



# Information Technology (IT) Auditing in India

**Comptroller and Auditor General of India**

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# Auditing in India

The Supreme Audit Institution (SAI) in India is headed by the Comptroller and Auditor General (CAG) of India. CAG of India derives his mandate from Articles 148 to 151 of the Indian Constitution. The CAG's (Duties, Powers and Conditions of Service) Act, 1971 prescribes functions, duties and powers of CAG. The Regulations for Audit and Accounts, 2007 further detail the framework, scope and extent of audit by CAG. As one of the pillars of the Indian democracy, SAI India strives to promote excellence in public sector audit and accounting services towards improving quality of governance. While fulfilling his constitutional obligations, CAG examines various aspects of government expenditure and revenues. The audit conducted by CAG is broadly classified into Financial, Compliance and Performance Audits.

IT audits are conducted by SAI India within the broad framework of Compliance and Performance Audit. Use of IT and IT tools in audits including financial audits is a continuous and evolving process.



# Information & Communication Technology (ICT) in the Governments and their Bodies in India

ICT has been used by the Governments—Union and States—and various autonomous bodies and Public Sector Undertakings (PSUs) increasingly over the last couple of decades. For many, it has become a mainstay of carrying out their functions. The initiatives are many and have come up in varied environments to address different needs of the citizen, business, governance, organisations, etc. A major means for service delivery by the Governments has been through e-governance initiatives. Every government department in the States and Central Government has taken up initiatives to make use of ICT.

## National e-Governance Plan (NeGP)

One of the major thrusts for use of ICT in the Governments in India has been through the NeGP which is steered by the Department of Information Technology under the Ministry of Communications and Information Technology of the Government of India (GoI).

NeGP was formulated in 2006 by the Government to speed up e-governance across various arms of government at national, state and local government levels, through a programme approach guided by a common vision, and strategy, enabling cost savings through sharing core and support infrastructure, enabling inter-operability through standards etc, resulting in the citizen having a seamless view of government.

## NeGP Implementation

NeGP is being implemented through Mission Mode Projects (MMPs), at Central level, State level and some integrated MMPs. They are :

### Central MMPs

- Banking
- Central Excise & Customs
- Income Tax (IT)
- Insurance
- MCA21
- National Citizen Database (NCD/MNIC)/UNIQUE ID (UID)
- Passport, Immigration & Visa
- Pension
- e-OFFICE

### State MMPs

- Agriculture
- Commercial Taxes
- e-District

- Employment Exchange
- Land Records
- Municipalities
- Panchayats
- Police
- Property Registration
- Road Transport
- Treasuries

In addition, every state can have five more state level MMPs as per their requirements.

### Integrated MMPs

- Common Service Centres
- e-BIZ
- e-COURTS
- e-Procurement
- Electronic Data Interchange (EDI) For Trade (eTrade)
- National E-governance Service Delivery Gateway
- India Portal ([www.india.gov.in](http://www.india.gov.in))



The implementation of MMPs is to be through the line ministries/departments/ state governments/autonomous bodies with Department of Information Technology (DIT) providing the Common and Support Infrastructure (National/ State Wide Area Networks, National/State Data Centres, and Common Services Centres & Electronic Service Delivery Gateways), monitoring and coordinating the implementation of NeGP. It is also evolving/laying down Standards and Policy Guidelines, providing Technical and Handholding Support, undertaking Capacity Building, R&D, etc.

At the state level, the governments have respective departments of IT which are the nodal agencies for the e-governance initiatives in the state.

Apart from the initiatives channeled through NeGP, the autonomous bodies and the Public Sector Undertakings (PSUs), both under the state and Union Governments, have implemented different IT systems, as per their functional requirements. The local governments and local bodies, the third tier of governance in India, also have been implementing various IT systems delivering services directly to the citizen. These initiatives may or may not be coupled with any of the MMPs under NeGP.

## The Information Technology (IT) Act 2000

The Government of India has enacted the Information Technology Act 2000 which has been later amended as the new Information Technology Act, 2008. This Act provides legal recognition to the transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as “Electronic Commerce”, which involve the use of alternatives to paper based methods of communication and storage of information, to facilitate electronic filings of documents with the government agencies.



# Development of IT Auditing in SAI India

SAI India has been conducting compliance audit of government laws, rules and legislations as well as performance audit of government programmes, schemes and departments.

