

Use of an Extranet to Integrate Project Management, Budgeting and Scheduling Throughout the Entire Project Life Cycle

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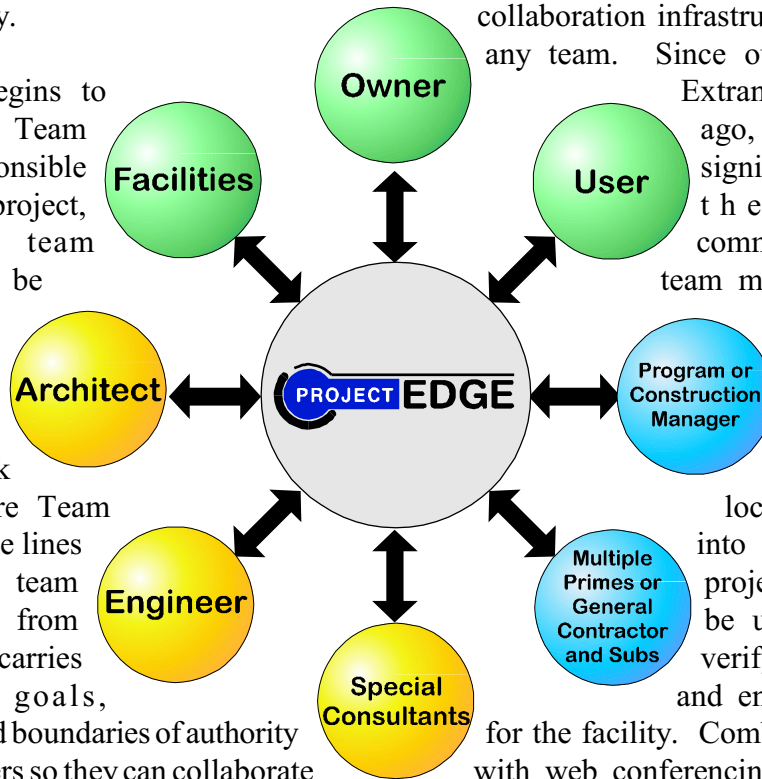
This white paper will discuss a solution for the integration of the project management efforts with budgeting, scheduling and quality control. Most, but not all, of those functions are needed throughout the entire project life cycle from the identification of need through design, construction into occupancy.

Prudent owners after having identified the need for a facility will prepare a business case to further define the needs of that facility, the dates when it is needed and the total amount of money that should be spent to both build and operate the planned facility.

As the owner begins to assemble its Core Team who will be responsible for producing the project, a self-directed team structure should be considered since it has proven effective in producing benchmark facilities. A Core Team organized along the lines of a self-directed team receives a charge from the owner that carries with it the goals, responsibilities and boundaries of authority of the team members so they can collaborate together to the highest extent possible to complete the project. Anyone considering a

self-directed team should read the Joiner Associates publication entitled, "The Team Handbook".

An Extranet is a powerful communications and collaboration infrastructure to provide to any team. Since our adoption of an Extranet nearly five years ago, we have seen significant benefits of the improved communications among team members as well as their adoption of common processes regardless of their organization or location. When put into place early in the project, an Extranet can be used to refine and verify the architectural and engineering program for the facility. Combining the Extranet with web conferencing can dramatically reduce decision cycles, reduce travel time and expense.



Estimate Integration

A Vice President of an ENR Top 100 contractor once told me that they had twenty-nine different estimators and twenty-nine different estimating systems. About six months later I retold the story during a presentation and was surprised at the end when a gentleman came up to me, handed me his business card and said “I want you to know that the count is now up to thirty-five”. We know that there are many approaches to estimating and agree that most estimators have a unique system. However, when it comes time to integrate that information, such diversity makes it difficult.

One solution that we have found is to have a common means of aggregating the estimates regardless of how they are organized at the detail level. Assume for the purpose of this paper, that all those estimates are spreadsheet based or can export their information to spreadsheets. A summary by cost code template can be developed that aggregates all of the detail for each cost code into a single amount. In most job cost strategies, the job cost information is not kept at any more detailed level than individual cost codes. Such a structure allows a uniform transfer into the job cost application because everything at that level is standardized. By working at this level of detail, we are able to integrate estimates into a job cost system with a few clicks of a mouse.

Contract Administration

As scopes of work are awarded and contracts prepared, the Extranet can be used to track each of those documents from initiation to close-out. Contract forms can be prepared in the Extranet and then circulated electronically for signature.

When executed, contract schedules of value can be exported directly to the accounting system to

record the commitments and to update the estimated cost at completion. If change requests are required, those can be prepared and circulated through the Extranet. If change orders result from the requests, those can also be initiated and tracked all the way through the Extranet including being exported to the accounting system.

