SMART INDIA HACKATHON 2024

TITLE PAGE

- Problem Statement ID – SIH1645
- Problem Statement Title- An app and web based software for productivity and safety management of coal mines.
- Theme- SMART AUTOMATION
- PS Category- SOFTWARE
- Team ID-
- Team Name- COAL MINE INNOVATORS

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COAL MINE SAFETY AND MANAGMENT

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❖Proposed Solution

1. Digital Shift Handover Log System

➢**Objective:** Streamline and digitize shift handovers.

➢**Features:**

- App & web platform for supervisors/operators.
- Digital templates for statutory/non-statutory logs.
- Real-time updates/alerts for critical incidents.
- Automated PDF report generation.
- Search & filter past logs.
- ERP integration.

➢**Benefits:**

- Improved communication & productivity.
- Enhanced safety monitoring.

2. Digital Safety Management Plan (SMP)

➢**Objective**:

- Digitize SMP per DGMS guidelines.

➢**Features**:

- Digital hazard identification & control mechanisms.
- Checklists, dashboards, and incident tracking.
- Digital responsibility assignments.
- Automated audit/compliance reports.
- ERP integration.

➢**Benefits:**

- Better risk management & regulatory compliance.
- Clear accountability & safety adherence.

3. Data Security Considerations

➢**Objective:**

- Ensure confidentiality, integrity, and availability of sensitive data.

➢**Features:**

- Encryption: End-to-end data protection.
- Role-Based Access: Controls data access by user roles.
- Security Audits: Regular checks for vulnerabilities.
- Backup & Recovery: Ensures data retrieval after incidents.

➢**Benefits:**

- Data Security: Prevents unauthorized access.
- Continuity: Safeguards operations during disruptions.
- Risk Reduction: Minimizes chances of data breaches.

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TECHNICAL APPROACH

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Mining Operations Enhancements

Enhancing various aspects of mining operations to increase efficiency, safety, and collaboration through advanced technology and systems.

Shift Handover Log Enhancements

Improved tools and processes for efficient shift transitions and communication.

- Pre-Shift Briefing Module
- Shift Handover Confirmation
- Historical Data Analysis

Communication and Collaboration Tools

Facilitates effective communication and teamwork across mining operations.

- Internal Messaging System
- Incident Reporting & Discussion Forum

Integration and Data Handling

Streamlined processes for managing and utilizing data from various sources.

- IoT and Sensor Integration
- ERP Integration Enhancements

Real-Time Data Feed Dashboard

A centralized system providing live metrics and insights into mining operations.

- Current Production Metrics
- Capacity Utilization
- Machine Status Summary
- IoT Data Feed
- Machine Efficiency

Safety Management Plan Enhancements

Advanced tools for risk management and safety compliance in mining operations.

- Risk Assessment Tool
- Interactive Hazard Map
- Training & Compliance Tracking

Advanced Reporting and Analytics

Delivers detailed insights and reports to support decision-making processes.

- Daily Report Distribution

Enhanced User Experience

Improves user interaction and accessibility for diverse users and roles.

- RBAC (Role-Based Access Control)
- Guided Onboarding
- Multilingual Support

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FEASIBILITY AND VIABILITY

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- **ANALYSIS OF FEASIBILITY:**
  - TECHNICAL
  - OPERATIONAL
  - BUISNESS
  - MARKET
  - CONNECTIVITY
  - TRANSPIRANCY
  - ACCOUNTIBILITY

- **POTENTIAL CHALLENGE AND RISK:**
  - HEALTH
  - OPERATIONAL
  - FINANCIAL
  - TECHNICAL
  - INFLAMMATION

- **SOLUTION TO CHALLENGES:**
  - DIGITALIZATION
  - ACCESSIBILITY
  - CONNECTIVITY
  - TRANSPIRANCY
  - SAFETY

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IMPACT AND BENEFITS

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1. ENHANCE TRANSPARENCY:

- The project will increase transparency between the government and the coal mine industries , promoting accountability.

2. REDUCTION IN CORRUPTION AND FAIR WAGES FOR LABOUR:

- Improved transparency can reduce corruption and illegal financial activities, ensuring workers receive accurate salaries and funds. This, in turn, can help reduce poverty and improve their quality of life.

3. WORKERS AND ENVIRONMENT SAFETY:

- The project will enhance workers safety and reduce environmental harm through stricter safety protocols and real time hazard monitoring.

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RESEARCH AND REFERENCES

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GITHUB LINK

https://github.com/Gaurav-K-Github/SIH_2024

FIGMA

https://www.figma.com/proto/pB3dG3H7WpPC1TgY9GPSxi/Untitled?node-id=46-19&node-type=CANVAS&t=l0Dqf9Bc4wHAGhwU-1&scaling=scale-down&content-scaling=fixed&page-id=0%3A1