IT audits have been conducted by SAI India for the last 20 years. The IT Audit wing was created as a separate wing in 2001 in the Office of CAG with the following responsibilities:

- Carry out a survey of the impact of IT on financial statements and finance related operations of entities under SAI India's audit jurisdiction and identify the proper methodology, software and resources and exercise supervision over the use of CAG.
- Plan and supervise Value for Money (VFM) audits of IT systems.
- Process reports arising out of audits carried out on this basis.
- Build capacity to carry out the above.

After the creation of IT Audit wing, a Strategic IT Audit Plan 2003-2008 was developed. In due course, an IT Audit Manual, checklists to carry out the IT Audit of an inventory system and audit of systems under development, training material on Computer Assisted Audit Tools, data downloading, IT Audit Reporting Guidelines, etc. have been developed. To carry out a survey of IT systems, a survey questionnaire has been designed along with a criticality assessment tool to carry out risk assessment for prioritising the IT Audit efforts.

The above have been developed along the lines of best international practices and frameworks for IT Audit from International Organisation of Supreme Audit Institutions (INTOSAI), Asian Organisation of Supreme Audit Institutions



(ASOSAI), Information Systems Audit and Control Association (ISACA), BS 7799, ISO 27001, etc.

IT Audits are coordinated through 78 field offices of SAI India. The audits have touched on the IT/e-governance efforts in the Union and State civil ministries and departments, Union and State commercial undertakings, Union and State revenue departments, Indian Railways and associated organisations, scientific departments, defence organisations, Post and Telegraphs, local bodies and various autonomous bodies.

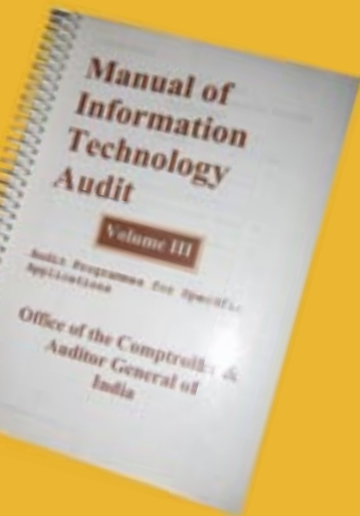
As a result of the training efforts, SAI India now has a vast pool of audit professionals equipped with knowledge and techniques of IT auditing. Every field office of SAI India has at least one skilled IT Audit team with many having plenty of IT Audit trained personnel.

Apart from capacity building within SAI India, officials from the Executive, including those from the Indian Administrative Service, Indian Forest Service and the Indian Armed Forces have also been trained on IT Management and Governance, based on the experience gained through IT Audits.

SAI India has been providing inputs on the proposed IT projects of various Union ministries, departments or State Governments.

The IT Audit initiative of SAI India received the prestigious Prime Minister's Award for Excellence in Public Administration for 2006-07 on 21<sup>st</sup> April, 2008.

SAI India is emerging as a crucial partner for e-governance in the country.



# Major IT Audits Carried Out by SAI India

More than 500 IT audits (compliance and performance) have been carried out by SAI India till now.

The audits have covered diverse systems that are:

- Citizen centric (G2C)
- Having effect on transparency in governance (G2C)
- Having effect on decision making in government (G2G).

These systems belong to departments or organisations under the

- Central Government Ministries
- State Governments
- Local Bodies (Governments)
- Autonomous Bodies
- Railways
- Defense
- PSUs
- Reserve Bank of India (the central bank for India) and the Core Banking Solutions.

Many of these systems are a part of MMPs under NeGP, especially those belonging to the Central Government ministries, State Governments and the local bodies.

The audits done under MMPs are:

## Central MMPs

- Banking - The J&K Bank and RBI Relief Bonds
- Central Excise & Customs - Electronic Data Interchange based Indian Custom Electronic Data Interchange System (ICES)
- Income Tax (IT) - Assessment Information System of Income Tax Department (AST) and e-TDS system
- Insurance - The systems in all major PSU insurance companies, including Enterprise Resource Planning (ERP) based systems
- Pension - Pension system in the Regional Provident Fund Commissioner's offices.



