**Development of an intelligent platform for obtaining environmental data**

**Introduction.**

Currently, urban areas usually harbor a large amount of pollutants that seriously protect the health of human beings, these pollutants come from different emission sources such as lead, hydrocarbons, solid waste, among others, which are generated from vehicles. , people, homes and industries. For this reason, cities today must have measures that harm the environment, in order to establish metrics and decisions that improve their quality of life and prevent environmental damage.

A monitoring system helps make informed decisions that help improve the situation in the affected area, it is important to determine the source and type of pollutant that affects the population where the contamination is analyzed.

For this work, the development of a system for monitoring defined geographical areas for the collection of environmental variables and polluting elements is proposed, for their visualization and study through a web platform.

The purpose of the web platform is to be the means by which the environmental monitoring data of various IoT nodes are displayed, to make the information understandable for the daily user, to allow the environmental study of a previously monitored defined geographical area and to study its evolution.

The web platform will have only two roles Administrator and User, the user being able to consult the information of the IoT node, environmental information and generate historical reports no older than one year.

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| **Type of roles** | **Description** | **Privileges** | **Technical background** | **Frequency** |
| Administrator | User who has administrator permissions. The administrator manages the IoT nodes by allowing you to register, delete, and modify the IoT nodes. | Access to all system functionalities. | advanced. Basic system administration skills with significant application knowledge are required. | whenever required |
| User | User accessing the system can apply filters to the data. | Visualize the information of the IoT nodes. In addition, you have privileges to apply filters to the information. | Half. It is requested that you have experience to access the system and manage the filtering tools. | whenever required |

**Functional Requirements**

1. User: Select geographic monitoring area
2. User: Select the IoT node
3. User: Consult characteristics of the IoT node
4. User: Historical report of the IoT node
5. User: Generate graph of the historical record of the IoT node
6. User: Reset password
7. Admin: Delete IoT node
8. Admin: Register IoT node
9. Admin: Modify IoT node
10. Admin: Consult IoT node
11. Admin: Delete User
12. Admin: Consult User
13. Admin: Modify User
14. Admin: Register User
15. Admin: Query Location
16. Admin: Delete Location
17. Admin: Modify Location
18. Admin: Register Location
19. System: Show the network status of the IoT node
20. System: Notify disconnection
21. System: System access (login)
22. Admin: Access the administrator panel

**non-functional requirements**

1. The system is a web platform developed with js, html, css and php
2. The history and the main panel will be on different pages
3. The system must have a load time of no more than 50 milliseconds
4. Navigation through the page will use the 3-click rule
5. The system must be functional at least for Windows, Linux, Android and IOS
6. The system must be responsive to the dimensions of the screen (Monitors)
7. The system must be responsive to the screen dimensions where it will be displayed (Tablets and IT)
8. The system must be compatible with most commercial browsers such as chrome, firefox, edge and safari

**Glossary**

**Arduino**

It is a motherboard based on an ATMEL microcontroller, which aims to be low cost and function as a microcomputer that can be programmed in different ways to use a wide range of accessories.

**pollutants**

Pollutants are elements that are harmful to health and the environment, which are generated by human activities.

**Internet of Things (IoT)**

The Internet of things is a process that allows the connection of various electronic devices of daily life, to share data between them and achieve a common goal.

**Environment**

The environment is the set of elements of chemical, biological and physical origin defined in a geographical area in which living beings coexist. It is also defined as natural and artificial elements that interact with living beings.

**Web page**

A web page is a set of files which contain information, which is used to display or perform an action that involves a user, which is contained on the Internet.

**NodeIoT**

Embedded device, composed of a series of sensors to monitor environmental variables, based on a Raspberry Pi and an arduino nano, using IoT technology.

**RaspBerry Pi**

A Raspberry is a microcomputer that can be programmed to perform different tasks and to which other components can be connected. a raspberry enables communication and data processing as one of the main tasks over the internet.

**Geographical area**

A geographic zone is a considerable extension of land which has defined limits.

**Resources. HR, Budget, Time.**



