MAHENDRA INSTITUTE OF ENGINEERING AND TECHNOLOGY

ENVIRONMENTAL MONITORING

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1. ABSTRACT:

Objective:

Environmental monitoring describes the processes and activities that need to take place to characterize and monitor the quality of the environment.

Environmental monitoring is used in the preparation of environmental impact assessments, as well as in many circumstances in which human activities carry a risk of harmful effects on the natural environment.

All monitoring strategies and programs have reasons and justifications which are often designed

environmental parameters, for the purpose of accurately quantifying the impact an activity has on an environment.

Results are gathered, analyzed statistically, and then published in a risk assessment and environmental monitoring and impact assessment report.

The main objective of environmental monitoring is to manage and minimize the impact an organization's activities have on an environment, either to ensure compliance with laws and regulations or to mitigate risks of harmful effects on the natural environment and protect the health of human beings.

. As human population, industrial activities, and energy consumption continues to grow, the continued development of advanced, automated monitoring applications and devices is crucial for enhancing the accuracy of environmental monitoring reports and the cost-effectiveness of the environmental monitoring process.

EXPANDING SYSTEM:

✾ *Unstainable growth of the whole world depends on several factors such as economy, quality education, agriculture, industries and many others, but environment is one of the factors that plays the most important role. Health and hygiene are key components of the sustainability of mankind and progress of any country, which comes from a clean, pollution free and hazardous free environment. Thus, its monitoring becomes essential so as to ensure that the citizens of any nation can lead a healthy life.*

✾ *Environment monitoring (EM) consists of proper planning and management of disasters, controlling*

different pollutions and effectively addressing the challenges that arise due to unhealthy external conditions. EM deals with water pollution, air pollution, hazardous radiation, weather changes, earthquake events, etc.

✾ *The sources of pollution are contributed by several factors, some of which are man-made and others due to natural causes, and the role of EM is precisely to address the challenges so that the environment is protected for a healthy society and world . With the more recent advances in science and technology, especially artificial intelligence (AI) and machine learning, EM has become a smart environment monitoring*

(*SEM*) *system, because the technology has enabled EM methods to monitor the factors impacting the environment more precisely, with an optimal control of pollution and other undesirable effects.*

✤ *The design of smart cities is taking the place of old and traditional methods to create and plan urban environments. Smart cities are planned using wireless networks that assist monitoring of vehicular pollution level in the city growth of the whole world depends on several factors such as economy, quality education, agriculture, industries and many others, but environment is one of the factors that plays the most important role.*

✤ *Health and hygiene are key components of the sustainability of mankind and progress of any country, which comes from a clean, pollution free and hazardous free environment. Thus, its monitoring becomes essential so as to ensure that the citizens of any nation can lead a healthy life.*

✾ *The design of smart cities is taking the place of old and traditional methods to create and plan urban environments. Smart cities are planned using wireless networks that assist monitoring of vehicular pollution level in the city.*

EXISTING SYSTEM:

✾ *The existing environmental monitoring system consists of various components such as sensors, data collection devices, and data analysis software. These sensors are strategically placed in different locations to measure parameters such as air quality, water quality, noise levels, temperature, and humidity. The data collected by these sensors is then transmitted to a central database or server for analysis.*

✾ *The data analysis software processes the collected data and generates reports and visualizations that provide insights into the environmental conditions. These reports help in identifying patterns, trends, and potential environmental issues.*

✙ *The system also allow time monitoring, enabling prompt action in case of any anomalies or emergencies. Additionally, the system may include features such as data logging, remote monitoring, and alert notifications. Data logging ensures that historical data is stored for future reference and analysis. Remote monitoring allows users to access the system and view real-time data from anywhere. Alert notifications can be set up to inform relevant stakeholders about any significant changes or critical events.*

✙ *The environmental monitoring system plays a crucial role in assessing the impact of human activities on the environment, identifying areas of concern, and implementing appropriate measures for environmental protection and sustainability. It aids in making informed decisions, promoting environmental awareness, and ensuring the well-being of ecosystems and communities.*

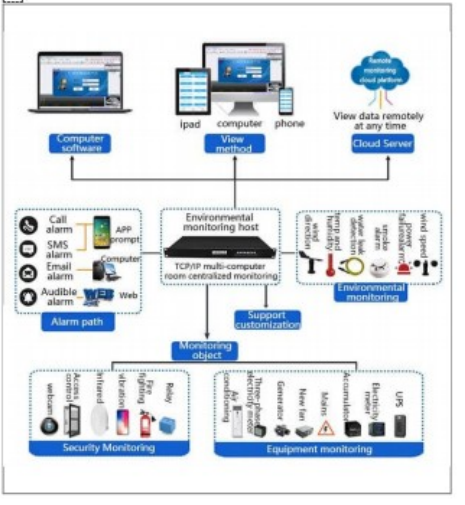
PROPOSED SYSTEM:

