Government of Karnataka
Department of Mines & Geology

M.V. Prashanth Kumar, KSAS
Nodal Officer, e-cell
DMG Objectives

Regulatory & Promotional
- Receipt and processing of Applications for the grant of leases under Mineral Concession Rules.
- Inspection of Applied areas to advice the Govt. for grant of Leases.
- To monitor scientific exploitation of mineral wealth of the state.
- To control illicit mining, quarrying and transportation of minerals.
- Scanning and identification of Mineral Resources
- Mineral Investigations, Exploration, Quantification and Analysis of Minerals
- Guidance and Dissemination of Mineral Information
- Promotion of Mineral Based Industries.

Mineral Revenue and assessments
- To monitor production and dispatches of various minerals.
- To monitor collection of royalty and seignior age fee based on grades/quantity.
- Imposition of penalties on illicit mining, transportation and storage.
ILMS e-Permit System

- The e-permit system was evolved with the help of inputs from various stakeholders such as Departmental Officers, Lessees, mineral based industries and others in accordance with acts and rules in vogue.

- The e-permit system as a module of Integrated Lease Management System was introduced in 2011.

- A circular vide No. DMG/ AD(MIN)/e-permit/2011-12 Dated 05.12.2011 was issued to all the stakeholders to use only ILMS system for all major minerals and not to use PMS or manual permits.

- The circular also made it necessary to ensure that for all major minerals, trip sheet are generated through e permit system.

- Any technical problems faced in the implementation of the above guidelines, is addressed with the assistance of helpdesk at DMG, Head Office.
Implemented ILMS Modules

- E-Permit
- e-Return
- Rake Permit
- M-Governance
- DCB
- RFID
- Weighbridge Software
- DSC
Ongoing & Future Initiatives

Mobile Application

E-Payment

LiDAR

GIS

Transformation in Mineral Management
Efficiency Enhancement

![Bar chart showing Efficiency Enhancement with years from 2005-06 to 2013-14. The chart compares Target and Achievement with values increasing over the years.](chart.png)
Comprehensive Computerization of Mineral Administration (CCOMA)
Objective of e-Governance

- Process Re-engineering of current Quarry / Mining business processes
- Introduction of technology for stakeholders of Geology and Mining for automation of Govt processes
- Real time accounting of payment, royalty pass, mineral transportation etc.
- Reduction in illegal mining through automated system
- Effective and Hassle free mineral administration
- Faster processing to ensure timely delivery of services
- e-Services for ALL stakeholders like Lease Owners, Weighbridge Owners, Mineral stockiest/traders, Department users
## Stakeholder wise Roles & Responsibilities

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Roles</th>
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<tbody>
<tr>
<td><strong>State Government</strong></td>
<td>- Policy making decision, necessary approvals/orders, Designing of Rules and Framework</td>
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</table>
| **Department of mines & Geology** | - Lead the overall implementation of initiatives  
- Initiation of reforms including development of ILMS application  
- Enhancing the ILMS application based on stakeholder feedback and real time issues  
- Monitoring of effectiveness of administrative reforms and carryout effective mineral administration and increase stakeholder satisfaction and revenue |
| **District Geologist Office**     | - Use of ILMS application and improve monitoring through data consolidation  
- Implementation of modules at district level  
- Improve effectiveness in mineral administration with the use of ILMS and administrative reforms |
| **Lease / Permit Holder**         | - Use ILMS application and its various modules  
- Provided necessary inputs on the challenges and the expectations from the system  
- Monitor and maintain records |
| **Weigh Bridge Holder**           | - Use ILMS application and weigh bridge module  
- Real time data & accurate weight measurement before trip sheet generation. |
| **Buyer**                         | - Participate in e-Auction  
- Acknowledge material receipt and mineral transportation of auctioned material. |
| **Partner Bank**                  | - DMG is in process to implement e-payment system such Net Banking and online RTGS/NEFT Transaction for hassle free and quick fund transfer service to stakeholders. |
| **(n)Code Solution**             | - Develop, implement and support various ILMS modules. |
E-auction & Transportation
Spot “e-auction”

1. Identification and quantification of Iron ore lots for e-auction is done by the DDMGs.

2. Samples are collected & sent to the DMG Laboratory for Fe grading.

3. Material identified for e-auction is in lot size of 4000 MT and is with an identification number (lot number).

4. Details are provided to MSTC a week before the actual date of auction.

5. The prospective buyers/bidders would be able to visit the locations and satisfy themselves as to the quality of the ore.

6. Normally a day before the actual e-auction, Fe content and floor price is indicated in MSTC portal based on market information.
Only end users can bid...Continued

7. Prospective end users, interested to bid in e-auction, register themselves with MSTC well before the actual auction date. Bidders are also expected to sign the Bid/Auction Document containing terms and conditions of the e-auction and submit along with EMD before participation in the bid process.

