Electronic Contract Management

Manju Pillai, Pramila Adavi

Abstract- The world today is moving on to paperless process to reduce manual intervention and come up with a flawless system. Contract management is an important issue in construction industry. Managing contracts in construction organization is cumbersome due to multiple stakeholders being involved in the process, Hence the need for managing the contracts in a systematic and organized manner. Electronic Contract Management forms an aid to managing multiple contracts in a construction organization. Electronic contract management is a system having constant process of ensuring that a contract is well structured and reviewed appropriately.

This system will streamline the business process by reducing the time taken to create, review, execute, and approve contracts. This in turn would ease activities like tracking, central storage of contract documents, and reduction in disputes. Electronic contract management would thus minimize risks associated with manual data entry. Key objectives of electronic contract management are

1. *Ensure easy access to contract information*
2. *Improvised Contract workflow*
3. *Flawless billing system*

This paper illustrates more on Electronic contract management which automates and simplifies the lifecycle process associated with creating and managing the contracts or legally binding agreements.

Index Terms - Electronic contract management, Contract management process, Contract change process.

I. INTRODUCTION

Technology today has advanced to such an extent that it has eradicated conventional techniques and has replaced it with efficient and time saving mechanisms. Electronic contract management is a result of such technical advances that the construction industry has adopted. As a part of these changes the construction process is enhanced with the help of modern electronic systems to enable strong partners/stakeholders relationship.

Contract management is an important factor which directly affects the following factors of the project:

1. Scope
2. Quality
3. Time
4. Cost &
5. Resource

The conventional method of managing contract involves risks and chaos which include inadequate information in contracts, inadequate delegation of authority and responsibility, fraud, theft, corruption, other unethical activities, communication gap, delayed financial decisions thus dampening the progress of the project, all due to manual intervention in managing contracts

Some of the limitations in conventional methods are:

The process is slow and does not favor a life cycle cost approach to projects

1. Requires large staff to conduct the whole process
2. Communication gap between the partners/ stakeholders
3. Poorly drafted contracts
4. Delayed financial decisions and so on...

Time demands for an Electronic Contract Management to overcome most of the limitations of manual method and to gain maximum benefits from Contract Management process. The Workflow would be automated; the alerts and other regular reporting would be generated by pre-determined parameters.

Visual effects often add to our understanding. Let me with the help of the below flowchart illustrate the basic concept of Electronic Contract Management.
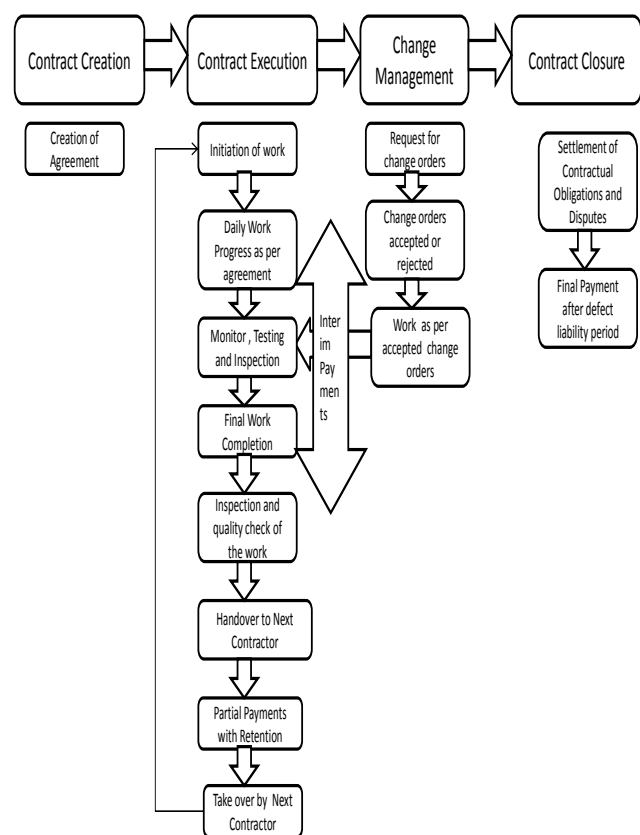

Fig.1. Contract Management Process workflow

Each stage indicates who would be involved, the processes to be followed, what data needs to be collected and where it would be re-directed. With a process map in hand the team would be in a position to assess opportunities for optimization through automation. In order to get the documents in an electronic repository with some amount of useful database fields, a unique key point/data will have to be captured as and when the documents are created. Points of integration with other systems are to be identified to work in line with functions and disciplines of other systems. For example, for bill payments the integration would be with the organizations accounting system (payables and receivables). Such simplified process workflows would also eliminate any occurrence of disputes and biasing.

