The benefit/cost analysis was performed in 2003

JTRP / INDOT RESEARCH PROGRAM

Research Pays Off

Use of Video Conferencing at INDOT—SPR 2192

Videoconferencing is a technology that can be a useful tool for INDOT in delivering training and accommodating meetings. With videoconferencing, training can be held at different sites with each site connected through the videoconferencing facility. These types of systems fall primarily into two categories, room systems and desktop. The room systems allow for bigger audiences while the desktop is attached to a desktop computer and is limited to an individual user. Desktop systems are priced below $1,000 while room systems price ranges from $5,000 to $10,000.

Approximately 80% of INDOT's training costs are due to indirect costs such as salaries when taking classes or when traveling to sites to receive the training. This cost can be reduced considerably by using videoconferencing. However, a problem with this method is that sites would need to purchase the hardware and software for videoconferencing. Another problem lies in actual ease of use. Interactions with these methods are certainly not as good as live interactions. If an effort is placed on how to interact with the equipment rather than learning the material, then the training environment suffers.

This technology is a natural fit for INDOT operations with geographically separated offices and projects scattered throughout the state. The need for this type of communication and collaboration justifies the initial investment. Costs for regularly scheduled meetings were calculated and reports from other state DOTs indicate a good return on investment and a technology that can be very beneficial for the Department.

Research Findings and Implementation

A review of eleven other DOT experiences with using Videoconferencing indicates that most states have equipped all District offices and the main office with room systems. They are being used for meetings and some training. The equipment is dedicated for DOT usage. Missouri DOT did a cost/benefit analysis and determined a 6 month payback period on the investment and a 3 to 1 benefit to cost ratio. In Pennsylvania the payback period on the initial investment ($700,000) was 9 months. PennDOT uses the equipment for all types of meetings and particularly design review sessions, FHWA meetings, and consultant meetings. In Iowa DOT a very detailed cost analysis of videoconferencing was performed in FY98 later mandated by the State Legislature. The report states a $70,500 cost savings through productivity gains and cost avoidance. They reported 134 DOT sessions using the equipment. In Wyoming the equipment is frequently used for training, both technical and non-technical, some graduate CE education, TRB sessions, and conferences from North Carolina State University.

Based upon the investigations carried out under this study on the two types of systems, it is recommended that INDOT should invest in a videoconferencing network for their operations. A travel cost analysis performed by Amy Miller from INDOT in March 1999 reveals that INDOT spends approximately $50,000 annually on travel expenses to regular programmed meetings and for personnel time at these meetings the cost is $187,238. So together, over $225,000 is spent annually on regularly scheduled meetings. The vast majority of travel is project related and is done on an ad-hoc basis. The costs for these are difficult to quantify.

This study is not suggesting or recommending that this technology will eliminate the need for meetings. But certainly some travel and time can be saved.

If all Districts, the Toll Road, Research and Central Office had a room system that would make nine systems for the state. At $9,930 each the initial investment is approximately $89,363. There has not been an analysis done on overall travel when informal and field trips are included.

Potential Benefits

As identified in the study, an analysis was conducted to determine the implementation of the system at 9 INDOT locations. An estimated installation cost of $9,930 per site was used. It was estimated that the system shall result in a reduction of 50% travel cost over the next 5-years. Therefore, the cost figure of $50,000 in travel cost per year(regularly programmed meetings), as identified in the study, was reduced to half and discounted over the next 5-years. The resulting benefit is identified in terms of travel cost savings as a direct result of using this system.

Cost of Research $10,000

Estimated Economic Value Over 5 Years At 5% Discount Rate

Costing Method	Number of Sites Considered [1]	Discounted Cost/Site [2]	Discounted Savings/Site [3] = [C-P]	Discounted Total Savings (5 years) [4] = [3] x [1]	Benefit/Cost Ratio [5] = [4] / $10,000
Current (C)	9	$26,455 (no travel savings)	$3,297	$29,673	2.96
Proposed (P)		$23,158 (travel savings + equipment)			

Assumptions

- That INDOT will install the video conferencing equipment at $9,930 per system.
- That the analysis takes into account the annual travel cost of $50,000 and the system installation cost.
- That the system shall be installed in all Districts, Toll Road, Materials and Tests, and Research (9 locations).
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- That the cost of travel will increase at 5% annually over the next 5 years.

References

- McCullouch, B.,"Construction Data Management 2000", Joint Transportation Research Project FHWA/IN/ JTRP-2000/7 Final Report, July 2000.
- Communications with INDOT Division of Systems Technology.