### State MMPs

- Agriculture - IT systems in agriculture departments in Tamil Nadu and Maharashtra
- Commercial Taxes - IT systems in Orissa and Haryana
- Employment Exchange - IT systems in Maharashtra, Kerala, West Bengal and Tamil Nadu
- Land Records - Computerised Land Records systems in Chhattisgarh, Madhya Pradesh, Goa, Gujarat, Uttar Pradesh, Maharashtra, Tamil Nadu, Bihar, etc.
- Municipalities - IT systems in Kalyan Dombivili Municipal Corporation, Hyderabad Municipal Corporation, Chennai Municipal Corporation, etc.
- Property Registration - IT systems in Rajasthan
- Police - Crime and Criminal Information System (CCIS) in Tamil Nadu
- Road Transport - Computerised road transport systems in Bihar, Jharkhand, Maharashtra, Meghalaya, Tripura, Mizoram, Delhi, etc.
- Treasuries - Computerised treasury systems in Assam, Chhattisgarh, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Uttar Pradesh, Kerala, etc.

### Integrated MMPs

- e-Procurement - Audited in Andhra Pradesh.

Systems functional under most MMPs have been audited and it is intended to audit all functional systems under MMPs in all the states.

Audits conducted on IT systems not covered under MMPs are:

#### Central Government

Systems like Online Management and Monitoring System (OMMS) for the flagship Prime Minister's Gram Sadak Yojana, VSAT based Money Order System, Sanchay Post System and Computerised Postal Life Insurance System in Department of Posts, Issue of Relief Bond 2002 by RBI, Pension System in Regional PF Commissionerate - Kolkata have been audited.



## Indian Railways

Most important systems in Indian Railways have been audited like the Passenger Reservation System and Unreserved Ticketing System which cater to millions of beneficiaries, Advanced Financial and Railway Expenditure Management System (AFRES), Pay Roll & Independent Modules (PRIME), etc.

## Central and State PSUs

Systems in most of the important Central PSUs have been audited. The emphasis of IT Audits in PSUs has been on the financial systems and the inventory/material management systems apart from the comprehensive and complex ERP systems. The systems have been audited in companies like the Indian Oil Corporation, Oil and Natural Gas Corporation (ONGC), Hindustan Petroleum Corporation Limited (HPCL), insurance companies like the National Insurance Company, New India Assurance Company (NIAC), Oriental Insurance Company (OIC), the coal mining companies like Northern Coalfields Limited (NCL), Western Coalfields Limited (WCL), and Coal India Limited (CIL), Hindustan Aeronautics Limited (HAL), Bharat Electronic Limited, telecom companies like Bharat Sanchar Nigam Limited (BSNL), Mahanagar Telephone Nigam Limited (MTNL), etc.

Among the state PSUs, the emphasis has been on the audit of public service companies, especially billing systems in electricity billing companies.

## Autonomous Bodies

IT systems in Indian Meteorological Department, Indian Institute of Kharagpur (payroll system), Small Industries Development Organisation (SIDO), Jawahar Lal Nehru Port Trust, Mumbai Port Trust, Kolkata Port Trust, Ram Krishna Mission, etc. have been audited.

All IT audit reports placed on the floor of Parliament and State Legislatures can be seen at <http://icisa.cag.gov.in/itaudit.aspx>.

Thus, SAI India has a vast coverage in terms of the number and type of organisations, businesses and IT systems.



## Results and Outcomes of IT Audits

IT Audits by SAI India have focused on the issues of IT Controls and Governance in the systems that have been audited.

Important issues like IS security, policy framework, system design, business rule mapping, applications controls, etc. have been raised in most of the audit reports. General assessment of these is as follows:

- Top management involvement has been minimal.
- Management awareness on IT security has been found to be low.
- Strong password policies have been found to be absent.
- Change management controls have been found to be absent.
- Focus on training has been minimal.
- Outsourcing of various activities is adhoc.
- Monitoring with use of MIS reports has been minimal.
- Acceptance testing has been absent or inadequate.
- Involvement of users has been minimal.
- Master data maintenance needed improvement.
- There have been inevitable time overruns.
- Data has been found to be incomplete, unreliable and non-validated.

### Positive Outcomes/Changes Resulting from IT Audits

- A clear picture has started to emerge about the reliability and integrity of IT applications working in the government and related organisations in the country.
- The citizens have a reference point to know more about the effectiveness and robustness of the computerisation projects directly affecting their lives.
- It is also becoming obvious that investments in IT for development, acquisition and implementation need to be controlled using a structured methodology to optimise value for money and also to see that the outcomes of these IT initiatives are as desired, accurate and reliable.

