

➤ **Mizoram State e-Governance Society**
**Department of Information &
Communication Technology**
Govt. of Mizoram



I M S

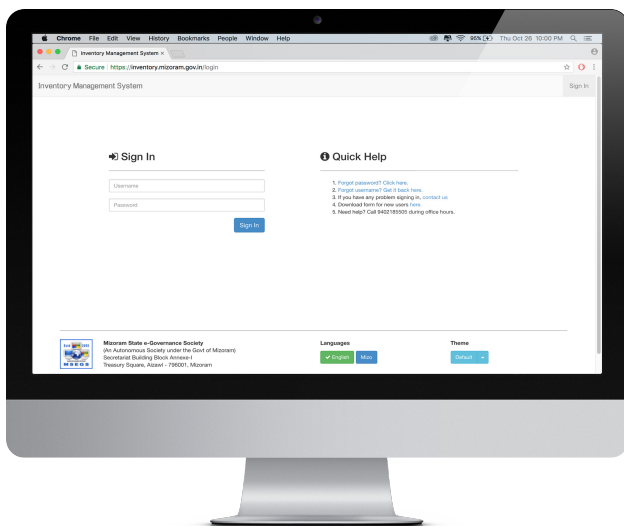
Inventory Management System

<http://inventory.mizoram.gov.in>

Documentation financed by:
Department of Administrative Reforms & Public Grievances,
Ministry of Personnel, Public Grievances & Pensions

00

Preface



Inventory Management System (IMS) is a project developed by Department of Information and Communication Technology initiated by Mizoram State e-Governance Society. Under this project, it has been envisaged to enable the approval of certain indent items to the officer of the concerned department through appropriate automated system.

It is an important enhancement of the State's e-Governance implementation programme, in which a major G2E service is delivered by leveraging Information & Communication Technology. The automation of workflow through a comprehensive automation of backend process within the department considerably reduced the troubles of the concern officers in their indent process of the required item.

Government of Mizoram has displayed its willingness and resolved to have institutionalized focus on e-Governance implementation in the state. The Govt. has constantly endeavoured to set high benchmarks for itself in areas such as growth and development and general administration which are critical pointers to the overall well-being of the citizens. Realizing the effectiveness of e-Governance in bringing about marked differences in the quality of services to the citizens and in increasing the internal efficiency of the administration, the government has resolved to extensively promote and patronize initiatives that aim at a phased transformation of its largely manual processes to a process driven digital governance system that is user friendly, accountable and transparent in nature. The implementation of an efficient and effective workflow system in the department reduces the workload of the officials, and enables fast processing of submissions. Also, this helps in faster retrieval of data and records, keep track of indent history and offers high degree of convenience within the department.

01

Overview

Inventory Management System (IMS) is implemented by Mizoram State e-Governance Society (MSeGS) which is rolled out to Secretariat Administration Department, Government of Mizoram as a pilot project and has been empanelled to assist the department in implementing the project.

The project is envisioned in two phases wherein in phase I conceptualization and developing framework for process improvement is being covered. This translates into a detailed AS-IS assessment

study followed by a comprehensive exercise of Government Process Re-engineering for proposing process improvement for the selected service. Subsequent to this, development of software and application based on the proposed solution will be taken up. In phase II of the project, project entered into actual implementation and the solution was rolled out for access and utilization by the department.

MSeGS has employed an established 'Process Improvement approach' framework comprising 6 stages viz. Objective

The screenshot displays the Inventory Management System (IMS) web application interface. The browser address bar shows the URL <https://inventory.mizoram.gov.in>. The page title is "Inventory Management System". The navigation menu includes: Indent, Users, Items, Stock, Message, Report, Help, Settings, Profile, and Sign Out.

