THE CATALYSTS

.....In Pursuit of Good Governance

SUPREME AUDIT INSTITUTION OF INDIA
लोकहितार्थ सत्यनिष्ठा
Dedicated to Truth in Public Interest

COMPTROLLER AND AUDITOR GENERAL OF INDIA

2026

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FOREWORD



I am pleased to release the sixth edition of the annual Compendium of New Initiatives and Good Practices of the Indian Audit and Accounts Department, titled *The Catalysts – In Pursuit of Good Governance*.

In an era marked by rapid technological advancements, evolving governance paradigms and rising expectations from public institutions, innovation has become an essential driver of institutional excellence. As the Supreme Audit Institution of India, we strive to continually refine our approaches, embrace emerging technologies, leverage data intelligently and foster a culture of learning and innovation to enhance the quality, relevance and impact of public audit and accounting.

Over the years, *The Catalysts* has emerged as an important knowledge management initiative of the Department. This edition brings together initiatives that demonstrate how technology, data analytics, artificial intelligence, process re-engineering and collaborative approaches are transforming audit practices and institutional processes. From analysing large volumes of transactions and unstructured records to enabling remote audits, identifying systemic risks and automating routine processes, these initiatives illustrate the growing capacity of the Department to undertake more comprehensive, risk-focused and evidence-based examinations. They also demonstrate how technological innovation, complemented by professional judgement and domain expertise, can enhance audit effectiveness and contribute to better governance.

I am confident that the initiatives documented in this compendium will encourage experimentation, inspire new ideas and promote wider adoption of effective solutions across the Department. Beyond their immediate achievements, they reflect the ingenuity, initiative and commitment of our officers and staff, and reinforce our collective resolve to build a future-ready institution that remains responsive to emerging risks, technological change and the evolving expectations of citizens and stakeholders.

(K. SANJAY MURTHY)
Comptroller and Auditor General of India

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TAX
ALYSIS
AUDIT
ALITY
PROCESS

Section I

Transformations in Audit

This section showcases innovative practices that are transforming the conduct of public audit through the use of technology, data analytics, artificial intelligence and automation. It brings together initiatives relating to technology-enabled audit planning, risk assessment, remote audit methodologies and digital tools that enhance audit efficiency, quality and effectiveness. The practices featured demonstrate how innovation and evidence-based approaches are strengthening audit processes and contributing to more robust audit outcomes.

1

GRAPH THEORY BASED NETWORK ANALYSIS FOR PUBLIC AUDITING



Centre for Data Management and Analytics,
Office of the Comptroller and Auditor General of India

Using Graph Theory and large scale data analytics to examine patterns in public procurement and assess welfare delivery at the household level across seven flagship schemes.

Conventional audits examine individual records (one bid, one beneficiary, one transaction) often missing patterns that emerge from relationships across them. Graph theory enables analysis of these relationships by representing records as nodes and their connections as edges.

The technique was first applied in 2023 to the Indian Railways e-Procurement System (IREPS) and subsequently extended to GePNIC Delhi, GePNIC Haryana, OMSS (FCI) and GeM. By analysing co-bidding patterns and shared identifiers among bidders, network analysis helped identify potential collusion and related vendor groups that could not be detected through individual transaction checks. This technique was extended at national scale in the area of welfare delivery.

Government of India scaled up the Direct Benefit Transfer (DBT) framework from 2015. Over the subsequent decade, 318 schemes administered by 56 Ministries were onboarded onto the DBT platform with transactions amounting to approximately ₹6.90 lakh crore in 2024-25. Seven major schemes—Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY), Pradhan Mantri Awas Yojana (PMAY–Rural and Urban), Swachh Bharat Mission (SBM–Rural and Urban), Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), Pradhan Mantri Jan Arogya Yojana (PM-JAY) and Pradhan Mantri Ujjwala Yojana (PMUY) involving nine scheme databases together account for ₹4.15 lakh crore representing nearly 60 per cent of the total DBT outlay and reaching approximately 80.60 crore beneficiaries.

The overarching policy objective of these schemes is saturation, ensuring that every eligible family receives the full range of benefits to which it is entitled, thereby addressing multiple dimensions of deprivation and enabling it to break out of the poverty trap. However, each of the seven schemes is administered by a separate Ministry operating through its own beneficiary database, identification framework, eligibility criteria and operational definition of poverty or deprivation. Consequently, while a scheme-wise audit can assess compliance

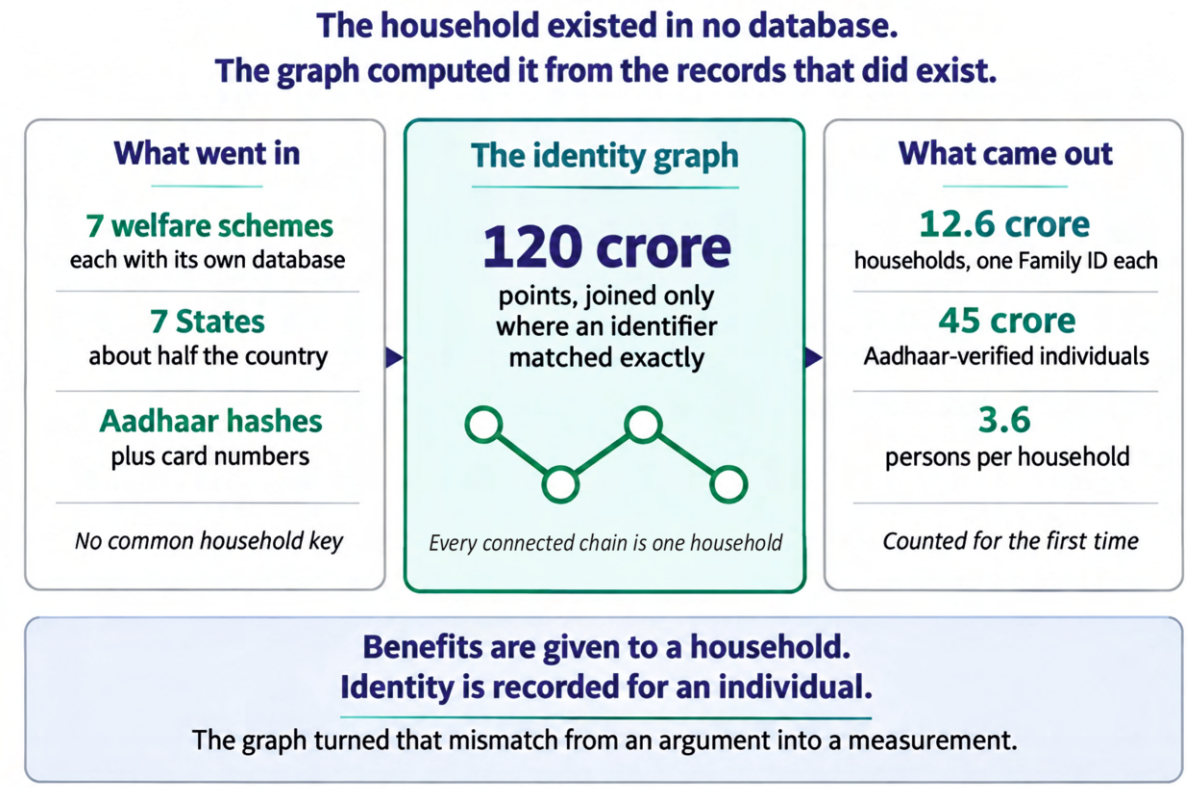
with the respective scheme's guidelines and establish whether eligible beneficiaries have received the prescribed benefits, it cannot, by itself, determine whether an eligible family is being covered comprehensively across all seven schemes.

This limitation also affects the enforcement of scheme-specific eligibility conditions. For instance, schemes such as the PMAY prohibit multiple members of the same household from receiving the benefit. This restriction cannot be effectively enforced without a common household identity. The absence of such an identity also makes it difficult to determine how many distinct households are covered across schemes i.e whether multiple benefits received by a household are permissible and which eligible households remain excluded from benefits.

PURPOSE OF THE EXERCISE

An audit was undertaken to assess the extent to which these seven DBT enabled schemes, taken together addressed multidimensional poverty through efficient, transparent and targeted delivery to eligible beneficiaries.

Graph theory was applied to reconstruct household identities across the seven welfare schemes whose separate databases lacked a common household identifier. By linking individual beneficiaries through shared family-level identifiers such as ration cards, job cards and PM-JAY family IDs, Audit sought to establish a unified household view across schemes.



This enabled identification of distinct households, examination of multiple benefit registrations, detection of overlaps and exclusions and assessment of the extent to which eligible households were receiving benefits under the Government's saturation policy.

Individual scheme compliance was examined only so far as it explained a pattern running across schemes.

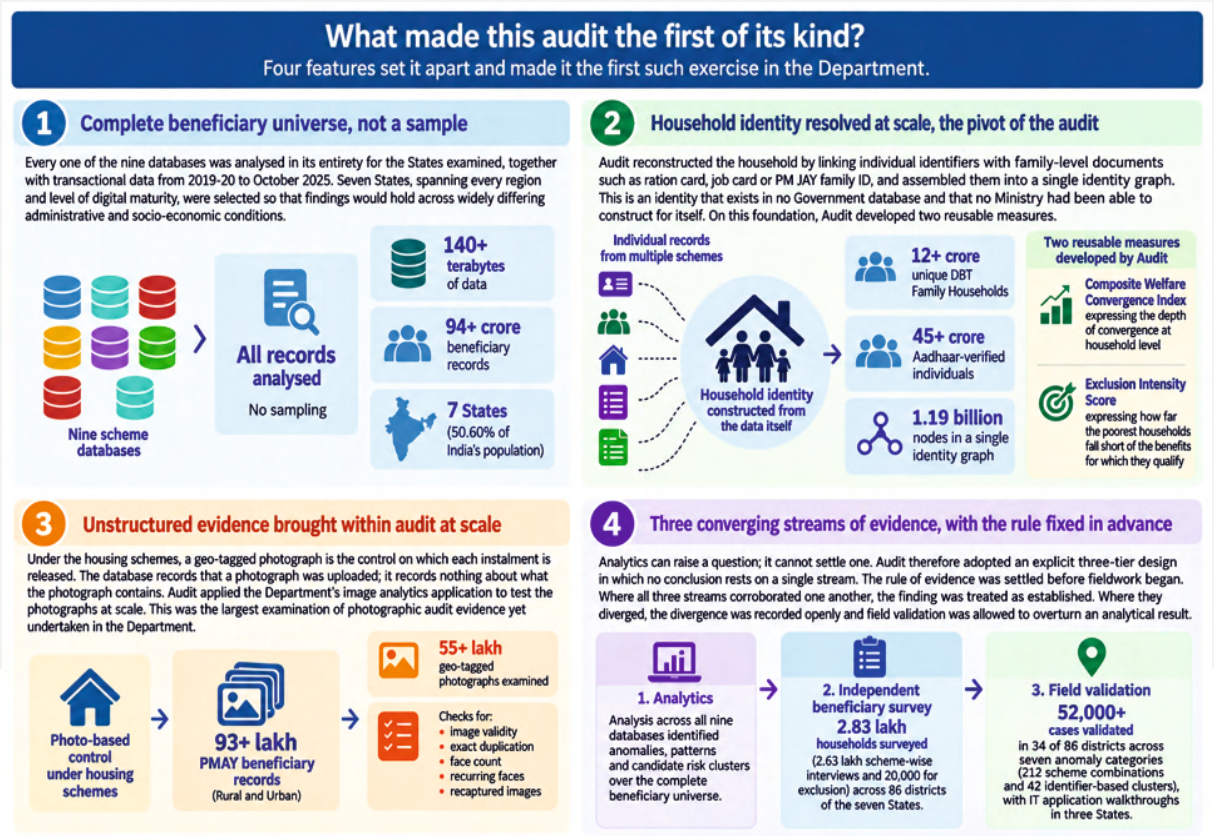
THE SCALE OF THE EXERCISE

Audit sought and obtained the beneficiary databases of all seven schemes held across nine separate databases owned by seven Ministries. The data arrived in the source systems' own formats, in MySQL, PostgreSQL, MSSQL and flat files and each had to be separately restored, standardised and pre-processed before any query could be run. The consolidated holding ran to over 140 terabytes. Every database was then analysed in full for the seven selected States covered in the assignment.

The exercise involved constructing a household identity graph of approximately 120 crore nodes across seven welfare schemes and seven States. Using shared identifiers such as Aadhaar hashes, ration cards, job cards and PM-JAY family IDs, Audit resolved the interconnected records into approximately 12.6 crore distinct households covering 45 crore Aadhaar-verified individuals. This large-scale analysis enabled Audit to establish household identities across otherwise disconnected databases and examine the convergence of welfare benefits at the household level.

The graph used exact matches of shared identifiers making the results deterministic and traceable to the underlying records. Mobile numbers and bank accounts were deliberately excluded as connectors because their use could incorrectly merge unrelated households.

Audit covered over 94 crore beneficiary records under analysis. It combined full-universe analytics, an independent survey of 2.83 lakh households across 86 districts and field validation of over 52,000 cases in 34 districts by seven field offices. Where the three streams of evidence diverged, the differences were explicitly recorded and field validation could override the analytical findings.



SIGNIFICANT AUDIT FINDINGS

The audit revealed a pattern that no single scheme's database and no scheme-wise audit could have detected on its own.

- **Reach is wide, but convergence is thin:** The average family was linked to barely two of the seven schemes and even households in the Government's own recognised category for the poorest of the poor to fewer than three.
- **Duplication that separate databases concealed:** Registrations that appeared valid in isolation emerged as multiple registrations by members of one household and as households drawing simultaneously under scheme combinations that are by design mutually exclusive.
- **Households spanning States:** Families appeared in the beneficiary records of more than one State. Neither a State system nor a central scheme database was so far able to see this.
- **Life events as a reason for the overlapping benefits:** Some of the overlaps were genuine, arising from marriage, migration or family division.

- **Outputs are delivered but outcomes are not measured:** Across schemes the recorded output was strong, while the outcomes were weak such as a connection released without the household moving away from solid fuel or a house sanctioned but unfinished.
- **The weaknesses of geotagging:** Image analytics established that geo-tagging, the control relied upon to prove that a photograph was actually taken at the site can be defeated by recapturing an existing image, despite the recaptured file bearing a genuine location and a genuine time stamp.

AUDIT RECOMMENDATIONS

Audit recommended that the Government establish a legally backed household registry anchored on a common Unique Family ID developed through a cooperative Centre-State framework. Supporting recommendations included interconnection of scheme databases for identity verification and de-duplication, dynamic targeting responsive to life events, unified grievance redressal, outcome-based assessment, real-time household-level negative lists and integrated audit trails.

OUTCOMES AND INSTITUTIONAL CAPACITY CREATED

The exercise established a reusable methodology for constructing household identities across unrelated databases along with two measures of welfare convergence and exclusion. It also developed a repeatable three-tier evidence protocol combining full-universe analytics, independent beneficiary surveys and field validation.

The audit strengthened institutional capacity through the establishment of an Aadhaar Data Vault, a secure analytical environment, large-scale image analytics capabilities and coordinated field validation across seven States. Data security and quality limitations were explicitly addressed ensuring transparency and reliability of analytical findings.

The application of graph theory across procurement and welfare databases demonstrates its adaptability to different audit domains.

Scan here for more details on the audit

The Team:

1. Shri B. K. Mohanty, IA&AS
2. Shri K Surjith, IA&AS
3. Shri Ajay Yeshwanth V, IA&AS
4. Shri Anil Kumar Goyal, Sr. Admn. Officer
5. Shri Chandersheel, Asst. Admn. Officer
6. Shri Sachchida Nand Sinha, Asst. Admn. Officer

Other contributors:

1. Shri K. S. Subramanian, IA&AS
2. Shri Lakhbinder Singh Chahal, IA&AS
3. Shri Jishnu J Raju, IA&AS
4. Shri Pawanjeet Singh, Sr. Admn. Officer
5. Shri Parshant, Asst. Admn. Officer

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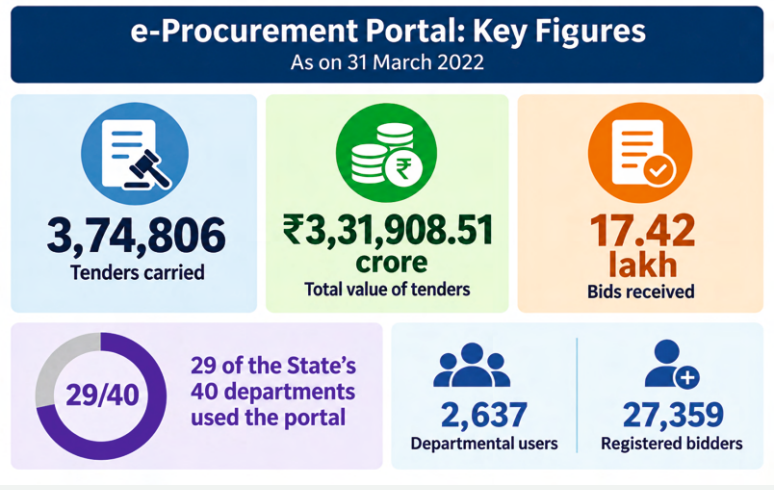
INNOVATIVE USE OF DATA ANALYTICS, CRYPTOGRAPHIC KEY VALIDATION AND EXTERNAL EXPERT COLLABORATION IN AUDITING A PKI-BASED E-PROCUREMENT PLATFORM



Office of the Accountant General (Audit-II), Odisha

Innovative use of Data Analytics, Cryptographic Key Validation and External Expert Collaboration in Audit of a PKI based e-Procurement Platform.

The Government of Odisha moved to online tendering in July 2008, using GePNIC, the Government e-Procurement System of the National Informatics Centre (NIC). At first, only tenders above ₹50 lakh in the four engineering departments (Works, Rural Development, Water Resources and Housing & Urban Development) were processed on the portal. The limit was lowered in steps, and from August 2015 onwards every tender of ₹5 lakh and above in the State Government had to be floated online. The threshold for Urban Local Bodies was ₹2 lakh.



The Works Department runs the portal through the State Procurement Cell, and NIC hosts it in its data centre at New Delhi. Between April 2018 and March 2024, the State paid NIC ₹7.90 crore, without any agreement in place.

The portal was meant to remove human discretion from tendering, display relevant tender information and provide every bidder an equal chance. Each bid is signed with the bidder's Digital Signature Certificate (DSC) and encrypted on the bidder's own computer. It stays locked until the opening date, and only the officers named as bid openers can unlock it. In principle, no one can see or change a bid before it is opened. The Office of the AG (Audit-II), Odisha tested whether this held in practice, covering the period up to March 2022 in 10 departments.

LIMITS OF THE CONVENTIONAL AUDIT APPROACH

Audit of tenders usually involves selection of a sample of files in the field office and checking the Notice Inviting Tender, the comparative statement, the minutes of the tender committee and the work order. In IT audits of such portals, the encryption is commonly taken on trust, the strength of the developer's design documents and the STQC[1] certificate. This approach could not be applied, for three reasons.

- **The bids were locked behind encryption:** Bids were locked with keys under Public Key Infrastructure (PKI), in a system built and run by NIC with no agreement binding it to the State. Any finding on bid opening would be contested by the developer unless it was proved from NIC's own code and data.
- **The trail had gaps:** No Database Administrator log was kept, and web logs were missing for 1,087 days, so changes made at the back end left no record. The database ran to 742 tables with no data dictionary.
- **The decisions were made off the portal:** Technical and financial evaluation, negotiation and award of contract were done on paper. Only 18.75 per cent of tenders were awarded on the portal, and some entries were made as late as 5,005 days after the event. A paper file alone could not show whether the price awarded was the bid price.

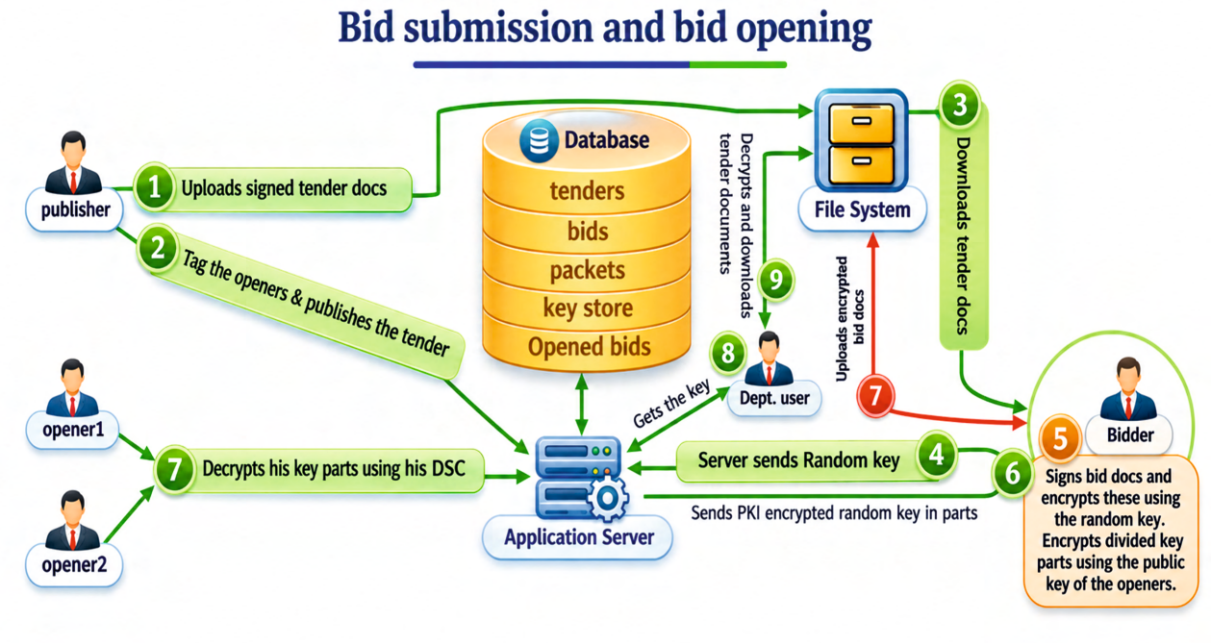
INNOVATIVE AUDIT APPROACH

The audit started from the data, not from the file. Audit built one chain of evidence that ran from the database, through NIC's program code, to the paper file in the field office.

- **The whole database, not a sample:** The full GePNIC database (742 tables) and logs were obtained from NIC and analysed using PostgreSQL, Python, Java and IDEA.
- **A risk score on every tender:** Twelve red flags, such as a winning bid sent from a department's own IP address, bidders sharing PAN or mobile numbers, L1 and L2 bids within two per cent etc., were scored for 1.77 lakh tenders. The scores identified 48 offices and 486 tenders worth ₹943.89 crore for field checks.
- **Matching identities:** The name on each DSC was compared with the bidder's name in 42,642 records using three similarity measures (Levenshtein, token-set and Jaro). A case was flagged only when all three scores fell below 70 per cent.
- **Encryption tested with the developer:** Working with NIC, the team studied the program code, rebuilt the keys and matched them with stored records for more than 6,800 bids. The encryption held, so every exception found was a bypass of the process, not a software fault.

1 Standardisation, Testing and Quality Certification, an attached office of the Ministry of Electronics and Information Technology, which provides a diverse range of services such as Testing, Calibration, IT & e-Governance, Certification, and Capacity Building to Public as well as Private organisations.

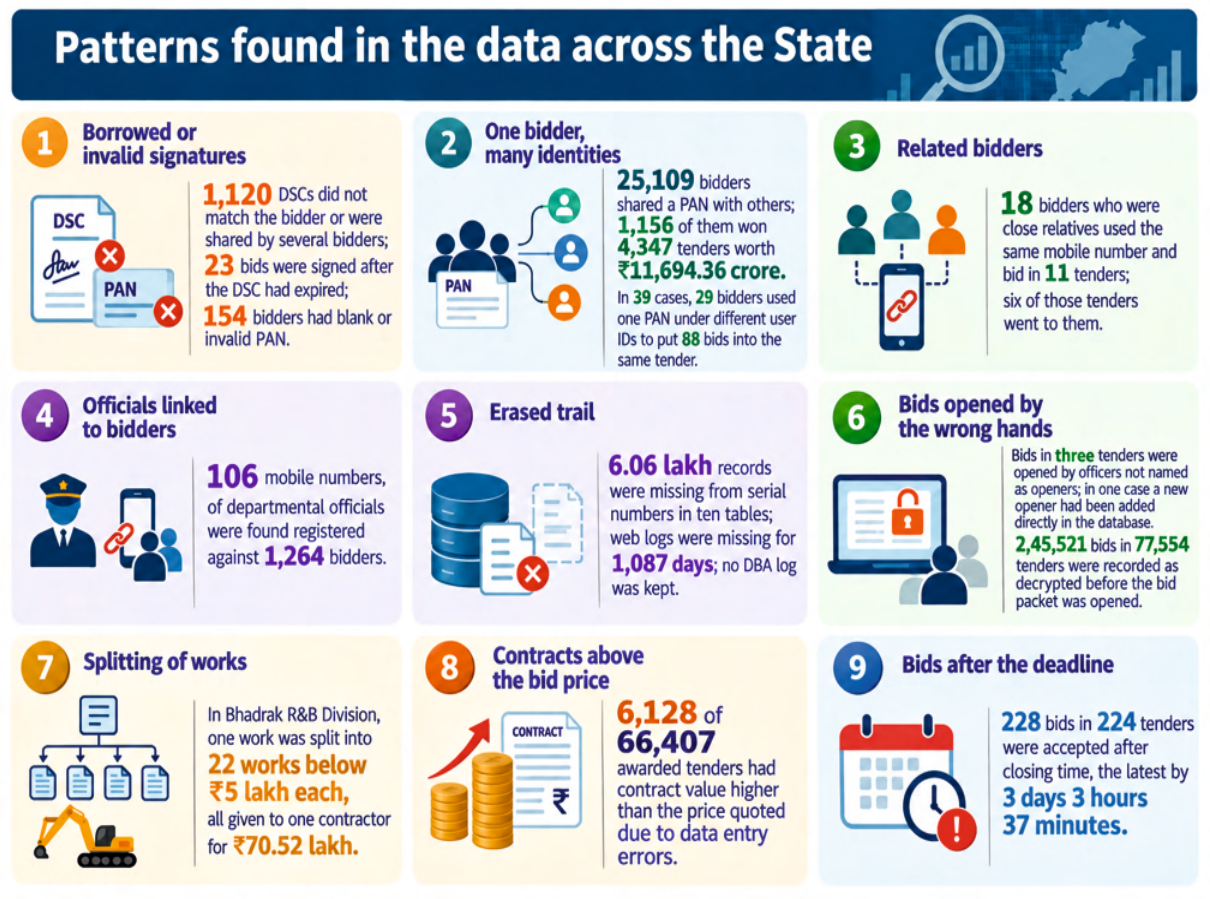
- **Paper set against the portal:** A tool generated a comparative statement for any tender directly from the database. Field parties compared it with the paper statements and work orders in the 48 offices.
- **Independent validation:** Professors of the Computer Science Department at IIT Bhubaneswar examined the findings, the database and the code and submitted their report. They noted that transactions on bids opened without matching keys were not possible through the normal flow of the system.



Bid submission and opening under PKI, tested with NIC

SIGNIFICANT AUDIT FINDINGS

The findings established that the portal had not removed the human element it was meant to remove. In the absence of an agreement with NIC, key modules remained incomplete, while bid evaluation, negotiation and award of contracts continued to be handled manually. The portal did not enforce prescribed bidding periods, the mandatory two-cover system or controls against splitting of works. Weak application controls permitted late bids, decryption by unauthorised officers, inconsistencies in dates and quantities, and contract values exceeding L1 bids. Inadequate access controls and missing back-end logs further prevented Audit from ruling out unauthorised data alterations or establishing the completeness of the database.



Case study: Bid prices raised on paper after opening

In Bhubaneswar Municipal Corporation and **Jeypore Municipality**, the Tender Inviting Authorities downloaded the price bids from the portal and changed them on paper. In 29 tenders they raised the amounts quoted by bidders; in one they left the eligible L1 bidder out of the comparative statement. The portal still held the true bids, which is how the change came to light. Had evaluation and award been done on the portal, with controls to enforce the rules, this could not have happened.

GOVERNMENT RESPONSE AND WIDER IMPACT

The Government accepted most of the findings, and proposed several corrective measures. These included PAN validation through integration with Goods and Services Tax Network, consideration of OTP-based mobile verification, replacement of SHA-1 with the more secure SHA-512[2], and verification of bidders' digital signatures. The IIT expert panel also recommended technical safeguards for implementation by NIC, including maintenance of Database Administrator logs, restricted database access and testing of changes before

2 Secure Hash Algorithms, used to protect the integrity of digital information.

release. The audit also demonstrated that irregularities involving bid prices, digital signatures and bidder identities could be traced through database records, strengthening deterrence.

The GePNIC platform is used across several States, Union Territories and Central Government organisations, enabling similar data-driven audit techniques to be applied elsewhere. The methodology is readily replicable for adaptation to local requirements. The approach also extends beyond e-Procurement to other digitally authenticated transactions, including treasury payments, land records, scholarships and direct benefit transfers, where verification of identities, authorisations, transaction timelines and completeness of records is equally relevant.

The Report was one of the main inputs to the management letter on e-Procurement systems issued in March 2026 to the Secretary, Ministry of Electronics and Information Technology (MeitY), and the Secretary, Department of Expenditure, Ministry of Finance, Government of India, and to the Chief Secretaries of the States. The letter shared the audit recommendations so that the States could adopt good practices in their own e-Procurement systems.

Scan here for CAG's Audit Report

Scan here for more details on the audit

The Team:

1. Shri Vishwanath Singh Jadon, IA&AS
2. Shri Sushant Ranjan, IA&AS
3. Shri Rudra Prasanna Rath, Sr. Audit Officer (Retd)
4. Shri Pramod Kumar Pani, Asst. Audit Officer
5. Shri Tanay Biswas, Asst. Audit Officer
6. Shri Kadi Suman, Asst. Audit Officer

3

PFMS VOUCHER ANALYSIS AND AUTOMATED SAMPLING APPLICATION



Office of the Director General of Audit, Central Expenditure, New Delhi

Transforming PFMS voucher data into risk-based audit insights through automated analysis and statistical sampling.

The PFMS Voucher Analysis and Automated Sampling Application is a desk-review application built in-house that converts voucher-level data from the Public Financial Management System (PFMS) into a structured analytical report and a statistically grounded sample in a single run, reducing manual effort from person-days to minutes.

