



# Automated surveillance & Analysis of Environmental Pollution

Using Artificial Intelligence and Machine Learning

An Innovation by  
M.P. Pollution Control Board



# OBJECTIVES



- ❖ To ensure reliability and authenticity of industrial Pollution data.
- ❖ Policy formulation and decision making on the basis of genuine real-time data as it can have significant environmental implications.
- ❖ To share this Innovative Automated tool to facilitate other States for monitoring of industrial pollution.

# Challenges

## 1. Data Authenticity

Reliability and Genuineness of Real-Time Pollution Monitoring Data

## 2. Data Tampering

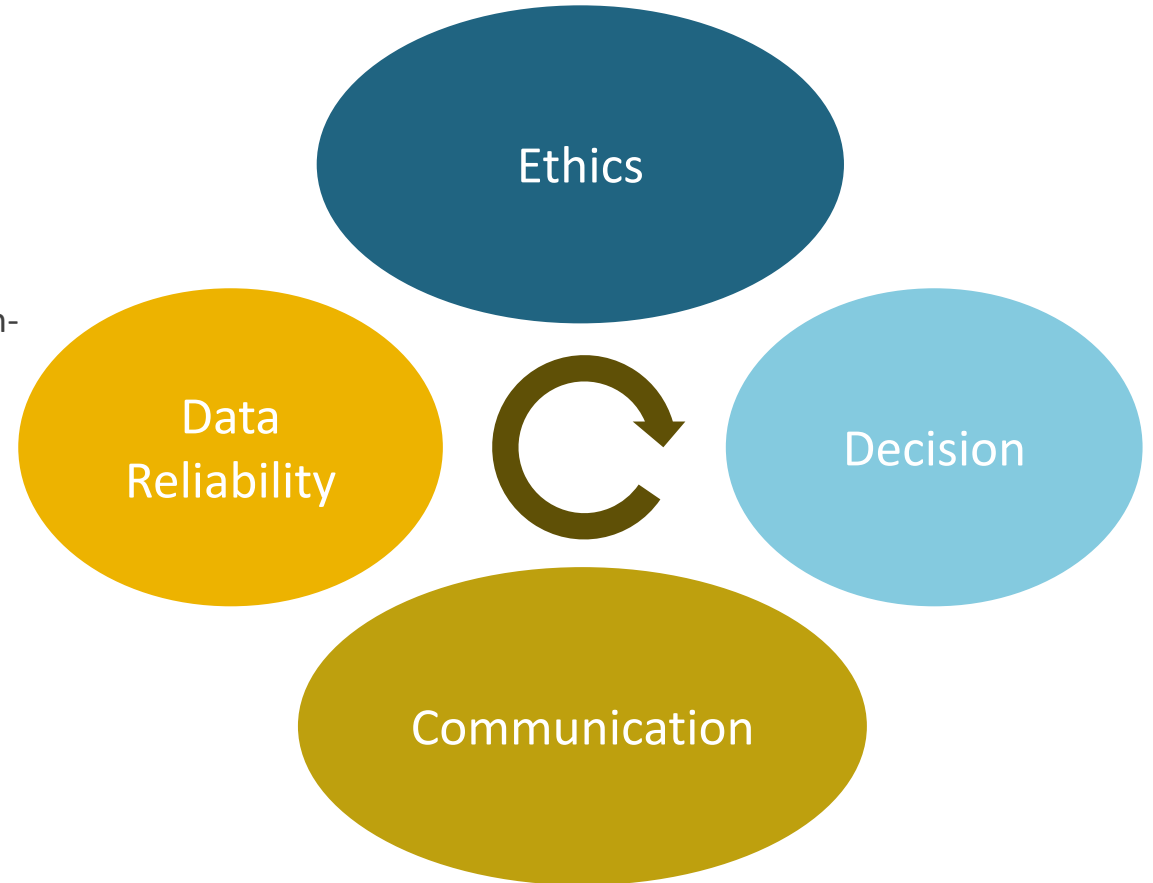
Unethical practices & Manipulation of environmental and pollution-related data.

## 3. Delay in Decision

Delay in decision due to Unreliable and inaccurate data

## 4. Surveillance Workforce

Round the Clock Monitoring of Industries and Environment.



