Cost Reduction by using "Extranet": A Study on Construction Management Resource

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Introduction

The construction industry for the past decades has gone through many changes. Better equipment, faster tools, and telecommunications have made things in the industry flow easier. This paper focuses on the cost reduction and related one of the innovative construction technologies called "Extranet".

"Extranet Systems (ES)" is a new word after Internet and Intranet. ES attempts to bring the many major factors of a project together and have them interact within "Virtual Interface". In short, all communication documents and construction documents go through ES in order to centralize the project management. However, the problem is that there is no project circumstance to test this ES software. It is because that construction team working on a major project probably will not use their resources to examine both traditional and Extranet services. Accurate information is not realistic, so there is much work that needs to be done in this area to find whether these services reduce cost of the project.

Therefore, the objective of this paper is to examine the efficiency of ES by using available information and to discuss the advantage and disadvantage of ES.

Overview of ES software

Many company such as Blueline Online[1], Ingenium[2], and Evolv/Bricsnet[3] have started to provide this management services for array of fees depending on project size, number of players, and firm size. According to Blueline Online producing the ES software called "ProjectNet", "ProjectNet is an out-sourced Internet-based project information and workflow management service for the design, engineering and construction industry"[1]. The following characteristics are showed as benefit from ES; create a project knowledge base for the project life cycle (PLC); make better business decisions; reduce time to market through intuitive workflow and improved collaboration; reduce project risk through improved communication and audit trails; reduce project costs and expenses by working smarter. Furthermore, in terms of Quality, Time, and Money, ES can be described in Table 1.

(Table 1) Extranet in view of Quality, Time, and Money

Quality	Creates a more informed team Enables continuous collaboration
Time	Reduces turnaround time Encourages timely and delivery costs
Money	Reduces travel and delivery costs Reduced insurance premium

Case Analysis –Examine the ES (A case study on $6million-one year project)

This paper examines the $6M-1.5 year project for remodel of the building as a small project. Actual data and cost information were received by Rettburg Crubber Architects and CM's on site.

>They sent out 120 bid construction documents –8lb each

>They sent out 120 specifications –2lb each

>They sent out 40 preliminary construction documents –3lb each

>They spent about $100 for Fax

By using the available data and information, the total project indirect cost is calculated as follows:

(Table 2) Total indirect project cost (6M-1.5yr case)

Cost of Shipping	$6,570
Cost of paper usage	$14,400
Cost of design & communication	$920
Cost of field communication	$2,725
Total	$24,615
Misc./ Unseen	$2,500
Total indirect project cost	**$27,115**

The calculation of the ES cost was showed as follows, referring to ProjectNet and ProjectCenter:

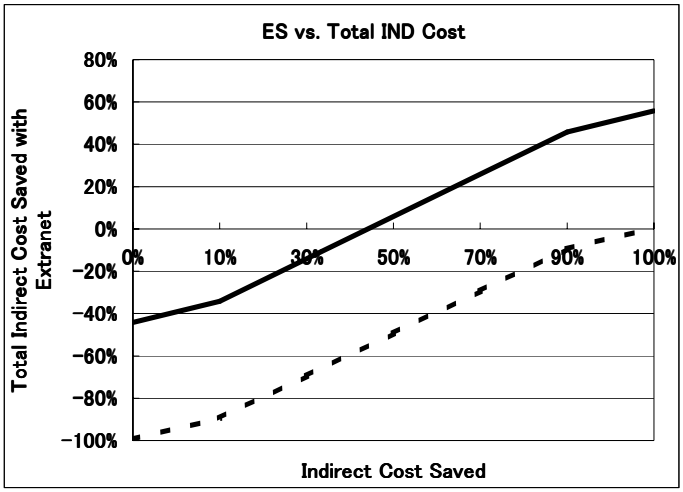
(Table3) Total Extranet cost

Avg. Set-up Fee		$15,467
Avg. Monthly Fee	$560*18 months	$10,080
Avg. Internet LAN set-up (56k to 214k cost used)		$775
Internet Monthly Fee	$34.95*18 months	$629
Total Extranet Cost:		**$26,951**

A general trend can be seen of % saved by using ES vs. the

total project indirect costs saved shown in Figure 1.

(Figure 1) ES vs. Total Indirect Cost



(N.B.) Location of all the major players, Cost variations of indirect inputs, Scale/Type of project, Project delivery option may be attributes which influence the total indirect cost. This case study only considers the Scale of the project to examine the tendency.

6M-1.5yrs project

The breakeven point is about 99% and it is hardly high enough to justify the costs.

15M-1.5yrs project

Assume that a similar project was done with a budget of $15M over 1.5 years. Indirect costs were $61,070 as a similar fashion (calculated by proportioning what was used in $6M to an equivalent $15M). In this case, the breakeven point is about 44% of the indirect costs.

Discussion and Concluding Remarks

Although the example software companies are assuming with a "20-40%" indirect savings and the above case study showed the similar tendency, management efficiency, increased schedule productivity, and so on should be considered. Generally speaking, the case study shows that ES is the most effective in reducing costs in many different projects:

1. Larger projects with more indirect costs
2. Far distances between managers

(Poor communication, e-mail, drawings, and so forth)

3. Project with higher than normal indirect costs

On the other hand, the ES is not effective:

1. Smaller projects
2. Projects with relatively low indirect costs
3. When players are located close to each other

At the same time, most of ES companies describe the advantages of ES but there are few suggestions. Possible reasons for reducing the cost are described as follows:

1. Travel Savings: This may be attributed to the ability of ES to provide better communication. For example, those who need to travel around 30 minutes to attend the meeting. Through ES, they could avoid.
2. Telephone: One primary advantage to ES is that users will not have to call several different parties to notify them of the latest change to the construction documents. Moreover, users do not have to play Phone-tag to try to catch another person in the office.
3. Shipping Parcels: One of the significant points of ES is that it possesses ability to reduce shipping cost. In almost all projects, there is a need to ship construction documents, specifications, material samples, highly classified documents, defective components, references, and so on. This will reduce the cost of shipping parcels.
4. Copies: Since companies generate a lot of paperwork, project manager also have to consider how to reduce the amount of papers. Many documents that are circulated are often insignificant. By using ES, they are available permanently to check whenever they like.
5. Delay: By implementing ES, the delay associated with poor communication is reduced. Due to the under pressure of schedule, several tasks in this industry, instant information and reduction of miscommunication are vital.

Further study is necessary to examine the efficiency of ES and its application.

References

[1]ProjectNet. 2000. <http://www.bluelineonline.com>

[2]ExtraNet. <http://www.ingenium-tech.com>

[3]Bricsnet Project|Center. <http://www.bricsnet.com>