## International Centre for Information Systems and Audit (iCISA), Noida

iCISA was established as the International Training Centre of SAI India. The centre has been rendering significant service to the Indian Audit and Accounts Department as a premier training institute since March 2002. It has also been doing the same for officers from other government departments and also for overseas participants belonging to various Supreme Audit Institutions. It has been raised, equipped and developed as an elite organisation to impart quality training and to act as a centre for excellence in information systems and audit of information systems. iCISA is an ISO 9001:2000 and ISO 27001 certified institution which strives for ensuring quality systems in training and alignment of IT with global best practices.

iCISA has trained 579 professionals from 94 countries for auditing in IT environment through 20 international training programmes. It has trained over 1300 officials of SAI India. In addition, 69 officials from the executive on IT Governance and Management have also been trained at iCISA.

iCISA has served as a hub of IT Auditing in India by SAI India and houses the IT Audit wing of SAI India.

iCISA has its website <http://icisa.cag.gov.in/> and hosts the IT Audit link (<http://icisa.cag.gov.in/itaudit.aspx>) for SAI India.



## International Cooperation on IT Auditing

SAI India is an active member of INTOSAI and ASOSAI working groups on IT Audit. It also has been involved in various bilateral arrangements for capacity building and knowledge sharing. The highlights are:

- SAI India has been the chairperson of the Working Group on IT Audit, formerly known as INTOSAI Standing Committee on IT Audit (ISCITA) since its inception.
- SAI India was a Member of the ASOSAI sixth Research Project team (IT Audit Guidelines).
- SAI India has participated as a member of INTOSAI Task Force on e-governance.
- SAI India was one of the speakers at the United Nations Seminar on e-Governance in Vienna in 2005 and chair of the working group of English speaking countries.
- SAI India has carried out capacity building in IT Audit in countries like Bhutan, Oman, Botswana, Saudi Arabia, Maldives, Uganda, Mauritius, Seychelles, etc.
- SAI India has partnered UNDP to train officials of SAI Iraq in IT Auditing.
- SAI India created an e-learning course for IT Controls for INTOSAI.
- SAI India has been conducting month long international training programmes on IT Audit at iCISA every year.
- SAI has been involved in the audit of:
  - Integrated Management Information System at UN Headquarters
  - ERP System in FAO in Rome
  - ERP System in WHO Headquarters in Geneva.

These partnerships and engagements are growing. SAI India's endeavour is to provide able leadership in the area of IT Auditing to all SAIs.





*Mr. Vinod Rai, CAG of India*

IT Audit is another important area where constant refinements are taking place, emerging from the ever expanding application of IT in government and public sector. IA&AD has splendidly responded to these challenges and is organisationally fully geared up to face them. However, given the very complex nature of these applications and fast developments in IT, audit has to remain ever vigilant and updated on the knowledge acquisition and its application.



I am happy to note that CAG's team received the Prime Minister's Award for Excellence in Public Administration for its pioneering work in the field of Information Technology Auditing. This is very much in line with the country's robust world-wide reputation in the field of Information Technology and the Government's move towards e-facilitation in the provision of various public services.

Smt. Pratibha Devi Singh Patil, President of India  
(14<sup>th</sup> October, 2008)



The Government has embarked on a massive National e-Governance Action Plan for increased use of Information Technology. This is expected to catalyse good governance. I am happy that the Comptroller and Auditor General's core competence in IT audits has been internationally recognised in the auditing fraternity. I recall that the IT Audit initiatives of the Comptroller and Auditor General have bagged the Prime Minister's Award for Excellence in Public Administration last year. I hope that the good work done in this direction will continue in the future too.

Dr. Manmohan Singh, Prime Minister of India  
(16<sup>th</sup> October, 2008)



## COMPTROLLER AND AUDITOR GENERAL OF INDIA

Website: <http://www.cag.gov.in>; <http://icisa.cag.gov.in/itaudit.aspx>

For further details please contact:

Sunil Kumar Bahri, Director General (IT Audit), e-mail: [bahrisk@cag.gov.in](mailto:bahrisk@cag.gov.in)

N. Nagarajan, Principal Director (IT Audit), e-mail: [nagarajann@cag.gov.in](mailto:nagarajann@cag.gov.in)

Neelesh Kumar Sah, Director (IT Audit), e-mail: [sahnk@cag.gov.in](mailto:sahnk@cag.gov.in)