✙ *The system typically involves deploying various sensors and*

- *Overall, the proposed system aims to provide a comprehensive and efficient approach to environmental monitoring, ensuring the well-being of our surroundings and promoting sustainable practices.*

EXISTING SYSTEM DESIGN:

- *Depending on the area of concern, a monitoring program can be designed to measure chemical, biological or physical impacts. Monitoring can be as simple as having someone go to the site and periodically measure water quality parameters in situ, or as elaborate as examining a series of satellite images taken over a period of time to determine watershed changes.*



✤ *An effective environmental monitoring program should*:

Build on existing knowledge and experience. .

It should include information and results from previous studies of the environmental effects of relevant industrial effluents, and knowledge

gained regarding appropriate sampling strategies, designs, and endpoints.

Clearly state monitoring objectives

Monitoring objectives should flow explicitly from management objectives, with results of monitoring used to assess and guide management and monitoring decisions. . !!

ENVIRONMENTAL MONITORING INITIALIZATION:

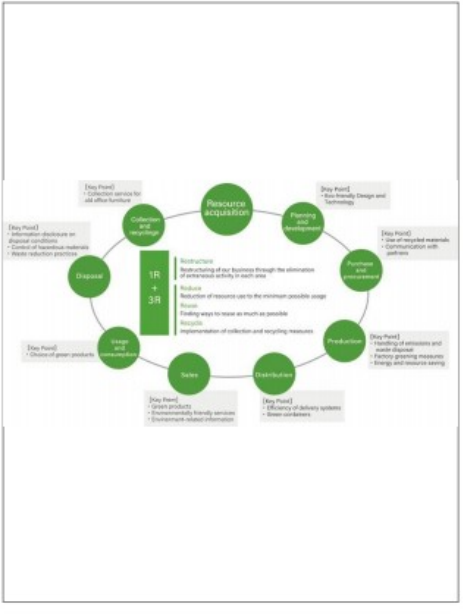
IWM4MINI allows the caller to supply MVS with some or all of the work request attributes needed for the monitoring environment. The attributes include user ID, transaction name, transaction class, source LU, and LU 6.2 token.

There are three types of monitoring environments available: management monitoring environments, report-only monitoring environments, and buffer pool management only environments. Management monitoring environments provide both

tokens), the first time IWM4MINI is invoked in each address space for a given work request must specify MODE=RESET. Any subsequent invocations for the same work request should specify MODE=RETAIN.

If you are invoking IWM4MINI for a management monitoring environment, multiple times for the same work request, only one of the invocations should specify EXSTARTTIME=exstarttime. It is up to you to decide at which point in the subsystem work manager's processing you consider the real execution start time.

classified into three types: Planned emission, fugitive emission and accidental emissions.



Execution environments are typically part of another node that models the computing hardware of a system. For example,

- **Fuel gas desulphurisation**
- **Activated carbon injection**
- **Fabric filters**
- **Electrostatic precipitators**
- **Dry sorbent injection**

Suppliers of environmental monitoring and control systems

Power Technology has listed leading suppliers of environmental control systems and environmental monitoring systems based on its extensive experience in the sector.

The list includes suppliers of fuel gas recovery systems, packed tower scrubbing systems, desulphurisation, drying and valorisation systems, boiler air pollution control systems, and heat recovery steam generators (HRSG). It also includes suppliers of odour control systems, oil spill secondary containment

systems, and flue gas cleaning and industrial odour control systems.

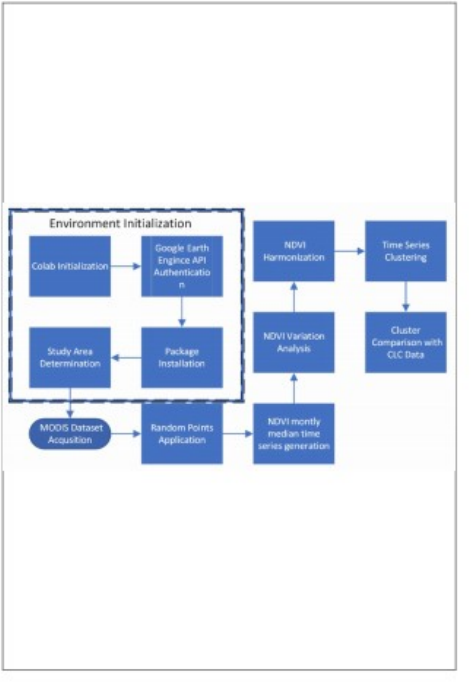
The information available in the download is useful for power generation companies, power plant operators, environmental consultants and any individual involved in power plant operations.

