inSis suite

Industrial Smart Information System

Jaaji Technologies

Jaaji Technologies

Sophistication with Simplicity

Digital Maintenance Logbooks using inSis Suite

Solution Overview

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Table of Contents

1. Maintenance Logbooks – Solution Overview 4
1.1. Features of Maintenance Logbooks....4
1.1.1. QR Code Scanning 5
1.1.2. Maintenance Schedule....6
1.1.3. Automated Reports....6
1.1.4. Checklist/Logbooks for each asset....8
1.1.5. Mobility 10
1.1.6. Contextual Analysis 11
1.1.1. Other Features 12
1.2. Benefits 12
1.3. Case Study 13
2. Customisations Available in inSis Suite 13
3. Security & Role-based Visualization.... 15

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Terminologies:

Jaajitech: Jaaji Software Technologies Private Limited, India (**Jaajitech**)

MIS & OI: Manufacturing Information System & Operational Intelligence

MES: Manufacturing Execution System

OIP: Operational Intelligence Platform

Process Historian: A time-series data base where the operations data are stored

Process Data Analytics: Provides actionable insights with the help of views which are a combination of Data, Calculations, Different Time Periods & Visualizations.

OPC: OLE for Process Control, a specification by OPC Foundation.

Modbus: A serial communication protocol for exchange of data between electronic devices

Process Control Systems: An automation system that is used to control process plants

DCS: Distributed Control System

Tag: An ID used to denote a process measurement in the Control System

inSis®: Industrial Smart Information Systems from Jaajitech, India.

EMS: Energy Management System

Jaaji Technologies®: Jaaji Software Technologies Private Limited, India (www.jaajitech.com)

Operations Logbook: The electronic logbook for Operator Field Logs.

KPI: Key Performance Indicator

Baseline Period: The period in which the Plant/Unit/Section is operated most efficiently and profitably

Baseline Value: It is the value for a KPI as a basis of certain performance used for comparison

Benchmark: It is the value for a KPI which is practically achievable which is based on other industry peers

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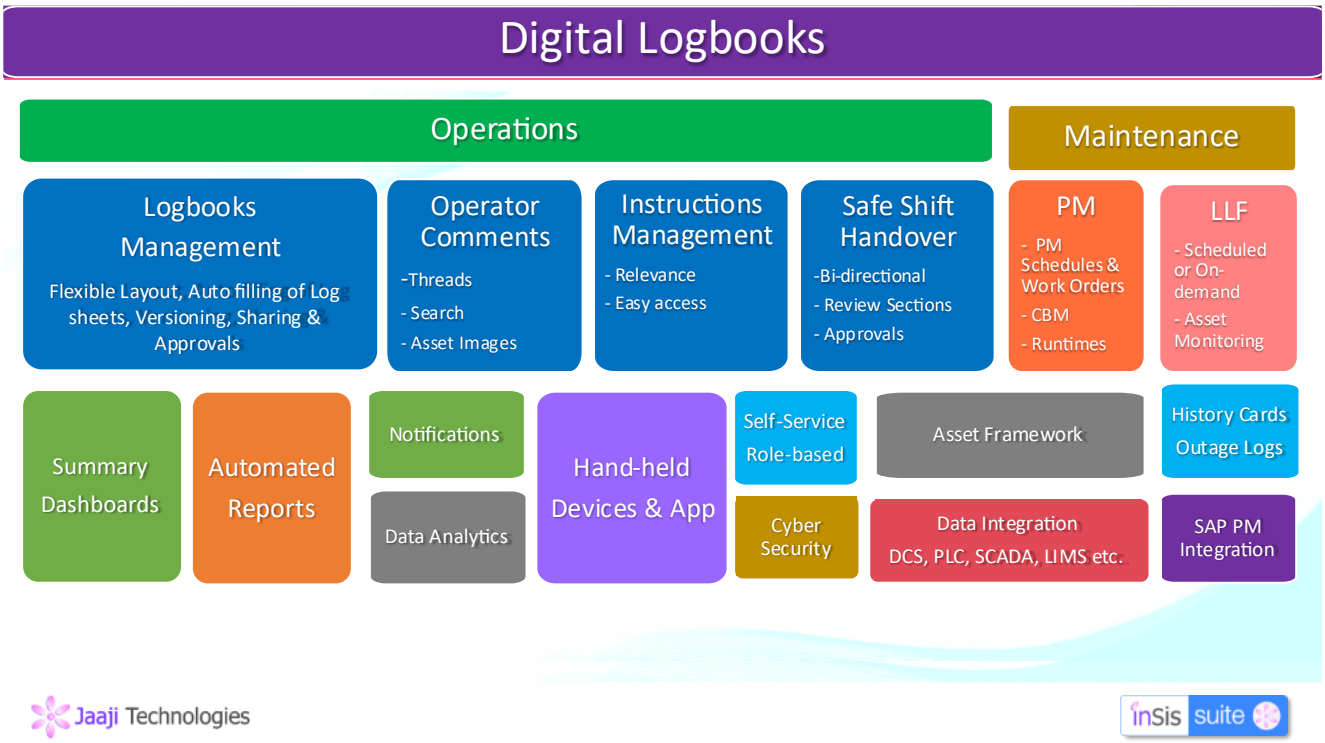
1. Maintenance Logbooks – Solution Overview

QR based Maintenance Logbook solution from InSis provides a central platform for end-to-end Asset Maintenance and performance evaluation. This platform while enabling the digitization of maintenance and LLF checklists also gives the Maintenance engineers customizable views of real-time and historical data to help in data-based decisions and faster response time. Since, both process and maintenance data are in the same inSis Historian database, it is easy to compare and relate the required data. This system will be accessible to operators, managers and HODs through a handheld android-based tablet. Easy to use self-service dashboards and reports are accessible to end users based on access rights and key system driven workflows.



1.1. Features of Maintenance Logbooks

inSis Suite provides the necessary tools to monitor operations, detect anomalies related to inefficiencies and opportunities and deliver event-centric information to empower maintenance engineers to make better decisions. It is an essential tool for achieving the Operational Excellence for Manufacturing Industries.

