Web-Based Project Management Action Research for Highway Projects Under $10 Million

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Background

- Iowa DOT undergoing a phase of complex bridge construction projects.
- A Web-Based Project Management System (WPMS) could ease the document management.
- After implementing a WPMS for the complex projects, the Iowa DOT considered identifying a solution for smaller highway projects.
Information exchange process can be classified as “difficult-to-access”. (R. Stewart, et al 2004)

Difficulties:
- Hard copy document transmittal
- Wasted time and money in this process

WPMS mitigate and try to solve the present document management difficulties.
Benefits of WPMS

- Coordination with other collaborative solutions (M. Alshawi, et al 2003).
An iterative approach to identify and solve problems.

1. Diagnosing: Identification of the problems that need to be addressed.
3. Action Taking: Planned actions are implemented.
4. Evaluation: The results of the actions are reviewed.
5. Specifying Learning: Knowledge captured is specified and communicated. (Susman et al. 1978)
First Iteration – Diagnosing

- Automatic Notifications
- Log-in requirement
- Store and save multiple document versions
- Document approval
- Comment option
  - No exceptions taken
  - Make corrections noted
  - Revise and resubmit
First Iteration – Action Planning

- Plan to identify solutions
- Evaluation criteria was established:
  - project capacity
  - storage capacity
  - document tracking history
  - accessibility
  - notification
  - approval option
  - price
  - capacity to recreate the workflow and requirements provided by the Iowa DOT
First Iteration – Action Taking

- Strategy: find a familiar user interface to the end user
- Studied social and professional connection websites.
- Solutions identified:
  - Huddle
  - TeamWork Live
  - TeamWork Project Management
  - Sosius
  - Google Applications
- Emails were created to test the WPMS
## First Iteration – Evaluation

<table>
<thead>
<tr>
<th>Feature</th>
<th>Huddle</th>
<th>Google Applications</th>
<th>TeamWork Live</th>
<th>TeamWork Project Management</th>
<th>Sosius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Capacity</td>
<td>25 Projects</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>35 Projects</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Member Capacity</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>25</td>
<td>Unlimited</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Managers</td>
<td>1</td>
<td>Unlimited</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Storage Capacity (Group)</td>
<td>25 Gb</td>
<td>100 Mb</td>
<td>50 GB</td>
<td>10 Gb</td>
<td>25 Gb</td>
</tr>
<tr>
<td>Storage Capacity (Personal)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>250 Mb</td>
</tr>
<tr>
<td>Document Tracking History</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ease of Accessability to the Site</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Document Approval Option</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Email Notification</td>
<td>Yes</td>
<td>Only for folder created</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Calendar Option</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Price</td>
<td>$200/month</td>
<td>Free</td>
<td>$149/month</td>
<td>$49/month</td>
<td>$100/month</td>
</tr>
<tr>
<td>Capacity to Reproduce DOT Workflow</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Efficient to establish the workflow before identifying WPMS.

Most of the commercial WPMS solutions available have established tasks, interfaces, and workflows.

A commercial WPMS solution is available.

Find a more customizable WPMS.
Second Iteration – Diagnosing

- Find a more customizable WPMS
  - Allows the creation of workflows
- Help in the implementation of the solution in other types of projects.
- Email notification
- Automated
Second iteration – Action Planning

- Study Microsoft SharePoint
  - Web-content management system
- Develop test SharePoint Pages using the Iowa State University Network
The SharePoint page was developed.

Problems encountered due to the University’s SharePoint License.

- Only internal users from the ISU network can access the site.
- Iowa State email accounts were created.
<table>
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<th>Feature</th>
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<th>Microsoft SharePoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Capacity</td>
<td>25 Projects</td>
<td>Depends on server space</td>
</tr>
<tr>
<td>Member Capacity</td>
<td>Unlimited</td>
<td>Unlimited- Approved by Adm.</td>
</tr>
<tr>
<td>Managers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Storage Capacity (Group)</td>
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<td>Depends on server space</td>
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<td>Storage Capacity (Personal)</td>
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<td>NA</td>
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<tr>
<td>Document Tracking History</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Ease of Accessibility to the Site</td>
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<tr>
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<td>Yes</td>
</tr>
<tr>
<td>Calendar Option</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Price</td>
<td>$200/month</td>
<td>Depends on License</td>
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</tr>
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</table>
WPMS that enables the creation of customized workflows reproduce better the needs and specifications of the project.

Can be customized with the DOT terminology.

There are some licensing restrictions in regards to SharePoint:

- Internal license – for internal users only
- External license – for internal and external users
Third Iteration – Diagnosing

- Find a way to allow external users from the Iowa DOT network access SharePoint or the documents stored in the SharePoint page.
Third Iteration – Action Planning

- Meet with the TAC.
- Identify different alternatives to allow external uses access the SharePoint docs.
- Implement the solution
- Evaluate the solution through surveys
Three alternatives were considered:

- Acquire the external Microsoft SharePoint license.
- Create an FTP website
- Use an email communication system to send and receive documents to/from SharePoint.

Current stage of the project:

- Implement SharePoint
- Develop the surveys
- Evaluate the Solution
SharePoint and FTP Workflow

Workflow courtesy of Karla Hocker, Iowa DOT
Conclusions and Lessons Learned

- Action Research is an effective method.
- Establishing a workflow before identifying solution is helpful.
- There are commercial solutions available.
- Microsoft SharePoint was chosen for implementation.
- Establishing a TAC was integral for the success of the project.
- Identifying the roles and responsibilities of each project team member, accelerates the development and implementation process.
References

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Any Questions?