# Challenges

## 5. Incidents & Response

**Delayed incident detection** and response time could lead to further environmental damage and harm.

## 6. Lack of Automation

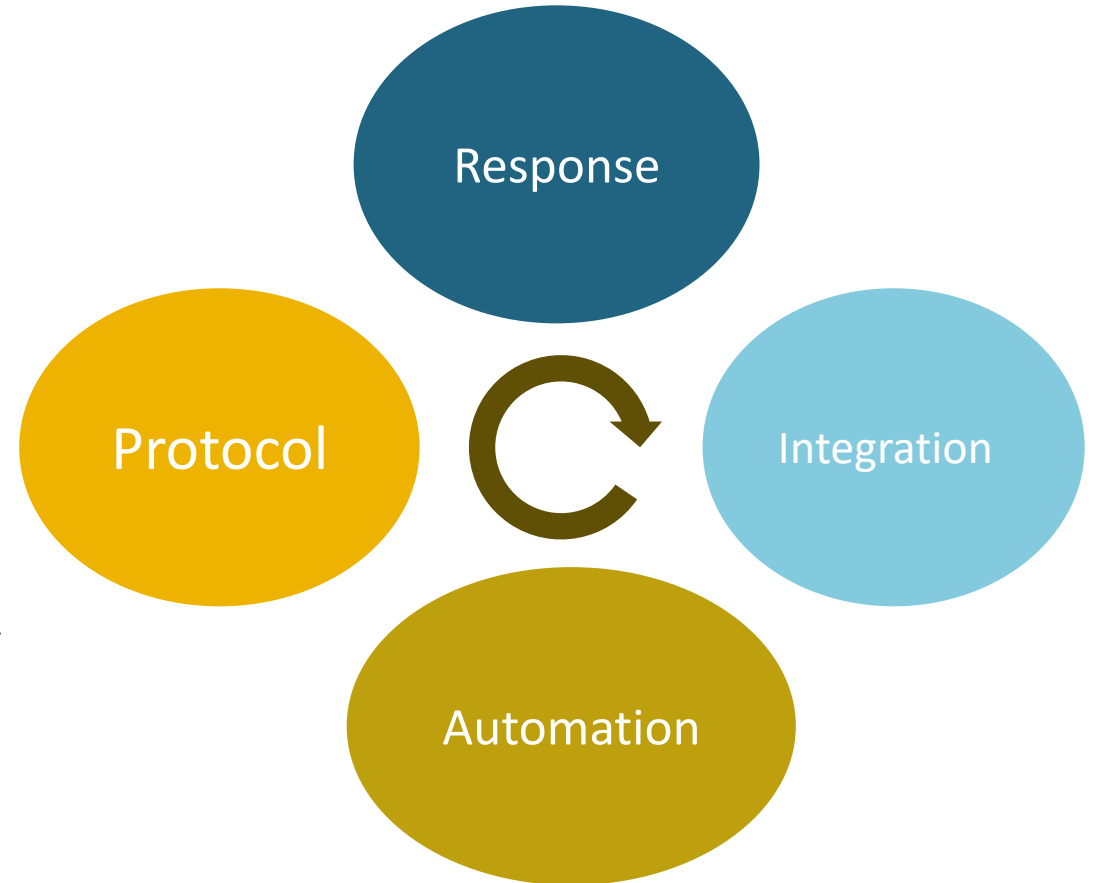
**Relying solely on manual data** collection and analysis may misguide and lead to wrong decisions.

## 7. Lack of Integration

**The solution will integrate with existing infrastructure**, including pre-existing Surveillance systems in industrial settings.

