Government eProcurement System of NIC, driving National & International Procurement

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Experience Sharing - PKI Applications at Scale

By:
National Informatics Centre,
Ministry of Electronics & Information Technology, Government of India

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Authors: Mr K Srinivasa Raghavan, Scientist G | Ms Usha Saxena, Scientist F
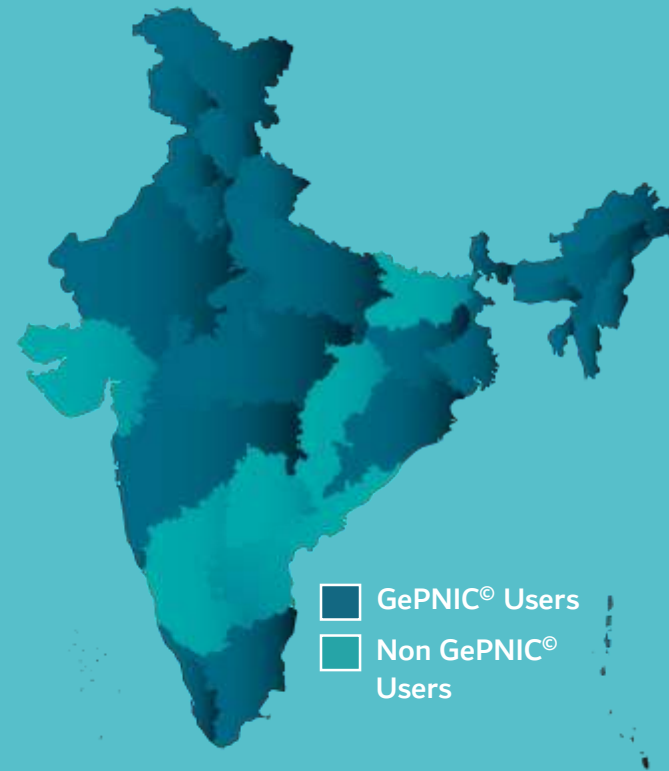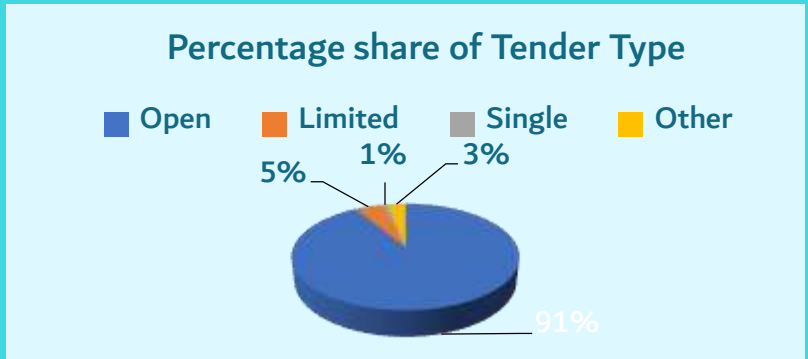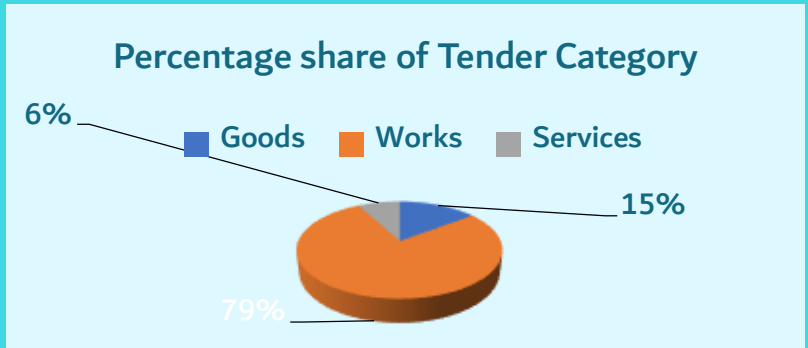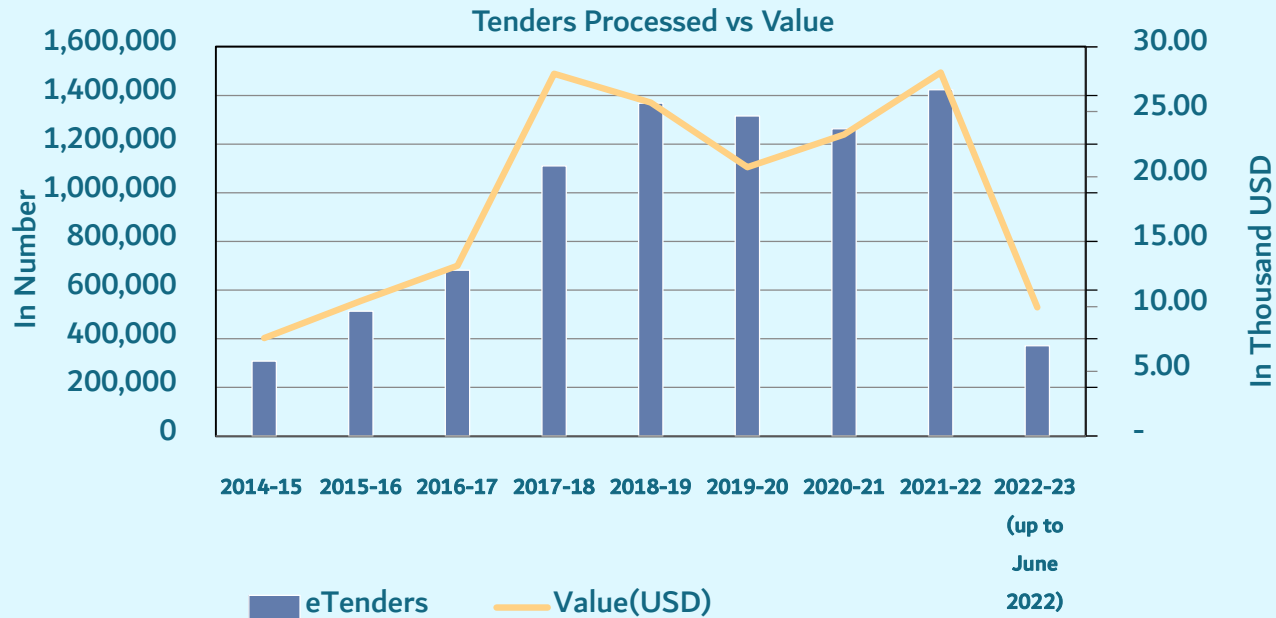
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Background & Objectives