PURPOSE OF THE EXERCISE

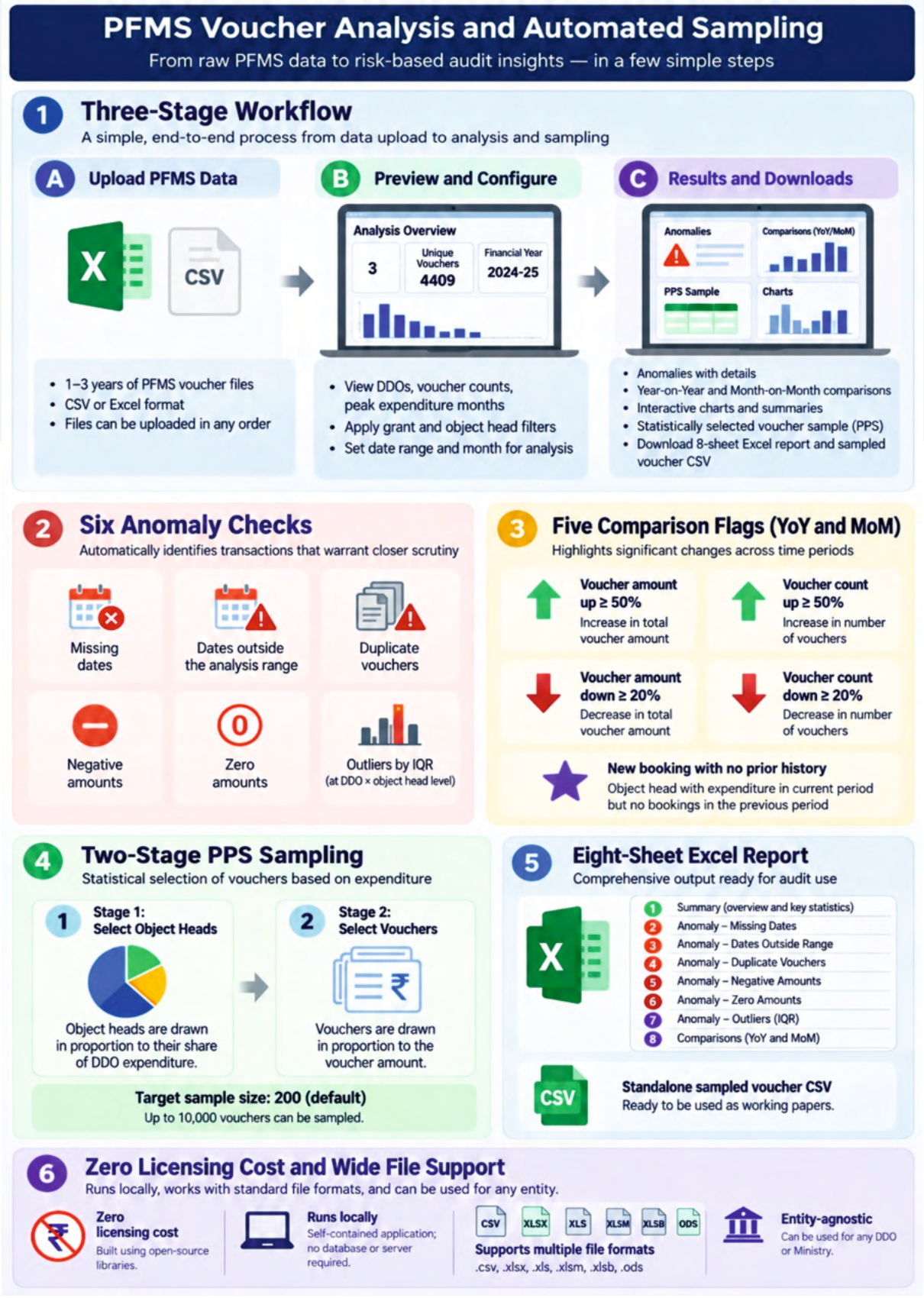
The Office of the Director General of Audit, Central Expenditure, New Delhi audits Central Government expenditure relating to 22 Central Ministries, involving voucher-level payment data of hundreds of Drawing and Disbursing Officers (DDOs) processed through PFMS. A single financial year's data may contain thousands of transactions per DDO, making detailed manual scrutiny during desk review a time-consuming exercise. The conventional approach relied largely on auditor judgement and manual spreadsheet filtering, without a standardised mechanism for anomaly detection, systematic comparison of expenditure trends across financial years or statistically grounded sample selection.

The application was built with a single purpose, it had to be usable by any officer in the office, on standard government-issue hardware, without requiring any technical support, specialised training, or organisational IT approval beyond what was already in place. This ruled out solutions that depended on a server, a database engine, or a commercial analytics platform. It pointed instead to a self-contained, file-based application that an officer could receive by email and run from a folder on the desktop.

KEY FEATURES

The application is a single self-contained Python file using the Flask web framework. It requires no database, no licence, and runs locally on the auditor's own machine ensuring voucher data never leaves the machine. An officer uploads PFMS export files (CSV or Excel format) for up to three financial years, configures parameters in a browser-based interface, and receives a comprehensive structured output which includes six categories of anomaly detection (missing dates, dates outside the analysis range, duplicate vouchers, negative

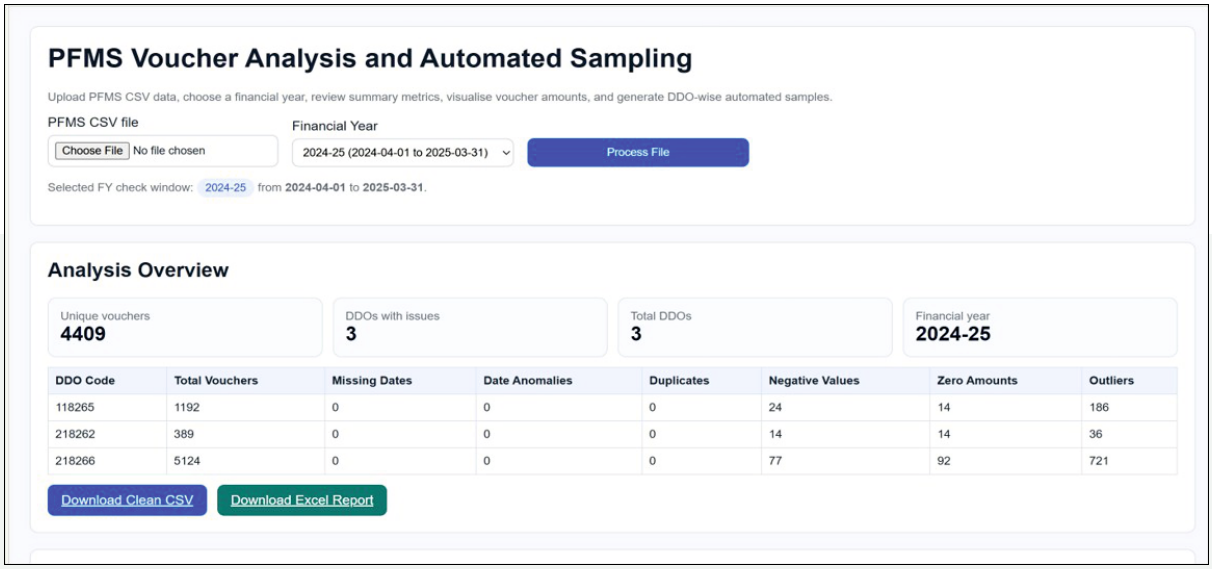
amounts, zero amounts, and outliers by interquartile range at DDO and object head level), year-on-year and month-on-month trend comparison, and a Probability-Proportionate-to-Size (PPS) sample ready for field verification.



AUDIT OUTCOMES AND IMPACT

The application has improved the identification of audit risks, strengthened the quality of desk review and enabled more efficient deployment of audit effort.

- **Actionable audit findings:** The application has been used by audit parties during desk review, leading to audit observations relating to misclassification of expenditure under object heads, irregular advance payments and non-remittal of interest to the Consolidated Fund of India. Year-on-year comparisons and outlier checks helped identify incorrect object head bookings, while PPS sampling directed audit attention towards higher-value transactions involving full advance payments. The application also serves as a voucher compendium for further analysis, while reducing manual effort per DDO from person-days to minutes.
- **Targeted field verification:** The application has brought about a qualitative change in audit practice by transforming desk review from a largely judgement-based exercise into a structured, data-led process. Audit teams can now identify specific vouchers, object heads and expenditure periods warranting scrutiny before commencing fieldwork. Automated anomaly detection, expenditure comparisons and statistical sampling enable field audit effort to shift from identifying transactions of interest to verifying flagged transactions, obtaining explanations and examining supporting records.



- **Standardised, reproducible audit processes:** The application's outputs provide a standardised, documented and reproducible basis for audit scrutiny. Excel reports and sampling records, including selection methodology, probability parameters and object head coverage, can be incorporated directly into audit working papers. This facilitates supervisory review and assessment of the completeness and rigour of desk review, while reducing dependence on individual auditors' practices.

- **Scalable audit solution:** The application is entity-agnostic and can be deployed by audit teams across Ministries and Departments using standardised PFMS voucher data, without modification to the underlying application. The application is also designed to accommodate additional analytical checks and anomaly flags based on field feedback, providing scope for continuous improvement and wider replication.

Scan here for more
details on the application

The Team:

1. Shri Saurav Kumar Jaipuriyar, IA&AS (Retd.)
2. Shri Karan Vohra, IA&AS
3. Shri Gagan Deep Grover, Sr. Audit Officer
4. Shri Satish Kumar, Sr. Audit Officer
5. Shri Prashant Gupta, Asst. Audit Officer

4

REVAMPING DATA ANALYTICS CELL AND CENTRAL AUDIT SECTION AS THE HYBRID AUDIT INTELLIGENCE GROUP



Office of the Principal Accountant General (Audit-I), Uttar Pradesh

Integrating data analytics, central audit and field verification to strengthen risk-based auditing and build analytical capabilities across the office.

A large proportion of the expenditure of Governments is now processed through Information Technology systems. Salaries are paid through the Integrated Financial Management System (IFMS), and welfare benefits are transferred through online portals and Direct Benefit Transfer (DBT). Establishment payments alone amounted to approximately ₹2.7 lakh crore over a period of five years. Two units, namely the Central Audit Section, also known as Financial Audit Support Group (FASG) and the Data Analytics Cell (DAC), support the audit of such expenditure.

PURPOSE OF THE EXERCISE

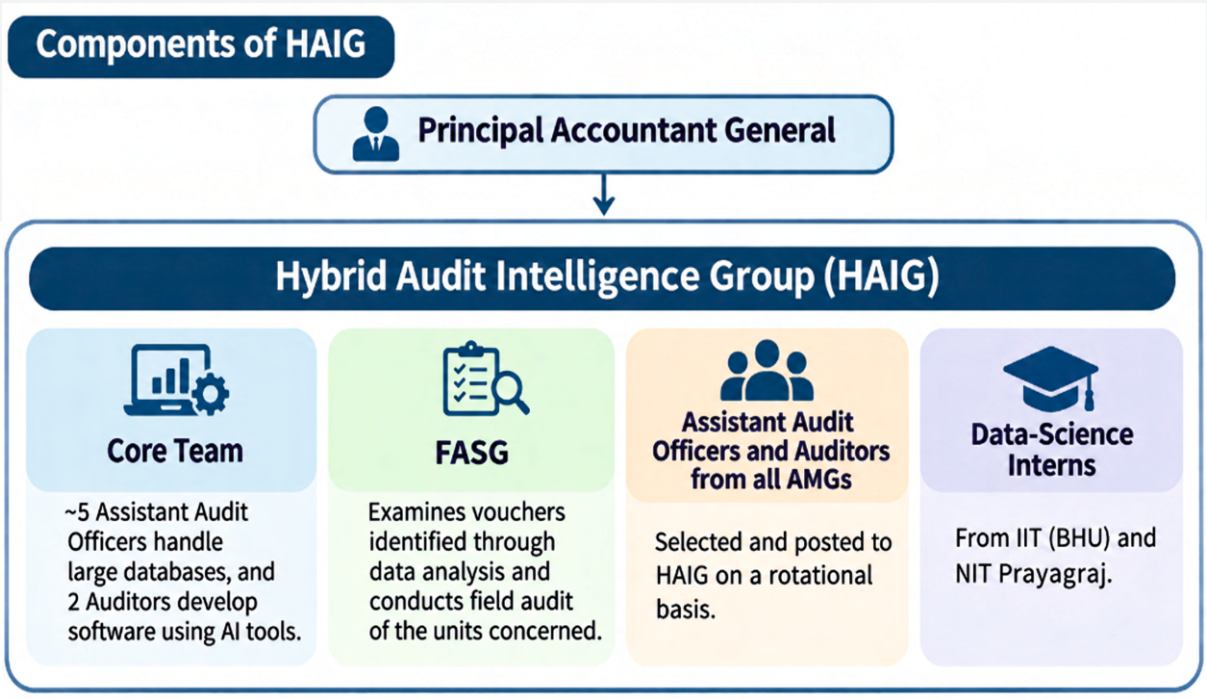
Examination of a limited sample of vouchers during the inspection of units does not provide adequate assurance over expenditure of this volume. The FASG relied on manual examination of vouchers to identify high-risk transactions, making it impracticable to analyse the large volume of expenditure data and generate meaningful audit leads. The DAC lacked adequate proficiency in analytical tools such as SQL, Python and AI, while earlier training efforts had not created sustained capabilities.

These limitations restricted the scope and effectiveness of audits, as compliance audits of social-sector schemes covered only about five per cent of transactions, without providing State-wide assurance across all districts, while establishment audits had yielded few significant findings despite the substantial expenditure on salaries. This highlighted the need for an integrated arrangement combining data-driven audit planning with systematic development of analytical capabilities.

THE INITIATIVE

The initiative involved merging the FASG and the DAC into a single Hybrid Audit Intelligence Group (HAIG) under the direct charge of the Principal Accountant General. Officials with technical aptitude were drawn from all Audit Management Groups (AMGs) on a three-month rotational basis, supported by data-science interns from Indian Institute of Technology (BHU), Varanasi and Motilal Nehru National Institute of Technology, Prayagraj.

HAIG centralised audit planning by defining audit objectives, obtaining and analysing complete datasets, identifying high-risk transactions and ranking auditable units by risk before deploying field audit personnel. During 2025–26, the office's two principal audit streams viz. statewide audit of salary payments and audit of social-sector schemes, were planned and conducted through this integrated arrangement.



The initiative combines hands-on capacity building, external technical expertise and integration of data analytics with field audit through the following key features:

- **Rotation of selected officers**: Each Assistant Audit Officer (AAO) and Auditor posted to HAIG conducts one audit assignment from data analysis to field audit and then returns to the parent AMG.
- **Association of external experts**: Data-science interns from IIT (BHU) and NIT Prayagraj work with the officers, and weekly training sessions are conducted by the Deputy Accountant General.
- **Linkage of data analysis with field audit**: Complete Government databases are analysed through rule-based checks and AI models, and the FASG examines the flagged vouchers and conducts field audit of the high-risk units.

CAPABILITY DEVELOPED

The initiative has strengthened the office's analytical capabilities by developing a pool of trained officers, creating specialised technical expertise and producing reusable tools and resources to support data-driven audits, as follows.

- A pool of 25 to 30 AAOs and Auditors able to use AI tools, SQL, PostgreSQL and Python independently in audit work, who are now posted across all AMGs.
- A data-engineering core of about five AAOs able to restore and handle large Government databases, and two Auditors able to develop software with the help of AI tools.
- Query libraries, data dictionaries, risk-ranking methods and field audit checklists prepared for repeated use across audits.
- Two tools, namely a document-compare tool and the web portal for the CAG's 101 Innovation Ideas Initiative were developed for CAG Headquarters.

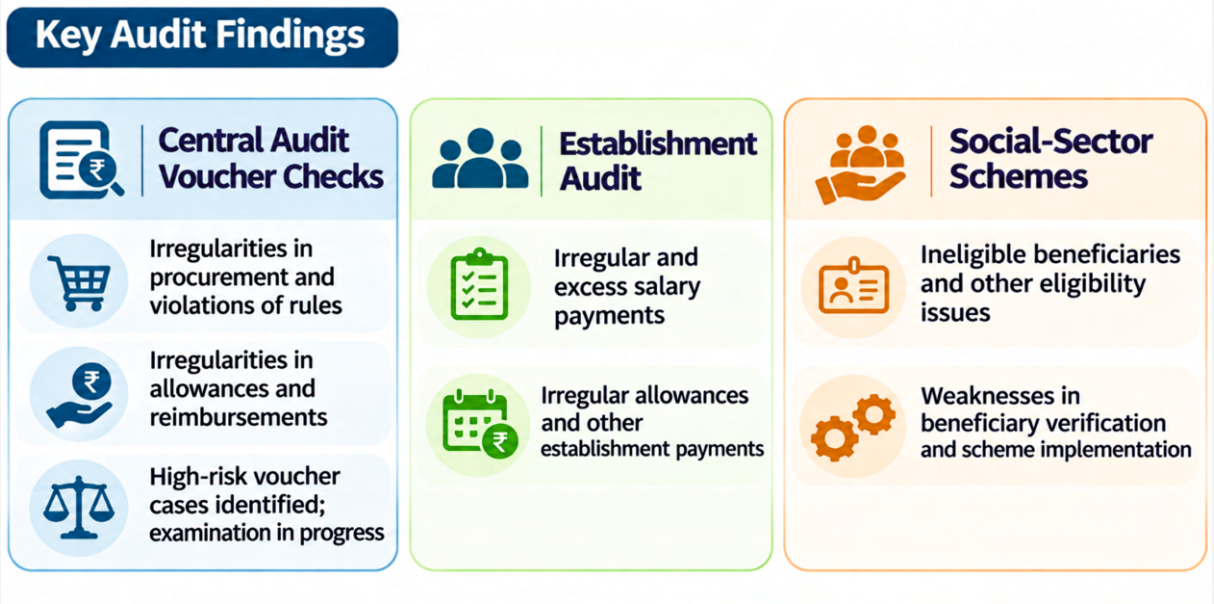
RESULTS AND GOVERNMENT RESPONSE

Audits planned through HAIG during 2025-26 covered the establishment expenditure of the State and more than 10 social-sector schemes. These audits brought to notice significant irregularities, which were confirmed in field audit and communicated to the Government.

Statewide Audit of Salary Payments (IFMS): HAIG obtained the complete IFMS salary database of about 4.9 crore records relating to five years. The pay rules were converted into computerised checks, and AI models were used to identify unusual patterns. All salary payments of the State were thus examined for the first time.

Audit of Social Sector Schemes: HAIG developed a common method for the audit of DBT schemes, which comprises identification of the actual beneficiary, examination of wrongful inclusion and exclusion, verification of the payment trail, testing of scheme rules and referral of cases to districts for field verification. All districts were covered and ranked by risk, and each statewide audit was completed within two months.

Central Audit Voucher Checks: The FASG undertook targeted examination of high-risk vouchers identified through data analysis. The examination identified irregularities in procurement, violations of the General Financial Rules, irregularities in grant of allowances, etc.



The Government constituted a Joint Working Group with audit to address control weaknesses in the IFMS, and agreed to share data and to provide an audit interface in Government portals. Validation checks recommended by audit were introduced in the portals of major DBT schemes, so that ineligible claims are rejected before payment. Departmental action, including recovery proceedings, has been initiated in cases where irregularities were confirmed.

The initiative can be replicated in every State Audit office which already has a Data Analytics Cell and a Central Audit Section, and where every State maintains comparable payroll and DBT systems. It can therefore, be adopted without additional posts or licensed software. Parts of the office's Standard Operating Procedure have already been adopted by other IA&AD offices, and the method for salary audit has been tried at three other stations.

Scan here for more details on the initiative

The Team:

1. Shri Raj Kumar-I, IA&AS
2. Shri Amritesh Shukla, IA&AS
3. Shri Samir Shukla, Sr. Audit Officer
4. Shri Manoj Kumar Sharma, Sr. Audit Officer
5. Shri Latief Rahman Khan, DEO

5

AI-POWERED PSU FINANCIAL AUDIT INTELLIGENCE PORTAL



Office of the Principal Accountant General (Audit-II), Uttar Pradesh

Integrating AI-driven financial analysis, risk assessment and compliance checks in a secure, end-to end audit workflow.

Statutory audit of Public Sector Undertakings (PSUs) by the Comptroller and Auditor General of India is, by its nature, a vast and time-intensive exercise. A PSU's financial statements viz. the Balance Sheet, Statement of Profit and Loss, Statement of Cash Flows and Notes, submitted as a PDF that is frequently several hundred pages long and often only partly text-searchable, must be read, reconciled and analysed under Indian Accounting Standards (IndAS), the Companies Act 2013, Companies (Auditor's Report) Order (CARO), 2020, Schedule III disclosure norms, CAG's Auditing Standards, Institute of Chartered Accountants of India (ICAI) Standards on Auditing and Department of Public Enterprises (DPE) guidelines, all within a compressed audit cycle.

PSU financial statements received for audit are price-sensitive and confidential before public filing. Commercial cloud based AI tools cannot be used to assist this work, due to the risk of exposing unpublished Government financial data to servers outside Government control. This has kept the analytical power of modern AI unusable in this specific context, even though such tools have transformed analytical work elsewhere.

The Audit Challenge

Manual ratio computation — every ratio is computed by hand, one statement at a time, for every PSU under audit, which consumes a disproportionate share of available audit time.

Fraud-risk screening is rare — quantitative models such as the Beneish M-Score (earnings-manipulation risk) or the Altman Z-Score (financial-distress risk) are almost never applied manually, since computing an eight-variable score by hand for every PSU is simply not feasible within the time available.

Compliance checks applied selectively — cross-checking disclosures against IndAS, CARO, the Companies Act and DPE guidelines, across hundreds of individual clauses, can only be sampled rather than exhaustively verified under time pressure.

Drafting observations is slow — writing even a single audit observation in CAG's prescribed Criteria-Condition-Cause-Effect-Recommendation format, correctly citing the underlying standard, takes considerable auditor time per finding.

None of this is a shortcoming of auditors — it reflects a shortage of time relative to the volume and complexity of what must be analysed in each audit cycle.

PURPOSE OF THE INITIATIVE

The initiative aims to streamline PSU financial audits by automating time-consuming tasks such as extraction and organisation of financial data and preliminary compliance checks, thereby enabling auditors to devote more time to substantive analysis and professional judgement. It seeks to harness the analytical capabilities of AI through a locally deployed, open-source model operating entirely on auditor's or Department's controlled infrastructure, ensuring that confidential PSU financial data remains within authorized systems.

KEY FEATURES AND INSTITUTIONAL RELEVANCE

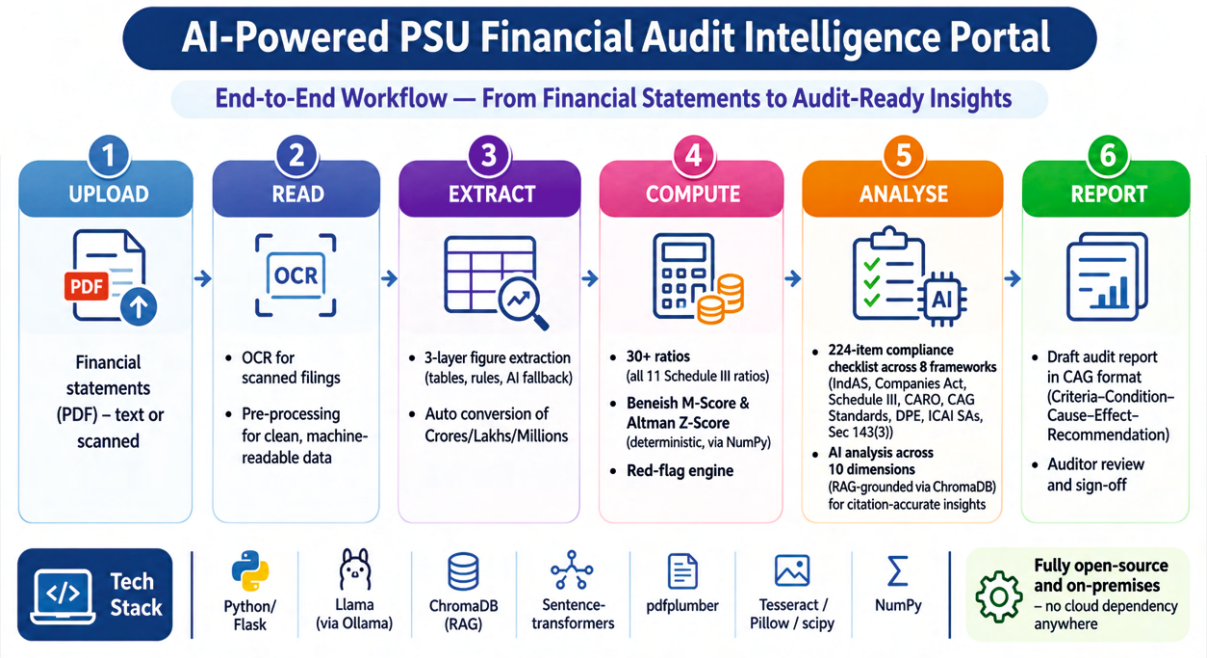
The AI-Powered PSU Financial Audit Intelligence Portal is a working web-based portal, built on Python and the Flask framework, that an auditor opens and uses through an ordinary browser. It integrates financial analysis, risk assessment, compliance checks and AI-assisted drafting into a single, secure audit workflow. The following distinguishing features make it a unique solution:

- **In-house development and confidentiality by design:** The portal has been conceived and developed in-house without external vendor involvement, using locally deployed, open-source AI. The entire processing is undertaken using the available infrastructure. No internet connectivity is required during analysis, and the absence of outbound data transmission can be verified through network monitoring.
- **Integrated Audit Workflow:** The workflow brings together OCR-based document processing, automated financial data extraction, ratio computation, fraud-risk analytics, multi-framework compliance checks and AI-assisted narrative analysis, replacing fragmented and largely manual processes.
- **Auditor Oversight:** The portal is designed to assist rather than replace professional judgement. All AI-generated outputs are explicitly labelled as drafts requiring auditor review and sign-off.
- **Institutional Relevance and Replicability:** Aligned with Business Process Re-engineering for Audit, Accounts and Institutional Products and Outputs, the initiative has the potential to strengthen the breadth and consistency of audit analysis underpinning CAG's Reports to Parliament and State Legislatures. It also offers a replicable model for secure adoption of AI in Government audit work.

HOW THE PORTAL WORKS

The portal provides an integrated, end-to-end workflow for PSU financial audits, from uploading financial statements to generating a draft report. It processes both text-based and scanned PDFs using OCR and a three-layer extraction mechanism, automatically identifying and normalising financial data across different reporting units. It computes over 30 financial ratios, including all 11 mandatory Schedule III ratios, flags significant year-on-year variations, and applies the Beneish M-Score[3] and Altman Z-Score[4] for earnings-manipulation and financial-distress risk assessment. A rule-based engine identifies potential financial red flags, while a 224-item checklist supports compliance assessment across eight regulatory frameworks. AI-assisted analysis examines 10 dimensions of financial performance and risk.

A key innovation is the use of Retrieval-Augmented Generation (RAG), supported by a local ChromaDB knowledge-base containing verified provisions from applicable accounting, auditing and regulatory standards. Before drafting observations, the AI retrieves relevant provisions from this knowledge-base, grounding its analysis and citations in actual regulatory text rather than the model's memory, thereby improving citation accuracy. The modular knowledge-base can be expanded to incorporate additional standards and provisions without modifying the application. The portal then compiles a draft audit report comprising the auditor's opinion, ratio tables, risk summary, observations with management-reply tracking and statutory reporting clauses, subject to auditor review and sign-off.



3 The Beneish model is a mathematical-statistical model that uses financial ratios calculated with accounting data of an enterprise aimed to detect if the reported earnings of the enterprise were manipulated.

4 Altman's Z-Score model is a numerical measurement that is used to predict the chances of a business going bankrupt in the next two years.

OUTPUTS, OUTCOMES AND IMPACT

Testing of the working prototype on three PSUs demonstrated its ability to undertake comprehensive financial analysis within minutes, indicating its potential to improve the efficiency, coverage and consistency of PSU financial audits.

- **Improved Efficiency:** A complete automated analytical pass, from data extraction to AI-generated analysis, was completed within minutes per PSU, for an exercise of comparable breadth that would otherwise take substantially longer time.
- **Validated Risk Assessment:** Testing on three PSUs with differing financial conditions, document quality and reporting units demonstrated accurate extraction, consistent computations and appropriate differentiation of financial risks.
- **Improved Reliability of Audit Observations:** Integration of RAG resulted in observable improvements in the citation accuracy of AI-drafted observations, reducing instances of incorrect references to regulatory provisions.
- **Broader Audit Coverage:** The portal enables more extensive financial analysis, systematic compliance checking and identification of potential irregularities within the available audit time, allowing auditors to focus greater attention on substantive findings.
- **Cost-effectiveness and Institutional Potential:** The use of open-source software eliminates recurring software licensing and cloud-service costs. The portal offers a replicable model for secure AI adoption, with potential to strengthen the consistency and evidentiary base of CAG's Reports to Parliament and State Legislatures.

Scan here for more details on the portal

Developed by:

1. Shri Akash Chaudhary, IA&AS

6

CAG PARAKH – DOCUMENT INTELLIGENCE AND INTEGRITY SCREENING SYSTEM



Office of the Principal Accountant General (Audit-I), Uttar Pradesh

Automated, risk-based screening of documents for integrity, authenticity and audit verification.

More than 40 per cent of Government expenditure in a State is estimated to flow through welfare and Direct Benefit Transfer (DBT) schemes. Applicants under these schemes upload supporting documents such as Aadhaar cards, marksheets, college enrolment records, medical prescriptions, caste and income certificates and bank documents on respective scheme data portals. About five crore such documents are subjected to verification in the State every year. These documents are largely unstructured, and their authenticity is difficult to establish at scale.

THE INITIATIVE

Manual examination of a document requires about 30 minutes, and less than five per cent of the uploaded documents can realistically be examined in audit. Manipulated or substituted documents can therefore pass routine scrutiny, and the existing methodology did not provide a means of screening such documents at scale, as it lacked a standardised mechanism to analyse large volumes of unstructured documents and convert the results into comparable risk indicators. There was, therefore, a need for a lightweight, standardised tool capable of screening documents at scale, identifying suspicious pages for verification by auditors, and enabling a shift from limited sample-based scrutiny to near-complete coverage.

CAG PARAKH is a desktop application conceptualised in collaboration with the Wadhwani Foundation and developed in-house, which screens documents uploaded under welfare and DBT schemes and converts them into page-level risk indicators for audit. Each page is examined for its structural integrity and its content, and the results are presented in a register ranked by risk, with the evidence for every flag.

KEY FEATURES

CAG PARAKH has been designed as a lightweight, scalable and standardised document-screening tool, with the following distinctive features that support its use across different audit environments.

- **Screening of every page:** It examines every page of every uploaded document and converts the results into a structured register ranked by risk.
- **Operation without dependence on infrastructure:** The core screening layer functions on ordinary office computers, including in offline environments, without continuous internet connectivity or a Graphics Processing Unit (GPU). The documents remain on machines controlled by the department.
- **Calibration on Government documents:** The screening modules have been calibrated on thousands of documents obtained in audits conducted by the office, including documents in Devanagari script.
- **Verification by the auditor:** The application identifies pages for examination and every flagged case is verified by the auditor before any conclusion is drawn. Screening thresholds and document classes can be calibrated for individual schemes using actual audit documents.
- **Safeguards against incorrect flags:** The application distinguishes poor scan quality from possible tampering through checks for Optical Character Recognition (OCR) confidence, blur and noise. Each flag is supported by evidence to facilitate auditor review, while suspicious or inconclusive pages are prioritised for verification.

Scanned PDF files and images obtained from departmental data are loaded into the application. Each page is rendered and its text extracted, and the screening modules are applied to every page. The output is a page-wise register in Excel, containing one row for each page with the file name, page number, type of document, the result of each module, the risk score and the evidence for each flag. The register is sorted by risk, so that the auditor examines the high-risk pages first.

How CAG PARAKH Works

Two-dimensional screening of each document page through 10 focused checks

Structural Integrity
Checks for tampering and inconsistencies (e.g., metadata, QR code, fonts, photographs, signatures)

Semantic Understanding
Identifies what the document is (e.g., marksheet, Aadhaar, prescription) and extracts key fields

No.	Screening Module	Checks Performed
1	Metadata and PDF provenance	Software used to create the file, edit history and inconsistencies in file structure
2	QR code verification	Decoding of the QR code and comparison with the printed text
3	Font analysis	Mixed or inserted fonts, including in Devanagari script
4	Moiré and recapture	Photographs of screens and reprinted copies
5	Capture consistency	Pages from different sources within one PDF
6	Photograph analysis	Detection of faces and reuse of photographs across files
7	Whitener and tampering	Correction fluid and overwritten regions
8	Readability and scan quality	OCR confidence, blur, noise and clarity
9	Signature presence	Digital, pasted, printed and inked signatures
10	Signature detection (trained)	Trained model, reported alongside the rule-based check

Lightweight and rule-based (works on ordinary office computers, including offline)

Configurable (thresholds and document classes for different schemes)

Bilingual (Hindi and English)

The application also supports the management of batches and projects, checks for duplicate documents and identities, recording of the reviewer's decision, display of evidence on the document image, and export of results in CSV, XLSX, HTML and JSON formats.

