# Designing an Appropriate MIS for Efficient Resource Management

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The size of India's total Defence Budget of Rs.1,05,600 crore, representing 14.1 per cent of total Central Government expenditure, which place it among the top ten defence spenders; coupled with the size of the defence forces and their presence even at remote and difficult locations starting from freezing Siachin Glacier to deep Indian Ocean and vast sky covering the country add to the complexities with which allocation and efficient utilization of scarce resources has to deal with. Even more so, India as a developing country is looking for more resources to achieve a satisfactory rate of growth and development. The need for a system for efficient resource allocation across the forces and its effective utilization is more than desired.

The Defence Accounts Department (DAD) has been a pioneer in using automated system since 1931 and even today has a very good automated budgeting and accounting system. However, there are certain gaps in the over all Defence Budgeting and expenditure control mechanism which makes it lacking of reliable and timely receipt and expenditure data for budget planning, monitoring, expenditure control, and reporting. The results have been over/under utilization of financial resources indicated by excess spending/savings by executive authorities in certain budget heads undermining the effectiveness and efficiency Resource Management. Further, it has been found difficult to provide an accurate, complete, and transparent account of their financial position to Parliament or to other interested parties, including donors and the general public. This lack of information has hindered transparency and the enforcement of accountability.

Because of above such reasons, organisations in many countries have started adopting a Financial Management Information System (FMIS) projects to strengthen their Public Expenditure Monitoring Systems. The establishment of an FMIS has consequently become an important benchmark for the country's budget reform agenda, often regarded as a precondition for achieving effective management of the budgetary resources. Although it is not a panacea, the benefits of an FMIS could be argued to be profound. *First*, the improved recording and processing of government financial transactions also allows prompt and efficient access to reliable financial data. This supports enhanced transparency and accountability of the executive to parliament, the general public, and other external agencies. *Second*, an FMIS

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strengthens financial controls, facilitating a full and updated picture of commitments and expenditure on a continuous basis. Once a commitment is made, the system should be able to trace all the stages of the transaction processing from budget releases, commitment, purchase, payment request, reconciliation of bank statements, and accounting of expenditure. This allows a comprehensive picture of budget execution. *Third*, it provides the information to ensure improved efficiency and effectiveness of government financial management. Generally, increased availability of comprehensive financial information on current and past performance assists budgetary control and improved economic forecasting, planning, and budgeting.

## Features of FIMS

In terms of terminology, a FMIS usually refers to computerisation of Public Expenditure Management processes including budget formulation, budget execution, and accounting with the help of a fully integrated system for financial management of the Ministries, Service Headquarters and other spending authorities. The full system should also secure integration and communication with other relevant information systems. As of the integration requirement, the FMIS is commonly characterized as an Integrated Financial Management Information System (IFMIS). Unfortunately, using the term "Integrated Financial Management Information System" can sometimes be erroneously interpreted as describing a system that can capture all the functional processes, and the relevant financial flows, within public expenditure management. However, the complexity of information systems within the government sector is, to a large extent, due to the multiplicity of functions and policy areas. As the name implies, there are, and should be, three guiding characteristics for a well-designed FMIS:

- *It is a management tool:* It is important that FIMS caters to management needs—not just those of the central agencies, but also line agencies. Moreover, as a management tool it should support the management of change. As an integral part of budget system reform it should support those needs that are likely to arise as parallel budget reforms are implemented.

- *It should provide a wide range of non-financial and financial information:* As a tool of management it should provide the information required for decision making be it financial or non-financial resources, which would be useful for efficiency and performance evaluation, resource mobilization.

- *It is a system:* Its role is to connect, accumulate, process, and then provide information to all parties in the budget system on a continuous basis. All

participants in the system, therefore, need to be able to access the system, and to derive the specific information they require to carry out their different functions.