- Government eProcurement system of NIC, GePNIC is a Government developed , owned and manged eGP platform to facilitate online electronic tendering.
- Over the last decade, the platform has evolved catering to end user requirements and in turn has rich feature, functionality and security stack.
- It caters to the complete gamut of procurement through electronic means.
- Implemented across India in 31 States / Union territories and over 689 Central Government Entities, facilitating National and Global Tenders with multi currency.
- Also facilitates, eAuction for conducting forward and reverse auctions.
- Single product , Configurable features, Quick On boarding .
- Meeting Objectives of Transparency, Authenticity, Security, Non discrimination, Accountability.

Magnitude of Trade Facilitation

- Government eProcurement system of National Informatics Centre, GePNIC is the core engine which facilitates eGovernment Procurement (eGP) across India and is implemented as Central Public procurement Portal (eprocure.gov.in/cppp)
- Average monthly transactions ~ 0.1 Million electronic tenders worth 31.40 Billion USD approx.
- Caters to 75-80% of procurement needs of India
- Certified by World Bank as well as Asian Development Bank
- Certified by Standard for Testing and Quality Certification, for (Security, Functional and Hosting Infrastructure)

GePNIC© Users

Non GePNIC© Users

1 8.8 Million Tenders

2 Worth 1589 Billion USD

3 0.8 Million Bidders

4 0.43 Million Procuring Entities

Implementation Timeline, Growth at a Glance

Tenders Processed vs Value

Y-axis (left): In Number — 0; 200,000; 400,000; 600,000; 800,000; 1,000,000; 1,200,000; 1,400,000; 1,600,000

Y-axis (right): In Thousand USD — -; 5.00; 10.00; 15.00; 20.00; 25.00; 30.00

X-axis: 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23 (up to June 2022)

Legend: eTenders | Value(USD)

Percentage share of Tender Category

Legend: Goods | Works | Services

6%   15%   79%

Percentage share of Tender Type

Legend: Open | Limited | Single | Other

5%   1%   3%   91%

Threshold value for mandatory adoption of etenders:-
Before 2014 - 16044 USD & above   FY 2014 - 15 onwards - 7940 USD & above   FY 2015 - 16 onwards - 3009 USD & above

Salient Features - Functionalities

- Caters to Goods / Works / Services contracts
- Flexibility to invite – Open /Single /Limited / Request for Proposal (RFP) / Request for Quotation (RFQ)/Expression of Interest (EOI)/Global tenders with Multi Currency/ Quality and Cost Based Selection(QCBS)/ Reverse-Forward Auction / Rate Contract / Tender cum Auction/ Facility for Single/Multiple cover(s) with Multiple Bid Openers
- Facilitates Two Stage bidding, Non Disclosure Agreement (NDA)
- Auto-Tendering with customised Technical Parameter Sheet
- Configurable Price Bid templates to suit Turnkey and Public Private Partnership projects
- Vendor Performance , Vendor Debarment Information, Vendor Grievance redressal
- Integrations with around 40 external systems for data exchange
- Real time Dashboard with Key Parameter Indicators

