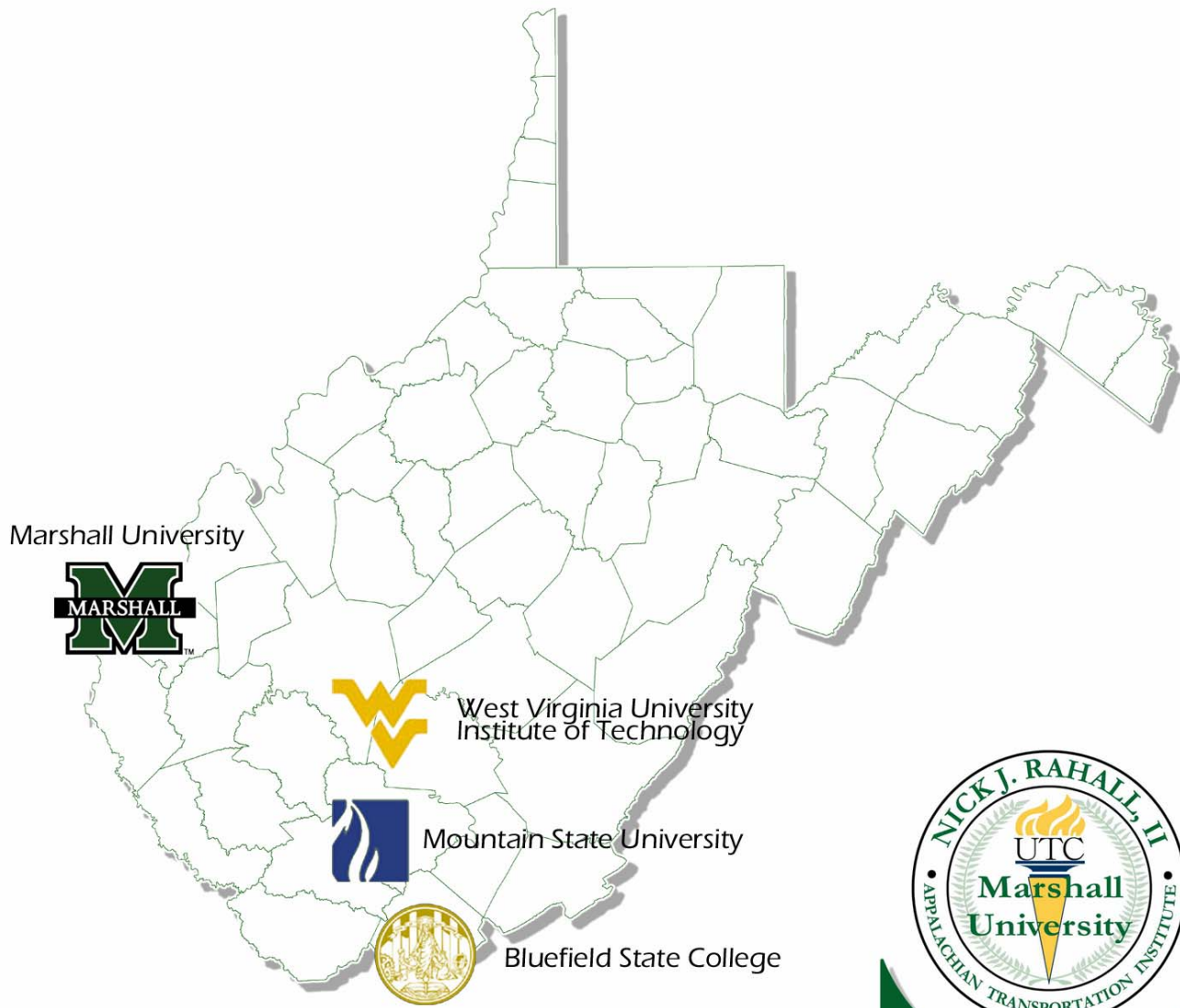


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Phase II – Enhance and Expand GIS Mapping System for The Appalachian Regional Commission’s Appalachian Development Highway System (ADHS).