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### ATTRIBUTES OF A WELL-DESIGNED FMIS

- Be modular, and capable of progressive upgrading to cater to future needs;
- Offer a *common platform* and user interface to the stakeholders in different agencies responsible for financial management, for adding to and accessing the information database (in its absence each agency will have the incentive to develop "its own" FMIS to meet its currently perceived needs);
- Maintain a historical database of budget and expenditure plans; transaction data at the highest level of detail; cash flows and bank account operations including checks issued, cancelled, and paid, cash balances and floats;
- Have dedicated modules to handle monthly, rolling, short-term (one to three months) and longer-term (three months to end of year) forward estimates of revenues, and expenditures prepared by agencies, and corresponding estimates of the resulting cash flows;
- Have built-in analytical tools to offer trend analysis of various elements of fiscal operations to permit a forward look at the emerging events bearing on the fiscal stance;
- Compile formal government accounts from the database of authorizations and cash allocations, primary revenue and expenditure transactions of the agencies; and treasury operations, avoiding the need to duplicate data entry for accounting purposes;
- Enable real-time reconciliation of parallel but related streams of transaction data—at the agency level: cheques issued with those paid by the banks; at treasury: receipts from banks with the cheques paid by taxpayers; cash balances reflected in the agency ledgers with the cash balances in the banks;
- Mechanize all possible routine tasks at the central and spending agencies—generating various forms/authorizations, checks, outputting hard copies of key registers and statements, etc; and
- Be flexible enough to provide user-defined management information, aggregated at the desired level of detail, from the database.

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Although the FMIS does not capture all the information flows, adopting a comprehensive approach in the development of the project is fundamental to ensure that all functional interdependencies are identified, hence securing the capture of all related information flows. FMIS should be taken in a broader context of interrelated information systems and involves the main functional processes from medium-term planning and budget preparation to budget execution and accounting.

A FMIS can be a vehicle for change. Experience indicates that a FMIS will induce several reforms in existing systems, including:

- *Structure of the budget and the accounts:* Introducing an FMIS necessitates unifying the codes and classifications (both the budget classification and the chart of accounts). These should be maintained at a central level. The reporting requirements are the basis for defining the structures of these codes and classifications. The new budget classification structure and chart of accounts should be compliant with the prescribed classification framework.

- *Main budgeting and accounting principles:* Typically, it should follow the main budgeting and accounting principle as adopted for various set of government, be it Cash-based accounting or Accrual-accounting, so that transactions are more transparent and able to reflect true picture to the users.

- *Cash management:* To ensure that the budget and accounts are comprehensive, it is essential that all the cash flows be channelled through the FMIS, and hence that all transactions, both receipts and payments, are processed by the FMIS, including the payroll payments. The FMIS could also aim at rationalizing the government banking arrangements and establishing a treasury single account for optimizing the management of government cash balances.

- *Control structure*: The design of the FMIS should introduce an improved system of internal and external controls for financial management. The internal controls regulate the cycle of recording, analyzing, classifying, summarizing, communicating, and interpreting financial information. The internal audit function helps the management in evaluating and assessing compliance with these controls. The external control system is exercised through external auditing carried out by the supreme audit institution.

Designing of Financial Management Information System (FMIS)

The objective of designing a Management Information System for an organisation is dependent on following aspects:

- Policy, objective, functions and activities of the organisation including financial need of projects/activities at various stages;

- Information needs of the decision-makers, intermediate levels including formulators and implementers; other stake-holders, including customers; general public since we are referring mainly to Government/Public organizations;

- Availability of information along with its sources, channels of communication, stages and processes through which it will be made available;

- Interface available with other systems and security measure installed for prevention of pilferage of data;

- How manual intervention could be minimised in capturing the data/information and its analysis, what, where and how much technology could assist in the entire process;

- Standard data classification for recording financial events;

- Internal controls over data entry, transaction processing, and reporting;

- Common processes for similar transactions and a system design that eliminates unnecessary duplication of data entry; and

- In-built process of validation of data and ensuring the correctness through different channels/streams.

## Complexities in the Indian Defence Setup

Considering the volume of Defence Budget in India, wide spread presence of Indian Army, Navy, Air Force, Coast Guard, Border Roads Organisation and other supporting formations who are working in areas where others do not dare to reach normally. Large number of spending authorities and different practices being followed by them based on their organizational needs and availability of resources, suppliers etc. makes it very complex and difficult proposition for those who keep track in monetary form of all transactions. Again, the fund flow of Rs. 1,05,600 cores, which is 14 per cent of Indian Governments annual budget, in the above mentioned transactions, its reconciliation involves herculean task for 33 Regional Controllers and 43 Pay and Accounts Officer (PAOs) and 225 Drawing & Disbursing Officers (DDOs) of the DAD who constantly monitor the flow of expenditure and reconcile with more than 2500 Bank branches and other lower accounting formations co-located with the spending authorities. This information flows in hard copies, soft data, as the case may be, from spending authorities/holders to 30 Accounting Circle,