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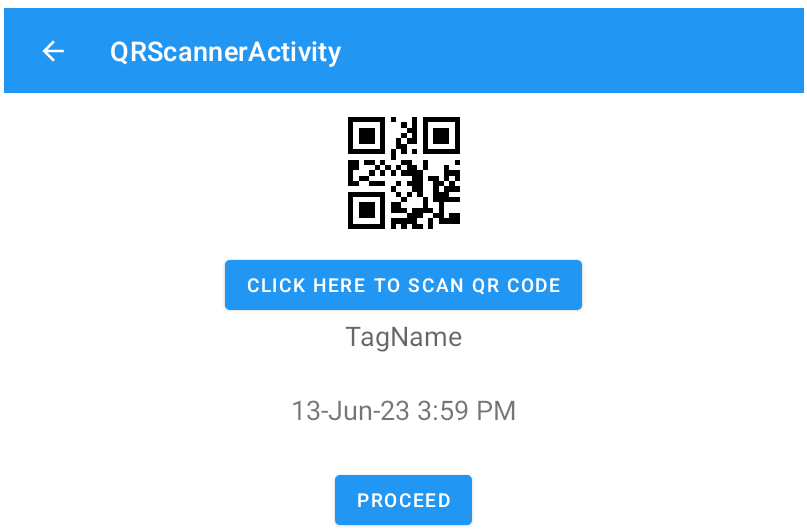
1.1.1. QR Code Scanning

Operators can scan the Field equipment with help of QR Code. The respective logbook or checklist for that equipment pops up on the hand held device so the operator can enter the observed data into the required field



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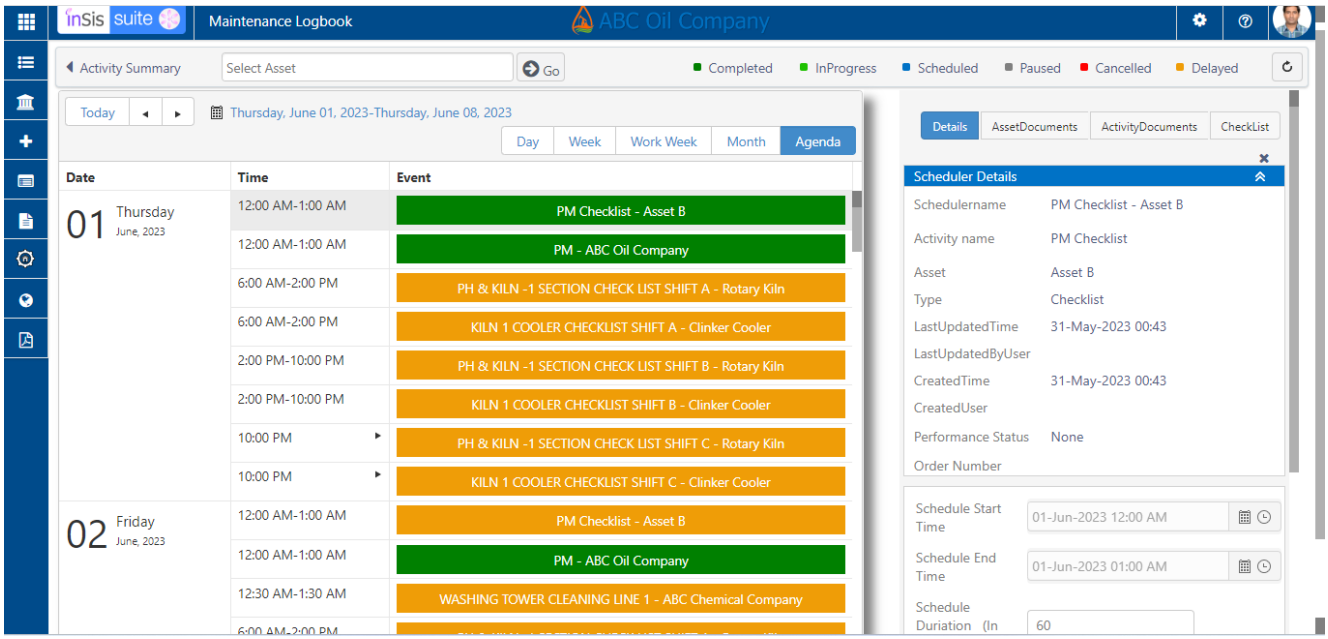
1.1.2. Maintenance Schedule

Preventive Maintenance schedules built in SAP can be synchronized into inSis and compliance can be driven to ensure better availability of the assets. In addition, PM schedules can also be defined in inSis directly.



1.1.3. Automated Reports

Automated reports and dashboards of PM compliance can be generated and shared with the concerned team members. In addition, reports such as Abnormality report / History card / Outage report can be generated for easy analysis and taking up preventive maintenance actions