Patterns Identified during Pilot Testing of CAG PARAKH

Scheme Audit	Pattern Identified through CAG PARAKH
Scholarship schemes	Forged or expired QR codes on uploaded certificates
Agriculture subsidy	Fake Aadhaar documents, linked to about ₹40–50 lakh of subsidy in a single district
Building and Other Construction Workers (BOCW) welfare	The same photograph appearing across multiple worker registrations
Mukhyamantri Kanya Sumangala Yojana	Edited college enrolment documents, used for the calibration of the font, overwriting and correction checks

The application was tested on documents obtained in scheme audits in a State. The pilots were used to calibrate the modules on actual departmental documents and to test the checks for readability, fonts and overwriting, recapture and correction regions. Pilot testing on documents from scheme audits in the State identified patterns such as invalid QR codes, fake identity documents and the reuse of photographs across registrations, which were flagged for verification by the auditor.

The application can be centrally packaged and updated, and installed locally in every IA&AD office. Extension to a new scheme requires only the configuration of document types and thresholds, and the application can serve audits of social welfare, education, health, labour, agriculture, rural and urban development, local bodies and works.

Scan here for more
details on the initiative

The Team:

1. Shri Raj Kumar-I, IA&AS
2. Shri Amritesh Shukla, IA&AS
3. Shri Anurag Singh, Auditor
4. Shri Latief Rahman Khan, DEO

7

GSTIN AUTOMATION & VERIFICATION TOOL



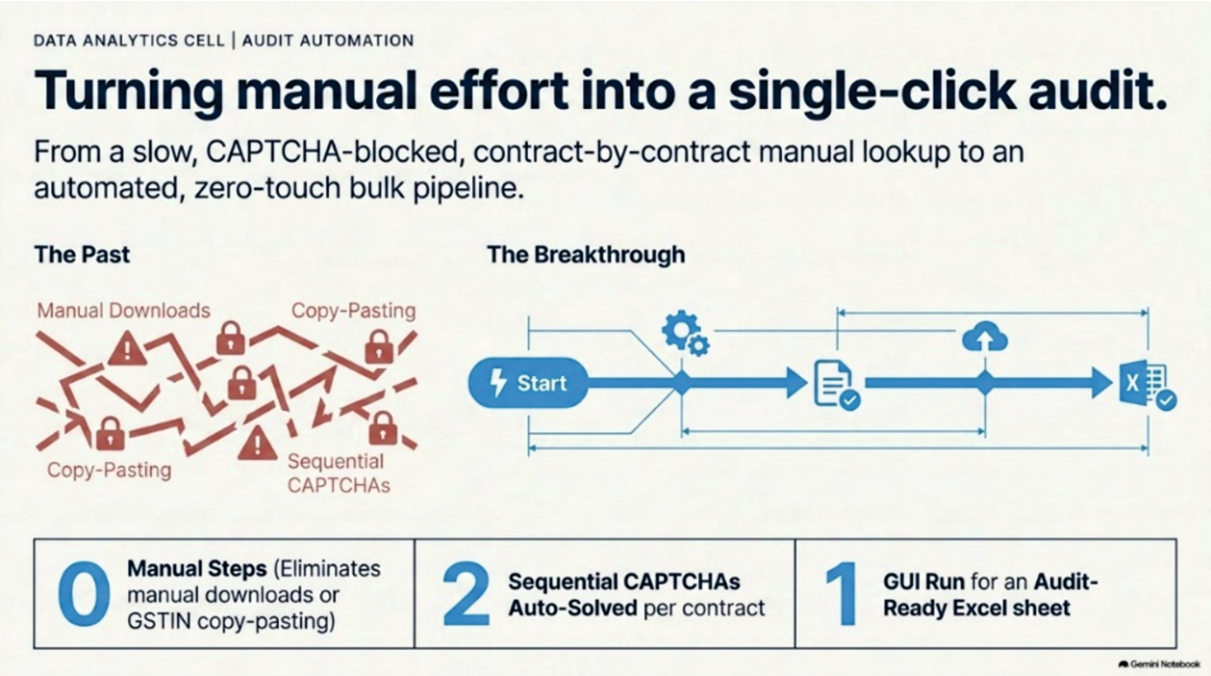
Office of the Principal Accountant General (Audit), Jammu & Kashmir

Automating GSTIN verification for smarter, wider procurement audits.

Every business registered under Goods and Services Tax (GST) has a 15-character GST Identification Number (GSTIN). When a department buys through the Government e-Marketplace (GeM), the seller is paid from public money. One of the simplest checks an auditor can make is whether the seller holds a valid, active GST registration. A cancelled or suspended registration, or a number that does not exist, raises a question about whether the seller is a genuine and eligible business operation. It is a pointer for further enquiry.

PURPOSE OF THE EXERCISE

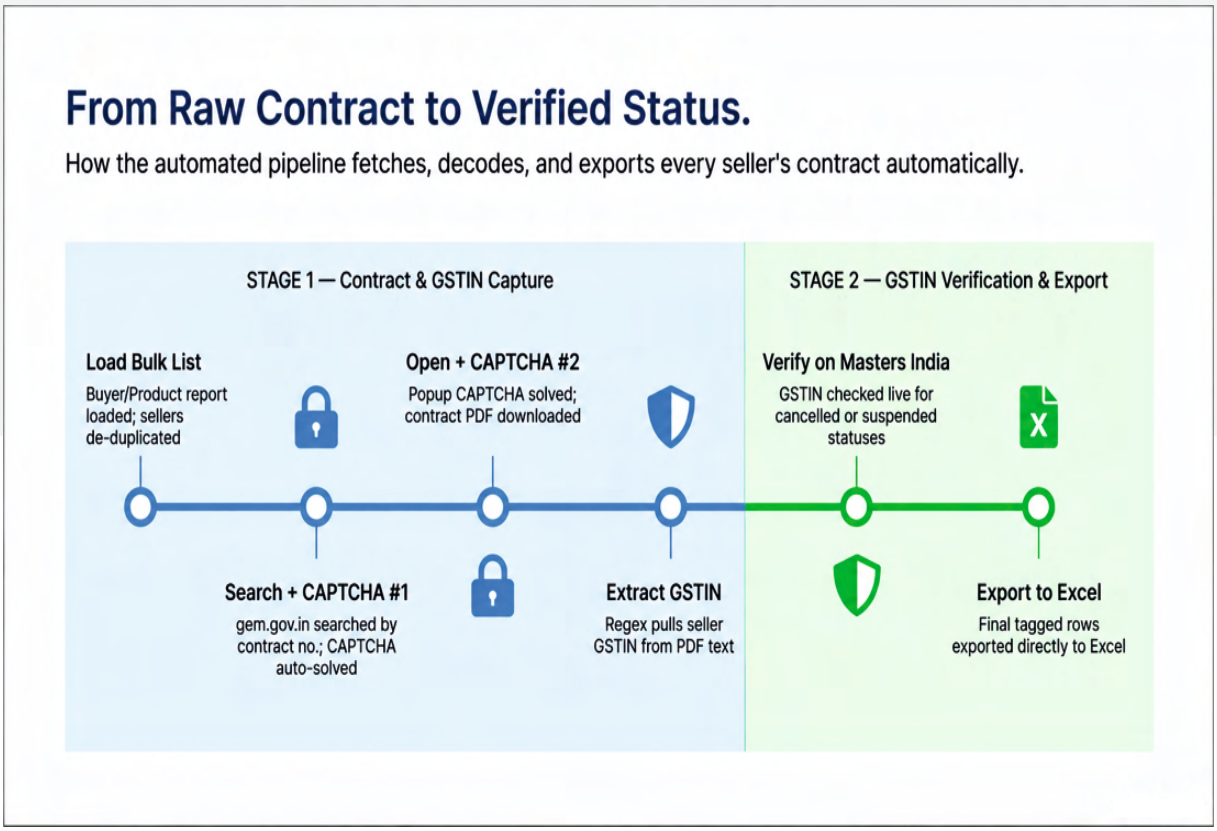
The seller's GSTIN is not available in the GeM reports that audit personnel download in bulk. It appears only inside the signed contract document (a PDF) of each individual order. To obtain it, an auditor has to go to the GeM website, search for the contract, type a CAPTCHA, open the contract, type a second CAPTCHA, download the PDF and read the GSTIN from it. The GSTIN then has to be checked separately on a GST website, which has a CAPTCHA of its own.



A single audit can involve hundreds of different sellers. Repeating these steps for every seller was too slow, so the check could not be applied consistently to all contracts. The purpose of the initiative was to automate the time-consuming process of extracting sellers' GSTINs from individual GeM contracts and link it with the subsequent verification of their GST registration status. The objective was to enable auditors to process a GeM report and obtain a consolidated list of sellers with their GST registration status in a single run, without entering CAPTCHAs, thereby making it feasible to extend verification to all sellers covered by an audit.

WHAT THE TOOL DOES

The first program takes a bulk GeM report, lists each seller once, searches each contract on the GeM website, reads both CAPTCHAs, downloads the signed PDF and reads the GSTIN from it. The second program checks the status of each GSTIN and flags sellers whose registration is cancelled, suspended or invalid. The result is an Excel file the auditor can use directly. Each CAPTCHA is read several ways and the answer most versions agree on is used, with automatic retry if a reading is wrong. The tool switches to Microsoft Edge where Chrome is blocked on the office computer and gives the auditor a manual-entry option as a last step.



A distinctive feature of the tool is its approach to CAPTCHA recognition. For GeM contracts, it generates five differently processed versions of each CAPTCHA image and uses OpenCV and Tesseract to identify the answer on which most readings agree. Incorrect readings trigger an automatic retry. For GSTIN verification, the tool adopts a layered approach comprising an in-house trained recognition model, a ready-made recognition tool (ddddocr), an AI-based image-reading service and, as a last resort, manual entry. The AI service receives only the CAPTCHA image, without any audit data, and is used rarely.

The tool also incorporates a built-in arithmetic check of the GSTIN's final character to identify potentially invalid numbers before online verification. It confirms successful downloading of each contract PDF before proceeding, thereby reducing the risk of incomplete extraction.

RESULTS, VALUE ADDITION AND REPLICATION POTENTIAL

The tool was used in the GeM audits of a few entities. It retrieved more than 2,000 seller contracts and extracted GSTINs without any manual CAPTCHA entry. The results were used directly to verify the genuineness of vendors and contributed to formal audit observations.

The initiative has improved the efficiency, coverage and accuracy of procurement audits by automating the retrieval and verification process, making it feasible to examine all sellers rather than a limited sample. Automated extraction reduces errors associated with manual transcription, while unattended processing allows auditors to undertake other tasks simultaneously.

Developed using existing office computers and free software libraries, the tool entails no setup cost and negligible recurring expenditure. It also reduces dependence on individual auditors' familiarity with the GeM portal. The tool requires no server and uses a GeM Buyer/Product report as its input. Since it is not specific to any department or scheme, it can be replicated by other offices conducting GeM-based procurement audits using ordinary Windows computers with Chrome or Edge.

CHALLENGES AND SOLUTIONS

The tool relies on automated extraction of information from websites , which presents certain operational challenges. These include possible blocking of shared office IP addresses due to excessive requests, changes in website layouts or CAPTCHA formats that may disrupt operations, and limitations in CAPTCHA recognition accuracy. A provision for manual CAPTCHA entry has therefore been retained.

Restrictions on Chrome and browser-driver downloads on office computers were addressed through automatic switching to Microsoft Edge and use of the driver manager supplied with the automation software.

In due course, a more sustainable solution would be to obtain official, paid API-based access to GST taxpayer information through an authorised GST Suvidha Provider and to seller information through an official GeM data facility. This would eliminate dependence on CAPTCHAs and web scraping, reduce the risk of access restrictions, provide standardised data and enable a more reliable audit trail.

The extracted information could also support the future development of a database of Government suppliers for network analysis. Linking sellers through common addresses, ownership or contact details could help identify potentially suspicious patterns across procurements for further audit examination. This capability will be added in future.

Scan here for more details on the tool

Developed by:

Shri Vivek Kumar Garg, Asst. Audit Officer

8

REMOTE AUDIT OF PANCHAYATI RAJ INSTITUTIONS (PRIs) UNDER TECHNICAL GUIDANCE AND SUPPORT (TGS) OF CAG



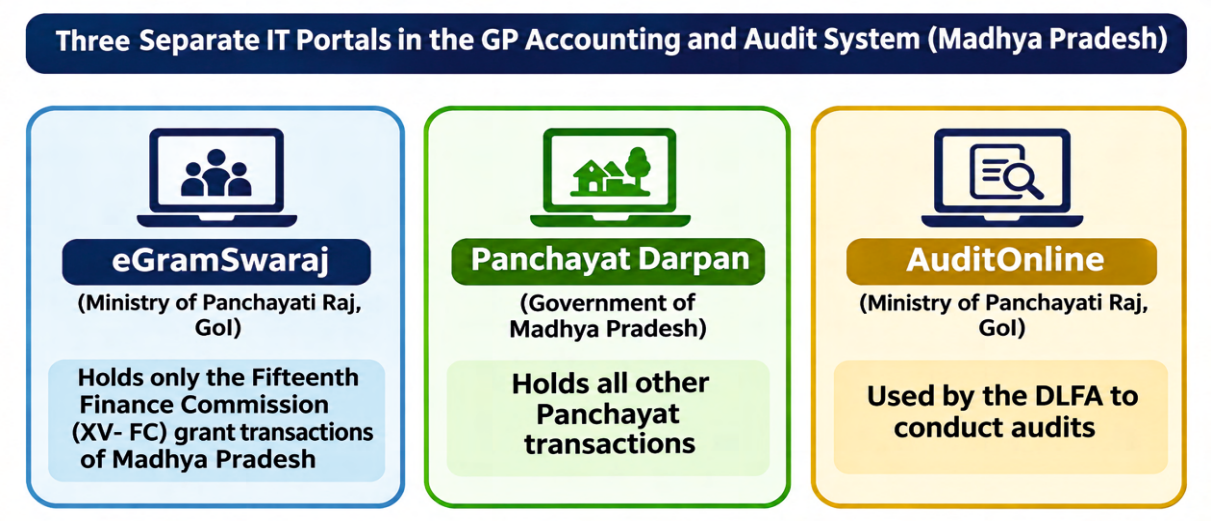
Office of the Principal Accountant General (Audit-I), Madhya Pradesh, Gwalior

Transforming Panchayat accounting and audit through integrated digital records and remote verification.

Madhya Pradesh has more than 23,000 Gram Panchayats (GPs). The Finance Commission (FC) requires their accounts to be audited every year as a condition for the release of grants. The Directorate of Local Fund Audit (DLFA) is the primary auditor and is responsible for auditing the accounts of these Panchayats under the Technical Guidance and Support (TGS) of the Comptroller and Auditor General of India. The CAG's guidelines of 2002, as amended in 2009, prescribe eight account formats under the Model Accounting System (MAS) for the maintenance of accounts by the Panchayats. However, the existing manual and/or digital systems did not provide a set of accounts in the prescribed formats covering the entire set of transactions.

In Madhya Pradesh, GP transactions are recorded on two separate IT portals, while the DLFA conducts the audit in physical mode and reproduces its findings on a third IT application.

The DLFA collected GP records offline at the Janpad Panchayat level, uploaded its audit observations to the AuditOnline portal, and issued the Inspection Report to the audited entities. The Audit Certificate was generated in Auditonline in respect of Financial Statements from eGramSwaraj data, which covered 15th FC grants only. Consequently, a substantial share of GP transactions lay outside the scope of digital audit.



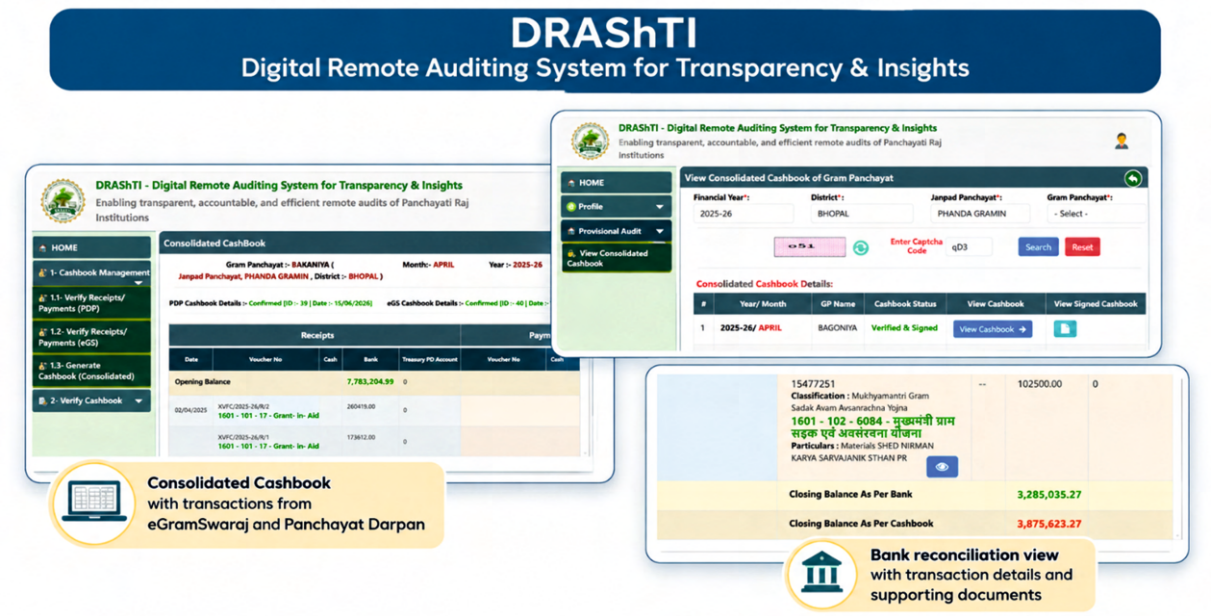
PURPOSE OF THE INITIATIVE

The existing system had the following interlinked weaknesses:

- **Partial certification:** The AuditOnline portal issued certificates covering Financial Statements restricted to 15th FC grants based on data from eGramSwaraj.
- **Manpower constraints:** Auditing more than 23,000 GPs on time with limited DLFA staff was a major challenge.
- **Time-consuming offline audit and associated financial burden:** Substantial working hours were lost in travelling to auditee units and collecting records from different sources. Physical audit imposed recurring TA/DA and man-day costs on the Government.
- **Scattered data and poor records at GP level**: Cashbooks were incomplete, vouchers and registers were inconsistently available, revenue was recorded late in some instances, and administrative and technical sanctions were often unavailable. Transactions were scattered across Panchayat Darpan and eGramSwaraj, so neither portal gave a complete, verified picture of a GP's finances.

While TGS traditionally involves advising local fund auditors on audit methodologies and test-checking their work, this initiative extended its scope to driving systemic transformation. The Office conceptualised DRAShTI (Digital Remote Auditing System for Transparency & Insights), an IT module on the State's Panchayat Darpan portal that enables remote audit of GP accounts. It brings every GP transaction, including 15th Finance Commission grants within a paperless audit.

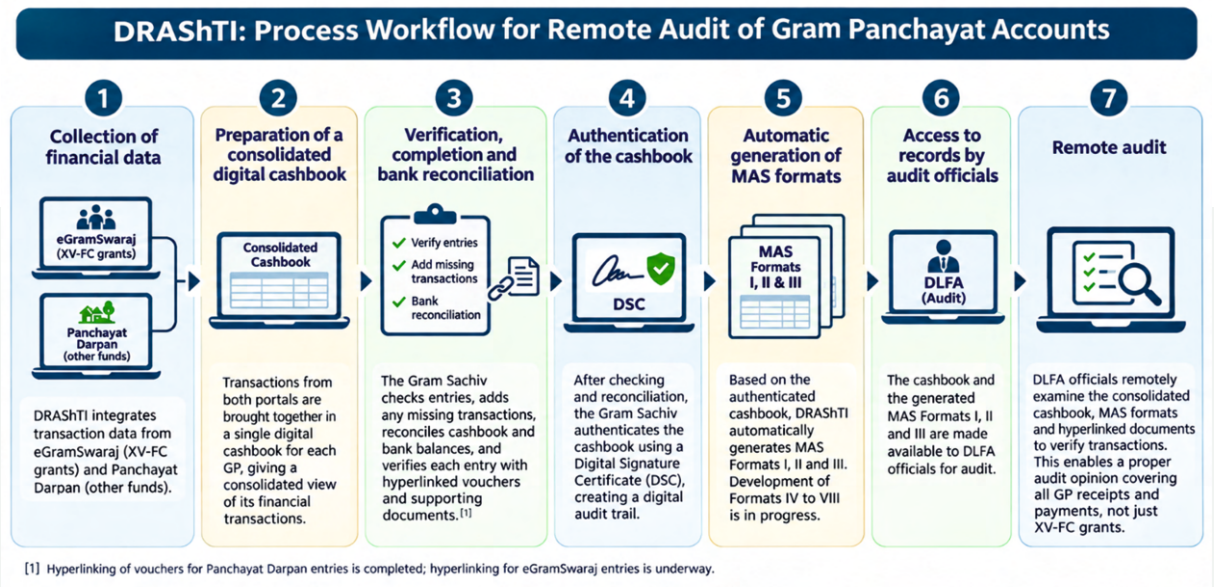
The feasibility of the approach was established through a pilot study. Subsequently, the Panchayati Raj and Rural Development Department (PRDD) developed the system under guidance of the audit office and with technical support from the National Informatics Centre (NIC). The Hon'ble Chief Minister, Government of Madhya Pradesh launched it State-wide on 14 July 2026.



HOW DRAShTI WORKS

DRAShTI consolidates eGramSwaraj and Panchayat Darpan transactions into a single digital cashbook for each GP. The Gram Sachiv adds any missing entries, reconciles the cashbook with the bank, and signs it with a Digital Signature Certificate (DSC). Every entry is hyperlinked to its supporting voucher, and MAS Formats I-III[5] are generated automatically. DLFA auditors, mapped through the Madhya Pradesh Treasury portal, then conduct the audit online with role-based, logged access.

The next phase will integrate MAS Formats IV–VIII[6] in three stages (Format VII first, followed by Formats V–VI, and then IV and VIII), after which the platform will be extended to Janpad and Zila Panchayats.



5 I- Receipt and Payment Accounts, II- Consolidated Abstract Register and III- Monthly Reconciliation Statement

6 IV- Statement of Receivables and Payables, V- Register of Immovable Property, VI- Register of Movable Property, VII- Inventory Register and VIII- Register of Demand, Collection and Balance.

KEY BENEFITS

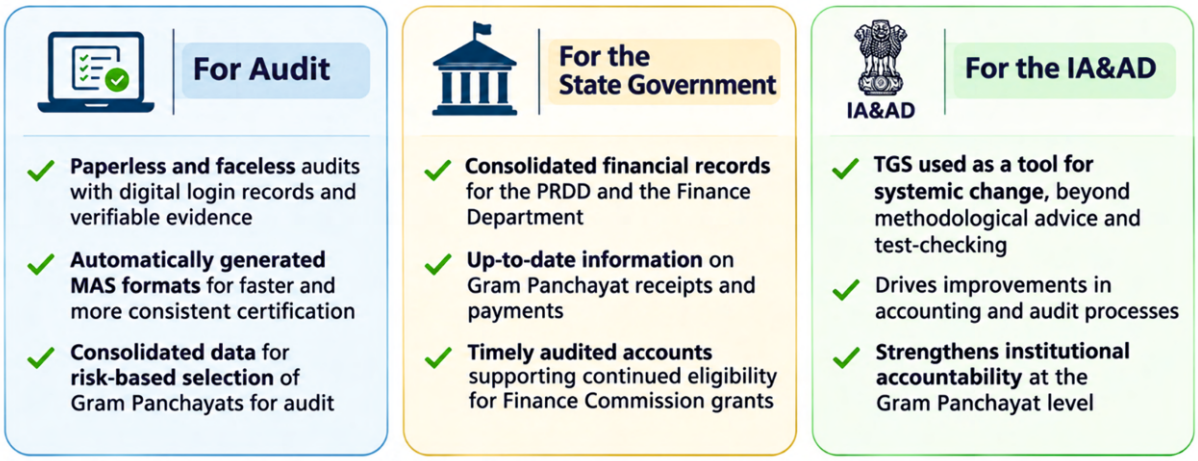
DRAShTI represents a significant shift towards comprehensive, paperless and remote audit of GPs. It has enabled the DLFA to audit more than 23,000 GPs in Madhya Pradesh. By integrating financial data from existing portals and enabling digital verification of records, the initiative is expected to improve audit coverage, efficiency and reliability while reducing dependence on physical visits and additional manpower.

The key benefits are:

- **Comprehensive audit coverage:** By integrating data from eGramSwaraj and Panchayat Darpan, DRAShTI enables certification covering all receipts and payments of over 23,000 Gram Panchayats in Madhya Pradesh.
- **Savings in time and cost:** Online access to financial records and supporting documents is expected to reduce travel time by approximately 80 per cent and TA/DA expenditure of the DLFA and the office by a similar proportion.
- **Improved accuracy:** Bank reconciliation, digital authentication of cashbooks through DSCs and supporting vouchers are expected to reduce manual errors .
- **Optimal utilisation of manpower:** Desk-based audit through role-based access enables coverage of all GPs without requirement for a proportionate increase in audit staff.

INSTITUTIONAL IMPACT

Beyond operational efficiencies, DRAShTI offers wider benefits for audit, the State Government and the IA&AD.



The model is scalable and replicable across States. Any audit office providing TGS to PRIs can adopt it using existing digital infrastructure and institutional arrangements. It needs no separate audit infrastructure and no proportionate increase in manpower, which makes it cost-effective and sustainable.

It is best suited to States where payments under schemes other than those funded through FC grants are processed through a State-owned IT platform. The core framework and audit methodology carry over with minimal change, while other components can be adapted to each State's accounting systems, IT architecture, reporting and administration.

Scan here for more details on DRAShTI

The Team:

1. Shri Rajdeep Singh , IA&AS
2. Shri Mahesh Prasad Srivastava, IA&AS
3. Ms. Rashmi Mishra, Sr. Audit Officer
4. Shri Gaurav Arya, Asst. Audit Officer
5. Shri Pankaj Beniwal, Asst. Audit Officer

9

ANONYMISED LOCAL AI FRAMEWORK FOR AUTOMATED DATA-LED AUDIT OF POLICE RECORDS

Office of the Accountant General (Audit), Uttarakhand

Using AI to uncover patterns across police records while preserving confidentiality. The Auditor's question goes to the model, while the citizen's data never leaves the office.

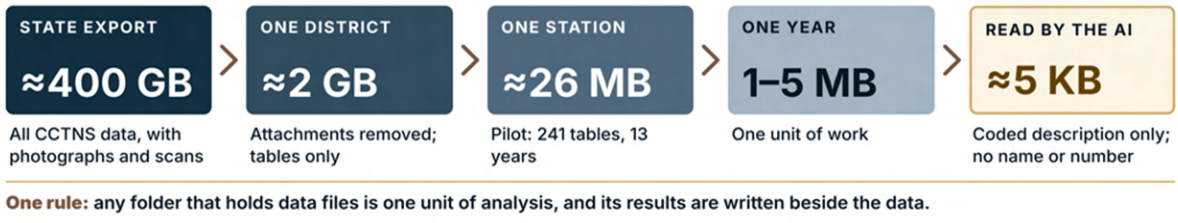
The Crime and Criminal Tracking Network and Systems (CCTNS) holds the complete life-cycle of a police case in digital form such as registration of the First Information Report (FIR), General Diary (GD) entries, arrest memos, case diaries, seizure of property, chargesheets and citizen services such as tenant and employee verification. These are among the most sensitive records held by the Government. They carry the names, parentage, addresses, mobile numbers, vehicle numbers and identity document numbers (Aadhaar, PAN, voter identity card, driving licence and passport) of complainants, citizens seeking services, accused persons, victims, witnesses and police officers.

THE CHALLENGE AND THE SOLUTION

In one State, CCTNS data with the Police Department measured nearly 400 GB. Audit of police stations traditionally relied on scrutiny of registers and a sample of case files. Sampling covers only a small fraction of the caseload and may miss significant contradictions between registers, such as an arrest dated before its FIR, a charge-sheeted case with no arrest record or a case diary written while the officer was shown on leave. Such patterns appear only when the registers are read together.

The large volume of data made manual examination impractical, while the sensitivity of police records ruled out uploading them to a commercial AI service. Moreover, the volume of data far exceeded what an AI model could process at one time. The challenge, therefore, was to develop an application capable of analysing the entire dataset without exposing the underlying records to the AI model or requiring it to process the data in its entirety at once.

To address this challenge, an application was developed to operate on an office computer, with the option of using either an open-weight AI model, Qwen 3.6, running entirely offline on the same machine, or a commercial AI model receiving only coded descriptions of the data. In the fully local mode, no data leaves the computer and no internet connectivity is required. The data is organised by district, police station and year, with each station-year folder treated as a separate unit of analysis.