and further to 30 data processing centres (DDP Centre) who feed it in the system, validate and compile before forwarding to EDP Centre of CGDA, New Delhi for generation of All India Expenditure figure. Apart from expenditure on normal maintenance, purchases of stores, another important area remains disbursement of Pay & Allowances to more than 13 Lakhs defence personnel located at the remotest places; maintain their Provident Funds and other related information; disbursement of Pension to around 22 lakh defence pensioners in different parts of the country.

## Financial Reporting System: Present Scenario in Defence Accounts Department

Amongst the various Departments under Government of India, Defence Accounts Department (DAD) has been the pioneer in introducing automation in the workplace. In 1931, Hollerith machines were introduced for processing All India Compilation of Defence Receipts and Charges. The first computer in the Department, an IBM-1401 was installed in 1969 in Meerut, where all India Financial Compilation of 50,000 Pay & Fund Accounts of soldier and Provident Fund accounts of Defence civilians were computerized. Even today, DAD is amongst first to deliver All India Monthly Compilation to Ministry of Finance by 5$^{th}$ of the following month, after close of the month.

Through the connectivity with 77 locations through MPLS based Virtual Private Network (VPN) based Wide Area Network (WAN); DAD is able to consolidate the expenditure data which is used to generate monthly All India Compilation Report to MoD and CGA by 5$^{th}$ of the following month, still there is long way to go in providing real time allotment/expenditure figures which will really help defence planners in budgetary monitoring.

In DAD, we generate various reports and statements and our users are located within DAD, within defence set-up and external users. The users outside the defence set-up include Ministry of Finance, Controller General of Accounts (CGA), Central Pension Accounting Authority (CPAO), and Director General of Audit Defence Services (DGADS). Information on status of pensions, pay, and contractor bills are also available to the concerned users by providing access through web after proper authentication of identity and other information for general guidance and other related recent happenings.

Users within the Defence set-up include Ministry of Defence (MoD), Service Headquarters & Directorates, Command Headquarters, Units, etc.

Reports and Statements

15 monthly Standard Financial Account Reports are generated, some of the important reports are:

- Consolidated All India Compilation of Receipts and Payments,
- Consolidated Report of Receipt, Debt & Remittances (RDR),
- Directorate-wise Report,
- GOC-in-C (Command- wise ) Report,
- Purchase of Stores Report,
- Foreign Exchange Payment Report.

Statements with different periodicity are submitted, apart from Ministry of Defence and Service HQrs, to Ministry of Finance – CGA, DGADS, CPAO etc. These statements include:

- Statement of Central Transactions (SCT),
- Appropriation Accounts for Civil,
- Reconciliation of Balances with RBI, SBI and other banks,
- Defence Pension Budget and Civil Pension Budget, etc.

The analysis of reports is carried out regularly and wherever unusual trends of bookings are observed, these are analyzed, also wherever any misclassifications are noticed; it is brought out to the notice of concerned spending authority/controller for taking corrective measures. Regarding items wherever special attention is required because of specific requirement of users, like monitoring of Capital expenditure etc., same are extracted and reported to the concerned authorities for necessary information/action.

## Brief of some of the FMIS Reports from DAD

Some of the major reports provided by DAD are described briefly as under:

- *Consolidated All India Compilation Report:*
  - This indicates current and progressive figures under each Major, Minor, Sub and Detailed Head-wise expenditure booked along with the allotments.
  - The analysis report provides current and progressive figures separately

for each Controller and under each classification code head.

- It helps in monitoring the progress of expenditure vis-à-vis availability of funds. Wherever critical levels are approaching, necessary action could be initiated in advance.

- Wrong booking, if any, may be identified and corrective action may be initiated in time in order to provide correct position of availability and utilization of funds.

- *Consolidated Compilation of RD&R heads:*

  - RD&R heads compilation provides the current and progressive figures separately for each Controller and under each classification code head.

  - Review of this compilation helps in review of Suspense heads and other important heads like 020/80, 020/81, 020/83 and 21/00.

  - It helps in preparation of various reports like Appropriation Accounts, Statement of Central Transactions (SCT), Combined Finance & Revenue Accounts, and Finance Accounts etc.