8. Bid Documents signed by the bidders are forwarded by MSTC to the MC for approval.

9. After approval MSTC allows such applicants to participate in the e-auction.

10. On the day of e-auction, the lots are kept open for 2 hours and if there is any participation in the bid with higher price, time is given for bidders to quote their price.

11. When the scheduled time allotted expires, bidding process ends.
12. Unless the last minute bidder quotes higher price, portal is open for another 5 minutes and likewise the cycle is continued until no one bids within that 5 minutes of grace period.

13. After the completion of auction, MSTC forwards the EMD money with a list of Successful Bidders and Bid Sheet to the MC.

14. Monitoring Committee issues the Acceptance Letter to the successful bidders giving details of lot number, payment details etc.

15. Successful bidders are given time frame to make payment as per acceptance letter.

16. Payments are received in full (cost of material+ 10% royalty+ 12% FDT+ 5.5 % VAT+ processing fee+ PWD fee etc).

17. If the bidder fails to pay the amount within the prescribed time frame, he will be loosing the right over the auctioned material and EMD amount will be forfeited.
18. Bulk Permits are generated in DMG & then forest department is intimated if it is a forest land.

19. Based on the bulk permits issued, the lease/mine holder will be generating the Mineral Dispatch Permits (MDPs) in Special Security Papers (SSPs) supplied by DDMG offices by opening the website using his password.

20. The entire process which works on e-mode is under Integrated Lease Management System (ILMS) which involves less of manual intervention and more usage of electronic mode resulting in saving of time and hassle-free movement of iron ore.
Advance e-auction

1. Normally e-auction is conducted for the ore which is produced and ready for movement.

2. M/s NMDC has introduced a system of "advance e-auction", before production of the material with an proposed quantity with grade & price.

3. At the time of lifting of material bidder is liable to pay the price for actual grade of material available for loading.

4. The system is an advantage to clear the stock of fresh production instantaneously.
Pricing Mechanism

1. For e-auction, M/s NMDC fixes the floor price based on the “Platt index” to the respective grade & type of the material (lump or fines) from their mines.

2. For the existing stock Monitoring Committee fixes the floor price.

3. For fresh production in the mines, lessees will indicate the floor price of the material.
1. Payment is done by RTGS where the money is credited into the account of MC instantaneously.

2. Action is underway in the department of Mines & Geology to provide a mechanism to all the stakeholders for making payment online through Net Banking or RTGS/NEFT through Virtual accounting system.

3. Confirmation through internet.
Important E-Permit Features

- This module is designed to control mineral transportation for major & Minor mineral Leaseholders.
- Introduced SSPP (Special Security Permit Paper) to print trip information for mineral transportation.
- System is validating Annual Mining Plan (AMP) Target Quantity & AMP Expiry Date, Lease expiry, excavated Mineral stock, Payment balance & Dues before issuing bulk permit for mineral transportation.
- District Officers are authorized to reconcile stock in system, approve bulk permit.
- System extended e-Permit modules to Beneficiation Plant to acknowledge mineral received and operate same process like leaseholder to transport mineral.
Important E-Return Features

- This module is designed to submit online Monthly, Quarterly and Annual Return forms specified in Mineral Conservation and Development Rules, 1988 for Leaseholders.

- This system helps lessee in filling accurate information as per Production and transportation information provided in e-Permit System.

- DMG has given windows to IBM to review submitted e-Return forms by lessee.

- System will lock submitted e-Return forms after specified time limit.
**Important Rake Permit Features**

- This modules facilitates leaseholders to transport mineral through multi mode transportation like By Road, By Rail, By Road-Rail, By Rail-Road, By Road-Rail-Road.

- System controls mineral stock in each stage of mineral transportation and validate information while transporting minerals.

- District Officer approves rake permit, applied by lessee through ILMS System.

- System controls and track mineral transportation flow from leaseholder to check post to Source to Destination Railway Yard to Buyer and same will continue till material reaches to industries.
Important M-Governance Features

- This module is specifically designed for non-specified leaseholders who do not establish IT infrastructure in lease premises.

- Lessee must forward SMS to DMG server as per defined SMS syntax to generate trip sheet information through ILMS System.

- District Officers and laymen can cross-check trip sheet information through SMS and Trip sheet Print Out.

- System is designed in such a way that DMG can introduce many services to initiate M-Governance Activities.
Important DCB Features

• District Officers are preparing DCB to calculate leaseholder’s dues after calculating opening, Demand, Collection.

• System will calculate interest and deduce dues from leaseholder ledger instantly and restrict lessee to apply for bulk permit unless dues are not cleared but allow leaseholder to generate permit in case of any legal orders.

• System calculates all defined formula as per rules and fetch necessary information from e-Permit system to prepare DCB.