Welcome

Summary Cards:

- Pending Indents: 2
- Pending Requirements: 916
- Pending Damage Reports: 0
- Out of Stock: 79

Indents Table:

No.	Indentor	Total Indents	Status
1	Pratap Chhetri	18	Dispatched
2	Zonunpari	13	Dispatched
3	V.Lalhimpuii	1	Dispatched
4	C. Lalnunpuia	1	Dispatched
5	C. Lalnunpuia	1	Dispatched

Less Stock Products Table:

Product No.	Product Name	Quantity
No Low stock items		

Latest Messages Table:

No.	From	Date
No Notifications		

Setting, Data Capture, Analysis of data, Prioritizing, Synthesizing and Developing Roadmap to meet the project deliverables. A participatory approach has been adopted to identify the existing stakeholders, process steps, information flow (data capture and movement), inputs and outputs for the process and potential improvement areas in the processes. The concerned areas, needs and expectations of the stakeholders have also been captured. All these have been achieved through meetings, focused group discussions and data collection through structured questionnaires, checklists, etc. the data captured in this phase helps to understand the present delivery mechanism of the services along with actors and participants involved in service delivery. Also, present level of automation along with level of preparedness of IT infrastructure and human resource capacities pertaining to ICT intervention have been captured to establish the areas of concern if there are. Being the first report delivered, the As-Is report covers the details of the existing work flow processes and the systems used by the department administration, the detailed cross-functional process maps for each process, the current service levels, the IT infrastructure in place and other relevant information for all the categories of services identified to be implemented under this project.

The report is prepared based on the inputs from the respective process owners i.e. by the government officers and through observations. Inventory Management System is a tool to manage product inventory

and manage indent requisition process in a department store/stationary. Using this system, department officials can get information about product stock and indent request information at any instance of time from their desk. Inventory Management System has inbuilt messaging facilities that enable quick and instant communication among software users.

Unique features of the services provided on the inventory management system website are as given below:-

1. The administrator dashboard has graphical reports of all Pending Indents, Pending Requirements, Pending Damage Reports, Out of stock items, Record of all indents made, Less stock product (warning), latest messages, SMS based notification system etc.

2. The storekeeper has an option to report damaged items to the administrator with or without stating the reasons. The administrator in turn, can accept the report or reject it.

3. The storekeeper upon updating the stock can set 'reserved stock quantity'. This update gives a warning to the administrator regarding the requirement. Moreover, an administrator will be able to view an item when the stock drops down to the reserved level. This also enables the storekeeper to notify the concerned authority and so that a hassle-free addition of stock can be made in due time.

4. A messaging system is one of the unique features which enables internal

communication between the indenter, storekeeper and administrator.

5. Product reports page enables the storekeeper and administrator to monitor the current stock level in real time, the requirements made, indent items, dispatched items and damaged reports.

6. The IMS is equipped with unique help page which provide a clear guideline of the system. A new / untrained indenter can simply view the videos on the help page and simply follow the steps on his own with ease.

7. Language option in English and Mizo is a unique feature which enables easy operational efficiency by the indenters.

8. IMS has a theme selection feature and users have the freedom to select 15 themes apart from the default theme.

02

Challenges Before

In the pre IMS implementation, there have been problems of double and multiple indentations of commodities, creating a cascading burden for the storekeeper and the department as a whole.

For instance, before a commodity is produced, the indenter first filled up a chit-form which is submitted to the storekeeper. The storekeeper checked for availability and if items were not available, the storekeeper notified the indenter and the process ended there. On the other hand, if items are available, the storekeeper would dispatch the items based on the indenter's chit-form. However, no personal records of indenters were maintained. This caused an unfair double indents with cascading effects.

With the introduction of Inventory Management System, this double and frequent indents are checked as the IMS keeps up to date records of all indents thereby abolishing unfair methods. The internal operations of the department are not computerized, the manual system used does not provide the means for tracking individual officer of their indent history, the indenter can make a request of the item as frequent as he wished since no tracking of history is done. Almost all the processes are



manual and paper driven, with a number of duplications and repetitive activities. The information is available only with the storekeeper and items have to be checked for availability by manually going to the storehouse.