- *Purchase of Stores for Defence Services:*

  - This compilation shows progress of expenditure with respect to source of procurement of stores i.e. DGS&D, FCI, procurements made by APO etc.

  - It shows current and progressive expenditure in respect of each Controller and code head each category wise.

- *GOC-In-C wise Compilation of Receipts and Charges:*

  - This shows current and progressive figures under each Major, Minor, Sub and detailed Head of Account of each Command wise.

  - The Command can monitor the progress of expenditure each Minor Head wise & Code Head wise against budget allocation.

The portion relevant of Consolidated All India Compilation Report is forwarded to each Service Headquarter and Directorates for monitoring, gap analysis with respect to their Monthly Expenditure Report (MER), necessary review, and other desired actions at their end. Similar reports about progress of booking expenditure vis-à-vis availability of funds are forwarded to Command Headquarters and other formations by the Controllers. Review meetings with the Executive authorities/Budget holders are being held on regular basis.

Limitations of the Existing Reports

Though the above mentioned reports and statements are serving the purpose to a great extent, however, there are certain limitations in the existing systems which are as under:

- *Real-time information is not available:* Batch-processing, time-gap in incurring and booking of expenditure, delays in submission of accounts, etc.

- *Reports are not user-friendly*: Large number of code heads, string of numbers and codes.

- *Checks on fictitious code heads*: Gaps in validation of code heads, delay in rectification process.

- *Quality/Reliability of data*: It suffers because of delay in transfer of data/information, corrective measures, reconciliation, lack of feedback from users, etc.

- *No feed-back from users*: Information requirements, correctness of data, improvement desired, better flow of data, etc.

- Lesser options for customized reports, access restrictions, and lack of sharing of information/data among users reduce the usefulness of the data/information gathered and efforts gone into it.

Leveraging of IT

With the introduction of new technologies in the field of data processing and communication, it becomes very easy to process huge data, without limitation of distance. It has helped in quicker and qualitative decision making. The advantage of application of Information Technology includes:

- *Processing Speed*: Huge data can be processed within a short span and reports could be generated almost instantaneously.

- Degree of confidentiality, detail, summary, and consolidation may be defined.

- Speed of travel and less human intervention in processing and handling.

- *Communication*: Number of intended users may be defined.

- *Security of information*: Level of access, identity authentication, and security in communication/transfer channels can de built.

- *Quicker Decision-making*: Further analysis, comparisons, etc. can be made quickly with help of soft data than manual processing, thereby, reducing time of decision-making.

- *Efficient Resource Allocation*: Quicker availability of information/data coupled with speedier decision-making and its compliance help in efficient allocation and utilization of resources.

## Some other Initiatives at Controllers' Level to Generate MIS

Few paying Controllers in the Defence Accounts Department have taken initiatives to provide easy access to general public, contractors & suppliers, pensioners, and serving officers through Internet based system on status of payment of bills and expenditure details. A few of them are as under:-

- *PCDA Southern Command*: For external users, i.e. suppliers and contractors the website of PCDA (SC), Pune, provides information related to status of bills submitted by suppliers/contractors and which stage of processing these are. For higher authorities, including Command headquarters, it provides for information related to progress of expenditure with respect of fund allocations and other MIS reports. The concerned information to the user is available only after verification of user id and password.

- *PCDA (Pension):* The website of PCDA (Pensions), Allahabad, provides the information related to the status of pension commission officers as well as PBORs once their name and IC/Regimental number is entered.

Figure 1: Website of Principal Controller of Defence Accounts, Ministry of Defence