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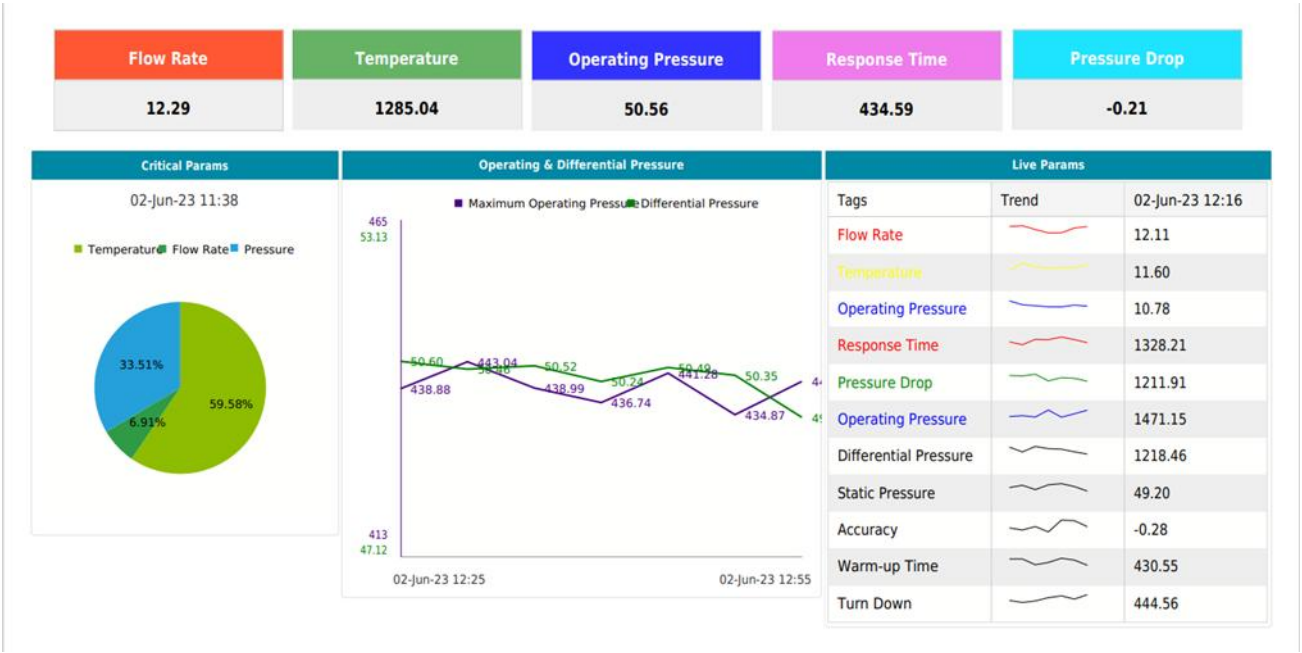
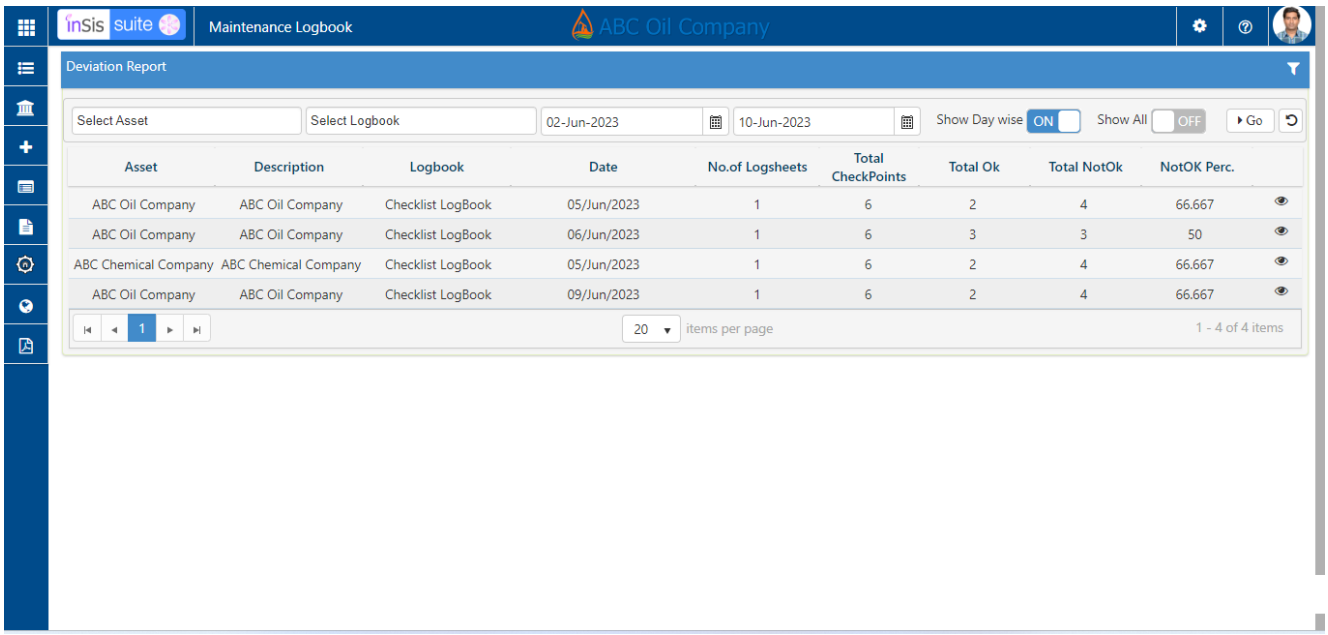


