

Online Vendor Management System of eProcurement

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Abstract- eProcurement is a comprehensive e-infrastructure that will help the government and the citizens realize the vision of fuelling growth via profitable B2B e-commerce, providing a robust, proven platform used by the largest companies in India and the world. It enables trade between companies of different sizes, platforms and locations. The eProcurement platform provides its members with access to several online tenders published by the departments. The Tender Management Software helps buyers and suppliers to reduce the cycle time, unnecessary paper work, waiting in long queues and simultaneously maintain the transparency in the entire process. eProcurement will be utilized by all departments of Central and State Governments including, Local Bodies and Municipal Corporations along with their vendors. Co-operative sectors, public sectors units can also use this solution. This system will have a Vendor Registration details that helps in tracking of activities by any bidder across any bidding agency. It is planned to be developed using tools such as Dot Net, SQL. This module can be easily integrated with the existing module of eProcurement giving it a full-fledged vendor module for use.

Keywords -- eProcurement, Vendor, Tender.

I. INTRODUCTION

Service-oriented architecture (SOA) is a software design and software architecture design pattern. It is based on distinct pieces of software providing application functionality as services to other applications. This is known as service-orientation. It is independent of any vendor, product or technology. And the project eProcurement comes under service-oriented architecture.

The existing eProcurement [1] system needs sophisticated vendor registration methodologies to overcome potential flaws in the system. A new requirement and work flow is to be added to the vendor registration module. And the workflow of the existing eProcurement system contains tender creation, uploading/publishing of tender documents, amendment notice, downloading bid documents, online clarification on tender related queries, bid submission/re-submission, bid opening/evaluation and award of contract need to be consistent and more efficient. The vendor registration module is a value added service to the existing eProcurement system.

Government eProcurement System of NIC (GePNIC) is an online system developed by National Informatics Centre (NIC), Government of India to facilitate all stages of procurement process for goods, works and services undertaken by Government Departments and Public Sector Undertakings.

GePNIC converts tedious procurement process into simple, economical, transparent and more secure system. Today, many government organizations and public sector units have adopted GePNIC. Ministry of Commerce and Industry, Department of Commerce has mandated early and fast adoption of a standardized eProcurement system in all the Central and State Government Departments through the Mission Mode Project on eProcurement [4].

A. Vendor

A vendor or a supplier [2], in a supply chain is an enterprise that contributes goods or services in a supply chain. Generally, a supply chain vendor manufactures inventory/stock items and sells them to the next link in the chain. Today, the terms refers to a supplier of any good or service. Big Enterprise Resource Planning (ERP) providers which offer e-procurement as one of their services, and the more affordable services focused specifically on eProcurement. Purchase orders are usually used as a contractual agreement with vendors to buy goods or services. Vendors may or may not function as distributors of goods. They may or may not function as manufacturers of goods. If vendors are also manufacturers, they may either build to stock or build to order.

II. OBJECTIVES

1. The online vendor registration system of eProcurement will have a Pan India Vendor Registration details so that tracking of activities by any bidder across any bidding agency can be completed.
2. This platform is planned to be developed using tools such as Visual Studio, Dot Net, and SQL.
3. It can be easily integrated with the existing system of e-Procurement thus giving it a full-fledged vendor module.
4. It can reject registration of such vendors as they do not conform to the standards and conditions set.
5. The registration for new vendors with minimum procedures is applied to get more vendors/clients in the system.
6. It seeks to include a process to bring the existing online platform for e-Procurement into the mobile platform to give vendors a convenient mode to register their tenders.
7. As a measure of future enhancement, it seeks to provide

with security in mobile platform to ensure secure transactions.

III. IMPLEMENTATION

A. Application description

Government of India invites application from existing and new manufacturers/suppliers for registration as Vendors for e-Tendering Process and they are offline in procurement processes. In the case of Online Vendor Registration System, the manufacturers/suppliers who are interested in business partnership with the Government will be requested to create an account and fill-in the Registration Format and submit to the Senior Manager-Purchase with all the supporting and required documents. The information/documents furnished by the manufacturers/suppliers will be treated strictly confidential.