Figure 2: Homepage of the Principal Controller of
Defence Accounts (Pensions)
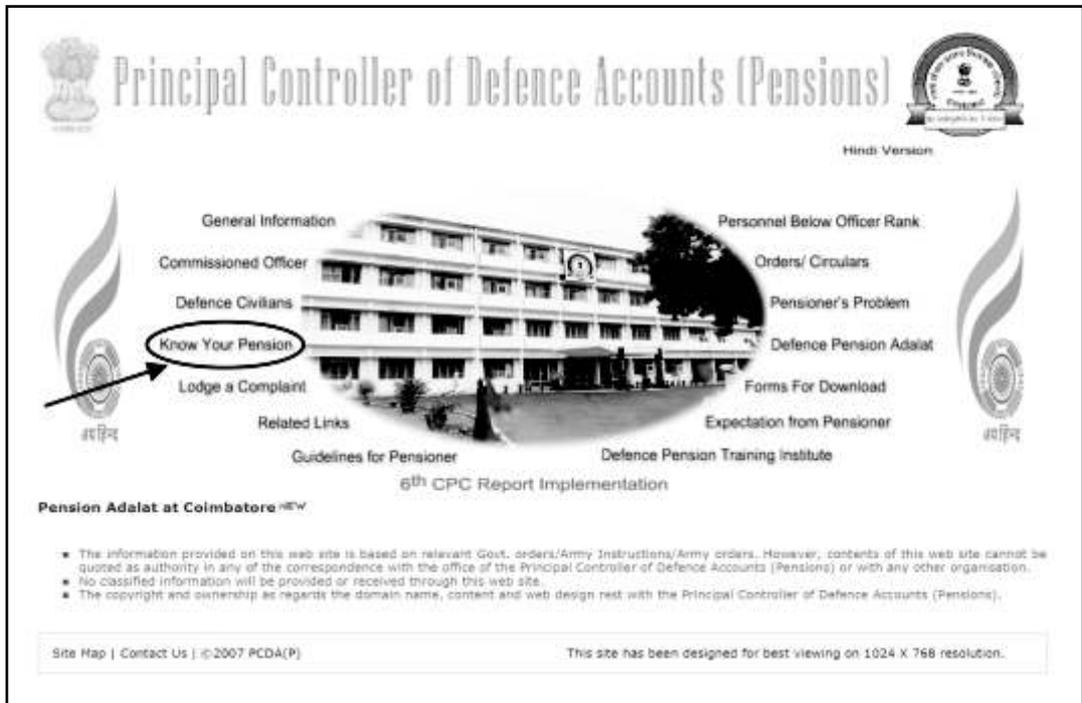


Figure 3: Website of Principal Controller of Defence Accounts (Pensions)

Similarly, limited initiative has been undertaken by CDA(Officers), Pune regarding the position of Provident Funds and Income Tax related information on interactive basis. However, guidance in terms of rules and procedures etc. related to various subjects is already available on websites of most of the controllers.

## Mission Excel IT (MEIT)

In order to overcome limitations of the existing reporting system CGDA have envisaged for Mission Excel IT (MEIT), which aims at complete automation of the financial function of the department. Certain grouping has been done in the modules based on the type of information, user groups, and common functionalities of the organizations. There are 9 modules under implementation under MEIT. These modules have been designed to cover entire spectrum of the function of the department right from payment (personnel/store) functions, audit and IFA functions to Pension module.

## Defence Budget Monitoring, FIS, MIS and PM

One of the modules of MEIT has been Financial Information System (FIS), Management Information System (MIS) and Project Monitoring (PM) module which is a comprehensive solution for higher management needs for decision making related to planning, monitoring, and controlling of Defence Budget.

- *Objective*: Collection, consolidation and compilation of information from various locations required for planning, monitoring & decision making purposes
- *Proposed Methodology:*
  - Development of central web-based system providing restricted/relevant access to MOD, DAD, Non-DAD and other users.
  - Central web-based system to collect relevant data/information from the local servers installed at local data processing centres.
- *Three sub modules:*
  - Financial Information (FI)-FI shall have all financial information related to expenditure, budget and committed liabilities.
  - Management Information (MI)-MI module shall have selected information from other MEIT systems in the nature of an information portal of other activities of the Department. For example, vendor databases, DGS&D purchases, pay & allowances, CHT contract, stores & works, contracts and other related information.

- ● Project Information (PI)-Project related information shall have data/information related to various projects undertaken-project proposal, project sanction, project funding, tender purchasing committee, physical progress and project closure.

The FIS to be installed practically in all the offices of the Department except AAO GE, AAO BSO, LAO including all MOs, all sub-offices (PAOs, DPDOs, Area Accounts Offices). The FIS architecture has mainly two layers of data base/system servers - one at Central FIS and second level at Local FIS system. Both level have interface with each other and keep on updating each other on real time basis. FIS Module will be mainly transaction based whereas MI Module is mainly a repository of information, for analysis and generating various MIS reports and tools.

