Virtual Project Tours Using Remote Classroom Technology

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Outline of Presentation

Virtual Project Tours – Iowa State University
  • Introduction & Review of Experiments
  • Future Applications for Industry
  • Demonstration Tour
    — State Gym renovation & addition, Ames, Iowa

Virtual Project Supervision – University of Calgary
  • Introduction & Overview
  • Demonstration

What is a Virtual Project Tour?
— A tour which results in or provides the practical effects of an on-site tour without requiring actual physical presence at the location.
Hardware Technology
• Sony Viao Mini CPU
• Sony Handycam
• Verizon Wi-Fi Card
• Cabled Cellular phone Headset

Industrial Uses of Virtual Project Tours
• Why does industry care about virtual project tour research?
  — Industry desires easy, quick, low cost and reliable process to remotely interact with remote projects
  — Experts can be taken to remote projects, remote projects can be brought to home office (and both)
  — The “beauty” is that virtual project tours are real-time (“simulcasted”) and eliminate waiting (vs. e-mailed still photos)

Industrial Uses of Virtual Project Tours
• Concept will become more of a reality for project management as technology improves quality of media
• What can virtual project tours be used for?
  “Hundreds of ways” but to name a few...
  — Equipment inspections
  — As-built condition reviews
  — Quality management programs
  — Safety field audits
  — Punch-list documentation
  — Training
Virtual Project Tour Demo

- Addition and Remodel of the Veterinary Hospital, Iowa State University, Ames, IA
- JV Project J.E Dunn Constr. & Story Constr.

Virtual Supervision

Objectives

Academia
Contractor
CMVC
Engineer
Virtual Meetings
Client
Infrastructure

• 2 High Performance Video Servers
• 10TB Storage Capacity
• Hardwired Ethernet Connection (Cat5 or Cat6)
• Wireless or Microwave Link to a Hardwired Location
• PTZ IP Camera

Ethics

System
Success Story

Purpose
• Construction Monitoring
• Quality Control and Progress Measurement
• Manpower Audits
• Ability to Check the Project Remotely
• Safety
• Construction Coordination
• Supporting Tool for Discussions & Capacity Building
• Security
Success Story (Cont.)

Advantage
• Bird Eye View
• Increase the Productivity of Supervision Staff
• Real-Time, Recording (Playback), Zoom
• Communication
• Time Saving
• Helping Project Coordination
• Worker Motivation/Behavior Modification
• Easy Access and ability of Monitor from Office
• Remote Inspection Capability

Safety Violations Before and After Camera Implementation

Virtual Supervision Project from CA, USA
Virtual Supervision Project from USA

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08.00 – 08.45</td>
<td>5min Rating</td>
</tr>
<tr>
<td>08.45 – 09.00</td>
<td>5min Continuous</td>
</tr>
<tr>
<td>09.00 – 09.30</td>
<td>30min Continuous</td>
</tr>
<tr>
<td>09.30 – 11.00</td>
<td>30min Continuous every 30min</td>
</tr>
<tr>
<td>11.00 – 11.30</td>
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<td>30min Continuous</td>
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<tr>
<td>04.00 – 04.30</td>
<td>5min Rating</td>
</tr>
</tbody>
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Results

Test Time Trend (W-I to W-VIII)

- W-I, W-III to W-V: Concrete, Formwork and Rebar
- W-II: Backfilling
- W-VI to W-VIII: Structural Steel and Steel Decking

Results (Cont.)

Overall Non-Test Time Trend (W-I to W-VIII)

- W-I, W-III to W-V: Concrete, Formwork and Rebar
- W-II: Backfilling
- W-VI to W-VIII: Structural Steel and Steel Decking
Conclusions

• Virtual presence on construction sites is a growing trend that will only increase as the technology improves
• Successful implementation will require a change in organizational culture, acceptance to change, and training

Questions?

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