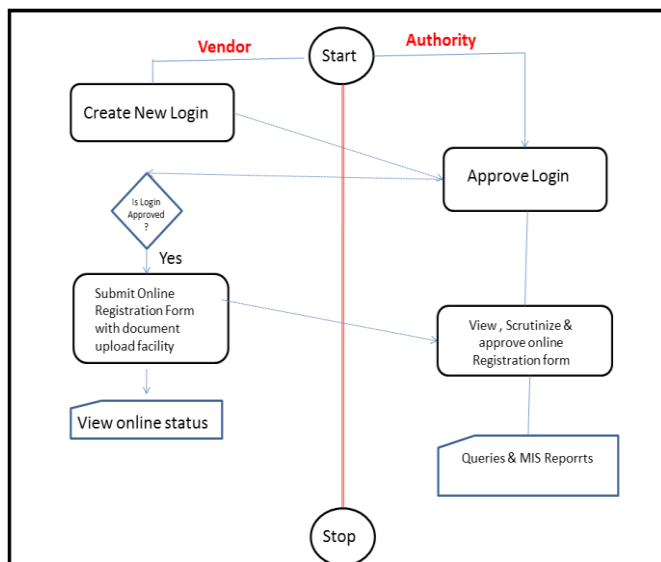


Fig 1: Workflow diagram of registration system

B. Work plan

The existing e-Procurement system needs sophisticated vendor registration methodologies to overcome potential flaws as also vulnerability in the whole system. Enrollment of prospective bidders/contractors who represent manufacturers, entrepreneurs, suppliers and works contractors in a simple, user friendly and secured platform is proposed. Another objective is allowing online bid submission/re-submission/withdrawal seamlessly only the registered vendors. The system seeks to ensure hassle-free online submission of documentary proof for registering in the Vendor Registration Module. The registered vendors are allowed to interact with the Principal/Government Agencies through Digital Signature Certificate authentication [7]. The encryption and decryption of technical and financial bids submitted by the bidders are the top priority in order to ensure sanctity of transactions. And a built-in two factor authentication to ensure utmost security of transactions. The

live bid opening view for bidders with email/SMS alerts at every stage of e-Procurement process is also proposed in order to keep the bidders well informed at every stage of registration, bidding process etc. which will culminate in total transparency in the transactions and thus result in zero scope of possible corrupt practices by the stakeholders.

C. Registration module

The vendor first visits the home page and then signs up if he/she is a new vendor and unique id is allocated to the vendor and an automated password will be generated at the admin side and that will be sent through the e-mail. The vendors will be allowed to change the password after their initial login with the auto generated password. The vendors will be filling the required details and the vendor finally able to preview the registration details. The vendor submits the form finally.

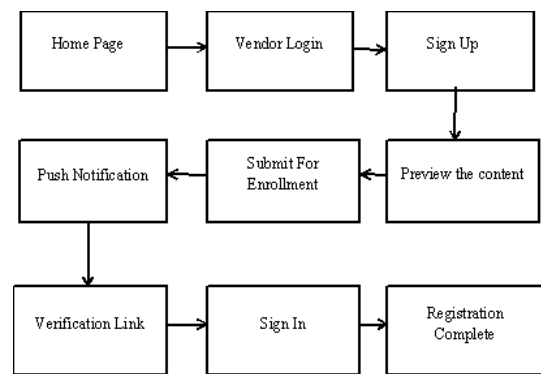


Fig 2: Registration module of eProcurement system

D. Verification module

After the completion of registration details and submission by the vendor, it will be stored in the database and the admin checks and verifies the details of the vendors manually. Then the vendors will be sent a push notification for invalid vendor documents and the reports are generated. A separate database will be maintained for the vendors who produced the invalid documents.

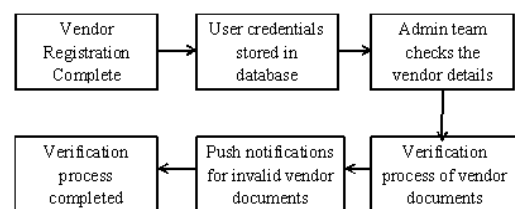


Fig 3: Verification of vendor details

E. Approval

The admin verifies the details of the vendor at verification stage. At approval stage the admin filters the suitable vendors, who are eligible to participate in the bidding. In the existing

system there is no sophisticated approval process since the vendors were allowed to provide only limited detail initially. Here the vendors are approved by ranking system in which the vendors are ranked by marking system. The weightage for all the details of the vendors will be decided by the business process team and percentage is calculated. If the vendor scores an average of seventy five percent or above then the corresponding vendor is allowed to participate in the bidding. The remaining vendors will be rejected and they will not be allowed to participate in the bidding. The final reports are generated.