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**Phase II – Enhance and Expand GIS Mapping System
for The Appalachian Regional Commission’s
Appalachian Development Highway System (ADHS)**

*Rahall Transportation Institute
Transportation Research Project ATI TTP0501*

*Prepared for
Appalachian Regional Commission*

June 2006

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Executive Summary

This project was undertaken by the Appalachian Regional Commission (ARC) and The Nick J. Rahall Appalachian Transportation Institute (RTI) to migrate the Phase I Desktop GIS Mapping System for Appalachian Development Highway System (ADHS) to Web-based GIS. The goal of Phase II was to overcome problems under the Desktop Personal Computer environment and improve coordination and automation of workflow. This will allow the ARC to maintain and operate ADHS Geospatial data with minimum cost. Suggestions obtained from multiple state workgroups during the completion of phase I were provided to help design and develop an enterprise GIS solution. Completion of this phase will lay the framework to maintain and update a web-based multi-regional enterprise ADHS GIS solution.

Project Objectives

Phase II will move essential ADHS updating applications to a distributed GIS environment. Allowing easier updates by states to the ADHS GIS, while maintaining, expanding, and continuing to support a GIS desktop application created in phase I. The goal of phase II will be to expand services to state and federal ADHS partners to improve coordination and automation of data workflow into the ADHS GIS. This will allow for more efficient data flow as well as lowering the overall cost of maintaining the ADHS Geospatial data. Additional benefits will be improved storing the updates into a data warehouse which will provide a safer and more secure atmosphere for the ADHS data. This phase will improve cooperation, data interoperability, avoid duplicate work, and create an automated mechanism for updating the ADHS. This will also help to ensure newly collected spatial data adheres to ADHS data content standards. This will further enhance the services already provided by the existing desktop ADHS GIS, by creating and expanding additional capabilities of a state-of-the-art web-based enterprise GIS. With geospatial tools specifically designed to edit, analyze and query specific information from remote locations to the Cost to Complete Estimate's centralized data warehouse. Providing an enterprise GIS solution taken from suggestions obtained from multiple state workgroups conducted last year during the completion of phase I. Completion of this phase will lay the framework to maintain and update a standalone multi-regional enterprise ADHS GIS solution.

Project Abstract:

The proposed research will advance the ADHS GIS mapping system by adding web-based GIS viewing and editing, improved data workflow and by lowering the overall cost of updating the Appalachian Development Highway System (ADHS) Cost to Complete Estimates. Additional improvements to the ADHS GIS Mapping System will make it more readily accessible to other government agencies and improve integration for advanced planning capabilities. Expected benefits will provide a safer more uniform environment for the transition of geospatial information from states to the ARC.

Task Descriptions:

1. Update ADHS

(This task is necessary to update yearly ADHS updates).

1. Update table B information to 2004
2. Update corridor alignments to 2004

2. Table B Editor and Viewer Application

(This task will create an application to view and edit table b in a similar format as seen in the existing cost to complete estimates. The first environment will be for the desktop with the potential to later move it into a web environment).

1. Design

Task 1 will include the following (2) subtasks:

- a. Design features and functions.
- b. Research.

2. Development

Task 2 will include the following (3) subtasks:

- c. Click and display.

- d. Edit feature.
- e. Report and Print Feature.

3. Document Management System

(This task will create a geospatial document management system to store various transportation documents relating to the ADHS. This system will allow a user to click on a map that will then open a menu to store and upload the document to the ADHS data warehouse, for later queries).

1. Design and Development

Task 1 will include the following (2) subtasks:

- f. Design features and functions.
- g. Development.

4. ADHS Website

(This will be the creation of a website devoted to ADHS for updates, training and frequently ask questions).

1. Design and Develop

Task 1 will include the following (2) subtasks:

- h. Design features and functions.
- i. Development.

5. Enterprise GIS

(This task will start the framework for a web-based ADHS GIS)

1. Design prototype features and functions

Task 1 will include the following (2) subtasks:

- j. Create working HTML layout.
- k. Create map files to work with existing HTML.

2. Development

Task 2 will include the following (2) subtasks:

- l. Integrate existing function with ADHS GIS.
- m. Create added functions to edit and maintain ADHS in web-based GIS environment.

3. Research integrating new prototype ADHS GIS with updated data from state DOT's

Task 3 will include the following (2) subtasks:

- n. Define access levels needed.
- o. Establish security protocols.

6. Training and Support

Conclusion

RTI developed and deployed web-based multi-regional enterprise ADHS GIS solution in collaboration with the ARC. This system will provide all the necessary functionalities to update ADHS Cost to Complete Estimate without installing any desktop application. User interface was carefully designed and developed based on suggestions from workshops. State DOTs are no longer needed to maintain phase I GIS software and geospatial data. RTI will operate and maintain the web application and the centralized database. This project will provide future benefits to other projects by providing system architecture to develop customize web-base GIS solution.