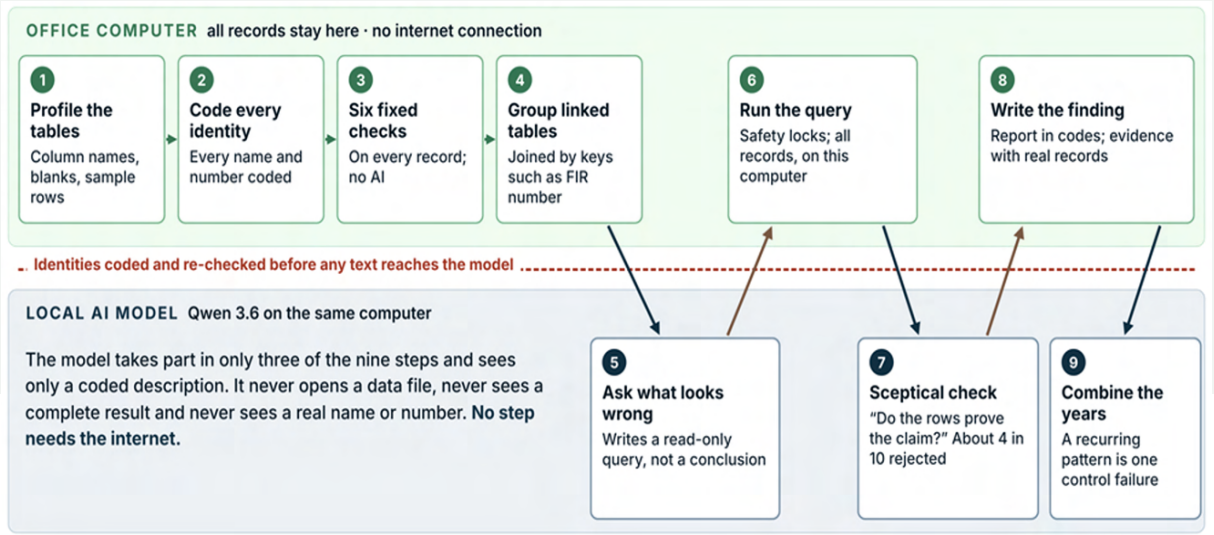


KEY FEATURES

The application incorporates four key features that enable comprehensive, evidence-based analysis of sensitive police records while preserving confidentiality:

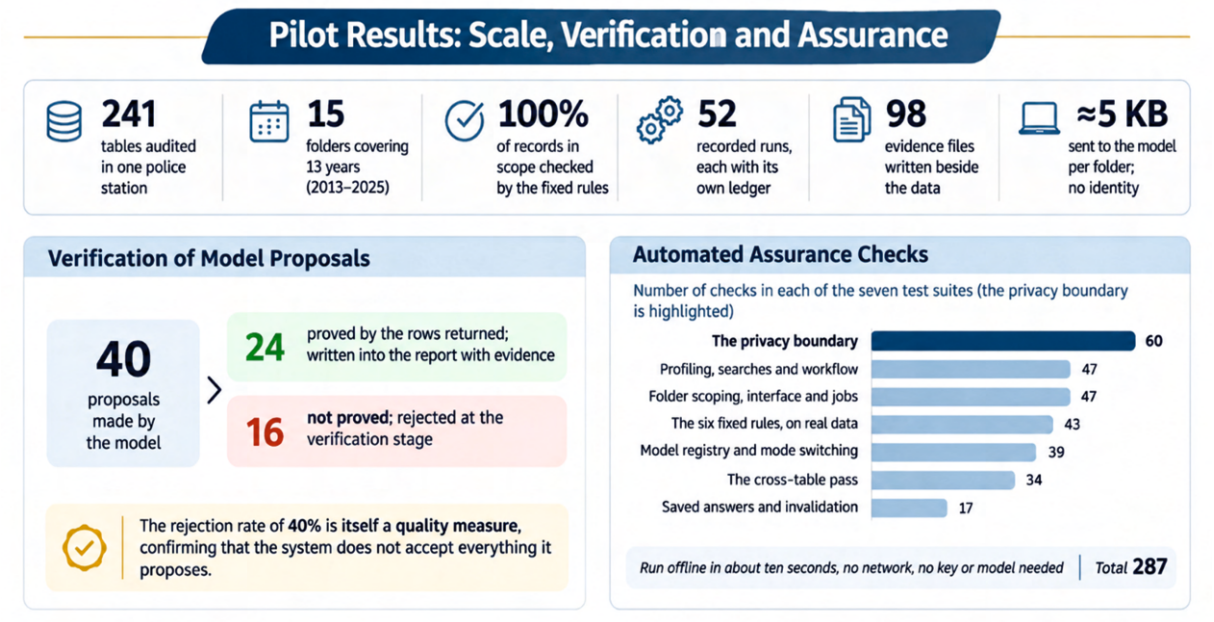
- **Description, not data:** Before any information is shared with the AI model, personal identifiers such as names, addresses, phone numbers and identity document numbers are replaced with permanent codes. A further check ensures that no identifiable information remains. The model receives only column names, basic statistics and five coded sample rows per table, amounting to approximately 5 KB per folder, irrespective of the volume of underlying data.
- **Questions, not conclusions:** Rather than generating findings directly, the AI model formulates read-only database queries to identify potential irregularities, such as cases marked as charge-sheeted without corresponding arrest records. Each query passes through four safety checks before being executed locally against the complete dataset. A query returning no matching records does not generate a finding.
- **Sceptical verification:** The results undergo a second AI-assisted review, in which five coded sample rows are examined to determine whether the evidence actually supports the proposed finding.
- **Evidence-backed findings:** Every confirmed finding is accompanied by the exact database query and the complete results, saved locally for verification by the field audit team against the original records. In addition, six predefined checks operate independent of AI across all records to identify data-quality issues and inconsistencies.

Each station-year folder passes through nine steps, of which the AI model is involved in three steps.



OUTPUTS, OUTCOMES AND IMPACT

The tested application offers both browser-based and command-line interfaces, configurable audit rules and a choice between a commercial AI model with coded identities and a fully local model. Each audited folder generates a coded report, complete evidence files and a locally retained identity key. An end-to-end pilot covering 241 tables across 13 years at one police station involved 52 recorded runs and generated 98 evidence files.



Cross-verification of police records through the application revealed inconsistencies in the recording of investigations, including overlapping case diary entries and investigative activities recorded while officers were on leave or assigned other duties. It also identified instances where applicants matching accused persons in registered FIRs were reported as having no criminal record during tenant verification, highlighting gaps in verification controls.

The application enables sharper, evidence-based audit planning by identifying specific cases for field verification and revealing systemic control weaknesses through cross-register analysis. It is replicable across CCTNS and other sensitive Government databases, including prison, hospital, welfare, transport and land records, using configurable checks, free open-source software and existing office systems.

Scan here for more
details on the application

The Team:

1. Shri Sanjeev Kumar, IA&AS
2. Shri Nishant, IA&AS
3. Shri Manoj Kumar, Sr. Audit Officer
4. Shri Devendra Diwakar, Asst. Audit Officer
5. Shri Abhinav Singh, Asst. Audit Officer

10

DATA ANALYTICS AUDIT: DETECTING POTENTIAL ANTI-COMPETITIVE BIDDING IN E-NAM AUCTIONS

Office of the Principal Accountant General (Audit-II), Tamil Nadu and Puducherry

Using behavioural data analytics to uncover collusive bidding, price suppression and systemic control weaknesses in Electronic National Agriculture Market auctions, safeguarding competition and farmers' interests.

The electronic National Agriculture Market (e-NAM) is a pan-India digital trading portal instituted to integrate physical agricultural wholesale markets (Regulated Markets/ Agricultural Produce Market Committees) into an open, competitive electronic auction system. By replacing physical open-outcry auctions with automated online bidding, e-NAM aims to foster uninhibited price discovery, eliminate local trader cartels, and guarantee remunerative prices to primary agricultural producers. However, in physical *mandis*, local trader rings can subvert digital mechanisms through coordinated practices such as cover bidding, artificial floor bidding and cyclical bid rotation, creating an illusion of competition while depressing the prices paid to primary agricultural producers.

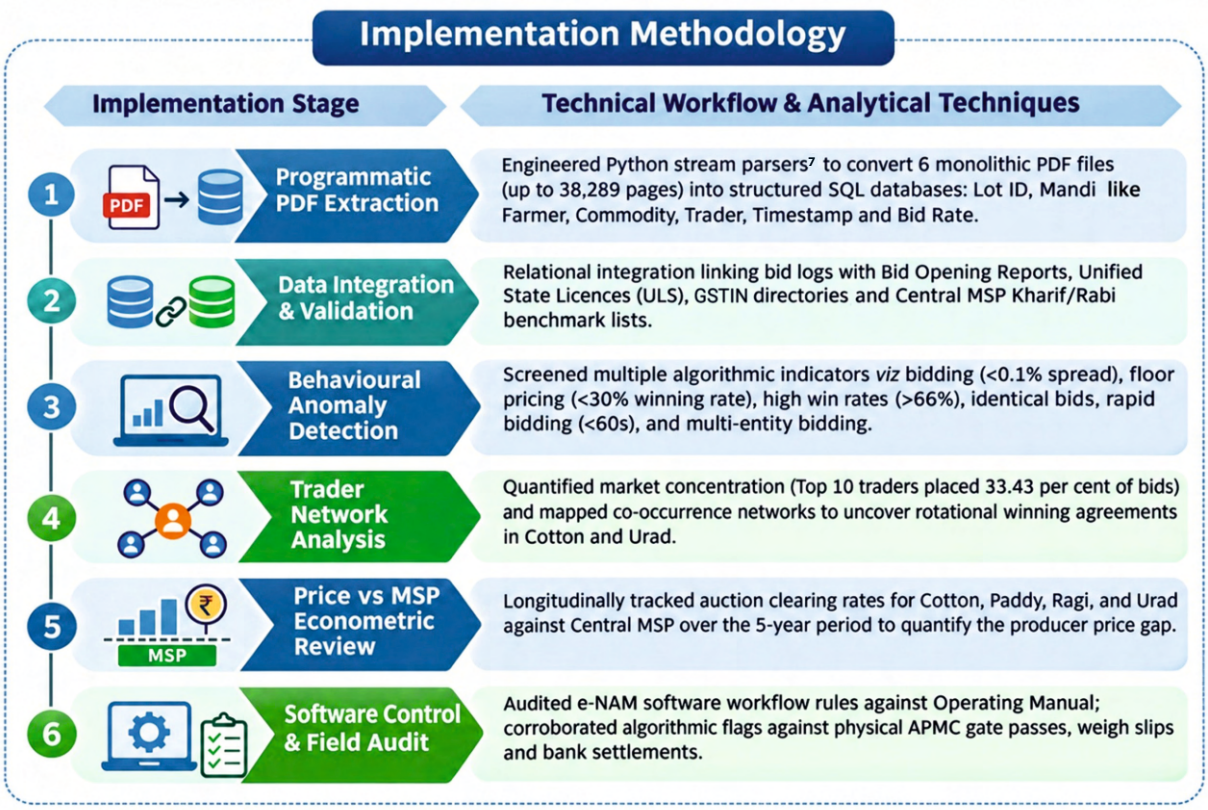
CHALLENGE AND INNOVATIVE APPROACH

Electronic auction platforms generate vast volumes of transactional data often stored in system-generated PDF reports running into tens of thousands of pages. Traditional audit methods relying on manual voucher sampling cannot extract or analyse these records.

To overcome this challenge, an automated behavioural analytics framework was developed which converted unstructured PDF reports into a structured relational database. It applied reproducible algorithms to detect collusive bidding patterns, assessed IT application controls against applicable business rules and compared auction prices against statutory Minimum Support Price (MSP) benchmarks. Analytical findings were corroborated through examination of physical market records. The initiative was implemented using Python-based data extraction tools, relational database (SQL) queries and pattern detection analytics models.

METHODOLOGY

The methodology goes beyond examining individual transactions to analyse bidding patterns, trader networks and price variations across auctions. By converting voluminous unstructured PDF reports into a structured database, it enables systematic analysis of bidding behaviour over multiple years. Automated algorithms identify unusual bidding patterns, abnormal win rates, recurring bidder interactions and price gaps relative to MSP benchmarks. These findings are examined alongside software application controls to identify potential weaknesses that may enable market manipulation. The resulting risk indicators guide targeted field verification through examination of physical market records providing a systematic, evidence-based approach to auditing electronic auction platforms.



KEY AUDIT FINDINGS – PILOT STUDY

A pilot analytics exercise was conducted at a Regulated Market, covering 1,21,594 lot auctions over five years (January 2021 to December 2025). Analysis revealed significant irregularities in bidding patterns, weaknesses in software controls and gaps in regulatory compliance.

- **Concentration of bidding:** The top 10 traders accounted for 33.43 per cent of all bids indicating substantial concentration of bidding activity.

7 Python stream parsers are programs that process PDF documents in manageable chunks, extract relevant information, and organise it into structured database records.

- **Suspicious bidding patterns:** Automated analysis identified instances of cover bidding, artificial floor bidding, identical bids, rapid successive bidding and multiple trader identities suggesting possible coordination among bidders.
- **Potential trader cartels:** Network analysis revealed recurring bidding groups and patterns of rotational winning particularly in Cotton and Urad auctions raising concerns about genuine competition.
- **Prices below MSP:** Cotton auction prices remained largely unchanged during 2022–2025 despite a substantial increase in MSP, widening the gap between auction prices and MSP. Below-MSP prices were also observed in Paddy, Ragi and Urad.
- **Software control weaknesses:** The Minimum Selling Price option prescribed in the e-NAM Operating Manual was not mandatory in the software workflow weakening safeguards against low-price auction settlements.
- **Regulatory finding:** Traders operating without valid licences or GSTIN were identified.

OUTCOMES AND IMPACT

The initiative established that digital procurement and auction systems require continuous automated behavioural surveillance as offline coordination among traders can undermine electronic bidding. It highlighted the need for structured data access, automated behavioural analytics and examination of software controls to detect potential market manipulation.

The methodology can be replicated across Regulated Markets nationwide given e-NAM's common technological platform and standardised data structure without requiring new software development.

Scan here for more
details on the application

The Team:

1. Shri R. Thiruppathi Venkatasamy, IA&AS
2. Shri Gowthaman Ramadoss, IA&AS
3. Shri Charles Devadoss Selwyn, Sr. Audit Officer
4. Shri M Raja Gopal, Sr. Audit Officer
5. Shri Kodipally Rohith Kumar, Asst. Audit Officer
6. Shri Sanapala Venkata Sai Krishna, Asst. Audit Officer
7. Shri T Thirumalaiah, Asst. Audit Officer

11

DATA-LED REMOTE AUDIT OF STAMPS & REGISTRATION DEPARTMENT

Office of the Principal Accountant General (Audit-II), Uttar Pradesh

Data-led Audit and Technology-Enabled Transformation in Compliance Audit of Stamps & Registration Department.

The Stamps and Registration Department is among the State's highest-volume revenue departments. Sub-Registrar Offices (SROs) across the State register property transactions through the Department's Integrated Grievance Redressal System (IGRS) portal.

Conventional Receipt Audit entailed physical presence of audit personnel at each SRO, examination of paper registers over five to seven working days per office and testing being confined to a small sample due to limited availability of time and resources. The traditional model covered only a small fraction of the total stamp duty revenue and generated approximately four observations per SRO. Large transaction volumes and low-value irregularities spread across registrations limited the ability to detect systemic non-compliance.

THE INITIATIVE

A data-led remote audit of the Stamps and Registration Department was conducted by adopting a remote methodology through direct system access replacing sample-based testing with 100 per cent algorithmic screening of transactions. Implemented across 12 SROs in four districts, the approach demonstrated a revenue impact of ₹52.45 crore, compared with ₹3.14 crore under the traditional audit cycle.

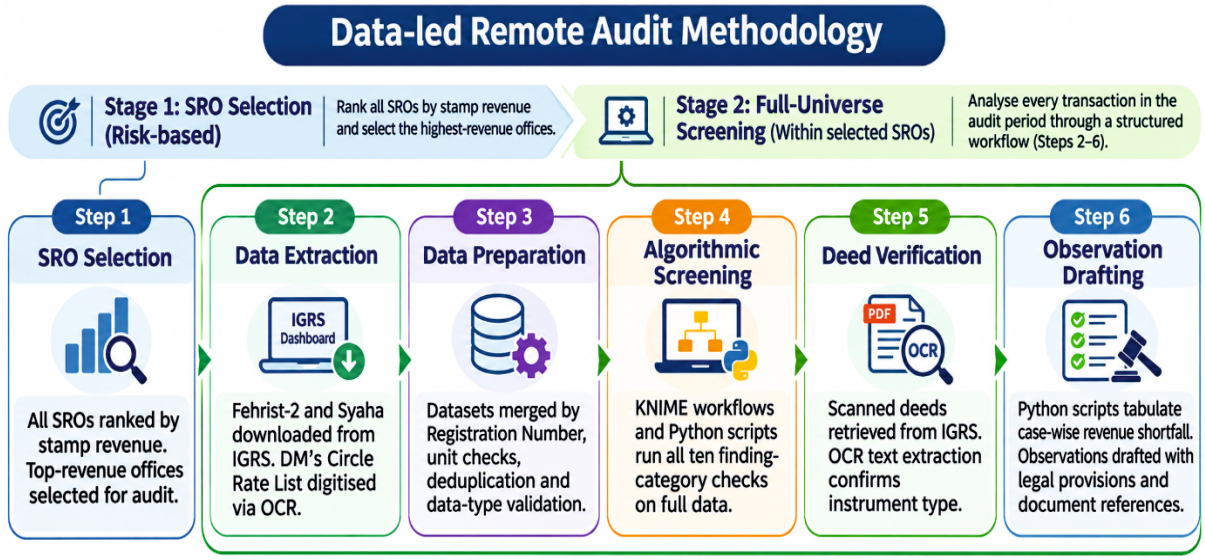
The foundation of the data-led remote audit was securing a dedicated, read-only Accountant General (AG) Office Dashboard within the Department's IGRS portal. This standing access provides secure remote access to *Fehrist*-2 (Deed Index), *Syaha* (Fee Register), and scanned registered deed copies, retrievable by registration number across SROs.

METHODOLOGY

The audit adopts a two-stage methodology. In the first stage, SROs within each target district are ranked by revenue with the highest-revenue offices selected for audit. In the second stage every transaction during the audit period in the selected SROs is subjected to algorithmic screening without further sampling. This approach combines risk-based office selection with full-population transaction coverage.

Python scripts and KNIME workflows are used to process transaction data at scale while Optical Character Recognition (OCR) facilitates digitisation and text extraction. The Circle Rate List is digitised into a searchable dataset for algorithmic cross-referencing. Deed data, fee-register entries and circle-rate data are then cross-checked to identify category mismatches[8] and procedural irregularities which are verified against scanned deed evidence. Python scripts subsequently consolidate the verified, flagged transactions into structured draft audit observations mapped to the relevant legal provisions and data fields for review and finalisation by the audit personnel.

The two-stage approach is necessitated by jurisdiction-specific variations in *Khasra* categorisations under the District Magistrate's Circle Rate List and locality-wise stamp duty rates. Further, detection of Security Bond misclassification requires deed-level OCR analysis to be undertaken separately for each SRO. Consequently, a single state-wide analysis is not technically feasible without district-specific reference datasets.



8 Category mismatch refers to a potential inconsistency in the property category adopted for stamp-duty assessment, identified by cross-checking deed particulars, fee-register entries and the applicable District Magistrate's Circle Rate List.

SIGNIFICANT AUDIT FINDINGS AND IMPACT

In 12 SROs across four districts, Audit identified 691 cases involving potential revenue leakage of ₹52.45 crore. Compared with the traditional audit model the results demonstrate:

- **Revenue coverage:** 22.99 per cent of total stamp duty revenue, against 0.9 per cent in traditional audit.
- **Revenue identified per SRO:** ₹4.37 crore, against ₹31.43 lakh which is 13.9-fold increase.
- **Audit observations per SRO:** 57 against 4, thereby reflecting a 14.25-fold increase.
- **Audit duration per SRO:** Approximately 3 working days against 5–7 working days, making the audit 40–57 per cent faster.
- **TA/DA and travel expenditure:** Zero against the full cost per SRO visit, thereby 100 per cent saved.

The largest category involved 477 cases (₹33.88 crore) of suspected concealment of residential property character through registration as agricultural land in violation of Section 27 of the Indian Stamp Act, 1899. Across 10 finding categories, the observations indicated systemic weaknesses in the master data, accounting and validation controls.

The AG Office Dashboard provides statewide access across all districts. The Python scripts and KNIME workflows require no modification for other SROs, as district-specific preparation is a one-time digitisation of the District Magistrate's Circle Rate List. The methodology has been incorporated in the SOP for Data-Led Remote Audit of Registration and Stamps Department.

Scan here for more details on the audit

The Team:

1. Shri Rajeev Kumar Pandey, IA&AS
2. Shri Akash Chaudhary, IA&AS
3. Shri DP Singh, Sr. Audit Officer
4. Shri Durgesh Awasthi, Asst. Audit Officer
5. Shri Gaurav Krishna Srivastava, Asst. Audit Officer
6. Shri Shubham Yadav, Asst. Audit Officer

12
GEM CATALOGUE INTEGRITY ANALYTICS SUITE

Centre for Data Management and Analytics, Office of the Comptroller and Auditor General of India

AI powered checks for accurate product listings and procurement on GeM.

The Government e-Marketplace (GeM) serves procurement by Ministries, Departments, Public Sector Undertakings and Autonomous Bodies. It is designed as a catalogue-driven marketplace. A buyer relies on three things viz. a listing's title, image specifications describing the item, and that the item sits in the right category so that the correct specifications, price references and approval rules apply. This is to ensure that the custom-bid route which lets a buyer describe a requirement outside the catalogue, is used only when the catalogue cannot meet the need.

All these risks lie within text and images and not in database fields. In such cases, keyword rules fail because buyers and sellers describe the same item in different words (e.g. "copier paper", "photocopy paper", "A4 75 GSM"). Manual sampling also fails due to the scale of work involved.

THE INNOVATIVE AUDIT APPROACH

An audit of GeM addressed the three risks using a suite of two AI technologies through three audit lenses:

Technology 1: Sentence-BERT (SBERT) reads text for meaning. It powers Lens A (custom bid versus catalogue) and Lens B (category and sub-category misclassification).

Technology 2: A vision-language model looks at a product photograph and reads its title together. It powers Lens C (image–title consistency).

Four design rules apply to every lens. The AI screens the full population, filters out known false-positive patterns and classifies results by confidence level while human verification is mandatory before any case is retained. The outputs are presented through self-contained HTML dashboards that require no server, licence or installation to view.

METHODOLOGY

The work involved five phases:

- **Data access:** Catalogue, bid and order data were analysed directly in the data warehouse using SQL, without transferring bulk data outside the controlled environment.
- **Pilot and tune:** Lens A was initially tested in four categories and later extended to 15 categories. Initial runs helped identify and filter out misleading matches caused by synonyms, label words and placeholder entries.
- **Scaling:** The refined processes were applied to the full dataset with provisions to resume lengthy Graphics Processing Unit (GPU)-based processing after interruptions.
- **Review:** A small analyst team verified the AI shortlists with every verdict logged.
- **Reporting:** Verified results, evidence and reasoning were written programmatically into HTML dashboards for the audit personnel.

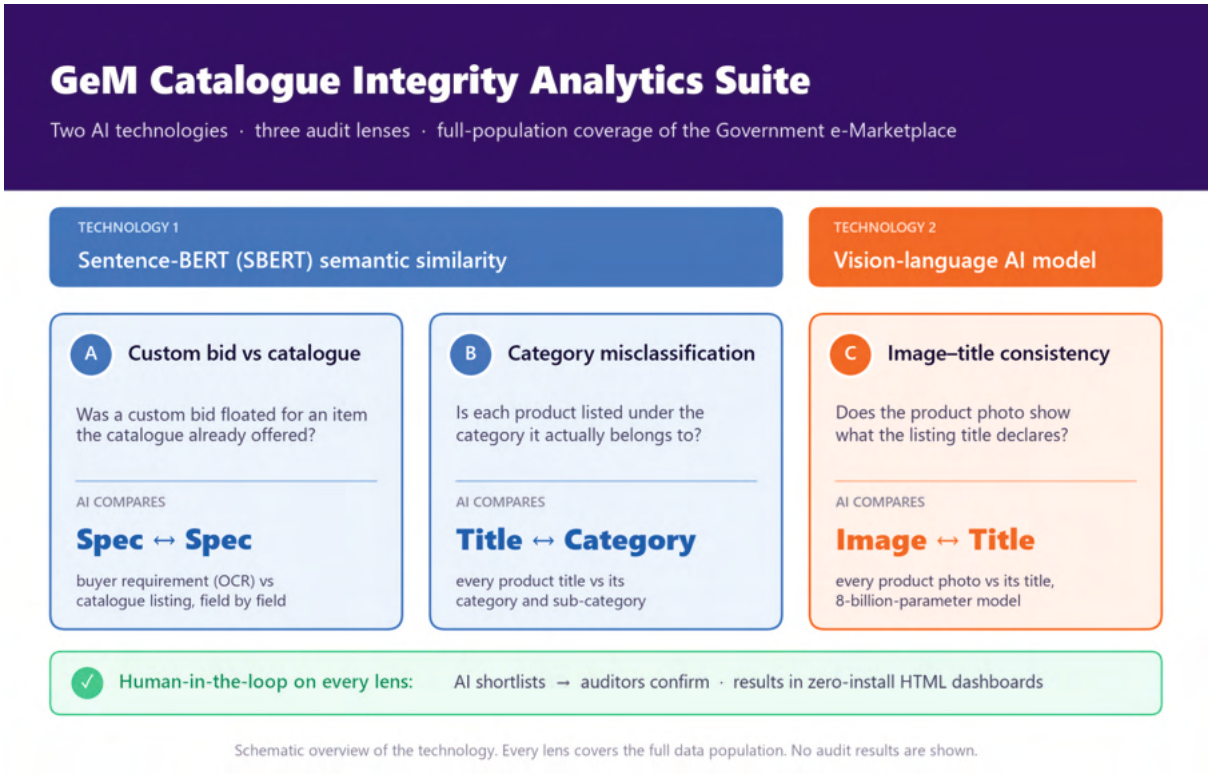
The initiative converts judgement-based audit questions into scored tests, replaces keyword matching with semantic embeddings and combines AI shortlisting with precise field-level verification. Dual-candidate image inference, adjudication, non-assessable filters, synonym controls, live-link checks, external benchmarks and human verdicts provide layered safeguards. The models and serving tools are open-source.

OUTPUTS, OUTCOMES AND VALUE ADDITION

The three lenses produced distinct audit outputs. Lens A (Custom versus Catalogue) examined single-item custom bids in selected categories to identify exact and likely catalogue matches with field-level checks eliminating near-matches before review. Lens B (Category Fit) examined the full product catalogue and generated a prioritised register of misclassified products linked to orders and product status. Lens C (Image–Title Matching) analysed sampled product images and identified verified mismatches with supporting reasons and benchmarks after filtering out non-assessable images, synonym-related matches and inactive links.

The suite replaced impracticable large-scale manual checking with AI processing and short ranked analyst worklists. Its reusable tests also offer designs for preventive controls at product listing and custom-bid publication. Analysis identified a placeholder catalogue identifier used for Bill of Quantities orders across unrelated products and this identifier was excluded from the analysis.

The three lenses can be adapted using standard extracts of catalogue, bid, order and image data. SBERT can run on standard servers while the image lens requires GPU resources and can be limited to a subset where capacity is constrained. Potential applications include State e-procurement portals, Central Public Procurement Portal tenders, health-sector purchases, stock and asset registers and comparisons of estimates or bills with approved items.



Schematic overview of the technology. Every lens covers the full data population. No audit results are shown.

Scan here for more details on the initiative

The Team:

1. Shri Ajay Yeshwanth V, IA&AS
2. Shri Chandersheel, Asst. Admin. Officer

13

LEVERAGING ERP SYSTEM FOR REMOTE/UNILOCATION FINANCIAL AUDIT OF CPSUs

Office of the Principal Director of Audit (Oil & Gas), Mumbai

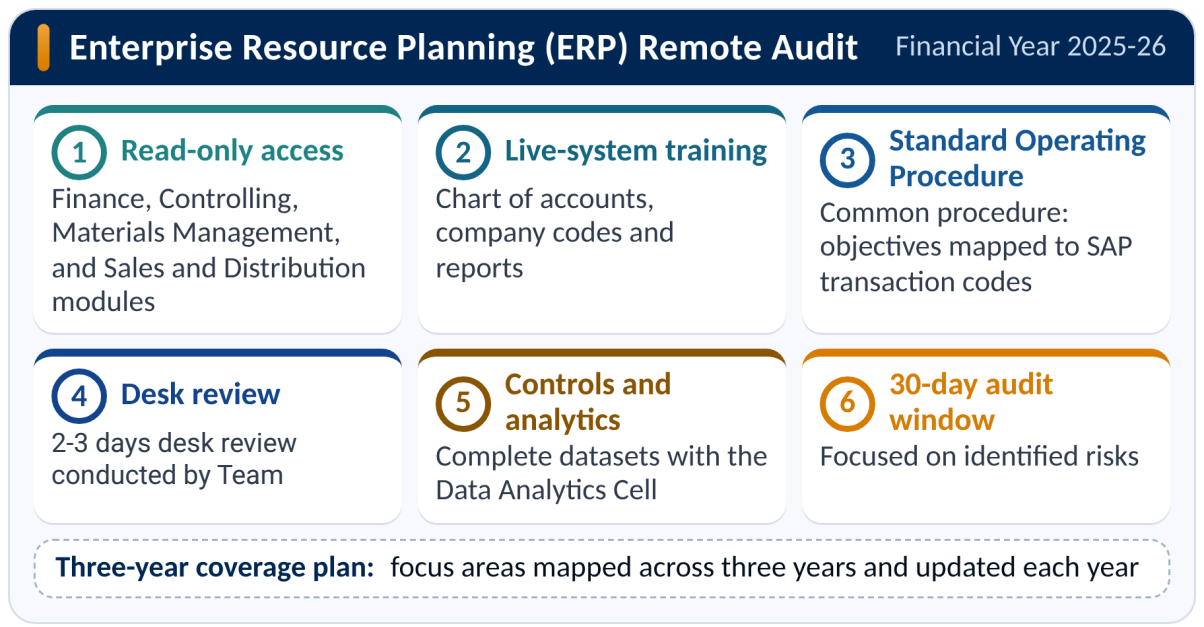
Early system access, data analysis and risk-based planning for efficient financial audit.

The Office of the Principal Director of Audit (Oil & Gas), Mumbai audits 50 Public Sector Undertakings under the Ministry of Petroleum and Natural Gas. Major entities operate on Enterprise Resource Planning (ERP) systems, predominantly Systems Applications and Products (SAP), containing extensive financial and operational records across refineries, marketing offices, pipelines and retail networks. In view of the finite audit resources of time as well as personnel, the scale of these operations necessitated an approach that could effectively examine transactions across locations and verticals within the available resources.

THE INITIATIVE

For the accounts for the year ended March 2026, the Office adopted an ERP-enabled, risk-based remote audit model. Early read-only access to the audited entity's systems was combined with hands-on training, a common Standard Operating Procedure (SOP), Data Analytics Cell support and structured desk review. This moved preparatory work ahead of the intended 30-day field audit window and enabled audit teams to concentrate on analysing records and examination against identified risks.

Under the conventional approach, time was spent on travelling, establishing contact with local officials, obtaining records and following up requisitions. Teams at separate locations generally examined their own units, making it difficult to trace transactions across units and obtain an entity wide view. To break these silos, the revised approach used the enterprise-wide ERP environment to examine records remotely and coordinate audit work across locations.



KEY FEATURES

Advance read-only ERP access: Access was requested before audit, covering relevant modules such as Finance, Controlling, Materials Management and Sales & Distribution. Connectivity, authorisation and data-access issues were taken up in advance so that teams could begin with working access to the required records.

Training on the auditee's live system: Audit personnel learnt the entity's chart of accounts, company codes, plant structures, report layouts and transaction codes used for extraction. Teams were constituted early and the same officers undertook training, desk review and audit finalisation, ensuring continuity of knowledge across the exercise.

A common Standard Operating Procedure (SOP): The SOP mapped audit objectives to SAP modules, transaction codes and reports. It covered access requirements, control testing, tracing transactions through document flows and risk-based sampling. Annexures provided checks for backdated postings, reversals, suspense entries and high-value manual postings alongside sectoral risks such as inventory losses and ageing capital work-in-progress.

Control testing and analysis of complete datasets: Automated control including segregation of duties, posting-period controls, three-way matching and duplicate-invoice check were tested before selecting transactions. The Data Analytics Cell supported extraction and analysis of complete datasets allowing teams to identify unusual journal entries, period-end adjustments and long-outstanding items for detailed scrutiny.

Desk review and supervisory oversight: A two to three-day desk review covered financial statements, accounting policies, significant movements, statutory auditor observations and earlier audit findings. Supervisory discussions at commencement confirmed system access, documented risks and finalised focus areas before detailed examination began.

Planned coverage over three years: Focus areas were mapped across a three-year horizon to be updated annually on the basis of changes in business. This supported in-depth coverage of significant areas while reducing repeated examination and long gaps in coverage.

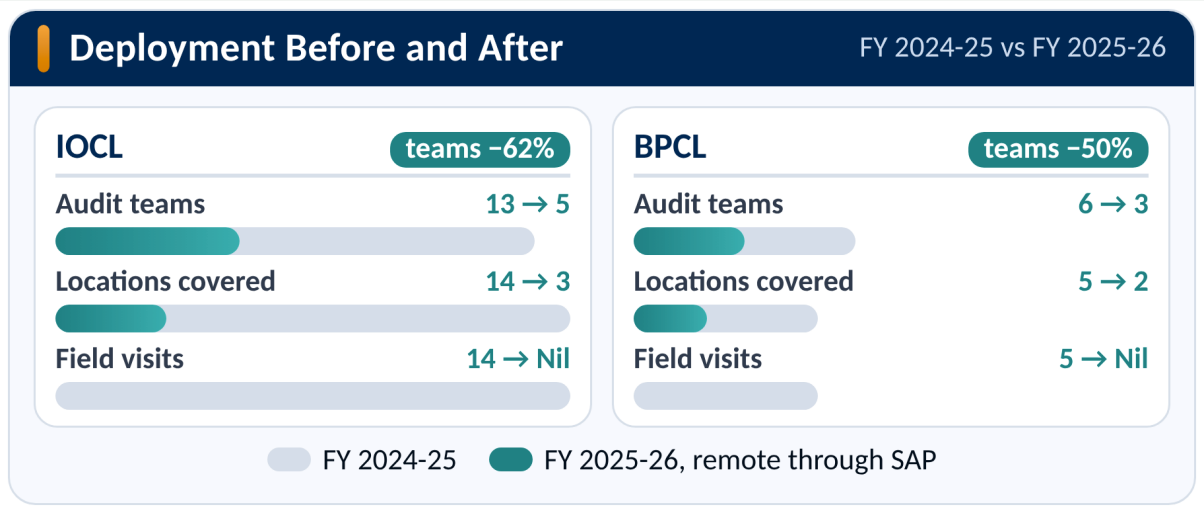
OUTPUTS AND REPORTED RESULTS

In FY 2025-26 financial audit work for Indian Oil Corporation Limited (IOCL) and Bharat Petroleum Corporation Limited (BPCL) was conducted remotely through SAP-ERP at three and two locations respectively, without field visits. Deployment and the monetary value of audit comments changed as follows compared with FY 2024-25.