Since the department sections are at varying level of automation and have different types of application implemented, the challenge is to integrate the departments' initiative with the project. It takes a fair amount of time to check for the availability of items and then formally submit an indent request. There is a huge challenge in integrating the proposed IT infrastructure with existing system followed by SAD administrative framework.

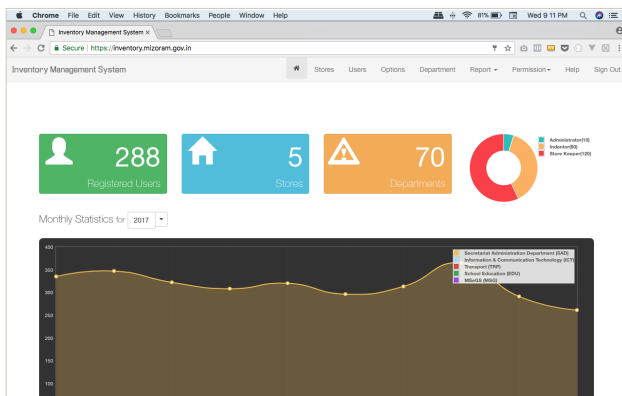
Administrative stability needs to be ensured starting from the implementation of the project. Important challenges which need to be noted are financial limitations, financial support for consultations, software development, procurement of hardware and capacity building etc. where not only SAD department but most of the department in Mizoram keeps very limited or none for IT in their yearly budget. Lack of infrastructure is a big challenge as the suggested application is online based which requires constant, uninterrupted internet connectivity and power supply.

SAD has their office set up at New Secretariat building which faced frequent internet connectivity problem and power disturbance. Once the application is online any failure in network connectivity or power supply will result in functioning failure of indenting system. Even though there is LAN within the department, the whole system has not been computerized so there is a huge demand to set up the IT infrastructure at different levels.

Most of the employees in SAD departments are technologically illiterate. Implementing Inventory Management System can be problematic for those who lack computing skills for which we have faced a lot of resistance from the user level. Barring the computer proficiency of the department officials, it is a challenge to educate and train the current department officials.

03

Objectives



system, an end-to-end business intelligence, data warehousing and reporting solution from scratch, including software, solution definition, and support.

The solution integrates data extraction storage, data mining, data analysis, and reporting tools. It automates the process of building sophisticated predictive models and enables the detection of fraud through circular trading and predictive analysis. It consist of few different modules.

The first module is a software application that can be used by the Indenters for searching items and requesting indents. The second module is a software application that is used within the department by the authorizing official and the Storekeeper. This application allows the aforementioned users to perform additional tasks. These features include - account creation, account deletion, indent request approval, indent records, data entry, and reports.

Both pieces of software exists within the same application. This server handles multiple threads and therefore allow simultaneous access of multiple users. It provides user authentication and stores all data.

The objective of the project is to improve its effectiveness and efficiency, reducing delays, improving employee satisfaction and retention. It aims at internal efficiency and effectiveness and adopting the best practices of various departments indenting system.

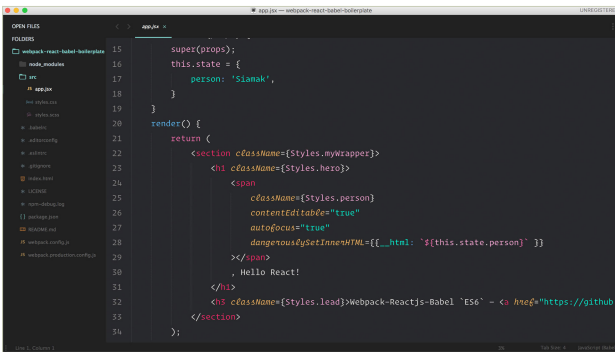
The broad objectives of the project include:

1. IT enabling of internal processes of the Department to increase functional efficiency.
2. Automation of workflow and internal processes of the Department.
3. Seamless integration of various officers with the department by using a single sign-in.