• This module is online, so lessee and DMG will be able to access information which will save lots of manual and reconciliation work.
Important RFID Features

- DMG has introduced RFID system to be incorporated in lease premise, Govt Check Post and Buyer Premises to systematize mineral movement tracking and acknowledgement to avoid manual mistake and malfunction.

- RFID System is cross verification of trip sheet information to cross check with printed trip sheet and RFID information.

- In Govt. Check Post, It facilitates fast vigilance and eliminate manual intervention to achieve transparency.

- RFID system is tempered proof and destruct of removal to abolish malfunction.
Important Weighbridge Features

• All major mineral leaseholders have to measure mineral carrying vehicle tare weight and gross weight before generating trip sheet.

• System tracks loading process and Validate each stage of loading.

• ILMS System is integrated with more than 200 electronic registered weighbridge in all major mineral leaseholder premises.
Digital Signature Certificate (DSC) Features

• Digital Signature Certificate (DSC) is mandatory for all leaseholders to access ILMS System.

• DSC ensures authentication and authorization of ILMS Operations performed by stakeholders through registered DSC only.

• Each Transactions has been mapped with DSC, IP Address and list of activities performed during session.

• DSC authentication eliminates malfunction in data and restrict access of other credential without registered DSC.
Ongoing & Future Initiatives
LiDAR Technology (To be Implemented)

- LiDAR scanning is far safer than conventional surveying methods and takes only a fraction of the time.

- The speed at which data is collected minimizes delays to the mining schedules and processes. For example, operational mine faces can often be surveyed in the time during shift change, causing zero delays in production.

- The LiDAR solution is ideal for finding differences between two time periods to accurately monitor the changes in the terrain.

- Data from the LiDAR solution dovetails cleanly into existing data workflows to produce deliverables including engineering drawings, as-built, contours and volumes.
Mobile Application (To be Implemented)

- Android based Mobile Application for Flying squad, Vigilance team & Govt Check Post to use mobile app to feed vigilance information and fetch trip sheet information for cross checking.

- This Application has been supported to all Android based Mobile Devices and Tablets with minimum specification.

- DMG is in process to enhance and extends mobile application features to be introduce for ease of access in ILMS Operations.

- Mobile Apps has features to scan barcode to fetch trip sheet information, Fetch GPS Co-ordinates, Time Stamping, Immediate actions information, Capturing Vehicle Image with driver.
E-Payment (To be Implemented)

- E-Payment module has been designed, developed and integrated with State Bank of India and its group bank like SBH, SBM, SBT.

- DMG is waiting for RBI Approval to implement e-Payment for Leaseholders for fund transfer through Net Banking or RTGS/NEFT.

- E-Payment module has been secured with SSL Certificate, DSC Signing and Encryption of Data, IP tracking, Cleared Third Party Security Audit.

- After Successful implementation with State Bank Group, DMG shall incorporate other nationalized bank to enable multiple bank options for leaseholders facility.
RFID Implementation
RFID/ Weighbridge Functionalities – Lessee Premises

1. Entry gate
- RFID Tagged Vehicle
- Pass Weighing Information

2. Tare Weight Measurement

3. Gross Weight Measurement & Trip Sheet Generation

4. Exit gate

Centralized Solution
Integration with ILMS System
Middleware
RFID/Weighbridge Functionalities – Check Post

6. Alert due to mismatch

5. Read Vehicle RFID

7. Store information and Print Check Post Slip
RFID/Weighbridge Functionalities – Buyer Premises

8. Entry gate
9. Weight Measurement
10. Alert due to mismatch
11. Exit gate

Pass Weighing Information

Middleware

Centralized Solution

Integration with ILMS System
RFID Implementation Phases

- Entry Gate: In Time Stamping & Alert in case of Vehicle
- Ceased in Govt. Check Post
- Unacknowledged Vehicle in Buyer Premises for unloading
- Arrived before Journey End time
- Tare Weight: Fetch Vehicle No & Deny Operation, if vehicle
  - Entry Time Stamping is Missing
  - Already Gross Weight Measured
- Gross Weight: Fetch Vehicle No & Deny Operation, if vehicle
  - Tare Weight is not yet measure
  - Trip Sheet has been generated
RFID Implementation Phases

- Exit Gate: Exit Time Stamping & Alert in case of Vehicle
  - Trip Sheet has not been generated
  - RFID Tag is not readable or not Found
- Check Post: Fetch Vehicle No & Alert in case of vehicle
  - Weight excess compare to mentioned weight in trip sheet
  - RFID Data mismatch with ILMS Data
  - Journey period is expired.
  - Route mismatch as per route proposed by lessee
  - Ceased by any other Check Post or Vigilance Squad.
  - Operator will hold vehicle in case of any other illegality found.
RFID Implementation Phases