Parameter	IOCL	BPCL
Audit teams	13 to 5	6 to 3
Locations covered	14 to 3	5 to 2
Field visits	14 to Nil	5 to Nil
Money value of comments	₹15,139 crore to ₹22,232.15 crore	₹37 crore to ₹29,352 crore*

*BPCL's FY 2025-26 total includes one observation with a monetary impact of ₹29,267.78 crore. Monetary values are approximate and relate to audit observations rather than confirmed savings or recoveries.

The number of teams fell by about 62 per cent for IOCL and 50 per cent for BPCL. Reduced travel saved time and expenditure on TA/DA. The monetary value of audit outputs increased which was substantially influenced by a single observation in case of BPCL.



ILLUSTRATIVE FINDINGS AND MANAGEMENT RESPONSE

IOCL: Analysis identified 4,318 spares valued below the ₹10 lakh threshold that had been capitalised. In 1,275 cases, identical spares had different useful lives across locations, which impacted depreciation and asset valuation. Control testing also identified the ability of finance users to change critical asset depreciation attributes without secondary approval and unrestricted access to commercially sensitive data of certain subsidiary and joint-venture entities.

IOCL management accepted the findings and initiated a review of anomalous spares cases and committed to greater consistency in useful lives, preventive controls in the Asset Module and entity-level access restrictions.

Illustrative Findings from ERP Data

IOCL		BPCL	
4,318	Spares below ₹10 lakh capitalised	₹8,568.44 cr	Right-of-use assets kept in Excel
1,275	Cases of differing useful lives	₹13.87 cr	Property, Plant and Equipment overstated (road assets)
Control gap	Depreciation changes lacked segregation of duties	2,869	Users could raise Purchase Orders and record receipts

Management response: IOCL accepted the findings. BPCL largely accepted them and proposed control improvements.

BPCL: Audit identified 15 duplicate liability entries totaling ₹58.73 lakh which overstated trade payables and understated profit. Inconsistent classification and useful lives of road assets together with unsupported residual values resulted in overstatement of property, plant and equipment by ₹13.87 crore. Further, 2,869 users could create purchase orders as well as record goods receipts, thereby weakening segregation of duties.

Right-of-use assets of ₹8,568.44 crore were maintained in Excel outside SAP without asset-wise records or an audit trail. Test checks identified premature capitalisation of one asset and an unreconciled amortisation difference of ₹11.54 crore. Management largely accepted the findings and proposed improvements to liability controls, asset valuation and access controls, as well as exploration of a SAP-based solution for right-of-use assets.

REPLICABILITY AND SUSTAINABILITY

Any audit offices examining SAP or other ERP-based entities can adopt the model using existing systems and resources at minimal additional cost. Essential requirements are advance read-only access, a similar SOP adapted to the respective audit universe, early team formation, training on the audited entity's system, analytics support and supervisory review of risks and priorities. For non-SAP systems, the SOP can be mapped to the relevant reports.

For FY 2026-27, the plan envisages audit of IOCL from New Delhi and BPCL from Mumbai. Reusable analytical scripts and common control tests offer scope for further improvement. Physical visits may still be required for matters such as verification of assets, remote examination provides a means of concentrating field deployment where it adds value.

The initiative demonstrates how advance preparation and access to auditee's ERP systems can provide an entity wide perspective, improve time efficiency of audit efforts and reduce travel-dependent deployment within the limited audit window.

Scan here for more details on the model

The Team:

1. Shri Vishal Chawre, IA&AS
2. Shri Anupam Jakhar, IA&AS
3. Shri Sagar Vijay Kale, IA&AS

14

MACHINE LEARNING-BASED RISK ANALYSIS OF IFHRMS VOUCHERS FOR AUDIT PLANNING

Office of the Principal Accountant General (Audit-II), Tamil Nadu & Puducherry

Applying multi-tier anomaly detection and statistical validation to strengthen risk-based audit planning.

The Annual Audit Plan (AAP) guides the optimal allocation of limited audit resources. Conventional audit planning, based on rotational cycles, financial thresholds and manual voucher sampling, tends to favour high-expenditure units, potentially overlooking high-risk transactions in smaller units. With millions of transactions processed through the State's Integrated Financial and Human Resources Management System (IFHRMS) and accessible through the *Karuvoolam* portal, a more objective, data-driven approach was evolved.

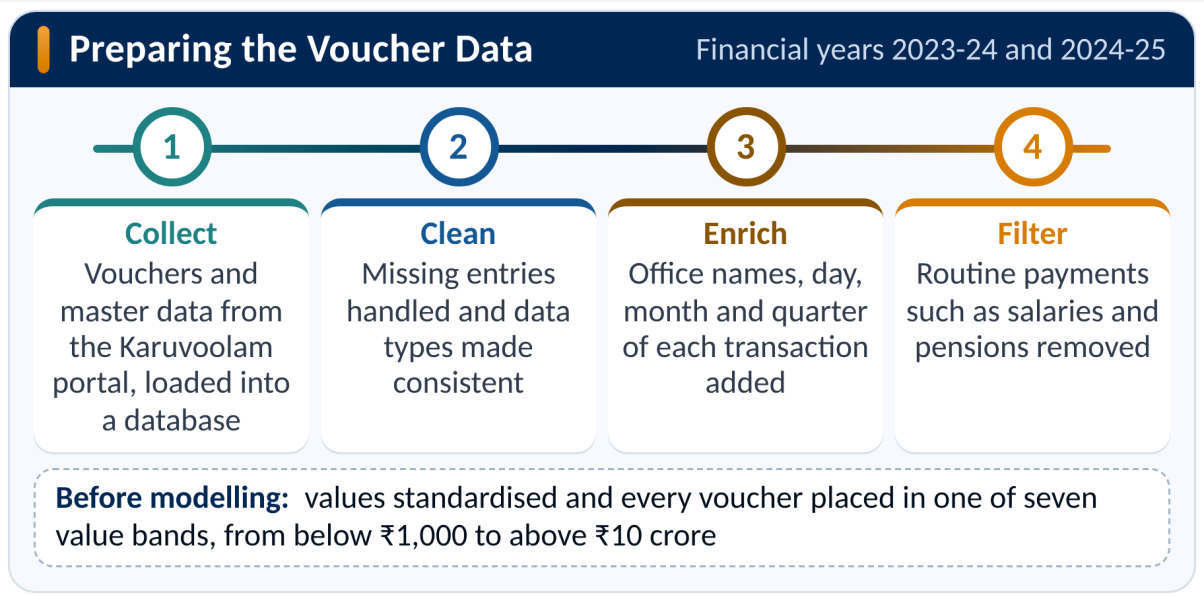
A Machine Learning (ML) based analytical framework was developed through an empirical pilot study. The framework integrates multi-tier anomaly detection and statistical validation to identify unusual expenditure patterns across government schemes, Drawing and Disbursing Officers (DDOs) and individual vouchers. This enables a shift from subjective manual sampling to risk-based audit selection, improving the prioritisation of coverage of transactions and associated units in audit.

PURPOSE OF THE INITIATIVE

The initiative aimed at replacing subjective post-facto sampling with objective data-driven methodologies capable of analysing financial data to identify expenditure-related risks and prioritise deployment of available audit resources. Rather than relying on fixed compliance rules, the approach examines multidimensional spending patterns, including transaction velocity, value deviations and financial-year-end concentration. Its sector-stratified, multi-tier architecture generates reproducible risk signals enabling objective risk-oriented audit planning.

IMPLEMENTATION METHODOLOGY

The implementation methodology comprised the following sequence of steps.



Voucher-level data for FY 2023–24 and FY 2024–25 was extracted from *Karuvoolam* and ingested into a relational database to enable structured querying and feature extraction. Fields included voucher number, execution date, debit amount, DDO code, Demand Number, accounting heads, Sub-Treasury, District and expenditure classification.

Domain-led filtering established a non-establishment voucher universe for modelling. Categorical fields were transformed to numeric attributes, continuous numerical features were standardised using the Z-score method so that no single feature dominated the model, and monetary values of debit transactions were grouped into seven logarithmic bands (ranging from 0: below ₹1,000 to 6: above ₹10 crore) to normalise heavy-tailed expenditure distributions.

THE INITIATIVE: THREE-TIER MACHINE LEARNING ANALYSIS

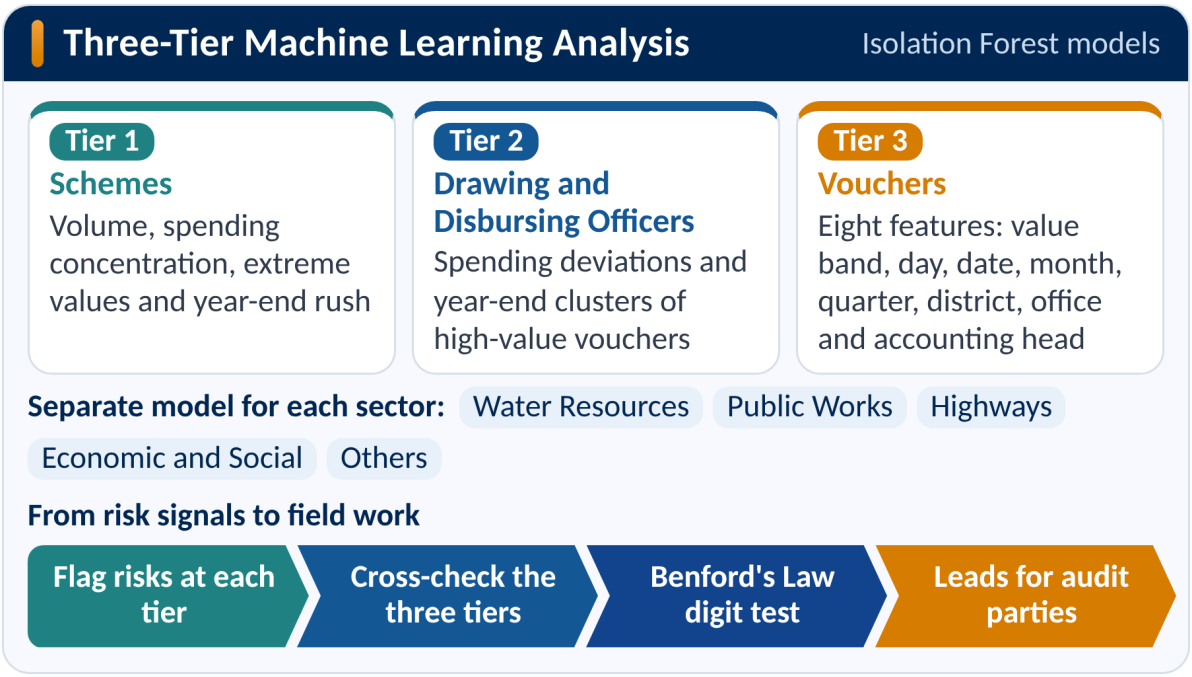
The pilot used unsupervised Isolation Forest models with sector-specific training for Water Resources, Public Works, Highways, Economic & Social Sector and Others. Model random seeds supported reproducibility with hyper-parameters tuned for acceptable results.

The analytical framework examined expenditure patterns at three levels *viz.* Scheme, DDO and Voucher, to identify risks at both aggregate and transaction levels.

- **Scheme:** A unique Sub-Head code and name was defined for a scheme. Single-DDO schemes and schemes with expenditure below ₹2 crore were excluded before modelling.
- **DDO:** Spending behaviour across DDOs under the office was analysed after excluding incomplete master records. A contamination parameter was used to flag risky DDOs.

- **Voucher:** Non-grant vouchers across the office were assessed by debit-value band, execution day, date, month, financial quarter, district, DDO and accounting head.

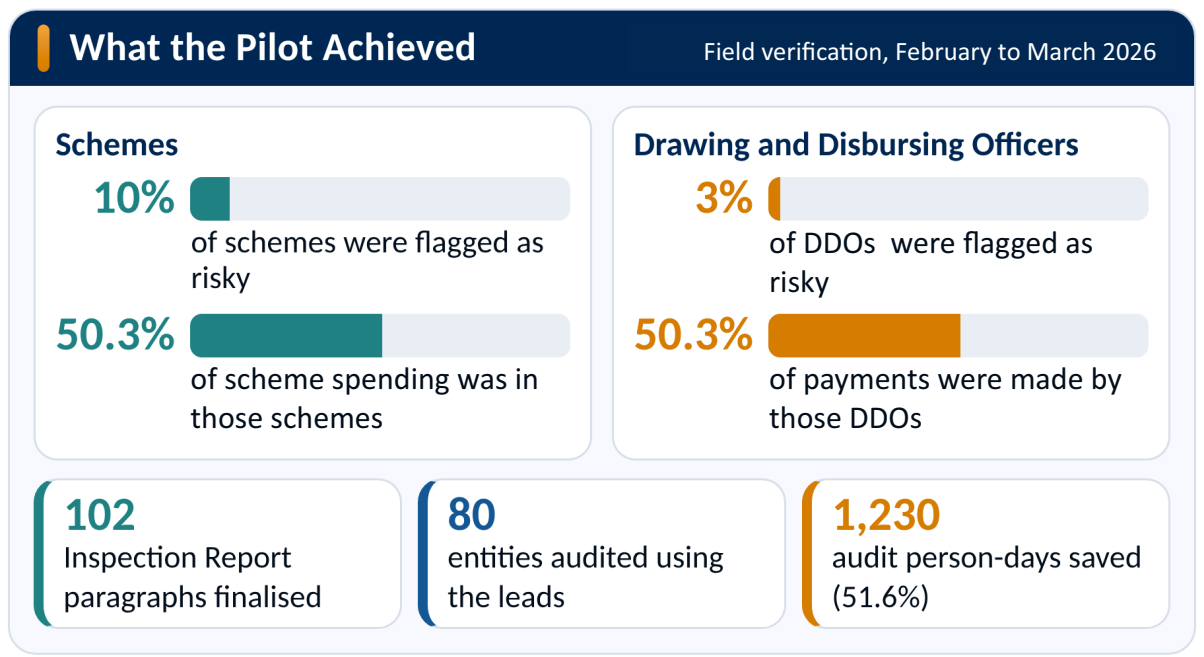
Flagged vouchers were compared with risky schemes and DDOs. Most anomalous vouchers were not simultaneously linked to both a flagged scheme and DDO, revealing transaction-level risk not visible in aggregate analysis. Benford's Law[9] first-digit testing provided a secondary check for numerical clustering, possible invoice splitting and threshold avoidance.



OUTPUTS, OUTCOMES AND IMPACT

The pilot covered non-establishment expenditure of the Government of Tamil Nadu for FY 2023–24 and FY 2024–25, with five sector-specific models. Risk-based field verification was undertaken between February and March 2026, focusing on high-risk schemes, DDOs and anomalous vouchers identified through data analytics. The risk analysis identified the following concentration of expenditure and disbursements among flagged schemes and DDOs.

9 Benford's Law is a statistical technique that examines the distribution of leading digits (first digits) in numerical data to identify unusual patterns in financial transactions that may warrant further audit scrutiny.



Model-assisted audits enabled field teams to focus on pre-identified anomalous vouchers rather than routine sampling, resulting in 102 finalised Inspection Report paragraphs across 80 audited entities. The initiative also saved 1,230 audit person-days (51.6%), enabling redeployment of audit resources to unaudited entities and emerging risk areas.

The methodology uses open-source technologies and standard public financial accounting structures, making it suitable for replication across the Department without commercial software licences. It can be adapted wherever IFHRMS or an equivalent State/Union Territory financial database is available.

Scan here for more details on the initiative

The Team:

1. Shri R. Thiruppathi Venkatasamy, IA&AS
2. Shri Charles Devadoss Selwyn, Sr. Audit Officer
3. Shri Kodipally Rohith Kumar, Asst. Audit Officer
4. Shri Sanapala Venkata Sai Krishna, Asst. Audit Officer
5. Ms. Vidya Baby K B, Asst. Audit Officer

15
PYTHON AUTOMATION TOOLS SUITE FOR INCOME TAX AUDIT

Office of the Director General of Audit (Central Receipt), New Delhi

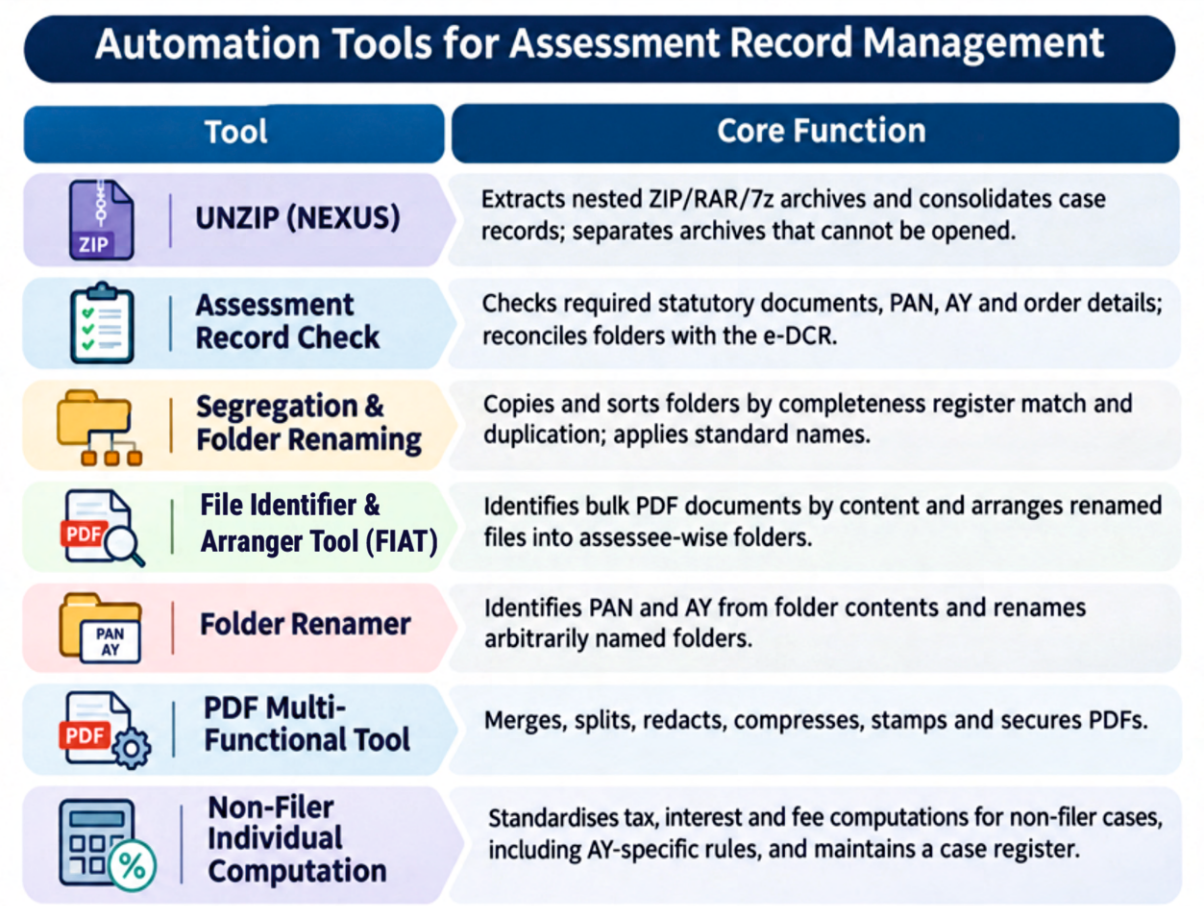
Automating pre-audit record preparation, document validation and reconciliation while preserving original records and maintaining an audit trail.

Income Tax assessment cases are selected through Computer Assisted Scrutiny Selection (CASS) system or information from the Insight portal or searches by the Investigation Wing. These are assessed by the Faceless Assessing Officer (FAO) or the Jurisdictional Assessing Officer (JAO) of the Circle or Ward concerned. Audit offices receive large volumes of case records from the Income Tax Business Application (ITBA) and e-Filing including assessment orders, computation sheets, demand notices, returns, statutory notices, appellate orders and assessee submissions.

Before examination, audit personnel may need to manually extract nested archives of the assessee submissions, verify the PAN and Assessment Year (AY), check document completeness and reconcile the folders with the e-Demand and Collection Register (e-DCR) or Management Information System (MIS) report. The absence of a standard folder structure results in missing or incorrect-year records, mixed-PAN folders, duplicates, unlisted cases and unusable files. Consequently, audit personnel spend considerable time extracting archives, identifying and arranging documents, verifying PANs and AYs, checking completeness, reconciling records and renaming folders before substantive examination can begin. These repetitive manual activities consume time, increase the risk of errors and omissions, divert skilled personnel from substantive audit work and leave an inadequate documentary trail of records received, missing or corrected.

THE INITIATIVE: SEVEN COMPLEMENTARY TOOLS

To address the above challenges, an in-house, Python-based automation tools suite consisting of seven utilities was developed. The suite of automation tools is designed to streamline the processing, organisation and verification of income tax assessment records. It automates repetitive tasks such as extracting archived files, identifying and arranging documents, checking completeness of statutory records, reconciling case folders with the e-DCR, and managing PDFs. A dedicated tool also standardises tax, interest and fee computations in non-filer cases. Together, these tools reduce manual effort, improve consistency and accuracy and facilitate faster audit scrutiny.

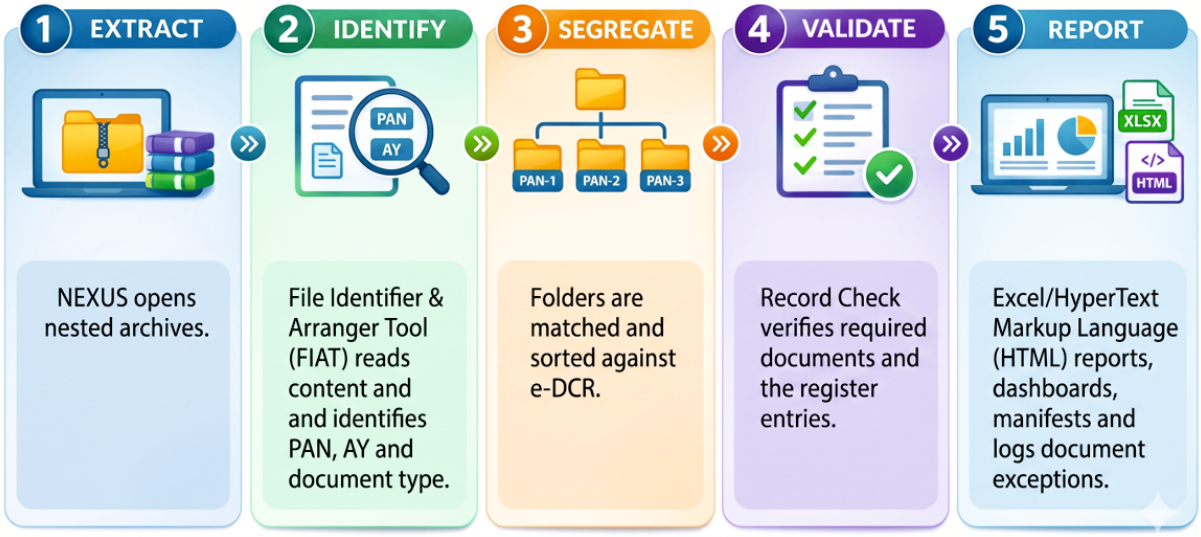


CONTROLS AND DISTINCTIVE FEATURES

The desktop tools were developed in-house through iterative testing on actual records. The tools run offline without a server, cloud connection or additional infrastructure. Extraction, arrangement and segregation protect source records by working on copies, destination and disk-space checks, optional dry runs and safe archive handling.

Document recognition is content-based rather than dependent on file names. DCR fields are validated before processing doubtful multi-PAN folders and AY conflicts are flagged for human review. Parallel processing, checkpoints, pause/resume controls and run logs support large batches and trace actions and failures.

HOW THE CORE WORKFLOW OPERATES



Exception reports identify missing assessment documents, returns and applicable notices, cases not received folders absent from the DCR, duplicate multi-PAN folders, AY conflicts, unreadable identifiers, zero-size files and archives that could not be extracted. Files use PAN_AY_DocType and folders use NAME_AY_PAN conventions.

Core Tool	Output
NEXUS	EXTRACTED FILES, UNEXTRACTED_ARCHIVES and a manifest.
FIAT	Renamed files, NAME_AY_PAN folders, _Unmatched and _Errors folders, and an Excel audit log.
Segregation Tool	Unique, Duplicate, Incomplete, Not-in-DCR, Multi-PAN-AY and Other folders, with a master report.
Record Check	Master audit report, compliance matrix, received/not-received status and dashboard.

The initiative combines audit domain knowledge with automation to create a complete pre-audit record management solution. Ordinary office software handle single tasks such as unzipping a file. These tools encode the audit logic itself, such as which documents a scrutiny case must contain, how PAN and AY identify a case and how records received reconcile with the register. Key innovations are:

- Automated extraction of deeply nested archives
- Intelligent identification of documents by PAN and AY
- Automated DCR reconciliation and completeness checks
- Auto-generated exception reports
- Standardised folder structures and file naming so that audit personnel work with the same layout
- Offline operation with an audit trail

MEASURABLE OUTCOMES AND IMPACT

The tools are in working use by audit personnel and have been tested in field offices on records received in different formats. Automation shifted audit efforts from archive handling, identification, renaming and reconciliation towards exception review and substantive examination of assessment orders, additions, disallowances and legal compliance. This resulted in greater availability of audit resources for analytical and substantive audit work.

The tools can run on ordinary workstations and process large batches without a server or cloud account. Document management and extraction of nested archives, file segregation into complete, incomplete, duplicate and unmatched sets, record validation and reconciliation against a master list, folder organisation and standard naming and PDF handling and exception reporting with an audit trail are applicable to other document-intensive IA&AD audits. The initiative therefore, has strong potential for replication in document-intensive audits across IA&AD.

Scan here for more details on the suite

The Team:

1. Ms. Aman Deep Chatha, IA&AS
2. Shri Krishna Pratap, IA&AS
3. Shri Vikas Dhiman, Sr. Audit Officer







Section II

Transformations in Accounts and Entitlement

This section presents initiatives aimed at modernising accounting, entitlement, establishment and administrative functions across IA&AD. It highlights the use of digitisation, process re-engineering and technology-enabled solutions to simplify procedures, strengthen internal controls and improve operational efficiency. The practices featured illustrate improvements in transparency, monitoring, accuracy and timeliness, contributing to more responsive and effective service delivery.

16

DATA-LED TREASURY INSPECTION AND ESTABLISHMENT AUDIT IN JHARKHAND



Offices of the Principal Accountant General (Audit) and Principal Accountant General (A&E), Jharkhand

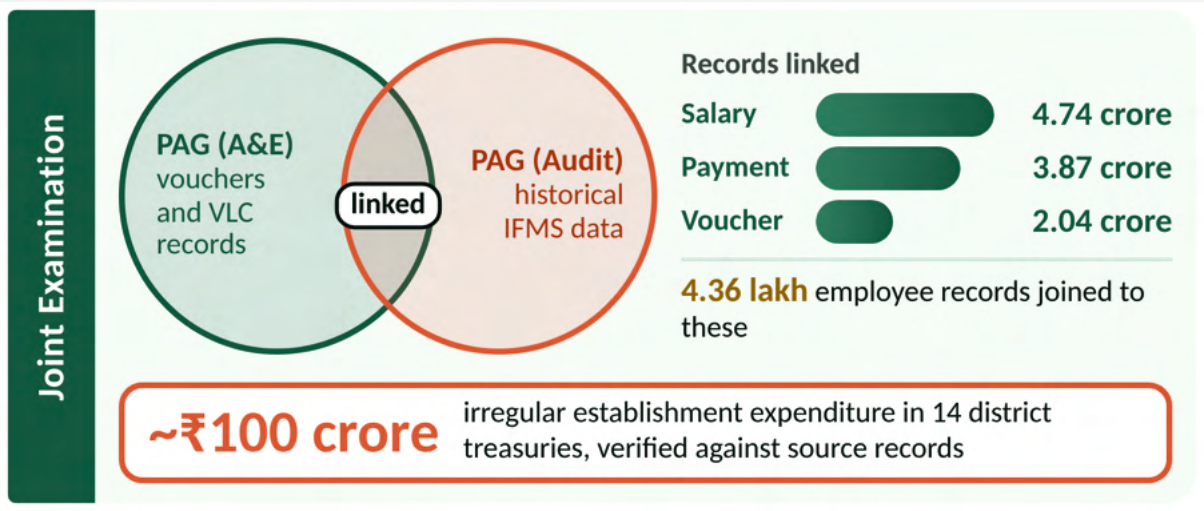
Unearthing the Jharkhand Treasury and Establishment Irregularities through Data-Led Establishment Audit, Data-Led Treasury Inspection and driving Systemic Strengthening through Synergy between Audit and Accounts offices.

Salary payments processed through the Integrated Financial Management System (IFMS) leave extensive electronic records. However, scrutiny of selected bills and vouchers may not reveal patterns spread across employees, treasuries and several months. A payment that appears ordinary in isolation may become suspect when compared with an employee's retirement date, earlier salary drawals or payments credited to the same bank account.

THE INITIATIVE

In this regard, the Accounts and Audit offices undertook a joint, data-led examination of establishment expenditure. The exercise combined the Accounts office's treasury accounts, original salary vouchers, Voucher Level Computerisation (VLC) records and treasury inspection experience with the Audit office's historical IFMS data, systems audit expertise and establishment audit and field verification capabilities.

The examination connected approximately 4.36 lakh employee records, 4.74 crore salary records, 3.87 crore payment records and 2.04 crore voucher-level records. Analysis of the available full population, followed by verification against source records, indicated irregular establishment expenditure of approximately ₹100 crore across 14 District Treasuries. Findings were jointly reviewed and communicated to the Finance Secretary and Chief Secretary, leading to State-level investigations and corrective measures.



KEY FEATURES

Targeted data access through joint working: The Data Analytics Cells of both offices worked with the State unit of the National Informatics Centre to identify the relevant IFMS tables. The Accounts office requisitioned these tables from the Finance Department providing a practical route to obtaining the specific information required for examination.

Reconstruction of the payment trail: Employee masters, salary slips, payment details, treasury vouchers and recovery records were connected using combinations of provident fund numbers, payee identities, treasury codes, advice and control numbers and voucher dates. This enabled payments to be traced from employee particulars to treasury and bank-related records.

Analysis across records and time: SQL, Python and supporting analytical tools were used to identify salary payments after retirement, abnormal basic pay, duplicate drawals, common bank accounts, temporary payee identities and changes in employee particulars. Historical IFMS records made it possible to identify alterations that a current extract alone would not disclose.