Inventory Management System is a fully functional inventory management

04

Solution Implemented



```
15 super(props);
16 this.state = {
17   person: 'Stanak',
18 }
19 }
20 render() {
21   return (
22     <section className={styles.myWrapper}>
23       <h1 className={styles.hero}>
24         <span
25           className={styles.person}
26           contentEditable="true"
27           dangerouslySetInnerHTML={([_html: `${this.state.person}` ])}
28         > />
29       </h1>
30       Hello React!
31     </li>
32     <h1 className={styles.lead}>Webpack-Reactjs-Babel 'Ese' - <a href="https://github.com"
33     </section>
34   );
```

from the empanelled consultant of MSeGS will analyse and then redesign the current indent and approval system and its components to bring in effectiveness, efficiency and added value contribution to the objective of administration.

As-Is Assessment

This assessment primarily comprises of examining the existing workflow processes and system used by the department administration. Business process maps were created for the current processes. Subsequently, similar activities were grouped for process normalization and redundant activities were removed. The target state was envisioned after benchmarking of the normalized processes by comparison of both the performance of the department's processes and the way those processes are conducted with those relevant to the best practices to provide ideas for improvement.

To-Be Process

After the identification of potential improvements to the existing processes, the development of the To-Be workflow system was built on the research from the

The following steps have been used to develop the system:

Objective Setting

For all the phases, objective setting was the initiation stage where client meeting was conducted to develop a common understanding on project objectives. Objectives once discussed and finalized were broken down into workable action steps and planning for achieving the actionable steps was delineated. A preliminary study of organization structure and operation was undertaken so as to have a basic understanding of the organizational function.

Requirement Analysis

In order to benefit from the e-Governance initiatives, Secretariat Administrative Department, with assistance

benchmarking and best practices activities.

The To-Be processes report was prepared which contained the detailed 'To-Be' scenario for all the services selected. The resulting To-Be processes was validated by the department officials and duly approved before implementation.

Development of Software

A comprehensive workflow of software system consisting of all the required modules at various levels - Government department, approving authority etc. was made. A data entry module was a part of the system to digitize the existing internal legacy records of the administration/ departments. Mizoram State e-Governance Society developed the software with mobile compatible to reduce the risk of connectivity issues for free of cost. Throughout the life cycle of the project, MSeGS has provided its services for Secretariat Department for free of cost.

A decision was made to host the application at Mizoram State Data Center, as requested by SAD. The concerned officers along with the storekeeper's offices were upgraded with desktop computer along with internet connectivity to implement the proposed system in an effective manner.

Implementation

Deployment of the application and testing with the end users was done. SAD department made an awareness of the initiatives undertaken and facilities extended to its employees.

Sequence of training was conducted for

various users from storekeeper, approver, administrator and indenters. The software was so simple and easy to use that it required only one training for various levels of users.

05

Coverage

Inventory Management System has been envisaged to enable the approval of certain indent items to the concerned officer through appropriate automated system for all departments under Government of Mizoram which may later be proposed to the Central Government to function it as a centralised application.

The targeted population are all employees working under Mizoram Government who has been facilitated to make indent requisition. Users may be of four types – Super administrator, Administrator, Storekeeper and indenter.

Each department will have their own store under which they can maintain their own user, administered by one official which will act as the administrator of the current department's application. The number of user for each department may depend on the number of employees who have been facilitated to make indents.

On current scenario as a pilot project under Secretariat Administration Departments, there are 248 indenters. Once the project is rolled out to all departments in Mizoram, the number of expected indenters is expected to be above 40,000 (forty thousands).



06

Pre vs. Post Deployment



Before the software was deployed the internal operations of the department are not computerized. The manual system used does not provide the means for tracking individual officer of their indent history, the indenter can make a request of the item as frequent as he wish since no tracking of history is done.

Almost all the processes are manual and paper driven, with a number of duplications and repetitive activities. The Information was available only with the storekeeper and items have to be checked for availability by manually going to the storehouse. It takes a fair amount of time to check for the availability of items and then formally submit an indent request.

