



Environmental Monitoring

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Environmental responsibility and sustainability are of paramount importance to ensure the preservation of our environment. Mitigating the real threats and reducing overall impacts on the environment have become a chief priority for all businesses especially those involved in the industrial and agricultural sectors, as well as those dealing with the management of smart cities.

To support the global direction and mandates designed for the protection of the environment, pulse by solutions has developed a new IoT application that enables environmental monitoring. It helps measure and eventually limits the unwanted effects of pollutants contaminating the air, water, and soil.

Through the use of this application, users – both from the governmental and nongovernmental sectors – can ensure that best practices are in place to monitor, track, and enable:

- Environmental surveying
- Pollution management
- Environmental management programs, compliance, and regulations

This application is a major development in the field of environmental monitoring. It measures the emission of gases and monitors pollutants in air, water and soil. In the areas surrounding sources of pollution, the application is able to detect fluctuations in the levels of around 120 variables, amongst which are:

For water:

- pH
- Conductivity
- Turbidity
- Chloride ion

For air:

- Carbon monoxide (CO)
- Ozone (O3)
- Sulphar dioxide (SO2)
- Ammonia (NH3)
- Hydrocarbons
- Dust

The application serves in limiting the environmental impacts of polluting industries such as power stations, as well as cement and petrochemical factories. It helps both the manufacturing facility and the regulatory authorities track the pollution sources and ensure compliance with environmental regulations.

The system includes the following tiers:

Presentation Tier

Business Tier

Device Tier

The application consists of two modules:

The Expert Module

It is the module by which an expert can monitor certain predefined environmental indices in the air, water, soil, etc. The module has the ability to:

- View all deployed nodes, and monitor their related information and status.
- View locations of deployed nodes on a map, with tooltips and different status icons.
- Monitor predefined environmental characteristics.
- Graphically display history of the predefined environmental characteristics in a given period of time.
- Configure three different levels of minimum and maximum thresholds for each environmental characteristic. A user can both set a global default value for thresholds on all nodes, and set a specific value for thresholds on node level.
- Notify predefined designated persons by email when a threshold is exceeded.
- Display all notifications and their details, and locate each of the detecting nodes on the map.
- Predefine the environmental characteristics that the system can possibly monitor, and also display the number of current deployed sensors to measure those characteristics on the environmental system.

The Admin Module

This module administrated the nodes and assesses their internal status. The module has the ability to:

- View all deployed nodes, and monitor their related information and status.
- View locations of deployed nodes on a map, with tooltips and different status icons.
- Monitor the deployed nodes internal status, represented as node internal battery level and node internal temperature...etc.
- Configure three different levels of minimum and maximum thresholds for each node internal status characteristic. An administrator can both set a global default value for thresholds on all nodes, and set a specific value for thresholds on node level.
- Notify predefined designated persons by email when a threshold is exceeded.
- Display all notifications and their details, and locate each of the detecting nodes on the map.
- Deploy nodes automatically, and remove those deployed nodes.