## 8. Protocol Compliance

**Ensure genuineness** of transmitted data without diluting stipulated norms



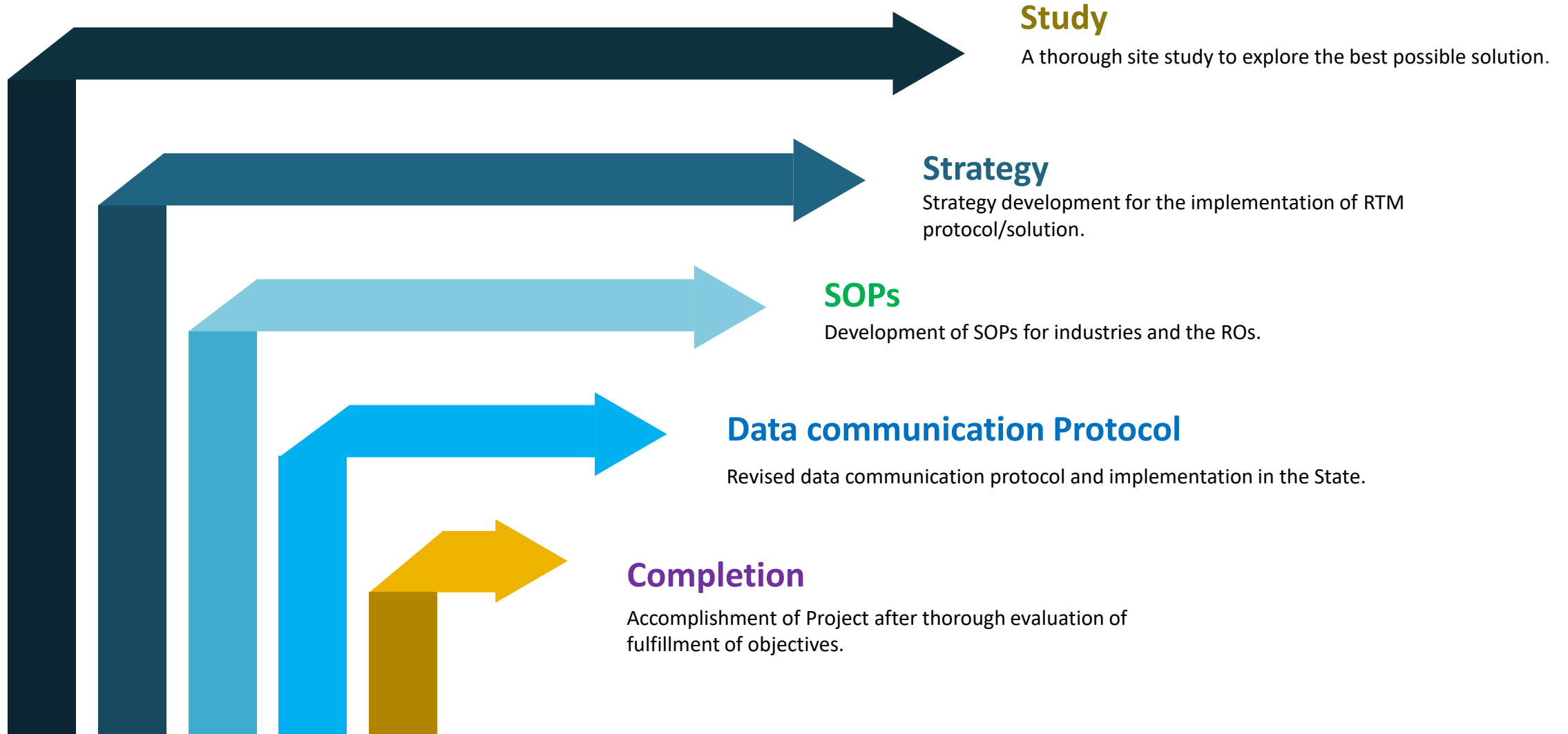


# Solution

Automated surveillance and  
Analysis of Environmental  
Pollution using  
Artificial Intelligence and  
Machine Learning



# Strategies, Constraints & Execution





## Upgraded Data Transmission / communication

IoT-based system to fetch and transmit data from industry to the MPPCB server replacing the existing data loggers from the Network.



## AI-based Image processing system

This system is to use pre-installed cameras at industries. The system transmit the feeds to the AI engine on real-time basis, detecting any emissions from stacks, storm water or wastewater at the outlet of industries, ETP operations etc.



## Live Reporting

The system promptly notifies the authority through video and images in the event of any occurrence/deviation.

