initial assessment of the proposed change is to be made for the impact to the overall ITS Architecture or the affected document. The purpose of the assessment is two-fold:

- Verify that the Change Request Form and supporting materials is complete and correct

- Compare with other Change Request Forms and determine if there are any conflicts

If the proposal for ITS Architecture modification has an impact on other stakeholders, the Maintenance Manager shall contact the Stakeholders to confirm their agreement with the modification. All Stakeholders directly affected by the proposed change(s) must approve and sign-off on the Change Request Form before the Maintenance Working Group considers the proposed change.

There are several options as to who performs the initial assessment, including:

- A consultant, hired to support the maintenance activities of the ITS Architecture
- The Maintenance Manager
- Maintenance Working Group
- The person submitting the change

Each of the above options has positive and negative implications, but the evaluator must have working knowledge of the ITS Architecture to evaluate the proposed changes.

#### **6.4.4 Reviewing the Change Request**

Upon completing the initial assessment, the Change Request Form shall be reviewed at the next meeting of the Maintenance Working Group. Maintenance Working Group meetings can be called by the Chairperson.

Maintenance Working Group meetings will occur, minimally, on an annual basis. On an annual basis, the Maintenance Managers will send a reminder to all its Stakeholders to update their ITS Elements and Interfaces in the ITS Architecture, if necessary. The Maintenance Managers shall distribute the Change Request Forms received and all supporting materials to all participants of the Maintenance Working Group prior to the meeting for their review. The Maintenance Working Group shall have sufficient time to review the Change Request Forms before the meeting. During the meeting, the Maintenance Working Group shall review the proposed changes and offer any comments.

The Maintenance Manager shall assemble the agenda.

Maintenance Working Group meetings can also be called by the Maintenance Manager if there is an urgent need to update the ITS Architecture quickly by one of the significant Stakeholders. In this event, the Maintenance Manager will send a request to the NITTEC member agencies and hold a Maintenance Working Group. The Maintenance Manager shall also distribute the Change Request Forms and all supporting materials to all Stakeholders prior to the meeting for their review, and advise the stakeholders of the specially requested Maintenance Working Group meeting. The Maintenance Manager shall also assemble an agenda for the Maintenance Working Group meeting.

After each Change Request Form is reviewed, and if no further comments are offered by the Maintenance Working Group or the various other stakeholders that are present at the meeting, the proposed changes shall be considered approved, and the Maintenance Manager shall sign off on the Change Request Form.

If additional comments are made that require action, those comments shall be noted on the Change Request Form. These comments are to be addressed by the person submitting the Change Request Form, and then submitted for review again at the next meeting of the Maintenance Working Group. If a proposed change is to be withdrawn from consideration, the Maintenance Manager must sign-off on the Change Request Form to close out the Change Request.

At the end of the meeting, the Maintenance Working Group shall agree if all the approved changes to the ITS Architecture necessitates a minor revision of the appropriate baseline documents or a major revision. The decision will be based on the number of proposed changes approved and the nature of the approved changes (See Section 5.3.1).

Minutes shall be kept for all Maintenance Working Group meetings. Minutes shall include, at a minimum, an attendance list, comments made on each proposed change, and the disposition of each Change Request Form (Approved/Withdrawn/Request More Information). Minutes are to be distributed to all members of the Maintenance Working Group meeting no less than 5 working days after the meeting. Comments are due within 10 working days to the Maintenance Manager. Approved minutes shall be signed by the Chairperson and will be distributed to all Stakeholders. The minutes provide a recording process for the change management process and provide traceability.

#### **6.4.5 Implementation**

After the Maintenance Working Group meeting, the Change Request Form is updated with the disposition information, and the same information is updated in the Change Request database by the Maintenance Manager. The Maintenance Manager will also notify the originator of each Change Request Form reviewed of the disposition.

The Maintenance Manager will also update the baseline ITS Architecture documents as appropriate. As the approved changes are made, the Tracking feature will be used where available. Upon updating the baseline documents, the Maintenance Manager will assign new version numbers and version dates to each baseline document.

Authorized Representatives and points-of-contacts for each Stakeholder shall be notified by e-mail from the Maintenance Manager when baseline documents have been updated. All baseline documents shall also be available to stakeholders from a website or other electronic location, such as an ftp site. It is the responsibility of the Librarian to ensure the most recent document is available from the website. After major revisions to the ITS Architecture or the baseline documents, the Lead Agency may elect to distribute all baseline documents to Stakeholders on CD-ROMs.