Verification before reporting: Analytical exceptions were treated as leads requiring examination. Apparent anomalies caused by arrears, differing employee identifiers or missing fields were investigated before escalation. The Accounts office checked original vouchers and Treasury records while Audit used historical data, *JKuber* records, Last Pay Certificates and field checks to substantiate cases.

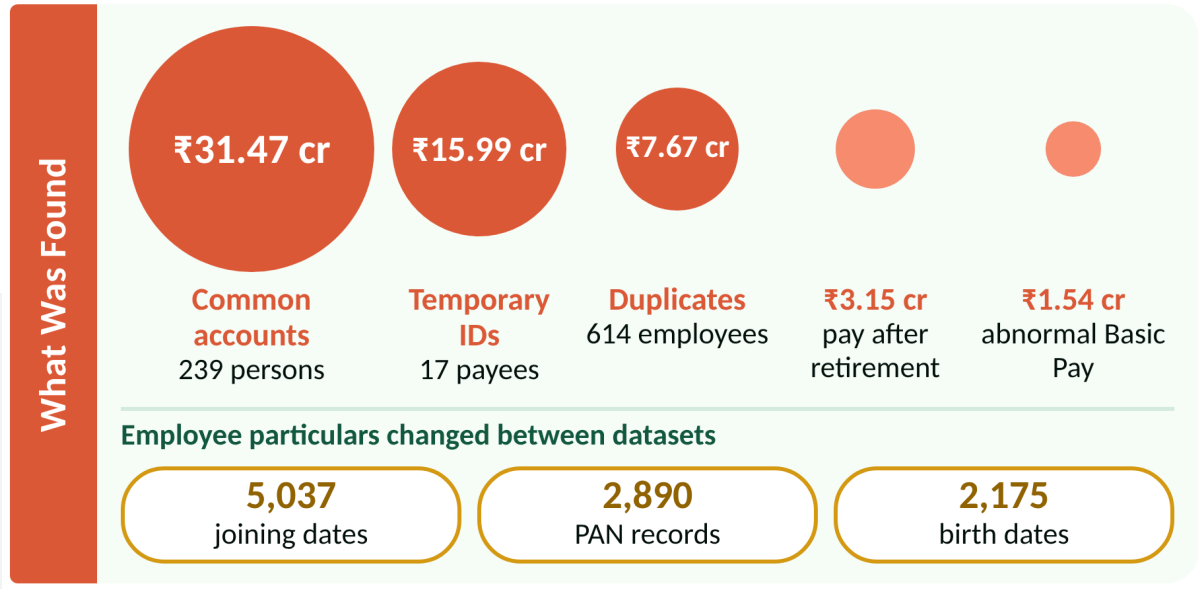
A reusable analytical platform: Experience from the exercise was incorporated into the Establishment Audit Intelligence Platform (EAIP) developed in-house by the Accounts Office in collaboration with the Audit office. The web-based platform brings together 24 documented checks covering payments, pay, allowances and employee particulars enabling audit personnel to examine exceptions without recreating analytical queries for each inspection.

SIGNIFICANT FINDINGS

Salary after retirement and abnormally high basic pay: At Bokaro Treasury, approximately ₹3.15 crore was drawn over 20 months in the name of a Sub-Inspector who had retired in 2016. In an Animal Husbandry office at Ranchi, an Accountant's Basic Pay rose from ₹37,200 in November 2023 to ₹12 lakh per month in March and April 2024. Total disbursements during August 2023–December 2025 were approximately ₹1.54 crore with inflated payment values corroborated by vouchers.

Payments to common bank accounts and temporary payees: Payments of ₹31.47 crore relating to 239 persons involving 1,294 transactions were credited to 29 bank accounts. Of these, 18 accounts were not found in the employee master. A further pattern involved ₹15.99 crore routed through 271 transactions using 17 temporary payee identities into a single bank account subsequently found removed from the employee master.

Duplicate salaries and altered employee particulars: The analysis identified 1,265 duplicate salary transactions amounting to ₹7.67 crore involving 614 employees under the same Drawing and Disbursing Officers (DDOs). Comparison of earlier and current IFMS datasets also showed differences in dates of birth in 2,175 records, dates of joining in 5,037 records and PAN particulars in 2,890 records requiring verification of the changes and their implications.



STATE GOVERNMENT RESPONSE

The State Government constituted a high-level inquiry committee, including a representative of the Audit office and expanded its remit as further cases emerged. District inquiries independently examined and verified the reported cases. In Khunti, for example, ₹22.45 lakh flagged by the analysis was assessed at ₹22.69 lakh by the district committee. Departments also sought special audits of police offices in Bokaro, Hazaribagh, Khunti and Chaibasa and Health Department offices in Deoghar.

CORRECTIVE ACTION AND SYSTEMIC SAFEGUARDS

State investigations resulted in FIRs and arrests in several districts. The Criminal Investigation Department (CID) traced a money trail of about ₹10 crore and suspect bank accounts and fixed deposits were frozen, including deposits of ₹1.98 crore. Records of more than 70,000 police personnel were revalidated before further salary drawals.

On 8 April 2026, the Finance Department issued instructions requiring DDOs and bill-passing authorities to verify employee identity, service particulars and bank details against supporting records and certify the checks on salary bills. On 21 July 2026, the Cabinet approved integration of bank-account and PAN verification with IFMS followed by a Finance Department resolution dated 31 July 2026. The approved arrangement provides for stopping payments at the Payee ID stage where bank details do not match, with proposed verification of about 20.80 lakh accounts and PANs at an estimated cost of ₹14.21 lakh.

INSTITUTIONALISATION AND REPLICATION

EAIP supports risk assessment by Treasury or DDO, period-wise filters and examination of employee-level payment records. Audit personnel can record verification results, attach vouchers and supporting documents, maintain a consolidated findings register and generate structured audit reports. Role-based access, masking of sensitive information and audit logs support accountable use.

The platform pilot examined 58.34 lakh payment records covering approximately 1.90 lakh employees, 4,314 DDOs and 33 treasuries. The platform preserves the tested checks and links analytical exceptions to the subsequent verification and findings record.

Built using open-source technologies without licensing costs, EAIP can be adapted in other States by mapping IFMS fields, reconciling loaded data, configuring applicable pay rules and validating results against vouchers. Separate office administration and office-specific analytical checks are envisaged as a further development. The Data Analytics Cells of both Jharkhand offices have a continuing maintenance responsibility.

The initiative demonstrates the value of combining complementary mandates and records from the outset. Targeted data requests, historical comparisons and verification against original documents enabled the offices to move from detecting irregular payments to supporting corrective actions and a replicable method for data-led treasury inspection and establishment audit.

Scan here for more details on the audit

The Team:

1. Shri Chandra Mauli Singh, IA&AS
2. Ms. Indu Agrawal, IA&AS
3. Ms. Abhiruchi, IA&AS
4. Shri Bhargav Ram Khyathi, IA&AS
5. Shri Uttam Mehra, Sr. Audit Officer
6. Shri Anil Kumar, Sr. Accounts Officer
7. Shri Abhijeet, Asst. Accounts Officer
8. Shri Jiten Paitandi, Asst. Accounts Officer
9. Shri Sachin Kumar Singh, Asst. Accounts Officer

17

DIVISIONAL ACCOUNTANT MANAGEMENT INFORMATION SYSTEM (DAMIS)

Office of the Principal Accountant General (A&E), Odisha

A structured, rule based and data-driven system for administration of Divisional Accountant Cadre.

The Divisional Accountant Management Information System (DAMIS) is a web application developed to modernize the administration of the Divisional Accountant (DA) Cadre through a structured database, analytical tools and a computer-assisted transfer and posting exercise. It brings together employee and division-related information and uses predefined rules, employee preferences, quantitative indicators, committee-assessed factors and geographical distance information to generate recommendations for transfer and posting, additional charge and link charge arrangements. It also provides analytical tools to examine charge distribution and identify delayed submission of monthly accounts.

Developed in-house using open-source technologies, DAMIS was used in the 2026 Annual General Transfer and Posting exercise, providing proof of concept. It supports administrative decision-making while retaining final authority with the competent authority.

Information relating to employees, postings, tenure, performance, qualifications, training, account submissions and divisions was historically maintained through separate spreadsheets, files and manually compiled records. The absence of an integrated database required information to be collected and reconciled from different sources for administrative decisions.

Transfer and posting decisions require several considerations to be examined together, including eligibility, tenure, previous postings, station preferences, administrative requirements and performance parameters such as timely account submission, Annual Performance Assessment Report (APAR) ratings and outstanding audit paragraphs. In the recent Odisha exercise, 75 employees were due for transfer and 78 stations were vacant. Processing preferences against available stations while applying eligibility and priority criteria was complex and time-consuming.

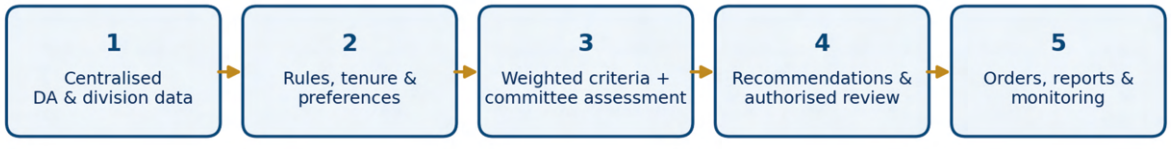
Additional and link charge allocation required identification of nearby divisions and consideration of possible overlaps. Obtaining an integrated view of posting history, division

characteristics, timeliness in submission of monthly accounts and geographical distribution of charges required separate sources and manual compilation. The core requirement was therefore an integrated decision-support mechanism applying multiple criteria consistently, while retaining administrative authority with the competent authority.

THE INNOVATION AND KEY FEATURES

DAMIS combines a centralised repository with analytical capabilities, geographical information and a multi-criteria recommendation mechanism:

- **Structured DA Cadre database** consolidates employee records, posting history, APARs, training, qualifications, Immovable Property Returns, administrative information related to complaint and related administrative actions, and data of involved administrative formations.
- **Transfer and posting recommendations** applies notified rules, station preferences, tenure and cooling-off requirements and other prescribed applicable conditions. A weighted seniority-cum-performance framework considers seniority, APARs, timeliness in submission of account, disability, proximity to retirement, outstanding audit paragraphs and other administrative parameters. Objective criteria are scored through an algorithm while subjective factors are assessed by the Transfer and Posting Committee.
- **Administrative discretion** is provided where recommendations may be overridden by the authorised administrator where administrative circumstances require a different decision and the same are available in the system for any subsequent review.
- **Division Distance Matrix** maps distances between divisions and supports identification of nearby divisions for additional charge arrangements.
- **Division grading and charge allocation** classifies divisions as Very Heavy, Heavy, Medium or Light based on expenditure data of the preceding three years. Additional charge recommendations follow the nearest-division or equitable-expenditure approach, as well as ensure that the linked divisions do not have a common incumbent.
- **Analytical and reporting tools** provides charge-distribution view, visual and heat-map-based analysis and records online and offline monthly accounts submissions to identify timeliness in their submissions. It can generate transfer and posting orders, annexures and minutes from processed data.



ELIGIBILITY & TENURE	Rules • tenure • cooling-off • station preferences
PERFORMANCE	Seniority • APAR • timely account submission
SPECIAL FACTORS	Disability • retirement proximity • compassionate grounds
COMMITTEE REVIEW	Subjective factors • authorised override

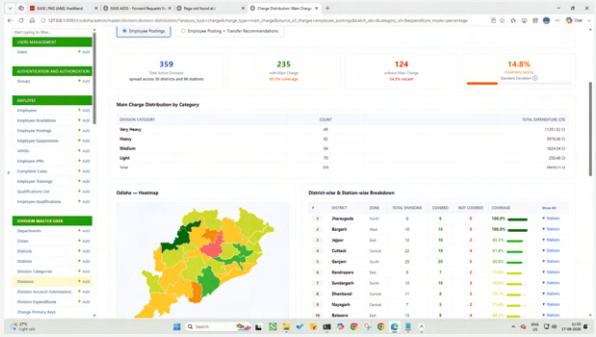
IMPLEMENTATION APPROACH

DAMIS is a web application developed using Django and PostgreSQL. It is presently hosted on the office intranet. The application provides authenticated access to authorised data based on privileges and permissions.

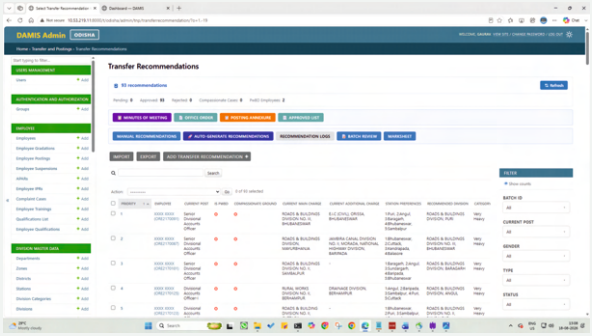
Existing DA Cadre administration processes were reviewed to identify workflows relating to transfer and posting, charge allocation, employee records, division classification and monthly accounts monitoring. Data was collected, structured and entered into DAMIS to create a centralised database for processing, analysis and reporting.

During initial implementation, DAMIS generated reports such as employees eligible for transfer and divisions likely to become vacant. These were placed before the competent authority. For the first transfer and posting implementation, the Works Miscellaneous Section (dealing with DA cadre) independently prepared the corresponding lists through the conventional process. The outputs were compared with DAMIS-generated results to derive the conclusion. In July 2026, DAMIS was used to generate recommendations for the Annual General Transfer and Posting of the DA Cadre.

Division analysis and charge distribution



Division analysis and charge distribution



Transfer recommendations

ACCESS	Authorised users • permissions
APPLICATION	Django web application • administrative workflows
DATA	PostgreSQL • structured cadre and division records
DEPLOYMENT	Office intranet • open-source technology

BENEFITS AND OUTPUTS

The system provides a single-point source of information in respect of the DA Cadre reducing dependence on fragmented spreadsheets and physical records and enabling faster retrieval. Rule-based recommendations bring greater structure and consistency to transfer and posting decisions while allowing authorised intervention. Distance-based information and link-charge recommendations facilitate consideration of nearby divisions for additional charges and systematic review of existing charge arrangements. Charge-distribution analysis helps identify imbalances and supports more equitable allocation of responsibilities amongst the officers of the cadre. It enables monitoring of timely submissions of monthly accounts, enables automated generation of transfer orders, annexures and minutes, reduces repetitive typing, compilation and formatting effort. By integrating employee, posting, division, expenditure and account-submission information, the system also provides senior officers with single-click access to comprehensive cadre data.

DAMIS uses open-source technologies and is currently hosted on the office intranet, resulting in zero infrastructure cost for the present deployment. Development expenditure using AI-assisted development tools has remained below ₹5,000. The open-source technology stack provides flexibility for future modification, enhancement and maintenance without proprietary software or recurring licensing costs.

The system has been designed in a manner to enable onboarding of other offices. The other offices would primarily provide its DA Cadre data in the prescribed format corresponding to the DAMIS database schema. Its standardised data structure and phased transition, supported by user/operator training, can facilitate adoption by other offices. Migration to an HQ-managed cloud environment would enable access by multiple offices through a common platform and avoid duplication of infrastructure.

Scan here for more
details on the application

The Team:

1. Shri D. Sahu, IA&AS
2. Shri Manoj Ekka, IA&AS
3. Shri Gaurav Yadav, Asst. Accounts Officer
4. Shri Tushar Kanti Saha, Asst. Accounts Officer
5. Shri Alok Kumar Maurya, Asst. Accounts Officer

18
EASE – E-ADMINISTRATION SOLUTION FOR EMPLOYEES

Office of the Principal Accountant General (A&E), Jharkhand

ERP-based Complaints, Stores and Inventory Management Modules for IA&AD Offices.

Timely workplace support and efficient store management are essential to office functioning. Complaints concerning computers, connectivity and office services, and requests for stationery and other supplies had often depended on calls, personal follow-up and paper records. This made it difficult to track requests, establish responsibility and monitor disposal. Manual stock records also required reconciliation, physical verification and preparation of prescribed returns.

THE INNOVATION AND ITS KEY FEATURES

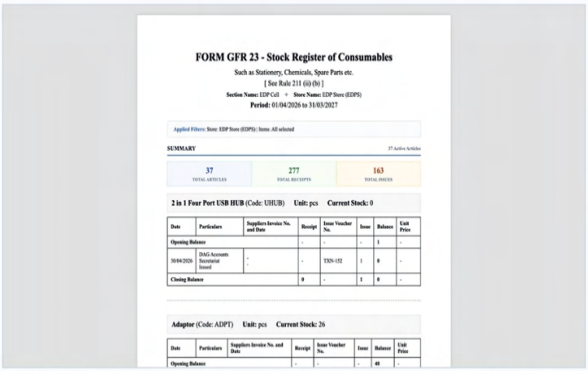
EASE is an in-house, cloud-hosted web application bringing employees, service sections, storekeepers and approving authorities onto a common transaction-based platform. Its Complaints and Store & Inventory modules preserve the procedural controls of office administration while creating an identifiable record of requests, decisions and transactions.

Complaints: A trackable service request

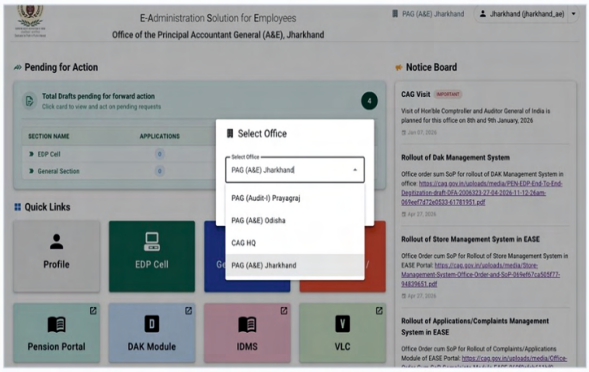
Employees submit an IT or general office-service complaint by selecting the service section and issue category and entering the details. Each submission receives a unique reference number and a time-stamped action history. The responsible section can acknowledge, forward, resolve or reject the request and employees can view progress. A complaint marked resolved is closed only after applicant confirmation and the applicant may also rate the service. Supervisors can review pending and disposed cases by category, section and period.

Compliance as a by-product, on one deployment

Form GFR-23 generated from the transaction data - and one platform serving several offices



Form GFR-23, the Stock Register of Consumables under Rule 211(ii)(b), generated rather than compiled - here the EDP Store for 2026-27.



One cloud deployment, several offices: the office is chosen at login, each with its own sections, stores, catalogues, users and workflow.

Live at CAG Headquarters, Odisha, Prayagraj (Audit-I) and Jharkhand; Karnataka, Manipur and Nagaland adopting.

How a Complaint Is Handled

Complaints module

1	2	3	4	5
Employee submits	**Reference issued**	**Section acts**	**Applicant confirms**	**Supervisor reviews**
Chooses service section and issue category	Unique number and time-stamped history	Acknowledges, forwards, resolves or rejects	Closed only after confirmation; service rated	Pending and disposed cases by section and period

Covers: information technology complaints and general office-service requests

Store requisition: from catalogue to delivery

The Store module replaces the earlier physical requisition process with an online catalogue showing item details and stock status. Employees select items, enter quantities and record the purpose. The configured approval workflow allows the approving authority to examine stock availability and earlier issues to the employee or section before sanctioning quantities. Approved requisitions generate delivery documentation, recording updates in respect of stocks. Receipts are recorded with invoice particulars and minimum-stock thresholds support replenishment planning.

A transaction-based workflow

The same application connects requisition, approval, delivery and inventory accounting. Employees can see quantities requested, sanctioned and delivered. Store administrators can examine the corresponding transaction history and stock position.



Approval supported by recorded evidence

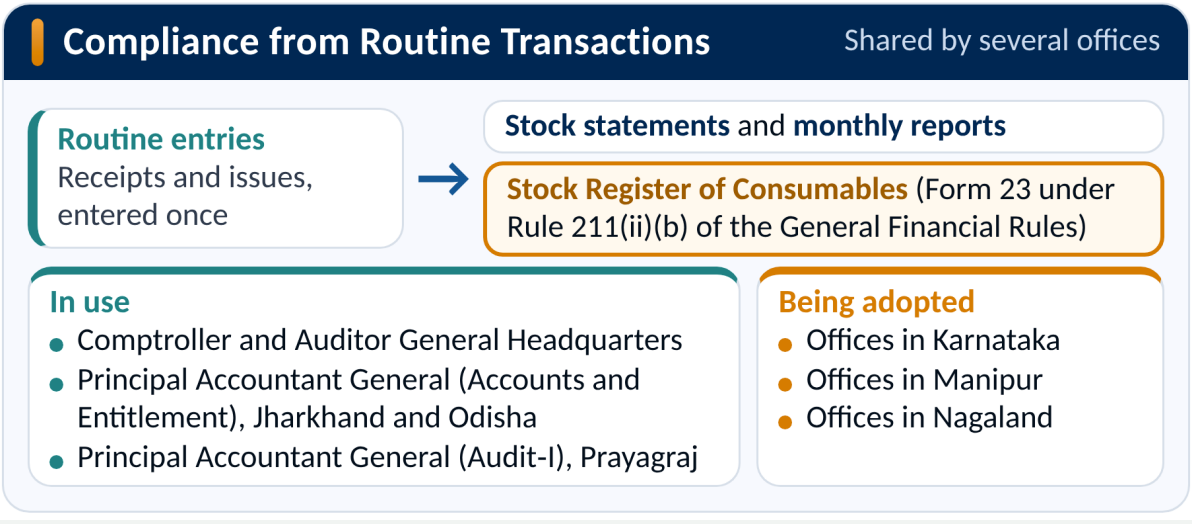
The application maintains the status of requisitions and the item master, including stock, category, item code and status. This enables the approving authority to consider the available record rather than relying only on memory or separately compiled information.

Individual asset records and verification

The Inventory component maintains a separate record for each durable asset including system identifier, serial number, location, custody, condition and status along with acquisition and warranty particulars. Barcode labels can be generated in bulk and scanned during physical verification. Geo-tagging through a smartphone is also supported. This provides a means of matching the electronic register with the physically available stock.

Compliance and reporting from routine transactions

As receipts and issues are entered in the system, stock statements, monthly reports and Form GFR-23, the Stock Register of Consumables such as Stationery, Chemicals and Spare Parts, under Rule 211(ii)(b), can be generated from the underlying transactions. This reduces the need to reconstruct the same information from separate registers.



VALUE ADDITION

EASE establishes a recorded and monitorable process for complaints and store transactions. Employees receive reference numbers and can follow progress and service sections have an organised case record. The approving officers can review stock and earlier issues and supervisors can examine pendency and disposal through dashboards. Asset records, barcode-assisted checks and reports support reconciliation and subsequent scrutiny.

EASE is centrally hosted and accessible through a web browser. Several offices use the common platform with each office configuring its own sections, stores, catalogues, users, permissions and approval hierarchy. This accommodates local procedures within a shared application and supports common maintenance and extension to additional offices. The application has been brought into use at CAG Headquarters, the Offices of the Principal Accountant General (A&E), Odisha and Jharkhand as well as the Office of the Principal Accountant General (Audit-I), Uttar Pradesh. The offices located in Karnataka, Manipur and Nagaland are in the process of adopting the application.

Scan here for more
details on the application

The Team:

1. Shri Chandra Mauli Singh, IA&AS
2. Shri D. Sahu, IA&AS
3. Shri Sreeraj Ashok, IA&AS
4. Ms. Abhiruchi, IA&AS
5. Shri Bhargav Ram Khyathi, IA&AS
6. Shri Gaurav Yadav, Asst. Accounts Officer





Section III

Stakeholder Engagement

This section highlights initiatives that strengthen IA&AD's engagement and collaboration with its diverse stakeholders, including legislatures, audited entities, citizens, academic institutions and professional bodies. It showcases approaches that promote constructive dialogue, knowledge exchange, institutional partnerships and greater responsiveness to stakeholder needs. These practices demonstrate how meaningful engagement can enhance the relevance, credibility and impact of public audit and contribute to improved governance.

19

DEMOCRATISATION OF CAG DATA AND DIGITISATION OF AUDIT REPORTS



Centre of Excellence in Digital Audit of Revenue (CEDAR)
Office of the Principal Director of Audit (Central), Bengaluru

Interactive Audit Reports and accessible datasets for wider public use.

Audit Reports support legislative oversight, administrative accountability and informed public discussion. State Finances Audit Reports (SFARs) and State Public Sector Enterprises (SPSE) reports contain extensive information on receipts, expenditure, debt, fiscal indicators and enterprise performance. However, dissemination through printed reports and static PDFs limits the ease with which readers can locate findings, compare information across States and years, or analyse the data underlying charts and tables.

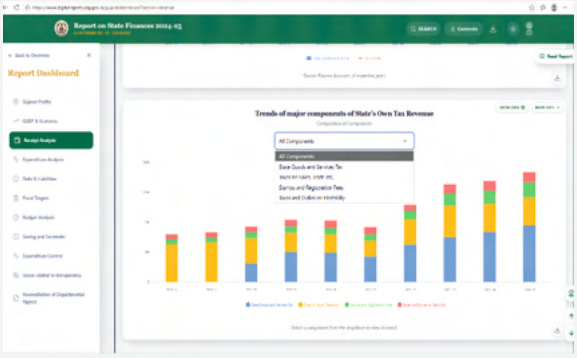
THE INITIATIVE

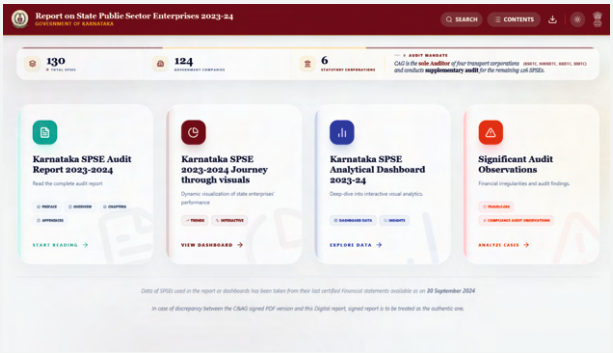
CEDAR's initiative on Democratisation of CAG Data and Digitisation of Audit Reports makes audit findings and associated datasets available through searchable digital reports and interactive dashboards. It links narrative findings with structured data, visualisations and supporting appendices enabling users to move from an overview to detailed analysis and download the underlying figures. The initiative has two components *viz.*, digitisation of Audit Reports and public dashboards of data available with the CAG.



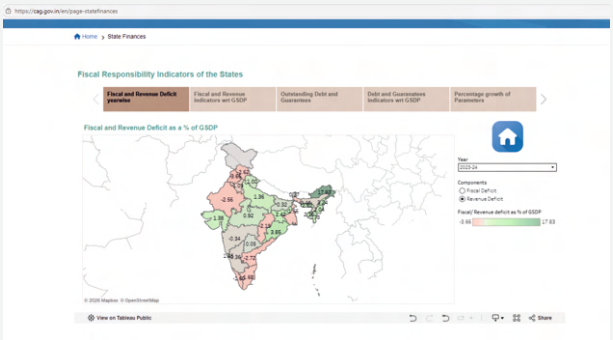
The digital SFAR pilot was developed in collaboration with the Office of the Accountant General (Audit-II), Kerala. Following approval, the approach was extended to other States and Union Territories. On similar lines, digital SPSE pilot for Karnataka's 2023-24 Report was developed in collaboration with the Office of the Principal Accountant General (Audit-II), Karnataka. CEDAR also prepared interactive dashboards for the Government Accounts Wing's decadal publication on State Finances for 2022-23.













KEY FEATURES

Three complementary views of State finances and State PSEs: Each digital SFAR and digital SPSE offers the full Report as web pages, an overview dashboard covering key parameters and granular dashboards. The full Report includes the preface, Executive Summary, chapters and appendices which are all interlinked, while the dashboards provide different levels of financial analysis and analytical data about the State Finances or the SPSEs. The digital SPSE report also has access to significant audit observations.

Linked narrative and data: Users can move from a dashboard visualisation to the corresponding report paragraph and from a paragraph to its supporting appendix. Full-text search helps locate relevant content. Charts and tables draw on individual data files and the users can download the same figures that they view in the digital Report.

Greater financial granularity in the SFAR dashboard: The granular SFAR dashboards incorporate receipt and expenditure data extracted from Voucher Level Computerisation (VLC) records up to Minor Head level. This provides detail beyond the printed Report and supports closer examination of receipts, expenditure, debt, liabilities and budgetary trends.

Integrated analysis of State Public Sector Enterprises: The digital SPSE Report has four components *viz.*, the complete Report with appendices, dynamic visualisation of enterprise performance, detailed analytical dashboards and significant audit observations. The SPSE dashboard provides analytical deep dive into executive, sectoral, SPSE specific analysis and audit status. Comparison of top five profit making and loss-making companies, sector wise financial data and analysis of peers and status of audit of each SPSE along with download option for financial statements are provided in this dashboard. Summary cards provide quick access to significant audit findings. This is useful for State Governments as they do not have such extensive comparable data at one place.

Comparisons across States and years: Interactive State Finances dashboards present decadal information under receipts, expenditure, debt, liabilities and fiscal indicators. Comparative charts and heatmaps enable users to examine changes across financial years and differences between States. A common structure for digital SFARs supports comparison of the same indicators across jurisdictions.

Downloadable data: Data, underlying charts and tables can be downloaded for further analysis. This enables researchers, public finance institutions and government departments to work with structured figures rather than transcribe information from static reports and appendices.

IMPLEMENTATION AND QUALITY ASSURANCE

The SFAR process uses common templates, file names, folders and data arrangements. A participating office nominates a nodal officer and supplies the required data and the Word file of the approved Report. CEDAR converts the Report chapter by chapter and prepares the associated visualisations. Each live SFAR is supported by approximately 176 to 250 data files and a State-specific workbook for granular financial analysis.

The field office verifies the digital output against the signed Report before tabling, enables publication on the digital reports website once the Report is laid. The signed PDF remains the

authentic version, and a disclaimer is added which clarifies this status. The digital presentation is intended to preserve the integrity of audit information while observing statutory safeguards and confidentiality requirements.

Experience from the SFAR rollout helped in preparation of an Instruction Manual for SPSE reports for guiding offices on data submission.

OUTPUTS AND PROGRESS

The digital SFARs for 11 States and one Union Territory were live on the CAG website at https://www.digitalreports.cag.gov.in/sfar, and 11 more had been developed and were under review (November 2026). The live Reports covered Assam, Gujarat, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Rajasthan, Tamil Nadu and West Bengal. The target is to digitise all SFARs and SPSE reports laid in State Legislatures during 2026-27.

INSTITUTIONALISATION AND BENEFITS

Digital SFARs of 11 States and one Union Territory are already available on CAG website. Publicity for the same is provided through CAG's social media handles and workshops with stakeholders.

The Karnataka SPSE pilot has been completed and its analytical dashboards handed over to Centre of Excellence for Financial Audit (CoEFA) for institutionalisation across Public Sector Undertakings and Autonomous Bodies. Preparation of the State Finances dashboards was institutionalised in collaboration with the Government Accounts Wing, with initial handholding from CEDAR for 2023-24 and dashboards for subsequent years made available on the CAG website at https://cag.gov.in/en/page-statefinances24-25.

The Tableau Public's counters recorded 2,432 views across the 11 granular SFAR workbooks (October 2026). The two State Finances workbooks recorded 34,712 and 16,030 views respectively. Outreach included publicity through CAG's social media handles and workshops at the Fiscal Policy Institute, Bengaluru for university professors and Officials of the IA&AD.

The digital resources consolidate information otherwise dispersed across Reports, accounts and appendices. State Governments and departments can examine fiscal trends and the performance of public enterprises, while researchers and institutions can access granular, comparable and traceable data. Links between figures and report findings support scrutiny of the evidence underlying the analysis.

REPLICABILITY AND SUSTAINABILITY

An office does not need to develop its own platform to produce a digital SFAR. It supplies its Report and data in the common templates and verifies the output while CEDAR builds and hosts the digital version. Standardisation makes the process repeatable with adaptations for the requirements of individual audit streams.