Salient Features - Security Aspects

- Robust and Secured system - Key aspect of success and wide adoption
- Mandatory use of Digital Signatures Certificates, issued by Indian Certifying Authority (CA)
- Two factor authentication for access, Role based access control
- Public Key Infrastructure based encryption for Technical and Financial Bids (Both separately).
- Adhering to PKCS 7 format standards as per CVC Guidelines
- Audit logs, Time stamping, Network Time Protocol
- Secured Hosting in ISO 27001:2013 & 20000-1:2011 certified Government owned Data Centres
- Provisions for Disaster recovery and Business Continuity
- Drastic reduction in number of cases pertaining to Right to Information (RTI), Vigilance and Court cases, Audit observations.

Benefits to Buyers

- Uniform and standardized tendering process across the department
- Reduction in Procurement cycle time
- Reduction of Tender publishing costs, paperless and environment friendly
- Safe, Secured and Standard Platform
- Procurement Processes Efficiency has enhanced
- Multiple bid-formats
- Wide publicity
- Discourages Cartel formation, raises red flag
- Best Price Discovery thru Open competition, eReverse Auction
- Real Time 24 x 7 availability of information
- Automated milestone based mail / SMS alerts and status updates
- Extensive search on various Product categories and other parameters
- Centralized portal where in procurement related information are available

Benefits to Bidders

- Zero Cost to Bidders, No Per-Bid Charges or registration charges
- Eliminates the need to submit bulky and multiple bid copies in paper form
- Anytime & Anywhere Bidding, No physical threat
- Complete anonymity
- Highly secured and certified platform
- Fair, Free and Fearless participation
- Provision to modify, re-submit and withdrawal the bid documents till bid closing time
- Increased transparency- all stage wise tender information available in public domain
- Cuts down unnecessary physical trips to office of tender inviting authority
- Transparent system inspiring confidence among bidder community
- Anyone having digital signature certificate irrespective religion/caste/ gender can participate in the tender if they meet requirements of the tender.

Reduced Costs for Government and Vendors

- Online Procurement has led to paperless trade practise, huge cost savings
- No physical travel , No paper bids by vendors
- No news paper Advertisement, reduced tender publishing costs
- Saves cost of Tender Fee as it is waived off due to online procurement
- Free portal registration for Bidders, leading to better L1 rates
- Interest bearing Escrow account for Earnest Money Deposit (EMD)

Case eg – India oil Corporation [IOCL], a procuring entity, used to hire warehouse(s) to store bid documents and employed a big team to manage the same. After adoption of online tendering all bids are stored in electronic mode and just one person manages the activity.

Security Implementation using Digital Signature Certificates In GePNIC©

Authentication

- Needed to verify the identity of the person or entity with whom one is transacting remotely.
- Method of establishing the veracity of the person of who he is actually claiming to be. In the current practices, this is achieved by associating a photo i-card or a driving license with the individual.

Confidentiality

This is a method of ensuring that apart from the parties involved in the transaction, no third party is able to know the contents of the transaction.

Integrity

A means of ensuring that the message contents are not altered during transmission to the intended recipient.

Non-repudiation

- This is the act of assuring the origin of a transaction or action.
- This is similar to the practice of an agreement being entered into by two parties and each of them retaining a copy of the agreement so that verification should be possible, if any dispute arise later.

Cryptography

- In order that the communication between two communicating parties is not snooped or monitored by any unauthorized parties the science of Cryptography was used by the communicating parties.
- It provides a means for secure communications and protect information resources on open networks.

Hardware Tokens (eTokens) widely used

Key is generated inside the token.

Key is highly secured as it doesn't leave the token.

Highly portable

Machine Independent

eTokens can be connected to the system using USB port.

Authentication Mechanism in GePNIC©

- User registration - Bidder and Department Users.

- Two factor Authentication including PKI.

- During registration the login ID is checked for uniqueness

- Valid Class 3 DSC under CCA India needed

- One User – ID - One DSC

- Once the DSC is attached, the Public Key details of the DSC is stored against this user.

- Signing certificate is registered first then encryption.

- Can be procured from any CAs – all are integrated

Secured Bid Encryption in GePNIC©

System extends Public Key Infrastructure ('PKI') at its very core for making secured bidding process compliant with Indian Information Technology Act 2000.