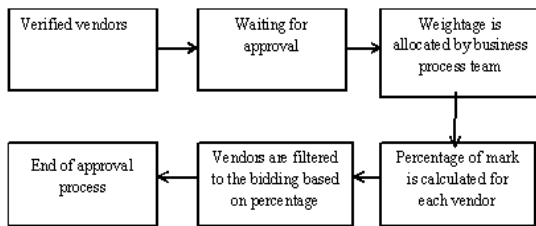


Fig 4: Approval process of registration

IV. METHODOLOGIES

The eProcurement system uses legally valid class of Digital Signature Certificates (DSC) issued in accordance with IT Act 2000 for authentication at all levels and 256 bit encryption with SSL security. The rights/roles are allocated to ensure only authorized personnel perform the task. A security audit certificate from STQC (Software Testing and Quality Control) and recommended CERT-In (Computer Emergency Response Team-India) Certified Auditor are built in.

Both the technical and financial bids [3] are encrypted at the client end. The GePNIC has been built-in with comprehensive audit log facility for detailed auditing of all transactions. The audit logs are secured and tamper proof with provision to know the details whenever required. Using DSC, the buyers and bidders can be assured of origin/source, security of the transactions, authenticity and accountability of the users. GePNIC supports multivendor DSUs/ eTokens from suppliers such as NICCA/ SIFY/ nCode/ eMudhra/ MTNL.

A. Salting

In cryptography, a salt is random data that is used as an additional input to a one-way function that hashes a password or passphrase.

B. Hashing

A hash function is any function that can be used to map data of arbitrary size to data of fixed size, with slight differences in input data producing very big differences in output data.

C. Advanced Encryption Standard(AES) algorithm

AES is based on a design principle known as a substitution-permutation network, combination of both substitution and permutation, and is fast in both software and hardware.

V. SCOPE OF THE SYSTEM

System has to facilitate to create login for new vendors for submission of Online Vendor Registration Form. The login credentials will be sent to the vendor through e-mail. Using the login credentials, vendor should be able to submit the Online Registration Form including upload of any required documents. System will have the facility for Competent Authority (viz. Purchase Manager/Supplies Manager etc.) to view the online forms, submitted by the vendors. Post Verification by the Competent Authority, system will have the options to Approve/Hold/Pending/Rejected, by specifying appropriate comments. System will provide Application Registration Status to the vendor, through their respective login. System will provide, Queries, MIS Reports as per the requirement of Competent Authority.

VI. CONCLUSION

At the end of the development and launch of the Vendor Registration Module for eProcurement system, it is expected that all types of vendors located in the length and breadth of the country as also the world over, ranging from small time traders, works contractors, manufacturers to world renowned multinational companies will have balanced opportunity in the Government sector eProcurement process. This in turn will result in level playing among all the stake holders in the business. This is also expected to achieve total transparency in the hundreds of thousands of tenders released by the Government sector every now and then. Needless to add that the more the transparency is achieved, the better is the management of corrupt free tender process which is the ultimate goal of the Government of the day.

The vendor rating is also made possible in the proposed Vendor Registration Module for eProcurement system which seeks to provide the classified information on the vendors standing which will help the Tender Releasing Agency viz. the Government authorities to segregate the small traders in order to safeguard their interest in small value tenders. Further the higher value tenders can also be made open only to the companies of higher standing in order to reduce the glut of tenders from un-qualified vendors.

With the better promotion of the Vendor Registration Module of the eProcurement system, the result of level playing field shall ensure that even smallest vendor in a remote rural area is able to be part of the tendering process of the Government according to their ratings; thus achieving the concept of equal opportunity to all that is enshrined in the Constitution of India.

VII. FUTURE ENHANCEMENT

As a future enhancement, the eProcurement system can be designed to enable mobile platform and make secure transactions. In later stages, the entire eProcurement module can be transformed into the mobile ecosystem.

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