   Manju Pillai, Department of Civil Engineering, Maharashtra Institute of Technology, Kothrud, Pune-38, India

   Pramila Adavi, Department of Civil Engineering, Maharashtra Institute of Technology, Kothrud, Pune-38, India

II. OBSERVATIONS

Contract Creation

In conventional method Contract Creation becomes a tedious process due to number of negotiation activities and consumes time because of non availability of the parties. The electronic system will ensure a draft of agreement is generated directly from work order/service order/purchase order. System will include various agreements to be formulated based on individual organizations terms and conditions.

Electronic contract creation helps the stakeholders review and approve the terms and conditions effectively before the final digital signature. History of approvals and signatures are maintained in a central repository. This system helps to reduce the amount of time it takes to create, negotiate, review, execute and approve contracts with an electronic approach that automates workflow, automatically notifies partners/stakeholders, retain document version, history, provides electronic/digital signatures and keep track of all activities. A unique identification would be assigned to each contract and general information would be recorded. This will allow reports to be sorted by partners and other stakeholders to gain a view of their overall performance across multiple contracts.

Contract Execution

An accurate history of construction project event is important to avoid delays, dispute etc. Visualized information will help the whole project team to know the status. The reports can be created in the corporate designs, in standard output formats and diagram type if desired. All reports would be automatically generated and sent on a regular basis via e-mail. Progress report can be used to generate progressive payments i.e. interim payments.

Payments and collections depend largely on policies, procedures and systems to ensure.

1. Good record keeping
2. Financial billing and payment systems
3. Streamlined and well documented procedures and
4. Staff performance in carrying out routine tasks and timely escalations

The contract execution process within system will involve different steps as below,

1. After the work has been initiated, daily progress would be tracked and analyzed to ensure the progress of work is as per planned schedule
2. Simultaneously monitoring and inspection would be performed to evaluate the quality of the work completed
3. Monitoring and Inspection will help in evaluating whether interim payments can be completed based on Planned Vs Actual work completion
4. Once the deliverables are complete the contractors will create an invoice receipt in the system this will in turn be verified by the accounts payable. Once verified, the payment then would be made to the contractors based on the payment terms maintained in the system
5. Since multiple contractors would be maintained, the handover – takeover process would be executed along with the contract checklist to ensure 100% completion of work as per contract

Above points depict the Start to End contract execution process, however change becomes an inevitable part of any project. A complete Change Management module has been included as part of Contract Execution process to avoid disputes and maintain documented change requests.

Change Management

A change is typically understood as the difference between the contract requirements as set forth in the original agreement between the parties and the requirements imposed subsequent to this agreement. Changes that arise during construction can originate with the owner, contractor, or even third party of the contract.

The change management process is divided into 4 parts: Identification> Evaluation> Approval> Notification. This process can be viewed in the below flowchart.
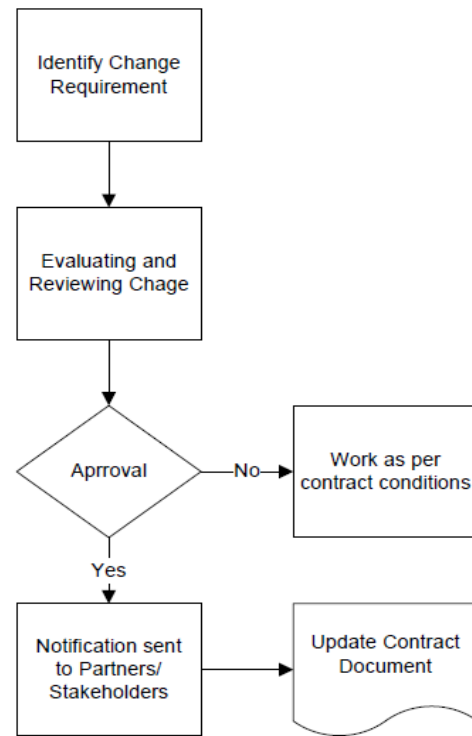

Fig.2. Change Management Process workflow

Above workflow stages can be elaborated as below:

Identify Change Requirement: In this stage of change management changes are pursued and requested. A change requestor designates a reviewer and approver. The requestor should attach relevant documents to help change reviewer/ approver in next processes

Evaluation and Reviewing Change: This stage contains a significant amount of information as it is the most important stage in the change management process. Once review request on changes are received from the identification stage the change manager(s) conduct the assessment based on the evaluation criteria.