# AI-based Image processing System & IoT-based data transmission system



# Attainments

## Monitoring Automation

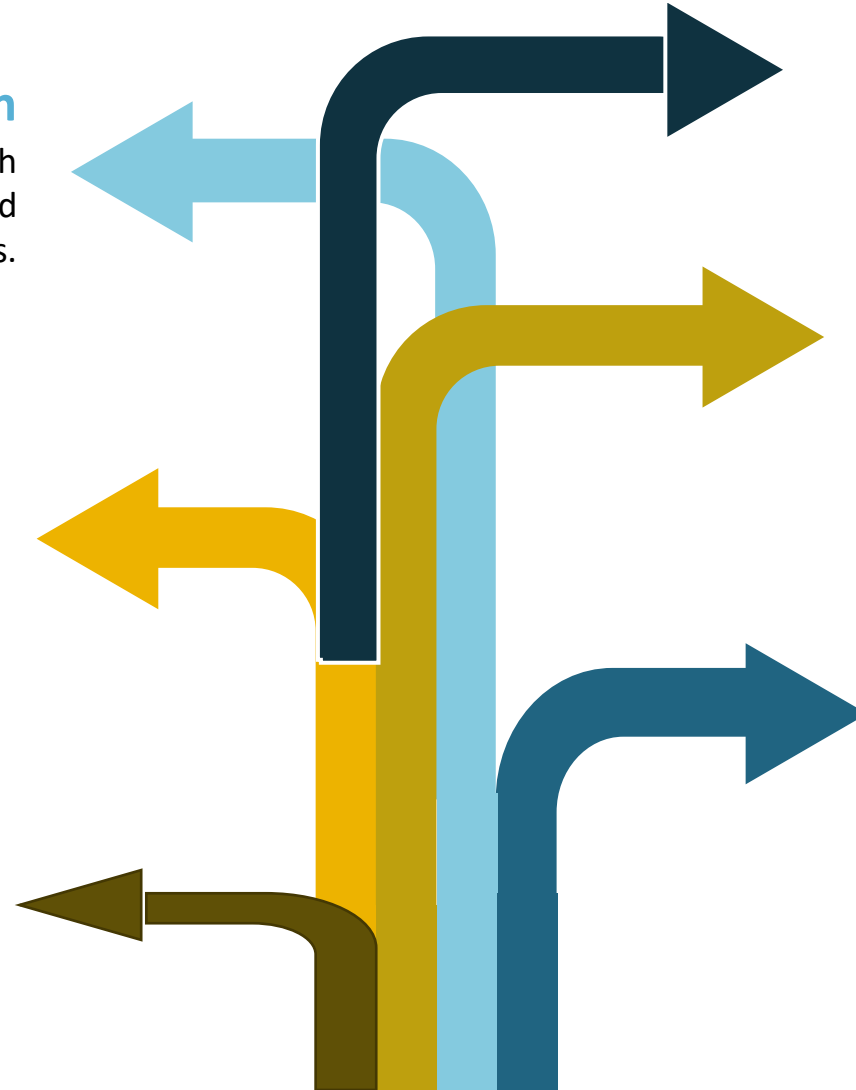
An automated real-time vigilance on health and status of all networked IoT devices and systems.

## Automated Notifications

Automated notifications to the designated officials via email, SMS, or other channels during system anomalies or downtimes, supported with automated escalation workflows.

## Swift Decision Making

The system is engineered to provide actionable alerts promptly, thereby reducing the decision delay significantly, ensuring that critical decisions are taken in time, thus, enhancing the operational efficiency and responsiveness.



## Corrective Action Automation

Harness automated scripts or actions aimed at resolving known issues sans human intervention and streamlining automated maintenance workflows for service scheduling.

## Round-The-Clock Monitoring

24x7 monitoring feature ensures continuous watch on IoT ecosystem, detecting and alerting any irregularities instantaneously, thus, substantially reducing the response time to potential issues and ensuring uninterrupted operations..

## Data Authenticity

Newly evolved sophisticated AI-driven framework processes sample data alongside real IoT data to ascertain genuineness of real-time pollution monitoring data. This feature is instrumental in maintaining data integrity and lays a solid foundation for precise and logical analytics and informed decision.