Automated Status Reports



Deviation Reports

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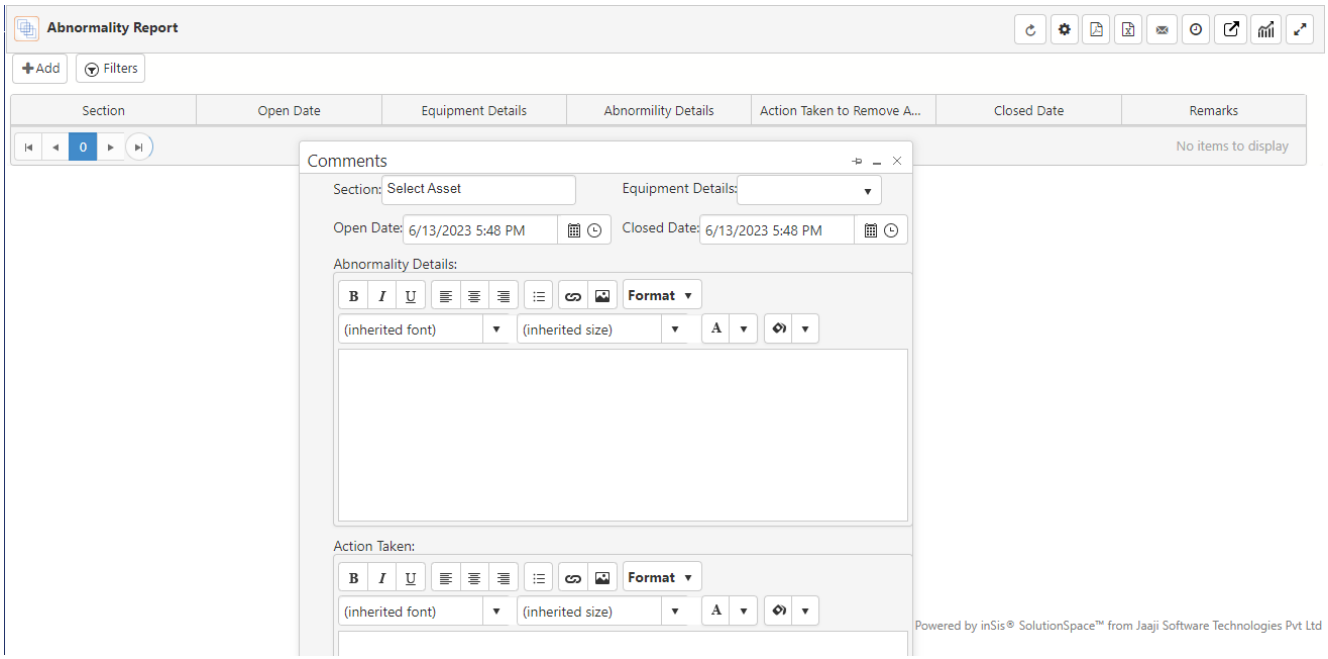
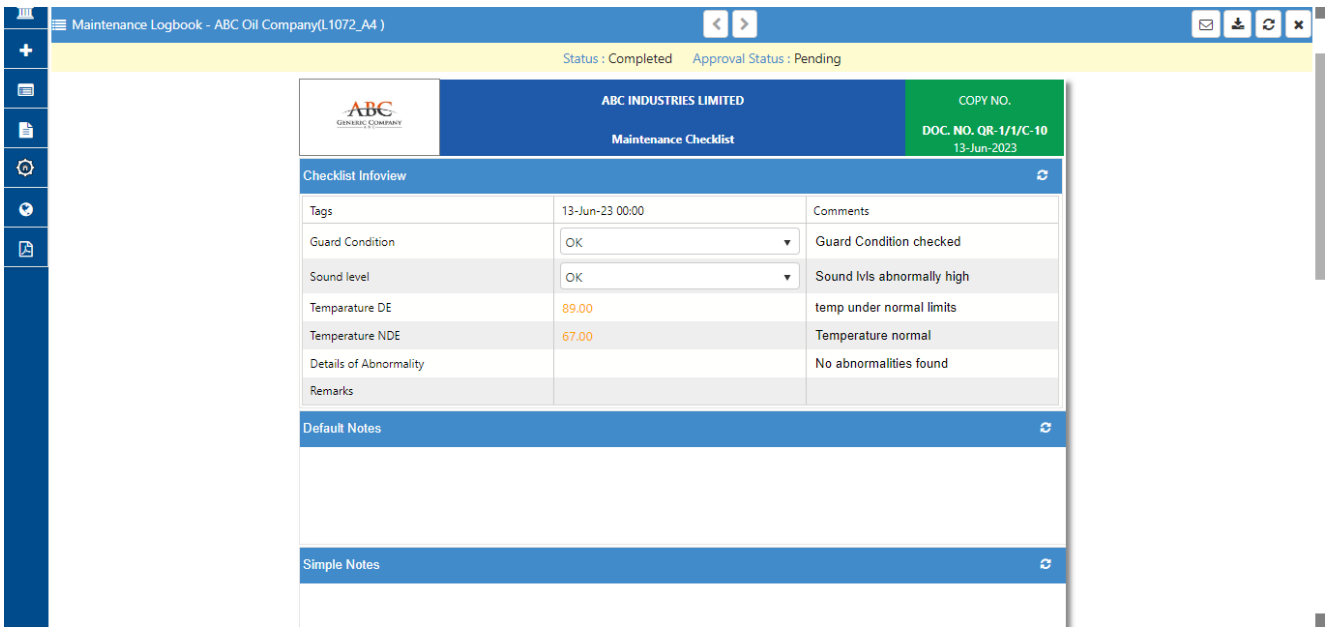


Abnormalities Report

1.1.4. Checklist/Logbooks for each asset

The system allows for easy configuration and hence different types of templates can be easily digitized for different asset groups. Maintenance of these templates including versioning and modifications can be done by the admin users for further usage by the operators in the field



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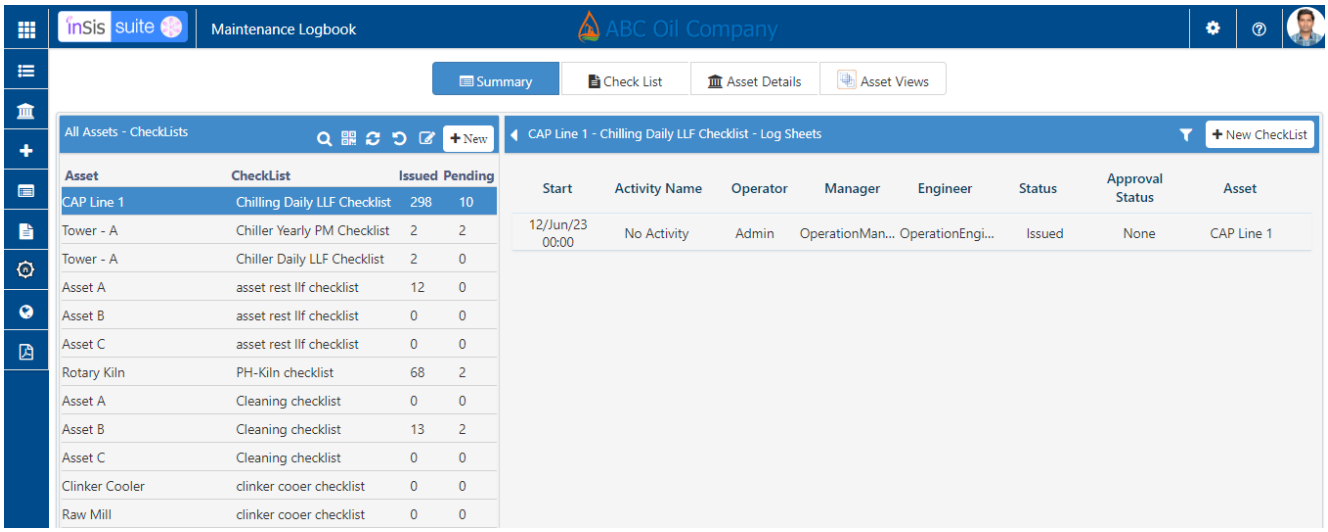