Approval: When an assessment is completed the evaluation scores are calculated automatically and then approval on changes is requested along with the evaluation results. However if the reviewers reject the changes the progress is returned to initial stage

Notification: An alert/ notification of approved changes with the final approval will be sent to each partner or stake holders. Once the information is reviewed the contact document can then be updated.

All the information generated in the earlier process will be stored in the change database.

Contract Closure

Contract closure is done when all contract obligations and requirements are met; all deliverables are verified and all payment activities by both the parties are fulfilled. Contract closure process will be interlinked with several other modules within the system. It would be based on multiple conditions such as Alerts for Contract renewal, termination of contract depending on termination parameters, final payment alert depending on defect liability period etc.

Since contract closure also depends on individual aspects of the parties involved, which can lead to more terms and conditions of the individual organization before the contract can be closed and these additional terms can also be included in the system which will allow the parties to select appropriate contract closure process. At the end of contract closure summary of all contracts, would be maintained in the form of a template.

III. BENEFITS

1. Standardized Processes and Procedures
2. Role based view display i.e. key performance indicators and action oriented dashboards
3. Different dashboard views would be available based on organizational hierarchy
4. Significant reduction in time and effort required to track and administer contracts.
5. Improvement in business process efficiency throughout the contract management lifecycle with automated workflow
6. Each day users can automatically receive their assigned tasks to be performed.
7. Daily status of activities completed and percent complete etc.
8. Complete change tracking system organizes change information that may impact the overall project schedule and total project cost
9. Reduction in manual processes and contract administration workload through process optimization and automation
10. Consolidation of contract database
11. Improved contract consistency and user- friendliness by leveraging contract template functionality
12. Elimination of duplicate effort through integration with ERP, document management, and other legacy systems.
13. Instant access to project data
14. Extensive reporting capabilities
15. Improved relationship between stakeholders
16. Improved stakeholder participation
17. Improved contract visibility & access to review and edit
18. Increased collaboration through online interaction which streamlines the creation, negotiation and management of contracts field and other non-contracting staff

IV. CONCLUSION

Electronic contract management plays a significant role in construction projects and organizations. It is an effective and efficient solution to the problems encountered in the traditional techniques of managing contracts. Successful implementation of electronic contract management would lead to a revolution in the construction world. Electronic contract management may increase the effectiveness in managing the contracts leading to cost reduction. It may

provide strategic and competitive advantages over paper contracts.

Access through internet enables speedy output of transactions. The waiting period for approval would drastically come down which would lead to delivery of projects on time. Successive payments can be made based on the business conducted as per the terms of contract. The organizations can keep an eye on the revenue leaks due to manual intervention and reduce the same on implementation of intelligent contract management. A history of contracts can be maintained which may prove useful in evaluation of partners in future. No risk of data loss as the documents can be tracked through Document management system. All the details and documents are highly secured. Electronic based information system can be password-protected and encrypted, so only authorized users can access the data. Electronic contract management is thus a stepping stone of a transparent contract management system in the world of construction.

REFERENCES

[1] The Chartered institute of Purchasing and Supply 'Contract Management Guide'
[2] International Association of Contract and Commercial Managers (IACCM)
[3] FIDIC Website
[4] Australian Government 'Public Private Contract Management'
[5] Chang, A. and Ibbs, C. (1998). "On-Call Contracting Strategy and Management." J. Manage. Eng.,14(4), 35–44, TECHNICAL PAPERS. Journal of management in engineering, Volume 14, Issue 4 (July 1998)
[6] Cheung, S., Yiu, K., and Chim, P. (2006). "How Relational are Construction Contracts?" J. Prof. Issues Eng. Educ. Pract., 132(1), 48–56.Legal affairs section. Journal of Professional issues in engineering education and practice,Volume 132, Issue 1 (Jan 2006)
[7] Shumway, R., Richard, A., and Ritti, J. (2004). "New Trends and Bad Results in Construction Contracts, Part I." Leadership Manage. Eng., 4(3), 93–98.
[8] Thomas, H., Smith, G., and Wright, D. (1990). "Resolving Disputes over Contract Notice Requirements." J. Constr. Eng. Manage.,116(4), 738–755.

First Author – Manju Pillai, M.E. Civil Construction Management student, Maharashtra Institute of Technology, Kothrud, Pune-38, India.

Second Author – Pramila Adavi, Associate Professor, Maharashtra Institute of Technology, Kothrud, Pune-38, India.