The approach can be extended to SPSE reports across States, Central Public Sector Undertakings and Autonomous Bodies. Digital versions of one Performance Audit and one Compliance Audit report of Central Revenue Audit are also planned. The principal lessons are to finalise templates before collecting data, provide clear submission guidance, secure timely inputs and complete verification before tabling. Wider coverage would progressively create a reusable repository for examining fiscal trends recurring issues and emerging risks.

Scan here for more
details on the initiative

The Team:

1. Ms. Monisha T M, IA&AS
2. Shri Ganesh Nithyanandam, Asst. Audit Officer
3. Shri Vivek S, Asst. Audit Officer
4. Shri Siva Prasad Reddy Sadi, Asst. Audit Officer
5. Shri Vipin V, Asst. Audit Officer
6. Shri Ankit Prajapat, Asst. Audit Officer

20

CRISP-CAG REPORTS INTELLIGENCE AND SIMPLIFICATION PLATFORM - A PILOT



Office of the Principal Accountant General (Audit-I), West Bengal

Making tabled Audit Reports searchable, accessible and traceable to source.

Audit Reports of the CAG of India contain findings on the use of public resources, but their value depends on how readily stakeholders can locate, understand and use them. Published largely as PDFs, findings concerning the same district, scheme or department remain scattered across Reports and years. Researchers and journalists often have to re-type statistical tables, while audit personnel must assemble information from separate sources before planning fieldwork.

THE INITIATIVE

CRISP is an in-house web and mobile platform developed on an open-source technology stack to convert tabled Audit Reports into structured, searchable and geographically mapped information. It enables users to retrieve findings, consult report-based assistants and access datasets with references linking the information to the original Report. The initiative also envisages a common platform for tracking follow-up on audit paragraphs and supporting audit planning.

The platform presents Reports in a simplified and structured form by selecting and organising the text of the Audit Reports without paraphrasing. Each statement is linked to its Report, paragraph and printed page, wherever available. Information absent from the source is explicitly identified as “not stated in source” or “status not available”. The public dissemination component uses only Reports already tabled before the Legislature.

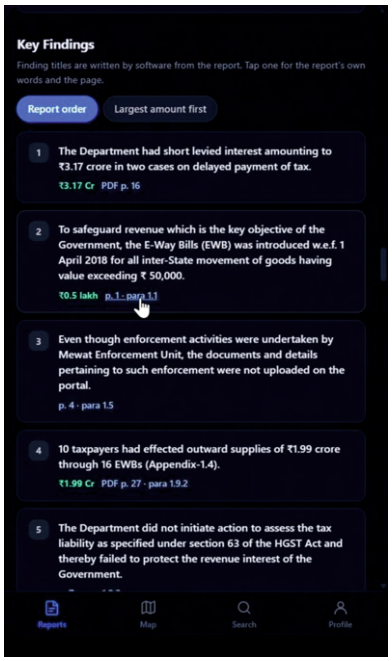
Development progressed from a prototype using three Reports to an expanded prototype covering eight Reports from West Bengal, Uttar Pradesh and Haryana. The work included a study of user requirements, automated testing, a fixed set of assistant questions, verification of figures against source pages and incorporation of suggestions received through mentor review.

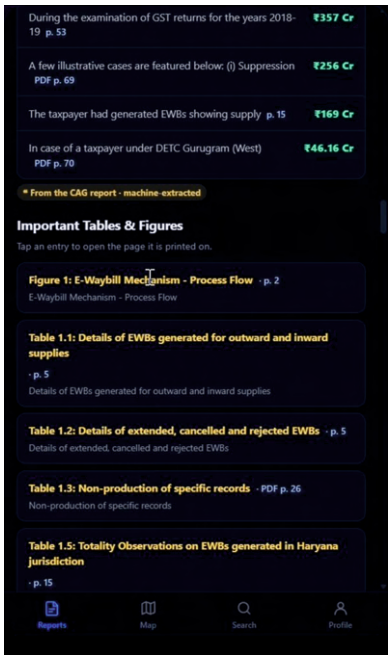
KEY FEATURES

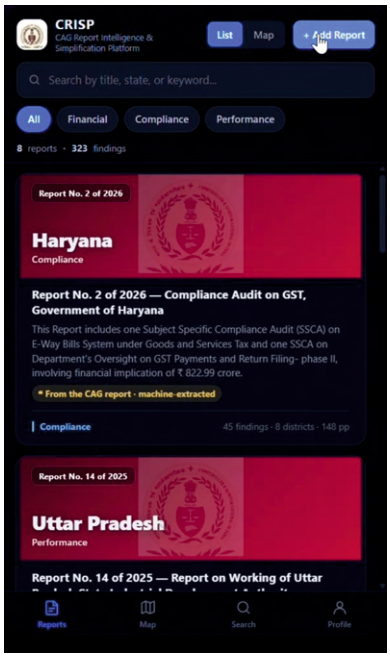
Searchable audit knowledge: Report content is extracted, divided into paragraphs and findings and tagged by State, department, scheme, period and issue type. Statistical tables are recovered with their units and source details. This allows users to retrieve related findings across Reports rather than search individual PDFs separately.

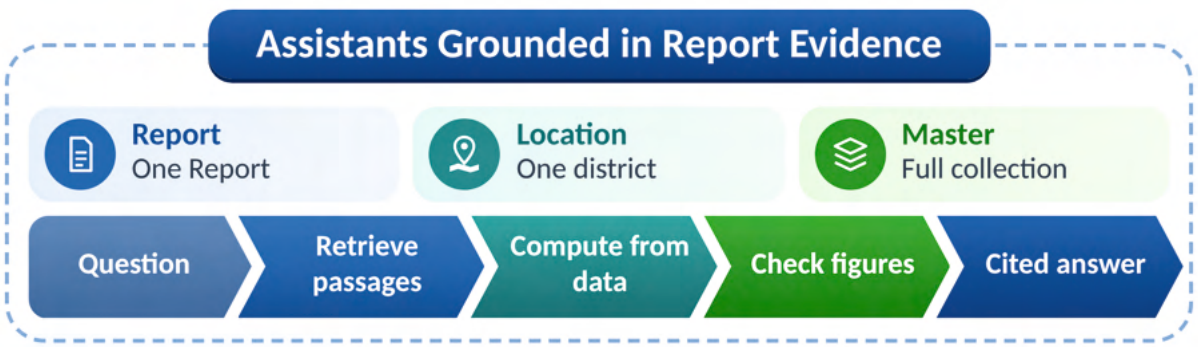
Traceability to the original Report: Findings and assistant responses carry source references. A citation opens the original PDF at the relevant page with the supporting passage highlighted. Where the Report does not provide a paragraph number, the platform records that limitation rather than assigning an invented reference.

Assistants grounded in report evidence: Report, Location and Master assistants are designed to answer questions relating to an individual Report, a district across Reports or the full collection. Retrieval-Augmented Generation (RAG) retrieves relevant passages before an answer is prepared. Totals, rankings and comparisons are computed from structured data and monetary amounts and percentages are checked against retrieved evidence. A rule-based engine provides cited responses when a language model is unavailable.







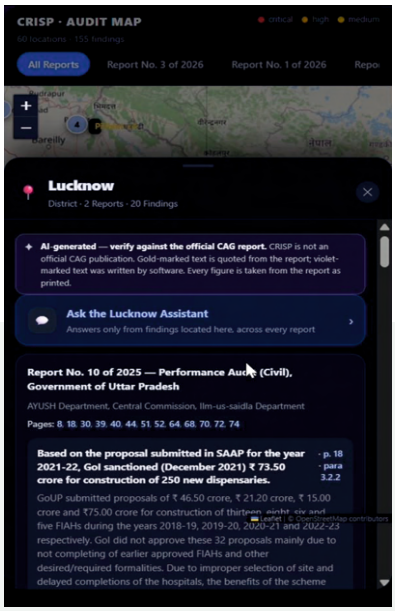


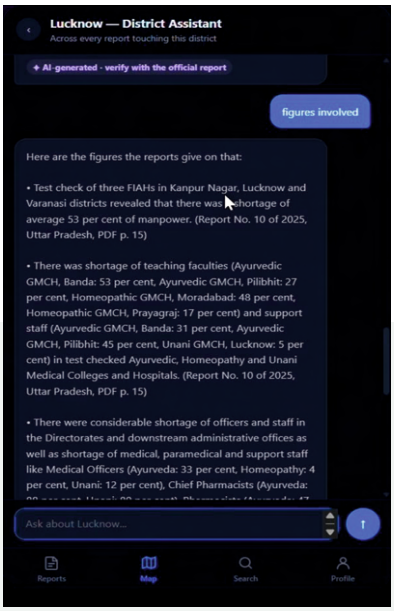
Geographical mapping: Places named in the Reports are matched to the codes of the national Local Government Directory (LGD). Each reference is classified as location-specific so that a finding concerning a particular place can be distinguished from a passing reference to it. State-wide findings are listed by State and are not pinned to a single location. The expanded prototype records 493 mapped place references across 60 districts.

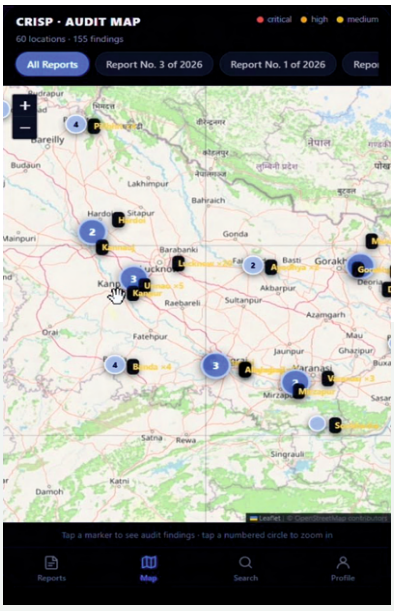
Datasets for research and public communication: The Researcher login supports export of report-derived tables and datasets in Excel, CSV and JSON formats, with a data dictionary and source references for individual rows. Datasets include expected and actual performance, fund flows and district-level figures. Narrated audio and video are also prepared from report text to support wider access.

Proposed monitoring of audit follow-up: The design provides separate views for departments, the offices of the Accountants General, the Public Accounts Committee (PAC), the Committee on Public Undertakings (COPU) and the Finance Department. It envisages prefilled Action Taken Note (ATN) form, tracking of Action Taken Reports (ATRs), due-date reminders, approved audit comments attached to the relevant note and monitoring of Committee recommendations. These workflows would record, route and track cases involving vetting and acceptance with the settlement under the control of the competent authorities.

Proposed support for audit planning: A restricted view is intended to bring together open Inspection Report paragraphs from OIOS[10], replies from CAG Connect[11] and findings from earlier tabled Audit Reports. This would help audit teams review a unit's history and identify recurring issues before fieldwork. Integration would depend on approved access to the relevant systems and data fields.





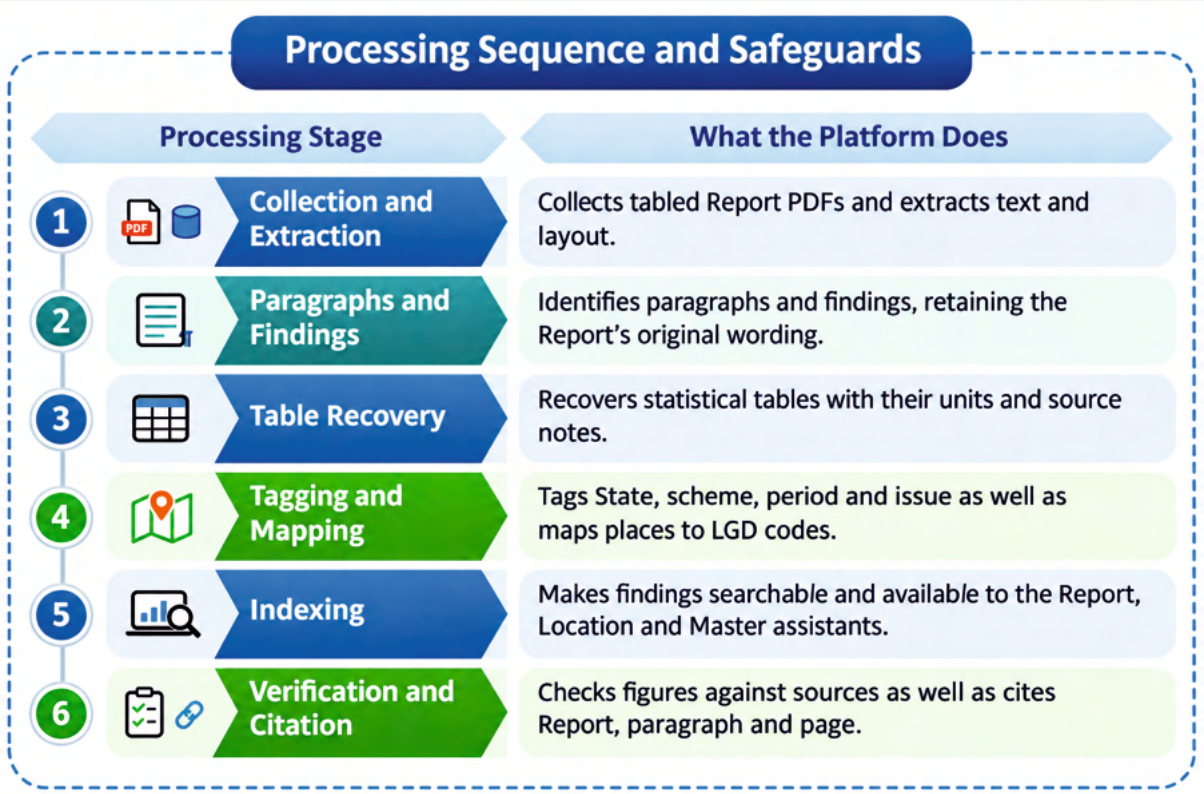


10 One IAAD One System (OIOS) is the integrated digital platform of IA&AD , designed to streamline and standardize audit processes , work flows and information management across the Department.

11 A digital audit platform of the IA&AD that enables audited entities to view audit observations, submit replies and track inspection reports online in real time.

IMPLEMENTATION AND SAFEGUARDS

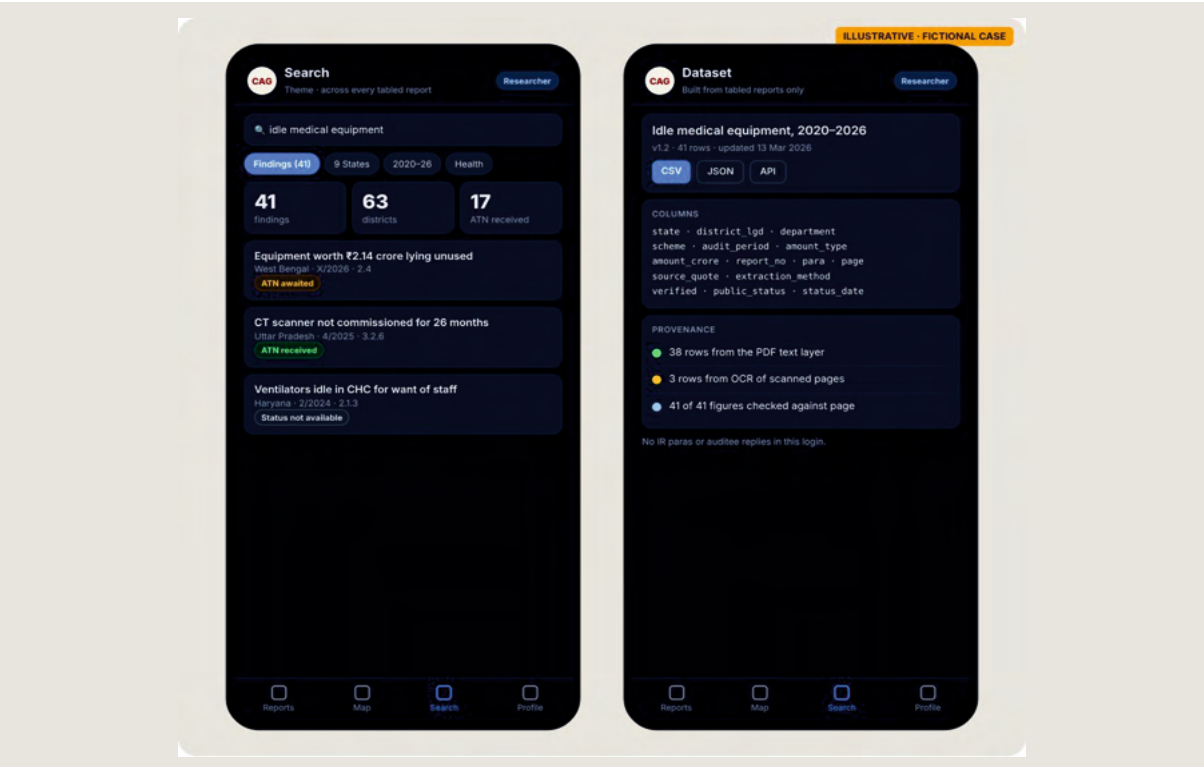
The processing sequence comprises collection of tabled PDFs, extraction of text and layout, identification of paragraphs and findings, recovery of tables, tagging, mapping, indexing and verification. Source citations and checks on figures are central safeguards. The design provides for role-based access and departmental hosting, including a self-hosted option. Public access to draft audit material is outside the intended scope.



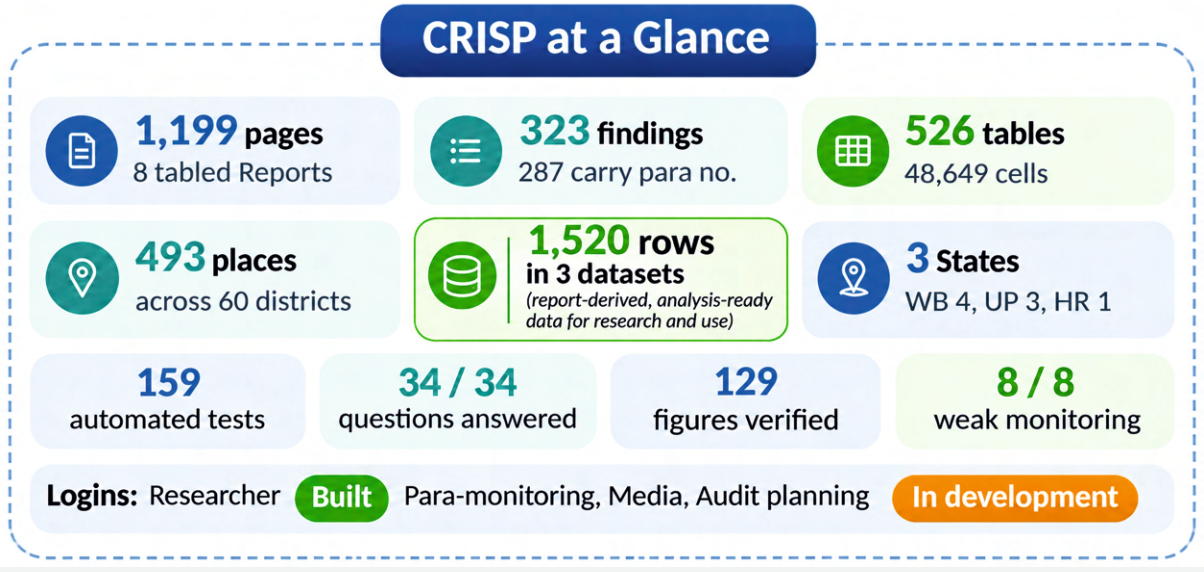
OUTPUTS AND REPORTED BENEFITS

The expanded prototype covers eight tabled Reports comprising 1,199 pages—four Reports from West Bengal, three from Uttar Pradesh and one from Haryana. It contains 323 structured findings, of which 287 (89 per cent), have the Report's own paragraph number. It also captures 526 tables containing 48,649 cells, with datasets covering 836 expected-versus-actual rows, 613 fund-flow rows and 71 cross-report rows.

The pilot involved successful completion of 159 automated tests, responses to all 34 questions in the assistant evaluation set and verification of 129 figures against their source pages. These results relate to the tested prototype and corpus. The Researcher login has been built, while para-monitoring, media and audit-planning logins are designed and under development.



The platform enables findings concerning a district to be retrieved through a single search and supports identification of themes recurring across Reports. For e.g, the submission's analysis identifies weak monitoring as a common finding in all eight Reports. Source-linked datasets reduce the need to transcribe figures manually while citations allow users to return to the evidence underlying a finding or comparison. The pilot has mapped 493 places across 60 districts from the reports.



The proposed follow-up modules could improve visibility of pending notes, the stage of vetting and the status of Committee recommendations. Their effect on timeliness and disposal remains to be assessed through a pilot. Intended measures include the proportion of ATNs filed on time, median vetting time, age of pending notes and the rate at which notes are returned.

REPLICABILITY AND SUSTAINABILITY

The same processing approach has been applied to Reports covering different States and sectors, including health, education, power, industry and taxation. Replication would involve configuring State departments, committees, deadlines and user roles. Approved links with OIOS and CAG Connect are envisaged to support follow-up without replacing the existing audit workflow and audited entity response systems.

The submission envisages scaling to about 3,000 Reports. The present solution operates in English and wider language coverage and testing with external users would be required before production deployment.

The experience underlines the value of extracting evidence from tables, preserving source wording and recording missing information. CRISP offers a means of making published audit knowledge easier to retrieve and use with the proposed follow-up functions providing scope for further development.

Developed by:
Ms. Tania Mishra, IA&AS

Scan here for more details on the initiative

21
STATE FINANCES AUDIT REPORT OF GUJARAT

Office of the Principal Accountant General (Audit-II), Gujarat, Ahmedabad

A visual Executive Summary, a benchmarked Score Card and Case Study reporting.

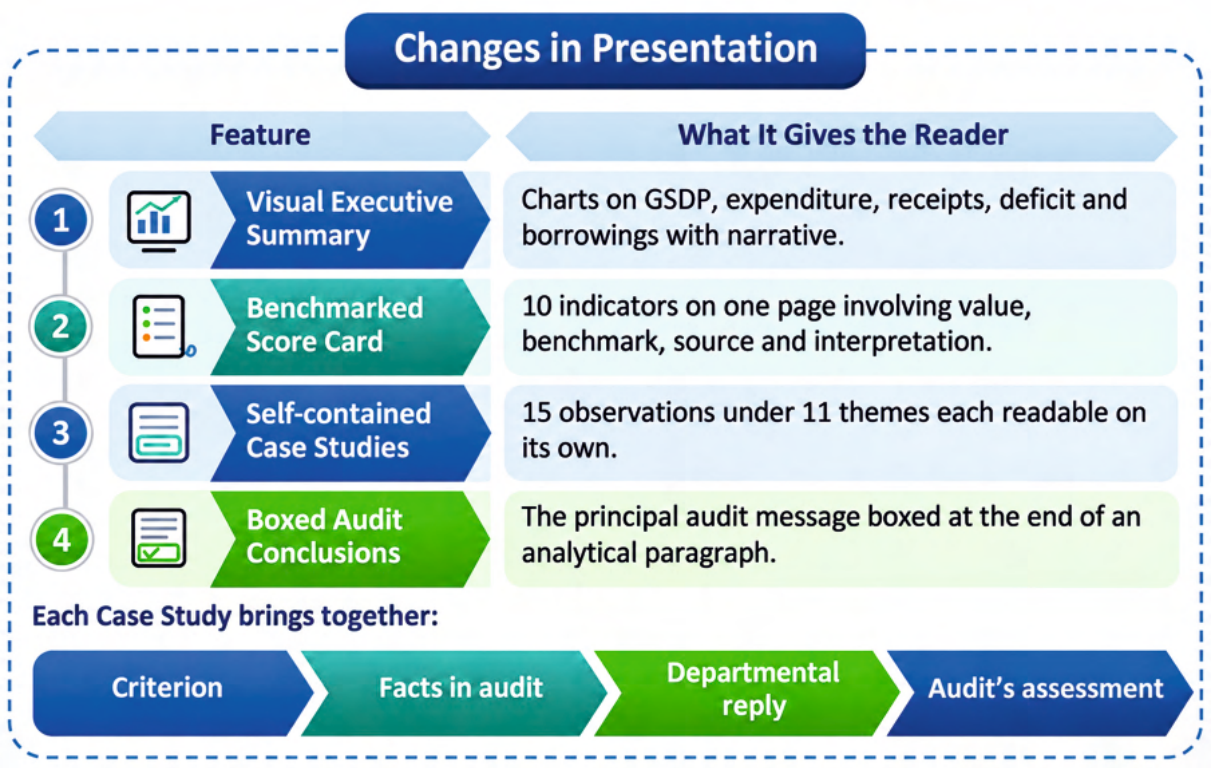
The State Finances Audit Report (SFAR) provides an independent assessment of a State's fiscal position. Its usefulness depends not only on the quality of analysis but also on how clearly the findings are communicated to legislators, Government departments, the media and citizens. The Gujarat SFAR for 2024-25 introduced three complementary changes in presentation to help readers understand the overall fiscal position, interpret key indicators and identify audit findings requiring attention.

THE INITIATIVE

The Gujarat SFAR for the year ended 31 March 2025 (Report No. 2 of 2026), tabled in the Gujarat Legislative Assembly on 25 March 2026, presented a mixed fiscal position. Gross State Domestic Product (GSDP) grew by 10.15 per cent and all four fiscal targets under the Gujarat Fiscal Responsibility Act, 2005 were met. However, Revenue Receipts declined by 1.89 per cent, the revenue surplus contracted by 43.41 per cent to ₹18,943 crore and the primary balance turned negative. These developments called for a balanced presentation of the State's strengths and emerging fiscal concerns.

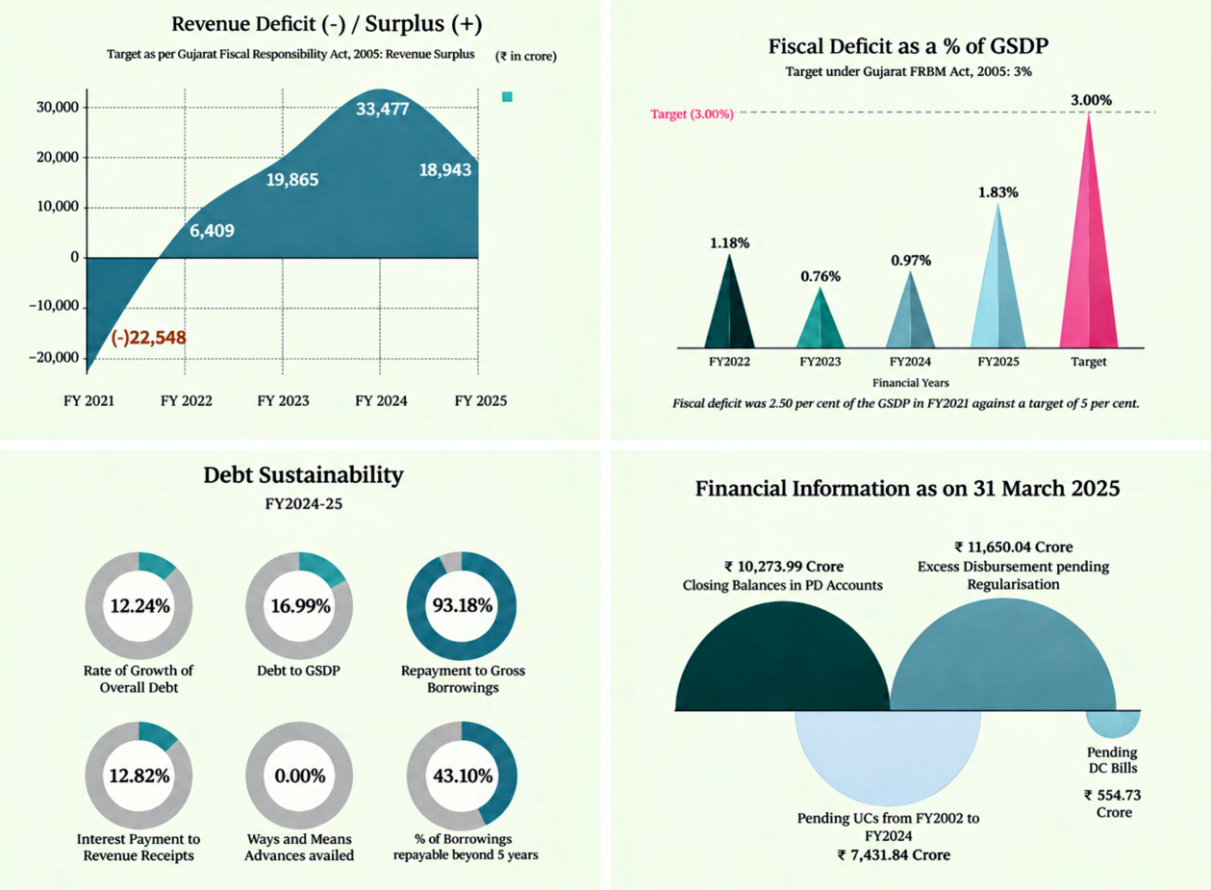
Earlier Reports largely presented the Executive Summary in running text requiring readers to draw together the overall position from several paragraphs. Financial ratios were not consistently accompanied by benchmarks explaining their significance while audit observations, departmental replies and Audit's assessments were embedded in continuous prose. These features made the Report less accessible to readers without specialised knowledge of public finance.

The Office introduced three changes viz. a visual Executive Summary, a one-page Score Card of State Finances and self-contained Case Studies.



KEY FEATURES

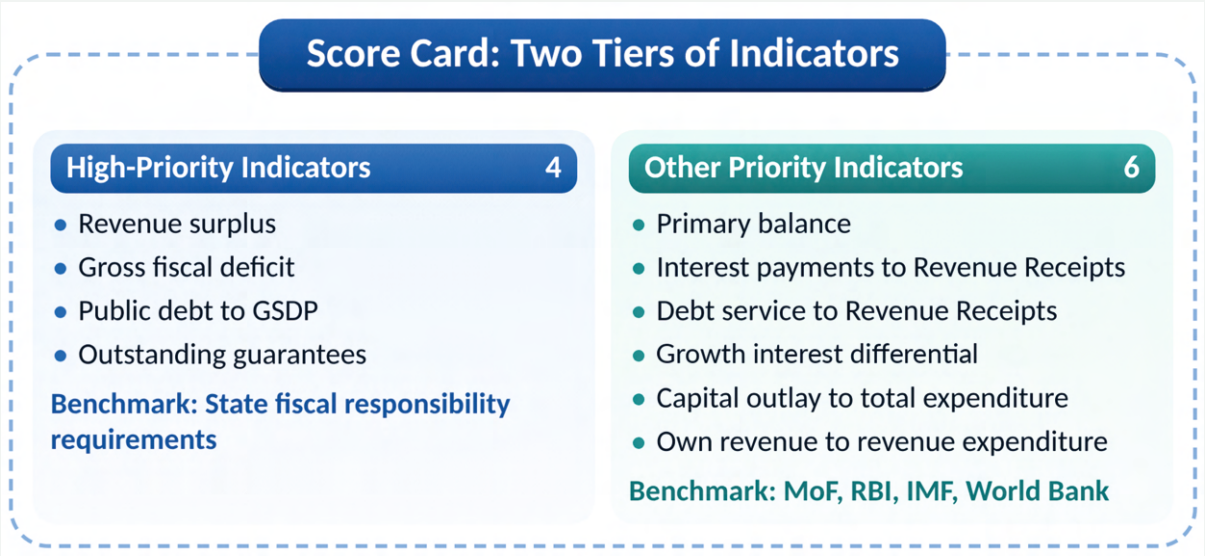
Visual Executive Summary: The Executive Summary, at pages ix to xi of the Report, presented the key fiscal parameters through nine charts and graphs. They showed the trend of GSDP and total expenditure up to 2024-25, a snapshot of receipts and expenditure for 2023-24 and 2024-25, the revenue surplus from 2020-21 to 2024-25 and the fiscal deficit against the target of 3 per cent of GSDP. Further charts showed interest payments relative to Revenue Receipts, total public debt relative to GSDP, outstanding guarantees against the ceiling of ₹20,000 crore, six debt sustainability indicators and financial information as on 31 March 2025. The accompanying narrative explained the factors behind changes in receipts, expenditure and borrowing, complementing the numerical trends shown in the visuals.