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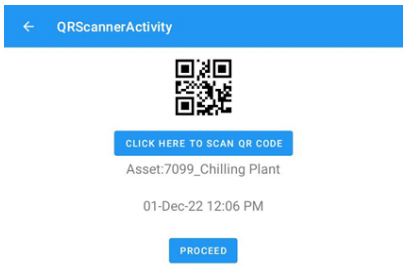
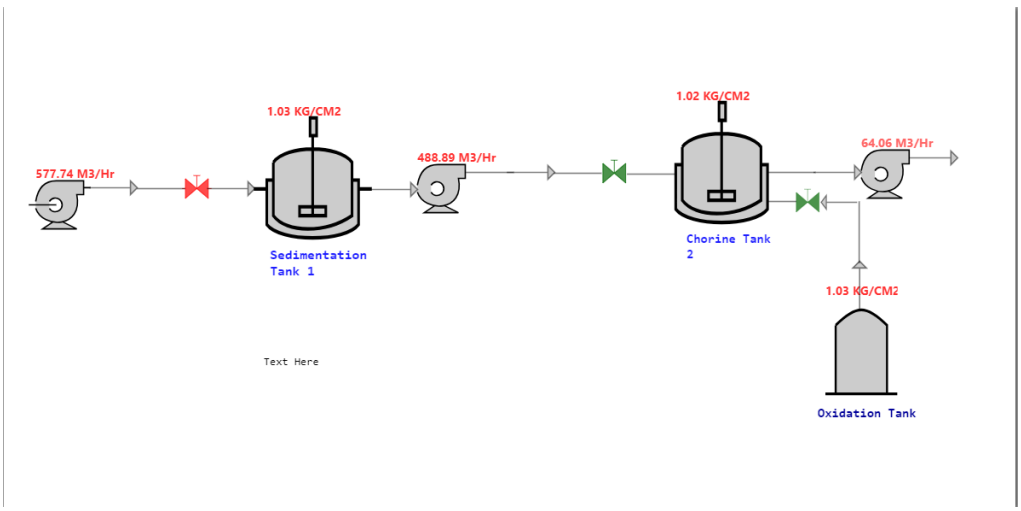
1.1.5. Mobility

The Mobile App inSis Operator Logbook helps operator

View real-time logbooks data on mobiles/tablets. The Logbooks created in web are easily accessed in Mobile. There is NO need to create separate mobile forms.





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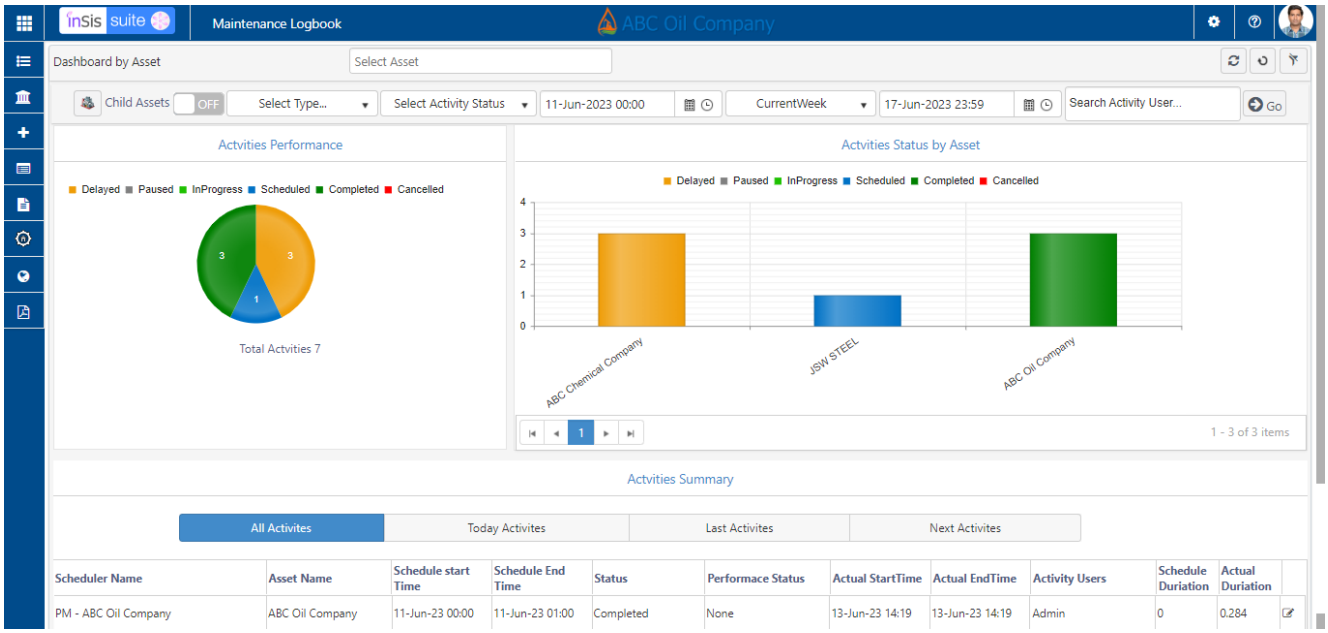
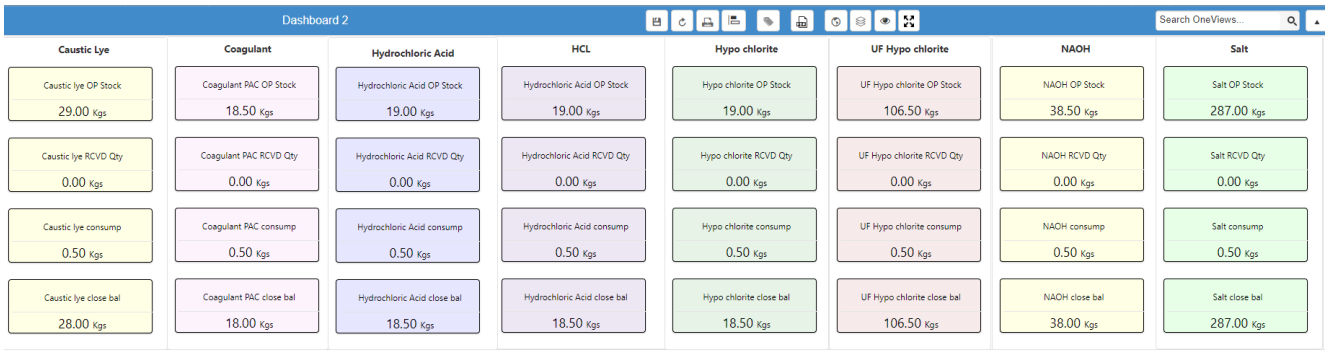
1.1.6. Contextual Analysis