The download contains detailed information on manufacturers and suppliers, their product and service offerings, and contact details to aid purchase decisions.

CIOSING:

Environmental monitoring refers to the tools and techniques designed to observe an environment, characterize its quality, and establish environmental parameters, for the purpose of accurately quantifying the impact an activity has on an environment.

Implementing working environment monitoring helps businesses establish and maintain a healthy & safe workplace, reduce risks of affecting health and prevent occupational


Environment Initialization
Colab Initialization
Google Earth Engince API Authenticatio n
Study Area Determination
Package Installation
MODIS Dataset Acquisition
Random Points Application
NDVI montly median time series generation
NDVI Variation Analysis
NDVI Harmonization
Time Series Clustering
Cluster Comparison with CLC Data

IMPLEMENTATION:

Plan: Planning, including identifying environmental aspects and establishing goals

Step 1: Define Organization's Goals for EMS.

Step 2: Secure Top Management Commitment.

Step 3: Select An EMS Champion.

Step 4: Build An Implementation Team.

Step 5: Hold Kick-Off Meeting.

Step 6: Conduct Preliminary Review.

Environmental Monitoring Implementation Practices and Procedures

An Aseptic Swabbing Techniques Training Program for Sampling the Environment and Equipment

Java Environmental Monitoring Program

User
Environmental monitoring Java program

Define Requirements:
Clearly define the goals and requirements of your environmental monitoring program. What parameters will you monitor (e.g., temperature, humidity, air quality, etc.)?

Select Sensors:
Choose the appropriate sensors for data collection. Ensure they are compatible with Java, and consider

using libraries or APIs for sensor interfacing.

Data Collection:
Set up a data collection mechanism to gather readings from the sensors. You may need to interface with hardware through GPIO, USB, or other interfaces.

Data Storage:
Decide how and where you'll store the collected data. Options include databases, CSV files, or cloud services. Use Java libraries to handle data storage.

Data Analysis:
Implement algorithms to analyze the collected data. This could involve calculating averages, trends, or detecting anomalies.

Maintenance:
Be prepared to maintain and update your program as needed, especially if you plan to use it long-term.

Remember that this is a high-level outline, and the specific implementation details will depend on your project's scope and requirements. Additionally, consider using relevant Java libraries and frameworks to simplify the development process and improve code quality.

PROGRAM:

```
import java.util.ArrayList;
import java.util.List;

class TemperatureData {
    private String location;
```

```
    public List<TemperatureData>
getTemperatureData() {
        return temperatureRecords;
    }

    public static void main(String[] args) {
        EnvironmentalMonitoringProgram
program = new
EnvironmentalMonitoringProgram();

        // Record temperature data

program.recordTemperature("Location
A", 25.5);

program.recordTemperature("Location
B", 22.0);

program.recordTemperature("Location
A", 26.0);
```

Location: Location A
Temperature: 25.5°C
Timestamp: [timestamp in milliseconds]

Location: Location B
Temperature: 22.0°C
Timestamp: [timestamp in milliseconds]

Location: Location A
Temperature: 26.0°C
Timestamp: [timestamp in milliseconds]

APPLICATION:

Environmental monitoring applications are essential to generating information about the quality of the environment around us, including whether it is improving, worsening, or staying the same. The kind of data environmental monitoring applications produce assist in decision making, both

Monitoring Applications
Monitoring Turbidity at Dredging Sites
Monitoring Dissolved Oxygen at Hydropower Facilities
Monitoring Scour at Bridges and Offshore Structures
Temperature Profiling in Lakes
Inland Lake Monitoring
Stream and River Monitoring
Flood Warning Systems

REVIEWS:

Environmental Monitoring review is a study that aims to collect and document information on an organization's present activities and related environmental aspects, impacts, legal requirements changing circumstances and continual improvement.

provide useful information on pathogens and toxic or radioactive substances in the locality to survive.

Environmental impacts are changes in the natural or built environment, resulting directly from an activity, that can have adverse effects on the air, land, water, fish, and wildlife or the inhabitants of the ecosystem.

THANK YOU!!