The Inventory Management System has replaced the legacy system of using register book and paper chit system of

indenting items with a more flexible and reliable system by using a browser based software. It enables safer and better record keeping thereby enabling the users to keep track of their history of indents and well as stock available.

The system also checks unusual indents on certain items, this process helps reduces wastage of items owned by the department. This software drastically reduces the time between processing indents and the last step of receiving the indented item. Inventory Management System detects instances of unmatched records with enhanced efficiency, and has also augmented overall operational efficiency.

The following are the outcomes of the project:

- » Generation of an efficient MIS for better decision making
- » Reduction of expenditure spent for Inventory.
- » Faster retrieving of the records due to computerized records
- » Automating the monitoring of inventory stock
- » Maintaining indent history record for proper management
- » Improvement in efficiency of the employees and reduction in workload.

IMS initiative has brought about a transformational change to SAD; moving away from the legacy register and chit indent system to a system-based indent making.

Since there were no proper records maintained before the system was computerised, there cannot be a proper statistic for the success of the project. However, as per the feedback given by the Users, Administrators and the Storekeepers their workload is now much more efficient, reliable, transparent and accountable in comparison to the previous system.

The system has the facilities for generating reports in excel format on the basis of Items and Indenters.

After the implementations of the Inventory Management Systems, it is now possible to track pending material requests.

It enables efficient inventory planning

and control, tracking different type of items stock, tracking rejected and scrap materials. It also enables the department to keep material consumption analysis for each and every employee, current stock analysis, stock shortage analysis, etc.

07

Key Learnings

This project is the first step towards the transformation agenda set up by SAD to infuse technology for better service of indent system to its employees. Inventory Management System accomplishes a digital transformation that prepares them to detect and rapidly combat unwanted indents and deter non-compliance. Secretariat Administration Department's collaboration with MSeGS resulted in a sophisticated data warehousing solution that enables the SAD to spot potentially fraudulent indents thereby increasing the efficiency of the Inventory Management System. The solution detects erroneous patterns of indents made by officers. History of records help check revenue loss.

The IMS implementation performed by MSeGS helped SAD accrue numerous benefits, including improved service delivery by actualizing services for website compliance, enabling improved indenter satisfaction due to easily available information of items, and bringing government services closer to the employees. In addition, the reduced response and resolution time helped SAD to save time and cost incurred by the indenters.



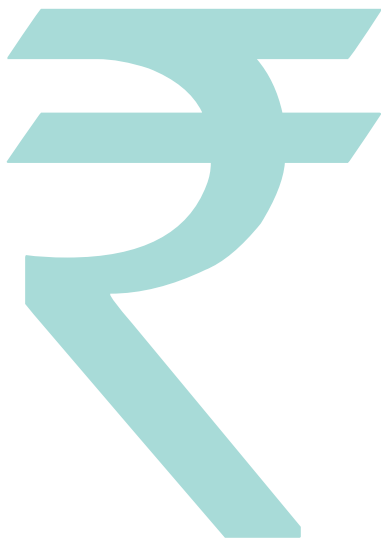
SAD was able to successfully implement Inventory Management System and observed an increase in number of indents. Due to the use of advanced technology and integration with an employee-facing e-service, there was an observed reduction in the tedious and manual effort, thereby enhancing operational efficiency. The IMS implementation also freed up human resources. This resulted in further financial savings. Implementation of IMS by SAD stopped revenue leakage. Additionally, robust reporting ensured SAD has real-time access to accurate data at the right place and right time, replacing manual process. The project has achieved such unprecedented success that it is already recognized by other government departments and requests for replication are in process.

The IT solutions have been advantageous to SAD operations as they have helped the department to apprehend revenue leakage from unfair indents which have been a massive challenge faced by the department. The IMS solution implemented by SAD enabled the department to analyse the massive data and supported business decision making as well as predictive stock management. Its implementation has been successful and has been widely adopted and appreciated by the majority of indenting officials. This success was jointly conceived by both the SAD as well as MSeGS core team.