Since the maintenance engineers see the process data and the historical data on their mobiles, it is easy to observe patterns and any anomalies in the energy consumption, vibrations, Oil temperatures etc…, Thus they are able to perform diagnostics easily and identify root causes and recommend right actions.





Monthly Stock (Opening,Received,Consumption,Closing)

Time	Caustic lye OP Stock	Caustic lye RCVD Qty	Caustic lye consump	Caustic lye close bal	Coagulant PAC OP Stock	Coagulant PAC RCVD Qty	Coagulant PAC consump	Coagulant PAC close bal	HCL OP Stock	HCL RCVD Qty	HCL consump	HCL close bal	Hydrochloric Acid OP Stock	Hydrochloric Acid co
01-Sep-23 06:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
01-Sep-23 14:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
01-Sep-23 22:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
02-Sep-23 06:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
02-Sep-23 14:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
02-Sep-23 22:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
03-Sep-23 06:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
03-Sep-23 14:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
03-Sep-23 22:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
04-Sep-23 06:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50
04-Sep-23 14:00	29.00	0.00	0.50	28.00	18.50	0.00	0.50	18.00	38.00	0.00	0.00	38.00	19.00	0.50

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1.1.1. Other Features

Data Driven Decisions: Collaboration is made easier; Process and Maintenance personnel are seeing the same set of data on their devices and thus discussions are more meaningful and data based.

Remote Monitoring: Access the Operations Information remotely from anywhere across the devices like Laptops, Mobiles & Tablets.

Store & Forward when Network is not there: During the periods of non-availability of networks, the data can be entered in the system and saved. They can go to Control room and transfer the data to server. Or when the network is available, the data can be synchronised.

Operator Comments: Operators can add comments and these comments are stored separately and integrated with Log Sheets. This helps in consolidation and search of comments.

Unlimited Data History: inSis Operations Logbook based on inSis Historian provides unlimited amount of History of the equipment Data.

Geo Restrictions: Optional restrictions are imposed on Operators to be in a Geographical location in order to enter the data.

Data Integration & Historian: It provides a Real-time Data Historian that historize the process parameters, Calculated variables, KPIs, etc. for unlimited period using a proprietary time-series data base. inSis DSI Integrate the existing Data Sources like Control Systems, Devices, SAP, DATA LAKES, HADOOP, LIMS, ERP Systems, RTDBs, Files, Third-party Historians etc.

Email Integration & AD Integration: The Maintenance Logbook Server shall be integrated with Client Active directory for creating users in the system. The Users information from Active Director will be synchronizes with inSis Security Module. Users will be able to login into the system using their AD credentials.

1.2. Benefits

- Improved Productivity and Operational Efficiency
- Real Time Asset Visibility for Immediate Action
- Proactive Alerts on Maintenance Schedules and Spares
- Simple visualizations and associated analytics save up to 80% time on data handling
- Savings through reduced down time, improved OEE, energy savings
- VAPT certified application ensured data is confidential while being achieved for future.
- Timely actions ensure improved Asset life between 5 to 10%

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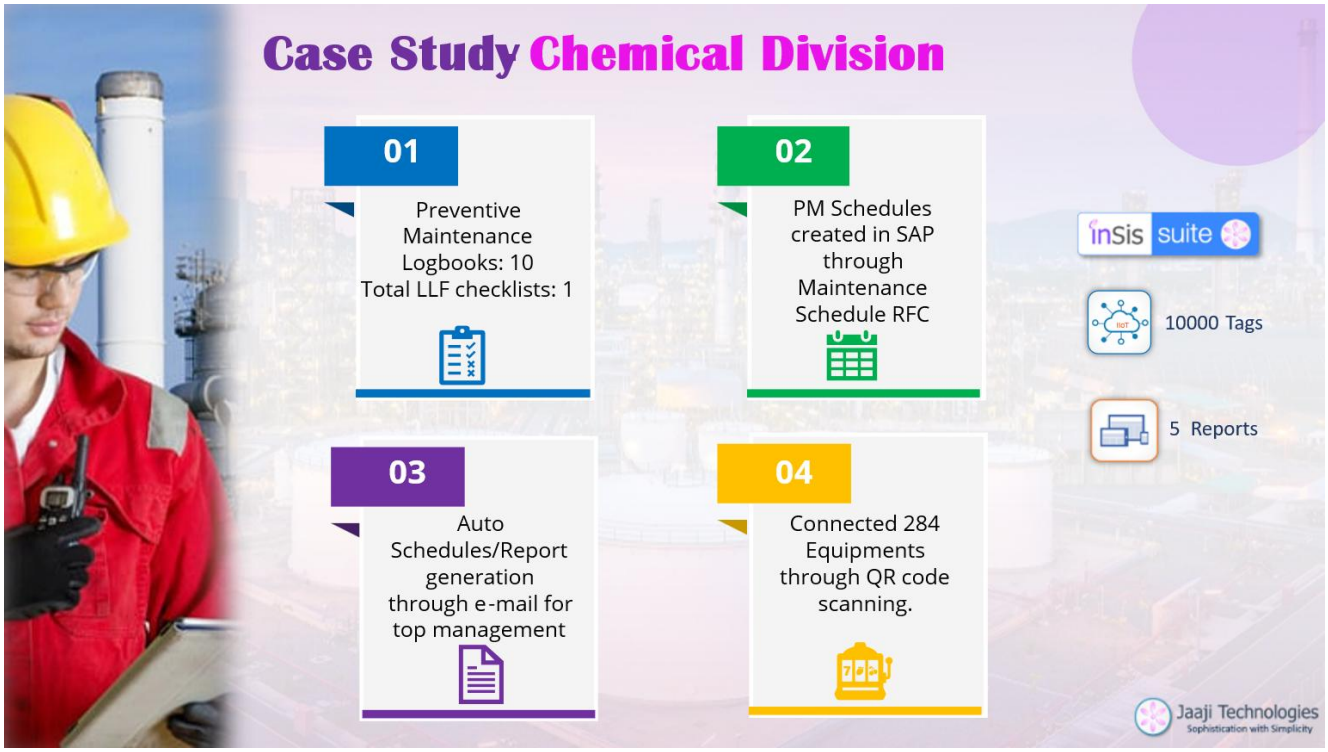
1.3. Case Study