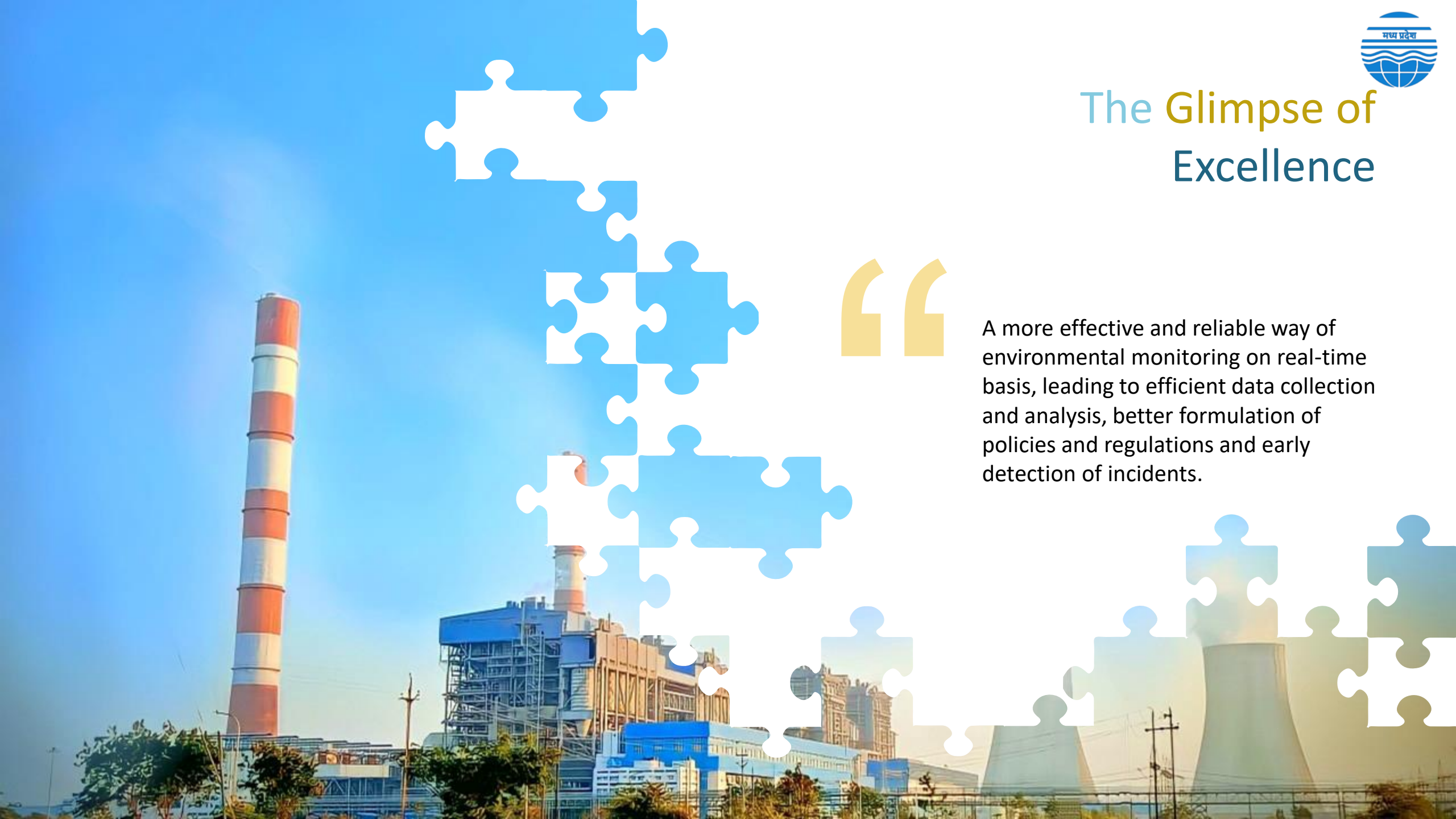




# The Glimpse of Excellence



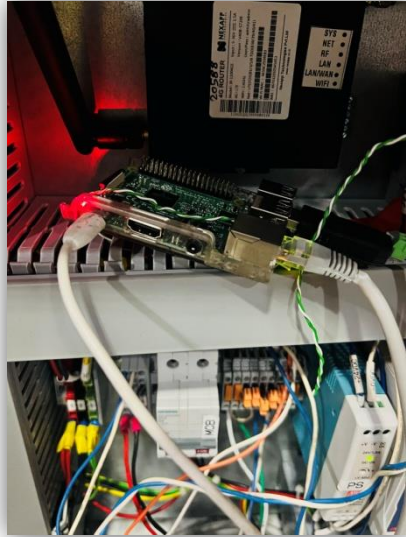
A more effective and reliable way of environmental monitoring on real-time basis, leading to efficient data collection and analysis, better formulation of policies and regulations and early detection of incidents.



# AI-ML Project Test Environment



In-house designed Surveillance Device by MPPCB



Open Setup for testing



Analyzer compatibility test



Make shift testing lab



Pre deployment inspection



Testing and Commissioning



Brainstorming before trial run



Final Deployment at Site



**THANK YOU**



**M.P. Pollution Control Board**

**Bhopal - 462016, India**

**Ph. : +91-755-2469180**

**E.Mail : [ercmppcb@nic.in](mailto:ercmppcb@nic.in)**

**Web : <https://erc.mp.gov.in>**