Thus the implementation of Inventory Management Systems has brought about transparency and efficiency. It has replaced the legacy system of using register book and paper chit system of indenting items with a more flexible and reliable system by using a browser based software. It enabled safer and better record keeping thereby enabling the users to keep track of their history of indents and well as stock available. It allowed the authority to check unusual indents on certain items. The process has been helpful in reducing wastage of items owned by the department. This software also drastically reduced the time between processing indents and the last step of receiving the indented item.

08

Cost Effectiveness



The project is meant to provide Government to Employee (G2E) services directly on the online based application, so that the process of indents becomes transparent, convenient and accountable to the indenters.

Benefits Obtained: The benefits obtained by the indenters is that they are not required to appear before the storekeeper with their chit forms. All the indents are supported by the IMS, so there is clarity in indents made and hence online indents can be easily submitted. SAD also benefitted from the project, as their resources are now being used for other productive purposes and the manual workload has been reduced.

Implementation coverage till date: The IMS is available to all employees working under Secretariat Administration Department who is facilitated to make indent. They can submit indents from anywhere and at any time, provided that they have an account in the application.

Efficiency and Improvement Initiatives: Before implementation of the IMS project, the cases involving too many indents and frequent indents were not checked as proper records have not been maintained. As SAD started implementing IMS, the number of such cases has dropped substantially thereby saving administrative cost. This has increased the transparency in the working of SAD.

Digital Inclusion: The indenters can directly submit indents without physically going to the storekeeper.

Green e-Governance: The manual indent involved submission of chit forms and register for record keeping. The IMS solved this issue by storing records in digital format which further eliminated the wastage of paper. Thus, it is environmental friendly.

09

Future Roadmap

Inventory Management facilitates in managing the inventory effectively in Government organization and the same applies to private organisation as well, with suitable control mechanisms resulting in reduction of inventory related cost. It has features like tracking obsolete inventory, fast, slow, non-moving items etc. which will enable the organization to maximize inventory turns, eliminate shortages and excess inventory investment. One supply chain strategy is to conserve a low inventory level just enough for instantaneous availability for use. However, the resulting surge in the risk of stock outages and substandard employee's service level make the cost saving in inventory level problematic to justify.

The future roadmap presented here will be the result of coordinated effort between Government of Mizoram and Mizoram State e-Governance Society to enable the approval of certain indent items to the concerned department's officer through appropriate automated system. A plan was made to implement the applications to all departments under Government of Mizoram on their will. The project started in 17th February 2014 and was completed



and successfully implemented in 22nd May 2015 in the Secretariat Administration Department, Government of Mizoram. Since the implementation of the software, continuous improvements have been made based on user feedbacks and suggestions. The software, as a result, is very stable to be deployed for any department. There has been additions of new features based on request which results in a more efficient and user-friendly software.

As previously mentioned, the software is currently being used by a single department. There is a plan in place to roll out the software to other departments and it is expected that at least 10 Departments will be able to implement the software within the current financial year. To lessen the burden of acquiring new equipment for implementing the system, the software is hosted at Mizoram State Data Centre and accessed through

State Wide Area Network (SWAN). This will result in a huge saving for the Departments interested in implementing the software for their usage as very few investments needed to be done for it. The ultimate goal of the software is to have a single unified system which will be used by all departments for their inventory processes.

The use of Information Technology has eliminated physical boundaries between states and countries making the world a single Global Village. With the arrival of faster and more reliable internet connection, we now think beyond the boundaries of states and as such our softwares can now be introduced to all the other states using the Software As A Service (SAAS) model of software licensing and delivery system. In this way, any state wishing to use the software can do so without investing time and manpower in creating their own software which will invariably be less stable than the current software which has been used for several years. This has a potential to be a good source of revenue for the Department and the State. Since all infrastructures are in place to make this a reality, it is expected to introduce the software to other states during the next financial year.

10

Award

In 2016, on account of its successful implementation, Inventory Management System received Skock Order of Merit Award for Top 100 Projects in India.