- The signed bid document is encrypted by random symmetric key and equivalent hash value is generated.
- This random key is encrypted using bid openers public keys.
- This will ensure such that these keys can be decrypted only with the bid openers private key which resides on their tokens.
- To make it tamper-evident, system generates hash values against each stage and verifies before decryption.
- This will ensure an accidental or intentional change to the bid document, including opening/viewing the data, will change the hash value.

This "hash value" is analogous to a fingerprint of an individual being unique to that person.

Challenges Addressed

- Easy availability of DSC across India as well as for Foreign Citizens
- Sensitization to stakeholders (Bidder and Dept) on use of DSC
- Browser compatibility issues
- Change over official(s) due to transfer / superannuation
- Handling signing and encryption keys separately, keeping copies
- Handling Loss of DSC
- Multiple Bid Openers

Benefits of Digital Signature Certificates

- Uniquely authenticates Users
- Legal Recognition of transactions signed using Digital certificates (IT Act 2000)
- Security based on encryption (Cryptography)
- Easily available across India
- Available for Foreign citizens also , facilitates Global tenders
- Stood by various court cases and Litigations in last 12 years
- Approximately 0.3 to 0.4 millions Bids are encrypted each month by GePNIC© platform.

Various Recognition for eGP- GePNIC©

- TOP Rank in National eGovernance Service Delivery Assessment 2021(NeSDA) amongst Central Government Ministry Service portals
- Computer society of India 19th CSI SIG eGovernance Awards of Appreciation 2021 to MP Tender Portal
- "PM Mementoes – Auction" conferred with Award of Appreciation in the 18th CSI SIG eGovernance Awards 2020
- Central Public Procurement Portal (CPPP) bagged the Award of Excellence 2020 in the 18th CSI SIG eGovernance Awards
- GePNIC© bagged Silver in Data Quality Challenge Award 2020 conducted by NIC
- Coal India Limited conferred with an Award for automated e-tendering system for excellence in "Innovation in Procurement Process" at NATCOM 2019
- GePNIC© won South Asian Procurement Innovation Award 2018 organised by World Bank and Procurement iNET
- GePNIC© and Govt. of Kerala both won CSI Nihilent eGovernance Award 2017 and 2013 under best eGovernance Project
- CPP Portal won Gems of India Award 2017
- GePNIC© won Two SKOCH Award for Smart Governance in 2015 and also in 2010
- GePNIC© bags eIndia Award 2014 for Govt. of Kerala and Mahanadi Coalfields Limited - Coal India Limited
- Govt. of Maharashtra awarded "Best Government to Business (G2B) Initiative of the Year 2013"
- Mahanadi Coalfields Ltd. – Coal India Limited won CII-IT Award 2011
- Odisha eProcurement implementation received eIndia Award 2009 "G2B initiation of the year" in 2011

Important Links

eGP Platform	https://eprocure.gov.in/cppp
Dashboard	https://eprocure.gov.in/eprocdashboard/
GePNIC© Product Information	https://gepnic.gov.in
eAuction India	https://eauction.gov.in
ADB/World Bank Certification	https://eprocure.gov.in/cppp/bank_docs
Awards to Stakeholders	https://gepnic.gov.in/show_content.php?lang=1&level=1&sublinkid=1790&lid=1707
Stakeholders Workshops	https://gepnic.gov.in/show_content.php?layout=&lang=1&level=1&sublinkid=828&lid=834
Monthly News Letters	https://gepnic.gov.in/newsletters.php?lang=1&EncHid=&lid=250
Testimonial(User Speak)-Sample	https://gepnic.gov.in/index.php#testimonial
Annual Reports	https://eprocure.gov.in/cppp/sites/default/files/eproc/Annualreports/CPPP-AnnualReport-2019-20.pdf
Awards & Recognitions	https://gepnic.gov.in/show_content.php?layout=&lang=1&level=1&sublinkid=1757&lid=1692
Security Quality Certification	https://eprocure.gov.in/cppp/sites/default/files/eproc/certificate/EPS_STQC_Certificate2020.pdf
eGP Bags TOP Rank in NeSDA	https://twitter.com/NICMeity/status/1537342838543118336?cxt=HHwWgMDT1dPK3tUqAAAA
Complete NeSDA Report	https://nesda.gov.in/publicsite/NeSDA2021_Report.pdf

Thank You

Contacts

Mr K Srinivasa Raghavan,
State Informatics Officer & Scientist G
National Informatics Centre,
Ministry of Electronics & Information Technology
Government of India , Chennai
ks.raghavan@nic.in
+91-9444992425

Ms Usha Saxena,
Head eProcurement Implementation & Scientist F
National Informatics Centre,
Ministry of Electronics & Information Technology
Government of India, New Delhi
usha.saxena@nic.in
+91-9891646046