**DUNDALK INSTITUTE OF TECHNOLOGY**

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**Alpha Release Technical Documentation On**

**AEROSENSE – SMART HUB FOR AIR QUALITY MONITORING**

Project Carried Out

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**EXECUTIVE SUMMARY**

The Alpha release of the Aerosense project represents a key phase in the development of our Smart Indoor Air Quality Hub. This initial release is a comprehensive prototype that demonstrates the capability of our system to assist individuals with asthma in monitoring the air quality within indoor environments.

Our system's architecture is detailed through clear diagrams that illustrate the interactions between the IoT components, the cloud-based web server, and the user interface. These diagrams serve to clarify the flow of data and the security measures in place to protect it.

The prototype, hosted on an AWS cloud server, showcases the core functionalities that will be present in the final product. It includes a working model of the IoT hardware, the software on the web server, and the database that stores and processes the gathered data. The use of PubNub ensures secure and efficient communication between the IoT devices and the web server.

We have taken significant steps to secure the application, with particular attention to the protection of data while it is stored and as it moves through the system. The security protocols we have implemented are critical in maintaining the privacy and integrity of user data.

The documentation for the Alpha release reflects the steps to creating a user-friendly and secure system. It outlines our approach to addressing the needs of asthma patients by providing them with actionable insights into their indoor air quality.

In summary, the Alpha release documentation shows the need of the Aerosense project and sets a clear direction for future development. It shows the first step to delivering a product that is of value to users, particularly those managing asthma in their daily lives.

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## **GLOSSARY**

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## **1. INTRODUCTION**

### **1.1 Purpose**

In today's rapidly urbanizing world, the quality of air we breathe is a growing concern, particularly for vulnerable groups such as asthma sufferers. To address this challenge, we've initiated the development of the "Aerosense Wristband." This innovative wristband is specially designed to monitor air quality, catering specifically to those with asthma. With it, users can access immediate updates on the surrounding air quality, enabling them to make decisions that prioritize their health.

### **1.2 Significance**

The idea behind the Aerosense Wristband was not just to create a new tech gadget. There's a genuine, urgent need for such a device. Several research studies have shown a clear correlation between declining air quality and an increase in asthma-related issues. With the Aerosense Wristband, we aim to empower users with the knowledge they need to avoid potential asthma attacks, ensuring they're not caught off guard. On a broader scale, by collecting data from numerous Aerosense devices, we might be able to identify specific areas with high pollution levels, as well as detect patterns over time. This could prove invaluable for those in roles ranging from city planning to healthcare policy development.

As we worked on the Aerosense Wristband, we focused on integrating the latest air quality sensing technology while keeping the user interface simple and intuitive. We strived for a sleek design, making sure that whether you're a tech enthusiast or just someone looking for a solution, the device is easy to use. This report will delve deeper into our development process, discussing everything from our initial feasibility studies to the depth of data management.

To make this report as reader-friendly as possible, we've avoided unnecessary technical jargon. Where complex ideas arise, we've tried to simplify them with relatable analogies and, when needed, included diagrams for a clearer understanding.

## **CONCLUSION**

## **REFERENCES:**