Central Financial Information System (CFIS)

This will be placed at CGDA EDP Centre and will be responsible for maintenance of masters related to Budget Centre Units (BCUs); Budget Allocations, except locally controlled heads; and Code Heads.

Local Financial Information System (LFIS)

The LFIS will be responsible for maintenance of masters related to locally controlled heads; capturing the expenditure data from punching medium etc.

Figure 4: Mission Excel IT
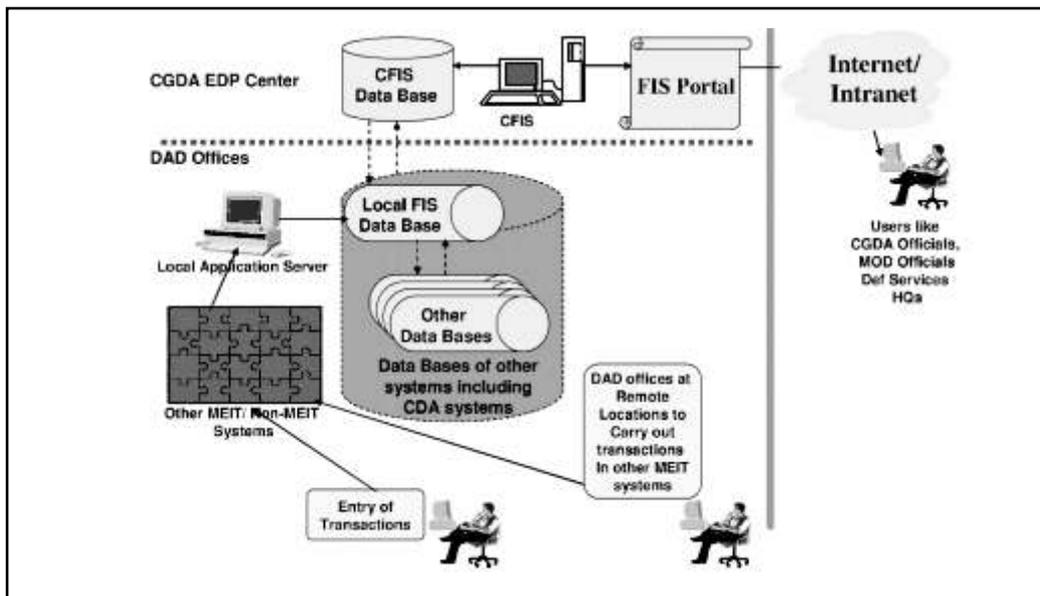
Budget Centre Units (BCUs)

Another key factor in the system will be BCUs, which will help in tracking budget allocations in different heads to a unit/spending authority from one or more sources, referred as parents, and expenditure will be monitored and controlled with respect to allocations. This will keep track of budgetary allocations and expenditure across the organisation. BCU includes Budget Holding Units, Budget Spending Units, Budget Holding & Spending Units and Geographical Units. It will have a unique code of 12 characters based on Parent-Child relationship.

The key aspects considered in the system are:

- Retaining the strength of the existing system.
- Real time information.
- Online connectivity to major users.
- Budget centre-wise information.
- Information on Committed liabilities.

## Advantages of the New System

The new system of DAD is likely to provide following advantages over the existing system:

- Real time information.
- Budget Centre-wise progress of expenditure with respect to allotted funds.
- Project/Scheme progress, source of procurement.
- User friendliness, easy maneuverability and option of customized/query based reports apart from standardized ones.
- Proposed limited access to decision makers in MoD, Services Headquarters, Directorate & Commands, based on their requirements.
- Will help in gradual move to Accrual Based Accounting system once Government directs MOD to implement it as system will be capable to capture the liabilities and future cash flows.

Status of FIS/MIS/PM Project

The system has completed its lab testing and progressing for further trials and is likely to be in place during next Financial Year.

## Conclusion

It is expected that after the implementation of FIS, the defence planner may have real time expenditure figure available which may help them in proper planning of the budget, effective resource allocation, monitoring it and avoiding large scale surrenders. This will bring not only economy and efficiency in defence expenditure but will be able to establish a link between planning and budgeting. The system being implemented would be capable to capture liabilities/assets figures and help smooth transition to accrual based accounting system whenever Government directs the MOD to implement it. *idsa*

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