Visuals from the Executive Summary as recorded in the Report

Benchmarked Score Card: Ten fiscal indicators were brought together in a one-page Score Card. Each indicator was presented with its value, a stated benchmark or analytical reference, the source of that benchmark and a brief interpretation. This enabled readers to assess the significance of a ratio alongside the reported figure.

The Score Card grouped the indicators into two tiers. **Four High-Priority Indicators** covered revenue surplus, gross fiscal deficit, public debt relative to GSDP and outstanding guarantees with reference to the State's fiscal responsibility requirements. **Six Other Priority Indicators** covered the primary balance, interest payments relative to Revenue Receipts, debt service relative to Revenue Receipts, the growth interest differential, capital outlay as a share of total expenditure and own revenue relative to revenue expenditure. The second tier drew on benchmarks and analytical approaches cited from the Ministry of Finance, the Reserve Bank of India, the International Monetary Fund and the World Bank.



The two tiers helped distinguish compliance with fiscal targets from wider questions of debt sustainability, repayment capacity, expenditure quality and fiscal self-reliance. For example, the gross fiscal deficit of 1.83 per cent of GSDP was below the three per cent ceiling, while debt service at 25.08 per cent of Revenue Receipts highlighted potential fiscal vulnerability. The Score Card concluded with a balanced assessment of the State's fiscal health and the need for prudence and allocative efficiency.

Self-contained Case Studies: Fifteen audit observations under 11 themes across the three chapters were presented as Case Studies in outlined boxes. Each Case Study brought together the applicable criterion, facts established in audit, the departmental reply and Audit's assessment. This allowed the observation to be understood independently of the surrounding text and facilitated reference during legislative scrutiny, including examination by the Public Accounts Committee.

Prominent audit conclusions: Where an analytical paragraph reached a conclusion, the conclusion was placed in an outlined box at its end. Readers could thereby identify the principal audit message without having to reconstruct it from the full narrative.

IMPLEMENTATION AND OUTPUTS

The presentation changes were developed using information already compiled for the Report. Benchmark selection gave priority to statutory requirements, followed by relevant fiscal consolidation references and analytical thresholds. Observations selected as Case Studies were screened for materiality and systemic significance.

The resulting Report combined visual presentation of fiscal trends, 10 indicators with benchmarks and interpretations and fifteen independently readable Case Studies. The approach retained the common reporting structure while making the analysis easier to locate, interpret and use.

BENEFITS AND REPORTED OUTCOMES

Clearer communication: The visual Executive Summary and Score Card brought the State's fiscal strengths and concerns into a consolidated presentation. Readers could obtain an overview before turning to the chapters for detailed analysis.

Support for scrutiny: The Case Studies and boxed conclusions provided concise points of reference for departments and legislators examining matters requiring corrective action.

Adoption by other offices: The visual Executive Summary format has subsequently been followed by other States of the Western Region indicating scope for application across States with differing fiscal profiles.

REPLICABILITY AND SUSTAINABILITY

The approach can be adopted by other offices preparing SFARs using data already compiled for the chapters. Its continued use would require consistent selection and interpretation of indicators, clear attribution of benchmarks and regular review of their applicability. Statutory limits and analytical reference values should be clearly distinguished so that readers understand the basis of each assessment.

A State-wise Score Card could also support the CAG's wider analysis of State finances by presenting trends over time and facilitating comparison across States.

The Score Card could be presented on the CAG's Digital Reports platform with indicators linked to the supporting analysis. The Case Study format and clearly identified conclusions could also be extended to compliance and performance audit reports and Inspection Reports wherever they would improve the accessibility of audit findings.

The initiative demonstrates how changes in presentation, supported by explicit benchmarks and complete audit observations can strengthen communication of audit results within an established reporting template.

Scan here for the SFAR

Scan here for more details on the initiative

The Team:

1. Shri Bijit Kumar Mukherjee, IA&AS
2. Shri Arshad Muhammed, IA&AS
3. Shri P. B. Chougule, Sr. Audit Officer
4. Shri Rajiv Ranjan Singh, Sr. Audit Officer
5. Shri Anil Chaudhary, Asst. Audit Officer
6. Shri Magan Prakash, Asst. Audit Officer


AUDIT
Audit
Compliance
Risk
Governance



Section IV

Measuring Outcomes

This section focuses on the tangible and measurable outcomes of initiatives undertaken across audit, accounting, entitlement, establishment and capacity-building functions. It highlights practices that have translated institutional efforts into demonstrable improvements in processes, service delivery, accountability and governance. By emphasising results and value addition rather than activities alone, this section illustrates the contribution of IA&AD's interventions to organisational effectiveness and broader governance outcomes.

22

COMPLIANCE AUDIT OF TAXATION OF UNEXPLAINED TRANSACTIONS



Office of the Director General of Audit (Central Receipt), New Delhi

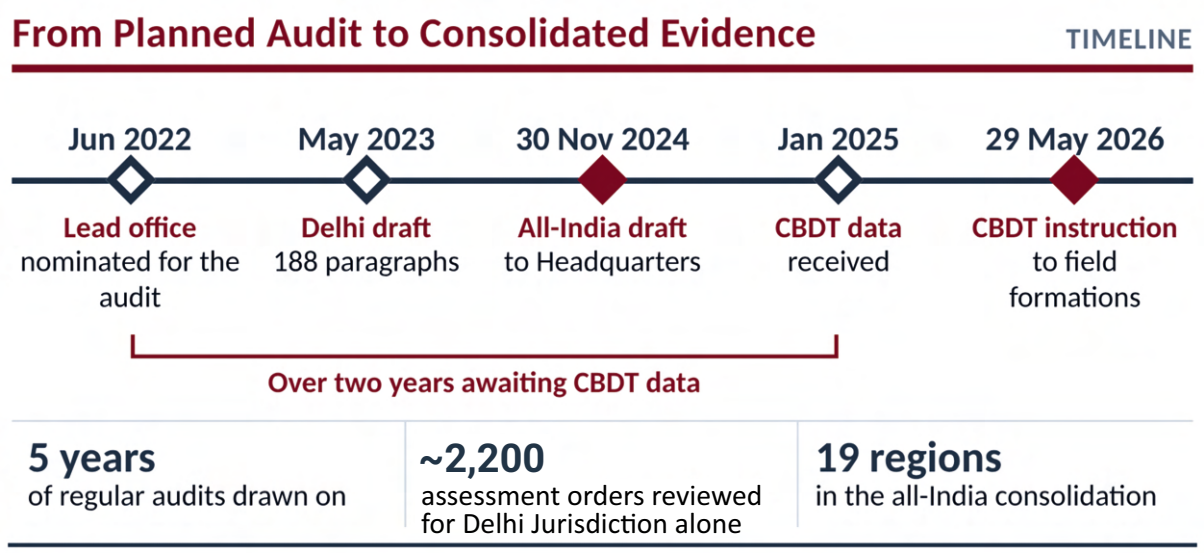
Consolidating regular audit evidence to identify systemic deficiencies in tax assessments.

The Income Tax Act, 1961 provides for taxation of unexplained credits, investments, money and expenditure under Sections 68, 69, 69A, 69B, 69C and 69D read with Section 115BBE. The new section 115BBE introduced with effect from Assessment Year 2013–14, prescribed a special tax rate of 30 per cent on such income. From Assessment Year 2017–18 the rate was increased to 60 per cent with a surcharge of 25 per cent on the tax along with applicable cess; while any deductions in respect of expenditure or allowances, as well as set-off of losses against such income were barred. Correct and consistent application of these provisions was therefore important for safeguarding revenue and ensuring equitable treatment of taxpayers.

THE INITIATIVE

Regular compliance audits identified recurring differences in the treatment of unexplained transactions across assessment charges. These included inconsistent treatment of cash and non-cash credits, unexplained bank deposits and unverified sundry creditors. Besides errors in tax rates, surcharge, assessed income and set-off of losses were also seen. The findings indicated a need to examine the application of the provisions systematically across regions.

The Office of CAG of India nominated the Office of the Director General of Audit (Central Receipt), New Delhi as the lead office for a Subject Specific Compliance Audit in June 2022. However, the centralised assessment data sought from the Central Board of Direct Taxes (CBDT) and its Systems Directorate was received only in January 2025, after a delay of over two years. An alternative approach as detailed below was adopted wherein to pursue the audit objectives with the evidence available, Audit compiled and analysed observations already raised during regular compliance audits conducted from 2018-19 to 2022-23. An initial draft containing 188 paragraphs of Delhi jurisdiction was submitted in May 2023. This was subsequently expanded to an all-India consolidation on similar lines. The approach converted scattered observations into a structured assessment of recurring deficiencies, their financial implications and the controls requiring improvement.



KEY FEATURES

Use of existing audit evidence: The exercise drew on assessment records and findings already available with field audit offices. This enabled the audit objective to be pursued despite the delay in centralised data, while making effective use of work undertaken during regular compliance audits.

Common analytical categories: Observations were classified into four categories *viz.* incorrect application of tax rates and surcharge, incorrect adoption of assessed income in tax computation, inadmissible set-off of losses and unexplained transactions escaping assessment and the applicable special-rate levy. This provided a consistent basis for analysis across regions.

Detailed verification and reconciliation: The lead office reviewed nearly 2,200 assessment orders, tax computation forms and related records pertaining to Delhi Jurisdiction. Differences in interpretation identified during verification were reconciled through further review and gap sheets issued to field offices. A second review was also undertaken to improve consistency in the treatment of observations.

Engagement with the Department: Departmental replies were sought and considered to establish the audit position. Discussions with senior tax authorities helped address contested cases and obtain responses.

OUTPUTS AND SIGNIFICANT FINDINGS

The exercise consolidated 1,902 audit observations across 19 regions, involving a total tax effect of ₹25,085 crore. Of these, 1,728 cases involved under-assessment or under-charge of ₹23,769 crore, while 174 involved over-assessment or over-charge of ₹1,316 crore. The findings therefore covered both revenue shortfalls and excess assessment affecting taxpayers.

1,902 Observations, ₹25,085 Crore Tax Effect — BY CATEGORY

1,728 under-assessed, ₹23,769 cr | **174** over-assessed, ₹1,316 cr



Escaped transactions: 75% of the tax effect — ₹25,085 crore

CATEGORY	CASES	TAX EFFECT
Unexplained transactions escaping the levy	589	₹18,799 cr
Incorrect tax rates and surcharge	926	₹4,706 cr
Assessed income not carried into computation	331	₹1,230 cr
Inadmissible set-off of losses	56	₹349 cr

Incorrect tax rates and surcharge: In 926 cases, involving a tax effect of ₹4,706.41 crore, the applicable rates were not correctly applied. In a case, an addition of ₹1,669.09 crore under Section 68 was taxed at 30 per cent with 12 per cent surcharge instead of the applicable special rate and surcharge, resulting in a short levy of ₹1,003.02 crore.

Errors in carrying assessed income into tax computation: In 331 cases, involving ₹1,230 crore, income chargeable under Section 115BBE was not accurately reflected in the tax computation statement. Such errors included understatement or duplication of assessed income and failure to carry additions into the relevant computation fields.

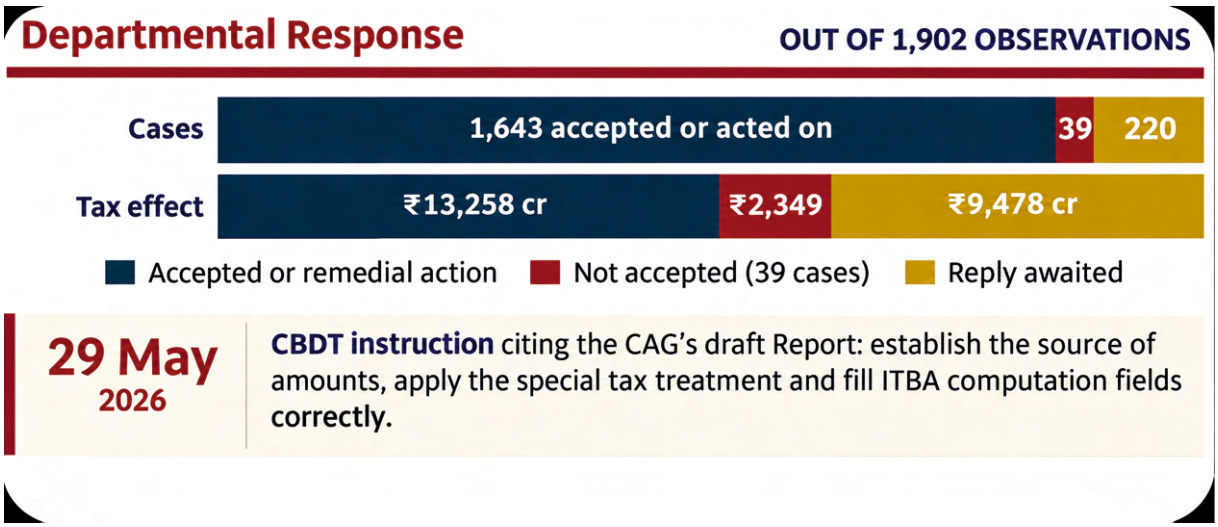
Inadmissible set-off of losses: In 56 cases, involving ₹349 crore, losses were incorrectly set off against additions under the relevant provisions. This reduced the income subjected to the special tax treatment.

Unexplained transactions escaping the applicable levy: In 589 cases involving a tax effect of ₹18,799 crore, the unexplained transactions falling within the relevant provisions escaped assessment and levy under Section 115BBE. This was the largest category by tax effect and highlighted inconsistent treatment of transactions requiring examination under the special provisions.

The consolidated analysis showed that the deficiencies extended beyond isolated calculation errors. They also involved application of the relevant provisions, transfer of assessed income into computation statements and supervisory checks over the resulting tax demand.

DEPARTMENTAL RESPONSE

Of the 1,902 observations, the Ministry or Department accepted the observations, rectified errors or initiated remedial action in 1,643 cases involving a tax effect of ₹13,258 crore. In 39 cases involving ₹2,349 crore the observations were not accepted or remedial action was not taken.



IMPACT

Changes in the Act: Audit succeeded in highlighting the discrepancy and scope of discretion in application of provisions of the Act like Section 68. The transition from Section 68 of the earlier Income Tax Act, 1961, to Section 102 of the Income Tax Act, 2025, marks a critical shift on assessment for unexplained cash credits. The previous framework allowed the Assessing Officer a degree of latitude, as the provision stated that such sums "may" be charged to tax. In contrast, Section 102 introduces the imperative "shall," effectively eliminating administrative discretion or estimation once a cash credit's nature and source fail to meet satisfactory legal standards.

The significant impact of the audit study is also underscored by the CBDT's communication dated 29 May 2026 to its Principal Chief Commissioners and Directors General. In this directive, which explicitly referenced the CAG's draft report, the CBDT instructed assessing officers to establish the true nature and source of transactions through appropriate inquiry, invoke relevant statutory provisions based on the facts of each case, apply special tax treatments where applicable, and accurately complete the relevant computation fields within the Income Tax Business Application (ITBA).

REPLICABILITY AND SUSTAINABILITY

The methodology can be adopted by other audit offices to consolidate regular audit findings around a common risk or statutory provision. A shared classification of errors, systematic verification of supporting records and reconciliation of differing interpretations can help distinguish recurring weaknesses from individual assessment mistakes.

The resulting evidence can support focused sampling, thematic audits, common checklists and risk-based audit planning. Sustained benefits would depend on follow-up of remedial action, timely access to assessment data, stronger IT-based validation of tax computations and effective supervisory and internal audit checks. The exercise demonstrates how existing audit evidence can be used to identify systemic deficiencies and support corrective instructions even when a planned data-dependent audit faces delays.



Scan here for CAG's Audit Report



Scan here for more details on the audit

The Team:

1. Ms. Aman Deep Chatha, IA&AS
2. Late Shri Sushil Kumar Jaiswal, IA&AS
3. Shri Krishna Pratap, IA&AS
4. Ms. Geetha Padmakumar, Sr. Audit Officer
5. Shri Pramod Kumar Mishra, Sr. Audit Officer

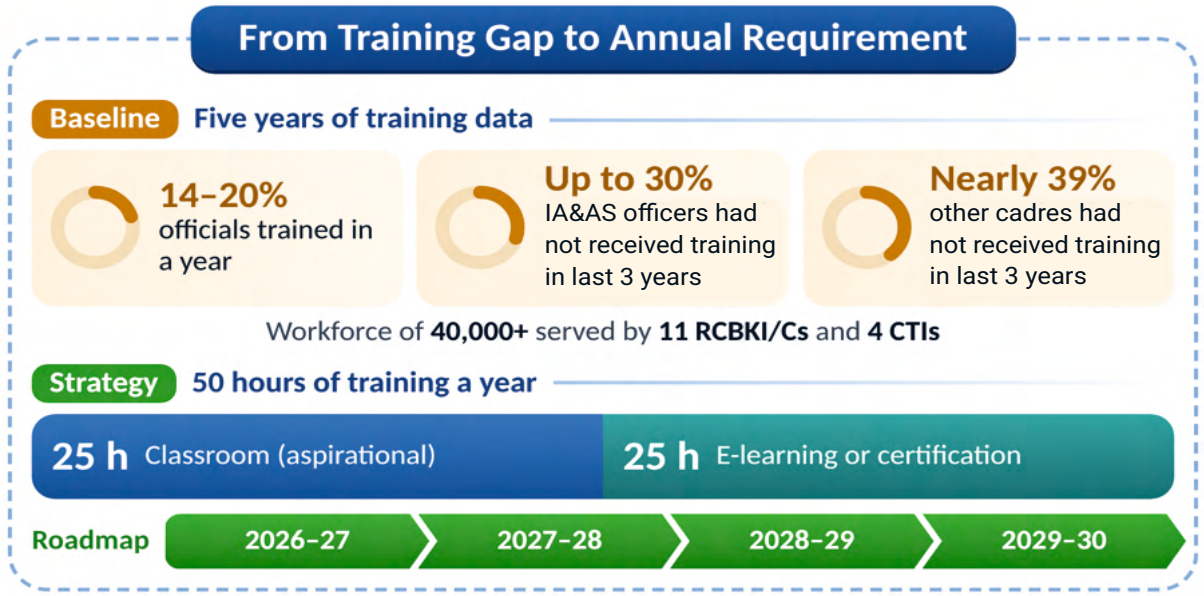
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FROM TRAINING TO CAPABILITY: TRANSFORMING LEARNING AND PROFESSIONAL DEVELOPMENT ACROSS IA&AD

Knowledge & Capacity Building Wing
Office of the Comptroller and Auditor General of India

An integrated training strategy, learning platform and employee-level training record.

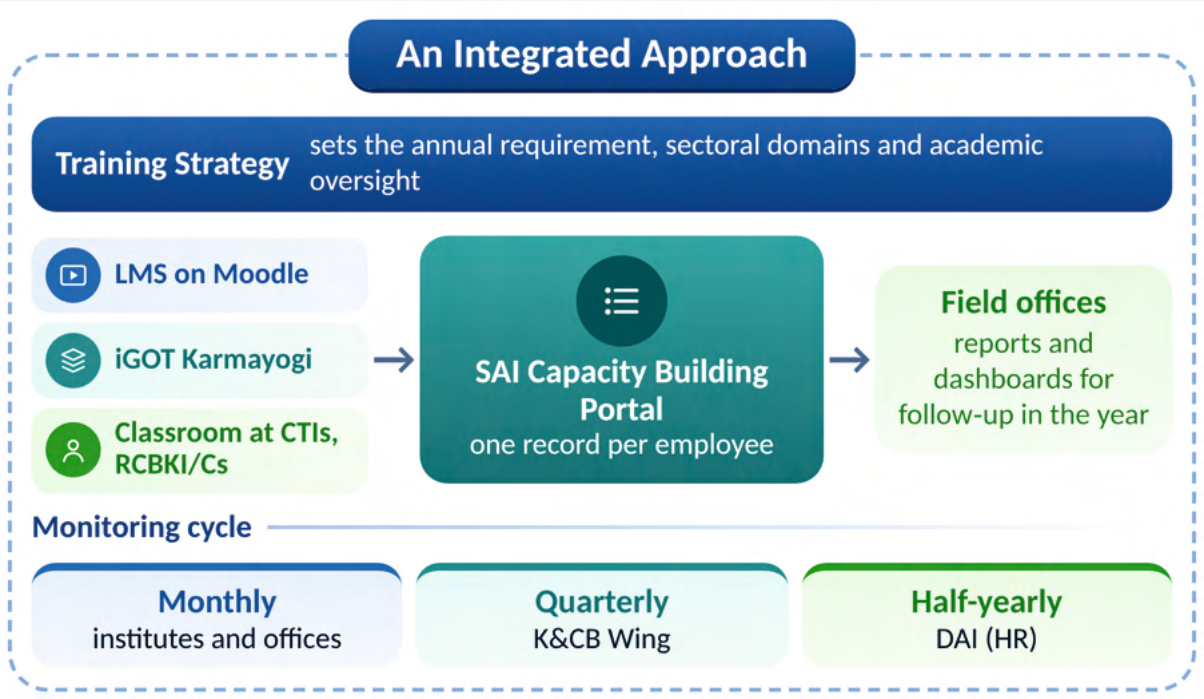
The Indian Audit and Accounts Department (IA&AD) serves a workforce of more than 40,000 officials through 11 Regional Capacity Building and Knowledge Institutes and Centres (RCBKI/Cs) and four Central Training Institutes (CTIs). An analysis of five years of training data showed that only about 14 to 20 per cent of officials received training in a year. Besides, up to 30 per cent of IA&AS officers and nearly 39 per cent of other cadres had received no training in the preceding three years.



Classroom capacity and faculty availability limited delivery while training opportunities varied with location and nomination practices. Subject ownership was fragmented across institutes and learning undertaken through different channels was not consolidated into a single record. Emerging requirements in data analytics, artificial intelligence, ERP systems, accounting standards and public financial management called for broader and more consistent access to specialised learning.

THE INITIATIVE

The Knowledge & Capacity Building (K&CB) Wing developed an integrated approach comprising the Comprehensive IA&AD Training Strategy, the departmental Learning Management System (LMS) and a consolidated training record on the SAI Capacity Building Portal. The Strategy establishes the annual training requirement, the LMS expands access to certified learning and the Portal enables offices to monitor each employee's progress across learning channels.



The approved Strategy prescribes 50 hours of training annually for the identified officials comprising an aspirational 25 hours of classroom training and 25 hours of e-learning through CAG Learning, iGOT Karmayogi or certification courses. It is supported by a four-year Roadmap of Action for FY 2026–27 to FY 2029–30 and changes in institutional specialisation, academic oversight and programme delivery.

KEY FEATURES

A defined annual training requirement: Training is organised around the learning completed by each employee with targets for annual coverage and hours. The combination of classroom and online delivery provides a means of expanding coverage within available institutional capacity.

Sectoral ownership and academic oversight: Each RCBKI/C has been given fixed sectoral subjects, while the CTIs cover subjects common to all sectors. Clear responsibilities, along with liaison officers and Mentors, help each institute build expertise and avoid duplicating

courses. Functional Wings take part in academic oversight through Review and Academic Committees at each institute. The Mid-Career Training Programme is now run in-house and organised around these sectoral subjects.

An accessible learning platform: The LMS at learning.cag.gov.in is built on Moodle, an open-source platform and is open to departmental employees. It carries 31 structured self-paced courses totalling 212.67 hours together with eight curated training resources developed from recorded workshops and expert sessions. The catalogue covers multiple subjects including cybersecurity, urbanisation, accounting standards, Railway IT applications and data analytics.

Assessment, certification and recognition of hours: Courses include assessment and certification, with completed learning hours credited towards the annual requirement. This connects online learning directly to the departmental training strategy and enables employees to undertake learning without dependence on classroom seats or travel.

One consolidated employee record: Interfaces developed in-house connect the LMS and iGOT Karmayogi with the SAI Capacity Building Portal. The Portal brings together online learning and physical training at CTIs and RCBKI/Cs into a single employee-level record. Reports and dashboards make the consolidated information available to field offices.

Monitoring within the training year: Oversight operates monthly at institute and office level, quarterly through the K&CB Wing and half-yearly by the Deputy Comptroller and Auditor General responsible for Human Resources. Offices can identify employees falling short of the requirement and initiate follow-up during the year. Domain-specific e-learning can compensate where an official is unable to attend physical training.

Reusable content and manageable modules: Recorded expert sessions are edited and kept for repeated use, so specialised training reaches more employees. Courses are also designed around how learners complete them. For example, a single 29-hour course on urbanisation was split into 10 shorter modules, each certified separately, so employees can finish one unit at a time alongside their regular duties.

IMPLEMENTATION

The initiative began by analysing training across the department i.e. who was trained, for how long, and where the gaps lay in each cadre. Subject areas for each institute were drawn from existing lists of audit domains and matched against the topics the Knowledge Centres already covered. This mapping gave a common basis for deciding which institute would handle which subjects.

Moodle enabled the Wing to configure and deploy the LMS without software licence costs. Content was commissioned from subject experts and supplemented with recorded departmental programmes. Integration of learning records was built early reducing the need for subsequent manual consolidation across platforms and linking training delivery to monitoring from the outset.

OUTPUTS AND BENEFITS

The principal outputs are the approved Training Strategy and implementation roadmap, a live LMS with 31 certified courses and eight curated resources and automated consolidation of training records across learning channels. The course catalogue has more than doubled in a year. As on 21 October 2026, the platform recorded 41,402 registered learners.

Enrolment, assessment, certification and automatic crediting of learning hours are operational. Field offices can view their employees' progress through reports and dashboards without compiling separate returns. The arrangement provides a basis for measuring movement from the earlier limited coverage towards the annual training targets. Registration figures establish access to the platform and achievement of training requirements is monitored through completed and credited hours.

Online delivery reduces travel and accommodation requirements and allows recorded expertise to serve successive groups of learners. Classroom capacity can be directed towards case studies, professional judgement and peer exchange. Sectoral ownership helps align training with the subjects officials handle, while consolidated records give supervisors a clearer basis for identifying gaps and planning nominations.



REPLICABILITY AND SUSTAINABILITY

The approach can be adopted by institutions delivering training across dispersed offices and multiple centres. Its essential elements are a measured baseline, a realistic annual requirement, a suitable division between classroom and online learning, named ownership of subject domains and consolidation of learning into one employee record. Open-source technology supports expansion without licence dependence with maintenance and content quality requiring continuing attention.

Further plan includes conversion of study material for all 20 papers of the Subordinate Audit/Accounts Service Examination into self-paced modules and development of structured courses from classroom recordings. A quality-assurance SOP provides for peer review by the institute responsible for the relevant domain before self-created content is published. Linking the LMS more closely with training calendars and nominations is also being pursued.

The experience highlights that access to content must be accompanied by completion monitoring and supervisory follow-up. By connecting the training requirement, delivery channels and verified learning record, the initiative provides a repeatable means of widening participation and making capacity-building progress visible at employee and office level.

Scan here for more
details on the initiative

The Team:

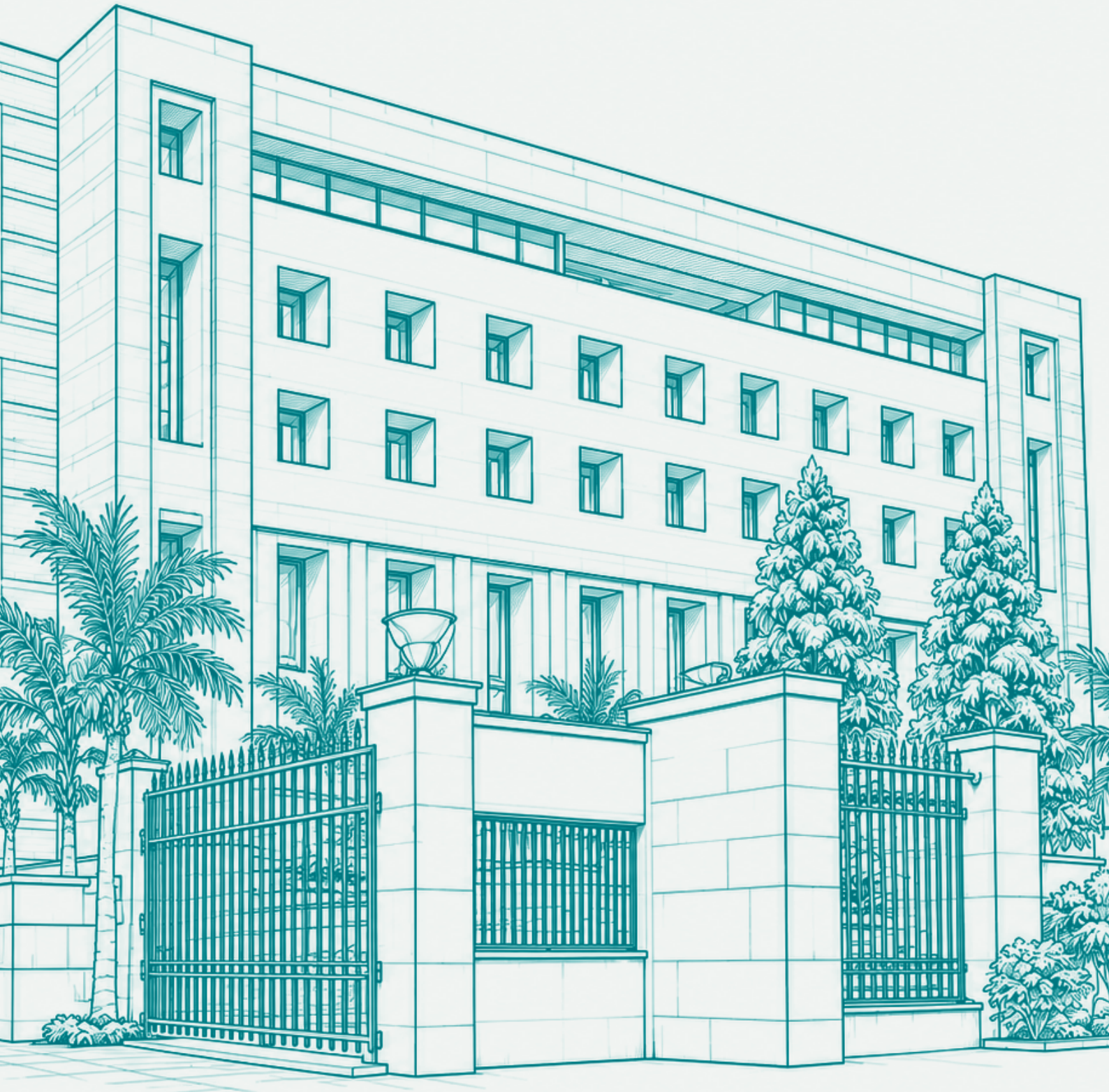
1. Shri K. S. Subramanian, IA&AS
2. Shri B. K. Mohanty, IA&AS
3. Shri Jishnu J Raju, IA&AS
4. Shri Joydeep Mukherjee, Asst. Admin Officer
5. Shri Mayank Tripathi, Asst. Admin Officer
6. Ms. Pooja Jhirwal, Asst. Admin Officer
7. Shri Sanjay Kumar, Asst. Admin Officer

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EDITORIAL TEAM

Shri Jitendra Tiwari

Ms. Veena Shrote

Shri Shailesh Singh

Shri Kunal Baroliya



We request your valuable feedback at:
dirppg@cag.gov.in

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Comptroller and
Auditor General of India
http://www.cag.gov.in