

JOINT TRANSPORTATION RESEARCH PROGRAM

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Pre-Contract Scoping Processes Value Stream Mapping

Introduction

The Indiana Department of Transportation (INDOT) is divided into six districts: LaPorte, Fort Wayne, Crawfordsville, Greenfield, Vincennes, and Seymour. Each district has the responsibility (with support from INDOT Central Office staff) for scoping the projects being considered for that district. One month prior to the launch of this project, INDOT created a new Central Office position of Statewide Director of Scoping.

At the time this project was launched, INDOT recognized that there was a need to improve the pre-contract scoping process because of inconsistencies between districts, lack of coordination/synergy between projects for appropriate bundling, and lack of long-range planning (engineering without borders). The consequences of these issues included cost-overruns, time delays, and change orders.

This research project was chartered to analyze pre-contract scoping as a business process, identify opportunities for process improvements, and help implement these improvements.

Findings

Three fundamental issues contribute to the scoping process problems:

1. The scoping process is inefficient and inconsistent.
2. Staffing for scoping is insufficient.
3. The programmed project budgets are locked in based on early, uncertain cost estimates.

While numerous actions have been recommended, and some piloted, those with the highest impact will be the actions that address these three fundamental issues, as follows:

1. Numerous proposed actions will improve the efficiency and consistency of the scoping process. Scoping peer group meetings can provide a vehicle for driving these improvement actions.
2. While the effects of staffing shortages can be accommodated somewhat by making the scoping process more efficient, staffing strategies (such as creating higher level, more esteemed scoping/planning positions) should be pursued.
3. Further refinement and implementation of the proposed future state of the programming process will provide a framework to allow later locking in of project budgets.

Implementation

Continuous improvement concepts and tools were used as the fundamental methodology for this project. The overall approach was to identify a current state of the scoping process, analyze it to identify opportunities for improvement, and then develop a desired future state and associated recommendations for actions to move toward it.

Tools used in this approach included interviewing subject matter experts (SMEs), group brainstorming, and process mapping. Mapping techniques included Value Stream Mapping (VSM) and SIPOC (supplier-input-process-output-customer) diagrams.

The first step in establishing the current state was to understand the approaches to scoping at each of the six districts. Each district was visited, and key personnel involved in scoping activities and management of the scoping process and support processes were interviewed. This included scoping engineers, scoping managers, asset engineers, system assessment managers (SAMs), and technical services directors (TSDs).

The next step was to get input from key Central Office staff to gain their insights into the current state scoping process. Directors of Bridges, Pavement, MIS, Safety Engineering, and Statewide Scoping were interviewed.

After that, a two-day scoping VSM workshop was conducted with members of all six districts and Central Office Statewide Scoping staff. District representation included TSDs, SAMs, and scoping practitioners (scoping engineers, scoping managers, and asset engineers). The purposes of the workshop were to map the current state, identify improvement opportunities, and develop the desired future state and associated action plans.

Next, a recommended SME from the University of Kentucky's Kentucky Transportation Center was interviewed. And finally, the recommended actions were evaluated, and, where possible, pilot implementations were executed.

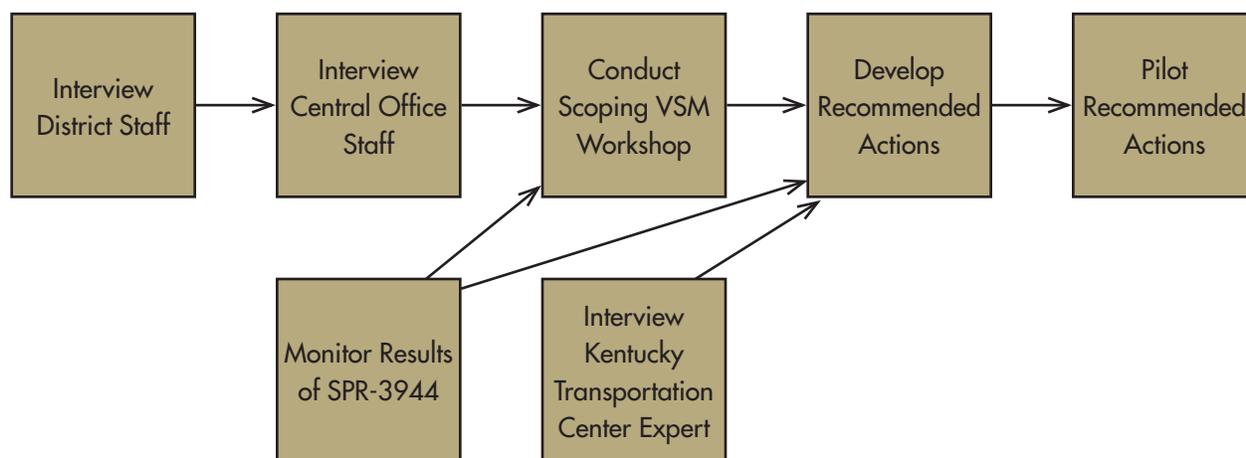
Throughout the project, progress and results of SPR-3944 ("Pre-Contract Scoping Processes: Synthesis of Best Practices"), which was being conducted concurrently with this project, were monitored and incorporated.

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Flow Diagram of the Project Methodology