2. Customisations Available in inSis Suite

inSis Suite is a comprehensive plat form for customising and building variety of solutions in the MES domain. inSis Suite is built based on Self-Service approach. End users and System Integrators can customise range of solutions and use cases. Following are major areas where the customisations are offered in inSis Suite,

1. **System Administration:** inSis Suite offers entire range of features available for end users to configure as per the following**,**
    a. Add/Modify/Delete New Tag Templates
    b. Add/Modify/Delete new Tags
    c. Modify Tag Properties like Limits, Units, Filters, Data Processing options, Historisation options, Scan frequency etc.
    d. Add/Modify/Delete new Calculation Tags with user defined calculations
    e. Add/Modify/Delete new Data Source Connections to OPC Servers, Modbus Gateways etc.
    f. Add/Modify/Delete User Enumerations
    g. Add/Modify/Delete Engineering Units
    h. Modify System Settings
    i. Add/Modify/Delete Users, User Groups & Roles

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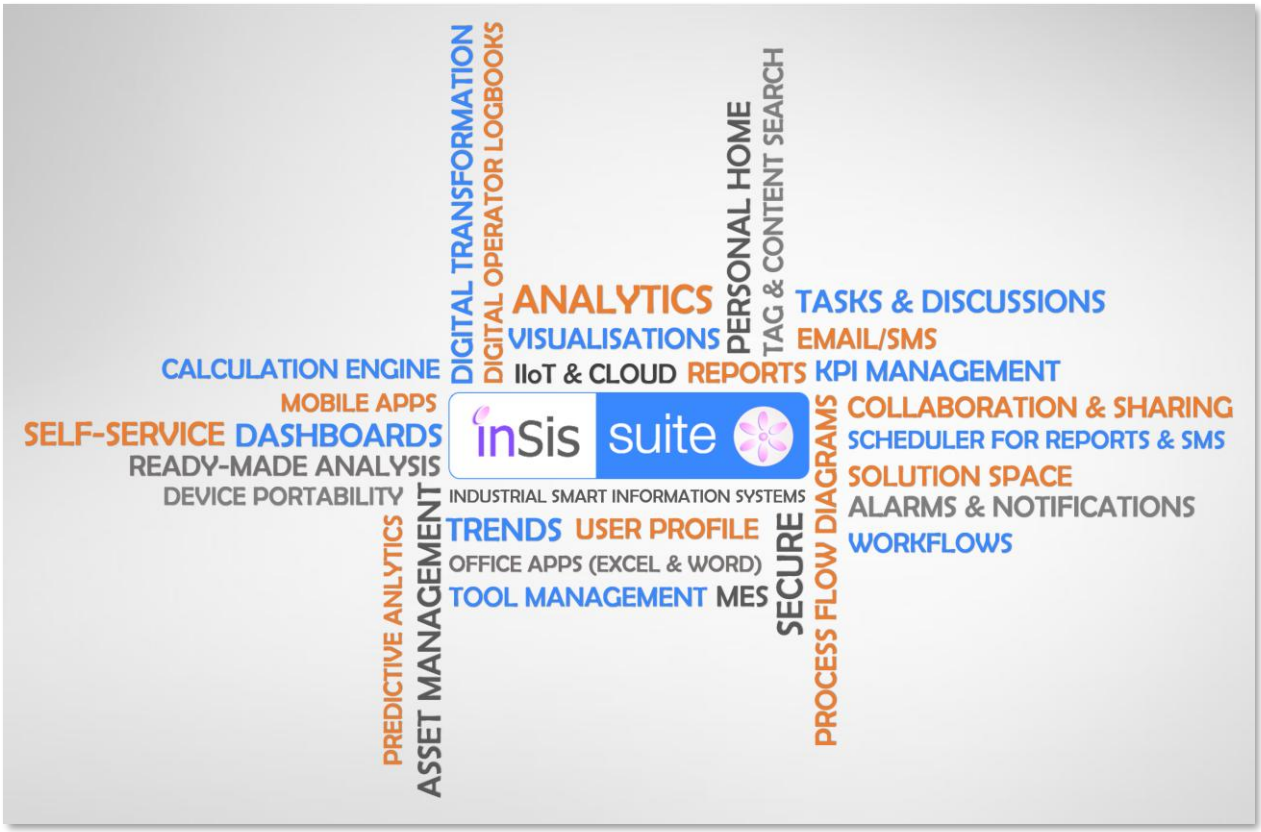
2. **Logbooks:** The logbooks are configured using free-format and layout using Logbook builder by end users. Configuring a new Logbook or revising new logbook can be done without any help from IT.
3. **Analytical Views:** Like the Dashboards, Users can configure their own Analytics Views depending on their requirements. They can modify the Tags, Analytics, Calculations, etc. at any point of time. inSis Suite offers drag & drop, click & Select, search & add approach while creating these Views. The IT teams support is NOT required to configure Analytics Views.
4. **Calculations:** End users can configure Ad-hoc calculations in Analytical Views, Dashboards, Trends, Reports etc. Further a Server-based calculation Tags can be configured by End users with user defined calculation expressions.
5. **Email & SMS Notifications & Reports:** Users can freely create email and SMS notifications to deliver the Manufacturing data on their mailboxes and phones.
6. **inSis Solution Space:** This product which is exclusively designed to build customised UI for the end users for a specific use case.It offers customisable UI with user defined navigations, drill-downs, content etc.



inSis Suite – Summary of Features

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3. Security & Role-based Visualization

All the products of inSis Suite are fully secured and based on configurable access permissions. The various Apps of inSis Suite implement thorough security for accessing the content and various features. inSis Suite supports Role-based Visualization.