- Entry Gate Buyer Premises: In Time Stamping & Alert in case of Vehicle
  - Ceased by Check Post or Vigilance Squad
  - Escaped Check Post
  - Journey Period expired
  - Trip Sheet belongs to other buyer

- Exit Gate Buyer Premises: Exit Time Stamping & Alert in case of Vehicle
  - Trip Sheet acknowledgement is pending
# Transformation in Mineral Management

## Facts Figures till Date

<table>
<thead>
<tr>
<th>Particular</th>
<th>Total Major Minerals</th>
<th>Total Minor Mineral</th>
<th>E-auction (Iron Ore, Manganese)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of Bulk Permits Issued to Lessee</td>
<td>11,018</td>
<td>16,086</td>
<td>5,470</td>
</tr>
<tr>
<td>Total Quantity approved as Bulk Permit</td>
<td>7.73 Cr MT</td>
<td>0.65 Cr MT</td>
<td>5.85 Cr MT</td>
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<tr>
<td>Total No. of Trip sheets generated</td>
<td>0.47 Cr</td>
<td>0.039 Cr</td>
<td>0.37 Cr</td>
</tr>
<tr>
<td>Maximum Trip sheets generated / day</td>
<td>8,214</td>
<td>1,812</td>
<td>7,398</td>
</tr>
<tr>
<td>Total Mineral transported</td>
<td>6.09 Cr MT</td>
<td>0.55 Cr MT</td>
<td>4.59 Cr MT</td>
</tr>
<tr>
<td>Total Rake Permit Issued to Lessee</td>
<td>7,130</td>
<td></td>
<td>7,087</td>
</tr>
<tr>
<td>Total Mineral transported through Rail</td>
<td>2.63 Cr MT</td>
<td></td>
<td>2.62 Cr MT</td>
</tr>
<tr>
<td>Total Weighbridge Installed</td>
<td>211</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total e-Return Submitted</td>
<td>4,843</td>
<td>1,673</td>
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<tr>
<td>Challenges</td>
<td>Action Taken</td>
<td></td>
<td></td>
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<tr>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
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<tr>
<td>Limited IT Infrastructure in Remote Area</td>
<td>• Introduced M-Governance</td>
<td></td>
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<tr>
<td>Stake holders are not IT savvy &amp; not willing to be computerized</td>
<td>• Training sessions were organized at micro level, operational manuals were designed, and demo cases were prepared and presented to stakeholders.</td>
<td></td>
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<tr>
<td>Manual Operations</td>
<td>• Process Re-engineering and make all process computerized and user friendly</td>
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<tr>
<td>Required accurate weight of Mineral</td>
<td>• More than 200 weighbridge Integrated with ILMS system.</td>
<td></td>
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</tr>
<tr>
<td>Need to Verify Information at Check Post</td>
<td>• Modernizing 13 Check Post equipped with RFID, CCTV, Weighbridge, IT &amp; Civil Infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Govt Rules &amp; Regulations</td>
<td>• Recommend changes in rules to strengthen process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceased Material</td>
<td>• Introduce e-Auction by Honorable Supreme Court and adopted process.</td>
<td></td>
<td></td>
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<tr>
<td>Transportation Challenges</td>
<td>• Introduce Multi-Mode Mineral Transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Verification to validate Rules</td>
<td>• Handled Rules &amp; Regulation through System to avoid human error.</td>
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</table>
Benefits

To Leaseholder

- Dissatisfaction & Uncertainty
- Reconciliation of Information
- Usage of Manpower
- Loss in Productivity
- Difficulties in Information Accessibility
- Frequency of District Office
- Frequency of Errors in e-Return forms
- Communication through Paperwork
- Inaccurate Information
- Wastage of Time in Correspondence

After ILMS vs Before ILMS
Benefits

To District Officers

- Efforts to validate Business Rules
- In efficiency of accurate Work
- Communication through Paper Work
- Response time to Stakeholders
- Work Load & Responsibilities
- Efforts to build MIS Information
- Efforts in DCB Preparation
- Difficulties in lease management

- Before ILMS
- After ILMS
Benefits

To DMG

- Increase Revenue
- Gained confidence and transparency
- Decrease Illegile Mining & Transportation
- Increased efficiency in administrative processes
- Service delivery to stakeholders
- Transparency and accountability in the processes
- Increase Standard Precess hour Process Re-engineering
- Increase efficiency in Decision

After ILMS

Before ILMS
Testimony by Stakeholder

Manual

Pre printed

e-permit

SSPP
Awards

- eINDIA Awards 2013: “Best Government to Business Initiative of the Year” for "Comprehensive Computerization of Mineral Administration (CCOMA)".


- 16th National e-Governance Award 2013: Excellence in Government Process Re-engineering for “Comprehensive Computerization of Mining Administration”.


- Presently Applied for Prime Minister Award 2012-13.