Purchase orders can also be prepared and entered in a similar manner. If backcharges are needed, they can be prepared in the Extranet and transferred into the cost system using the same mechanism as purchase orders.

Except for extraordinary transactions or adjustments that are handled in the accounting system with journal entries, all of the transactions to project cost can be initiated in the Extranet and transferred directly to the job cost application without reentry of data.

Job Cost Reporting

The details of job cost reporting are left to each respective accounting system. The reports generated by each respective system could be published into the Extranet for review by authorized parties. Prior to the integration of these two applications, our accounting staff used a line printer to produce reports that were then sent by overnight package to remote job sites. Now the same information is posted for authorized persons who also receive an electronic notice that the information is available.

Schedule Integration

Depending upon the size of the project and the sophistication of the parties involved, schedule integration may be handled by calculating the schedule as a large network with many integrated subnets. However, that is probably

more the exception than the rule as most projects are likely to see a combination of schedules ranging from sophisticated to the back of a napkin. The owner's team should prepare a general schedule to put the work of all the contractors into a general time frame and sequence to define major milestones for each contract. The owner's schedule will set the general tempo of the project and the individual contractor schedules will provide the detail.

An overview schedule produced in an application such as Primavera P3 or Microsoft Project can be published in the Extranet for all the parties to consult. The publishing could be as simple as a pasted image in the database and/or the actual scheduling application files that someone could download and open with the native application to more closely coordinate their schedule with the overall schedule. If the individual files are made available, care must be taken to ensure that the versions of the file do not become confused. In an Extranet, the latest version of the file can be published for all interested and authorized parties who will have one place to turn to to get the most recent "official" schedule file.

Another approach is to provide each of the contractors and consultants with a portion of the schedule which they update. Using this approach, an update report could be prepared in the scheduling system and then distributed to all of the appropriate parties through the Extranet.

Using Primavera P3, as an example, we report on a two week current activity report with a total four week look ahead for each responsible party that can be used as a schedule of current activities and used as an input device to record actual starts and finishes as well as projected time remaining. The entries made in the update report are processed by the scheduling person after receiving electronic notice from the

Extranet that the update has been made.

Cashflow Forecasting

Forecast cashflow requirements for the entire project life cycle can be made by integrating both the budget and schedule information. Depending upon the phase of the project and the methods used, the cashflow forecast calculation can range from relatively simple to extremely complicated. Some approaches can require a great deal of data input and calculation.

We prefer an economic modeling approach originally developed by the author for the New York State University Construction Fund as a forecasting tool for forecasting the cashflow requirements of the entire university system or selected capital projects. We have continually updated that forecasting system and use it for our own projects to achieve satisfactory results using minimal data.

Contractor Requisition Processing

Before extensive use of the Extranet, we processed contractor invoices through a customized section of the job cost system. Our customized solution, based on a progress invoice method, allows for detailed schedules of value to be used for single or multiple phases of work on a line item by line item basis. The system generated invoice form eliminated the need to reenter cost codes and other information for each invoice while presenting an accurate total to date for prior requests.

The pre-Extranet approach relied on mailing and faxing of the invoice documents. If multiple steps of approval were needed, the documents frequently did not survive faxing as easily read documents.

Our solution was to combine the features of that system with a workflow driven approval process in which the contract administrator prepares the initial invoice form and then posts it for the contractor to enter their requested amounts. When the contractor has entered their request, this is transferred through the workflow process to the next reviewing person until the review cycle is complete.

Updates to the schedule of values through change orders are reflected in the next cycle of the invoice process. The update allows the contractor to request for those items when the work has been completed. Change orders are entered on the requisition form in the same level of detail as the original contract schedule of values. This coding detail gives each member of the project team the ability to quickly look up the projected cost at completion, amounts paid to date and amounts that the requisitions are drawn in the current cycle. Additionally, the same information is available to update the cashflow projection whenever that calculation is made.

For more information on ProjectEDGE, white papers or demonstrations, visit our web site at www.projectedge.com or contact us at 888-516-EDGE, Fax 315-471-6659 or e-mail at projectedge@edgewater.net.

Integration with other Construction Management Applications

In many projects, there is no common contract administration system used for the owner, its construction manager, if any, and all of the respective contractors. Some Extranets, such as ProjectEDGE, provide a solution by giving all of those parties the ability to do all of their communications, RFIs, submittals, punchlists and contract administration in the Extranet where each party can share the information within the extent of their access rights.

If the contractor or other party maintains a separate system, it is possible to export the information from ProjectEDGE through a spreadsheet format that could be used directly as a spreadsheet or imported directly into the contractor's in-house systems. However, since the project information is available anywhere at any time through the Internet, most contractors should find that degree of integration unnecessary or redundant.

About the Author:

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To learn more about Use of an Extranet to Integrate Project Management, Budgeting and Scheduling Throughout the Entire Project Life Cycle, contact:

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