Active Directory Integration:
inSis Suite has built-in connectivity with Active Directory so that the Users can be easily added in to inSis System directly from AD. Also, the authentication is done using the Active Directory.
System supports parallel authentication using Active Directory and Form authentication for supporting the Mobile Apps and accessing the inSis System from outside the corporate networks.

Cybersecurity:

By using the Microsoft Azure Cloud, we provide the reliable, secure and robust cloud solution. Further the securing provided by Application software as per the following

The application security is either Forms based security of Windows Active Directory based security. In both cases, the security model implements the following,

1. Users
2. User Groups
3. Roles
4. And, Privileges

Users: User are created by Administrator for each of the person who is intended to access inSis Suite. Each User has various details like Password, email, phone etc. User can change their password and manage their profiles after login. When a new user is created, by simply assigning to appropriate User Group, his access is controlled.

User Groups: A User Group is configured for similar type of users i.e., Process Engineers, Production Engineers, Process Managers etc. The Roles are assigned to the User Groups.

Roles: By default, there are Administrators, Engineers, Operators & ViewOnly roles. The privileges for each of these roles are pre-configured. However, these privileges can be modified by the Administrator.

Privileges: The privileges are fixed which define the accessibility and specific activity in the application, i.e., accessing an overview, or creating a dashboard etc.

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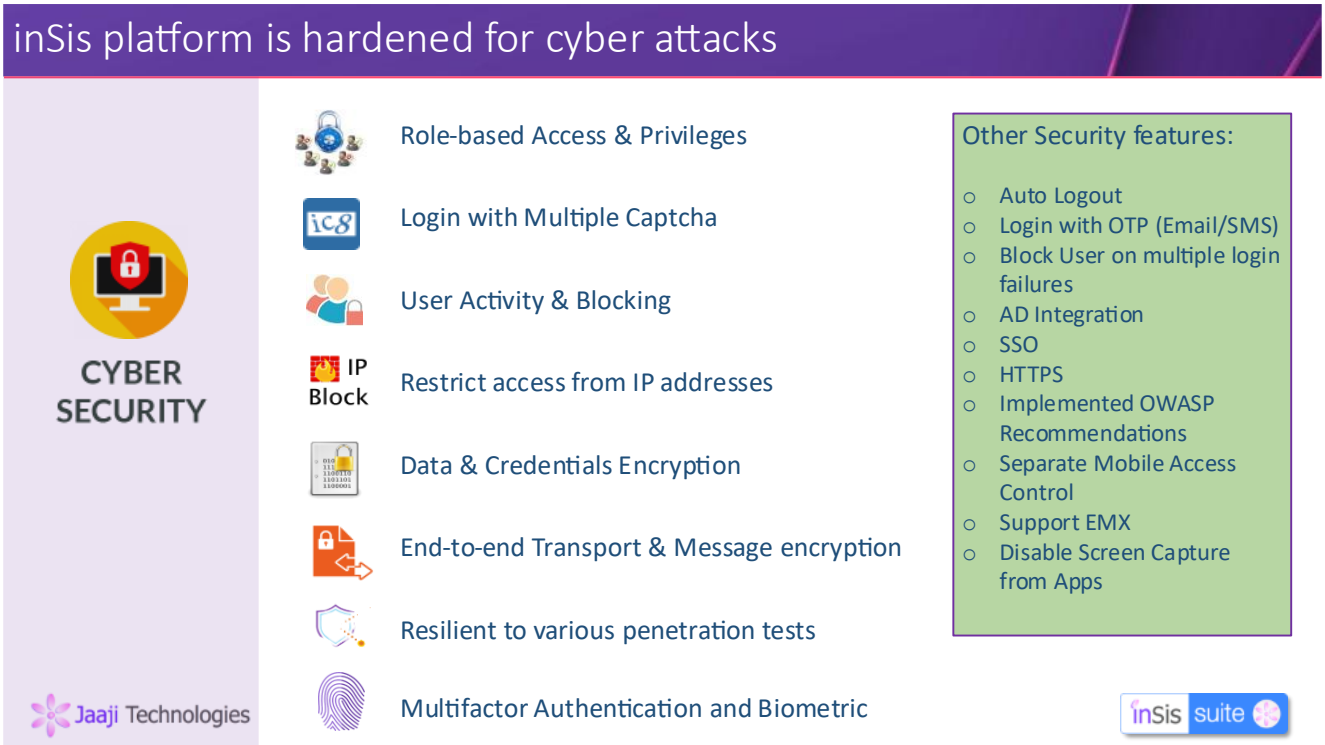
Login Process:

inSis Suite is accessed through Web-browsers, Office Apps and Android Apps wherever applicable. In all scenarios, the user shall authenticate before proceeding further.

- **Credentials:** The login process required providing a valid credentials.
- **Encryption:** The passwords are encrypted while passing over to Server for validation.
- **Captcha:** The logins are done with Captcha.
- **Blocking of Username:** The usernames are blocked on fixed number of invalid credential entries.



Content Visibility & Access within the Organization:

The various Analytical views, Trends, Dashboards, Graphics, Reports which are created by specific user will be accessible to only the user who configures them. However, user can share this information to specific Users, User Groups & Roles for them to access with or without the privilege to modify. This enables to full control of the data visibility and access within the entire organization.

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