**Executive Summary**

Aerosense is amending scope based off feedback from lecturers and market research to meet the requirements of air quality monitoring with a shift from wearable technology to a more versatile, portable "Smart Indoor Air Quality Hub." This hub is specifically tailored to aid individuals with asthma, delivering personalized air quality insights and actionable recommendations to manage indoor air environments.

**Introduction**

Initially made as a wristband for real-time air quality monitoring, Aerosense is transitioning towards a portable hub format. This shift enhances the device’s utility, offering not just monitoring but a comprehensive management system for indoor air quality tailored to asthma patients' needs.

**Unique Selling Proposition (USP)**

The Aerosense Hub stands out through its portability, customized asthma profiles, and integration with external health data APIs, like pollen counts. It delivers specific insights and advice, empowering users with asthma to make informed decisions about their indoor air quality.

**Features of the Smart Indoor Air Quality Hub:**

* Portability**:** Designed to be easily transported and used in various indoor settings where users spend a lot of time.
* Asthma User Profiles**:** The hub will create a unique user profile that records individual triggers and provides customized recommendations.
* Targeted Trigger Monitoring**:** Equipped with PMS7003 and BME680 sensors, the hub measures pollutants that can trigger asthma symptoms and provides relevant alerts.
* Pollen Count API Integration**:** Offers an extended view of environmental factors affecting air quality and asthma, important for comprehensive monitoring.
* Educational Interface**:** Instructs users on air quality and its health impacts, reinforcing an active role in asthma management.
* Community Data Sharing**:** Allows for anonymized data contribution, fostering a collaborative approach to understanding broader air quality trends.

**Justification for Scope Adjustment:**

* Technical Feasibility**:** Adapting to a portable model that monitors static environments is more realistic within the project’s scope and timeline.
* Asthma-Specific Solutions**:** The hub's personalized data and health suggestions cater directly to asthma patients, ensuring relevance and differentiation.
* Enhanced User Engagement**:** The hub's focus on education and personalized data promotes a proactive stance towards health management.

**Research and Market Analysis:**

Our research indicates a lack of devices in the market that cater specifically to asthma patients with personalized monitoring and actionable insights. The Aerosense Hub fills this void by offering a unique blend of features:

* [Environmental Protection Agency Ireland – Air Quality Standards](https://www.epa.ie/our-services/monitoring--assessment/air/)
* [Environmental Protection Agency USA](https://www.epa.gov/aqs)
* [World Health Organization – Air Quality Guidelines](https://www.who.int/publications/i/item/9789240034228)
* [Current Market Analysis of Air Quality Monitoring Devices](https://www.marketsandmarkets.com/Market-Reports/air-quality-monitoring-equipment-market-183784537.html)
* [Asthma Triggers and Management](https://aafa.org/asthma/asthma-triggers-causes/)
* [Air Quality and Asthma Research](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4740125/)
* [Pollen Count API Integration](https://www.getambee.com/api/pollen)
* [Competitive Analysis – AtmoTube Comparison](https://atmotube.com/)

**Competitive Advantage of Aerosense:**

Personalization and Specificity: Aerosense stands out by offering custom alerts and health recommendations based on the user’s unique asthma triggers.

Integrative Health Approach: By incorporating external health data, like pollen counts, Aerosense provides a holistic view of factors impacting air quality and asthma.

User Empowerment through Education: The hub not only monitors but also educates, encouraging users to take control of their environment and health.

Community Impact: The contribution of anonymized data to community studies positions Aerosense as a socially responsible brand and aids in larger-scale environmental health research.  
  
  
**Data Contribution:**  
  
The distinction between outdoor and indoor air quality data within a community-shared dataset is indeed a crucial aspect of the Aerosense project.  
  
User Input**:** Users can be prompted to specify the environment they are in when setting up the device or when moving it to a new location. This input will be used to specify the data collected.

Sensor Location Tagging: Each Aerosense Hub can be configured to tag its data with a location descriptor indicating whether it's indoor or outdoor data. This could be a simple toggle setting in the hub or associated app that the user sets based on where the hub is placed.  
  
Data Visualization and Reporting**:** When presenting data to the community, it can be visualized in separate categories or layers, clearly indicating which data points are from indoor environments and which are from outdoor environments.

**Conclusion and Revised Scope:**

Aerosense's redefined direction towards a Smart Indoor Air Quality Hub represents a new change in asthma care and indoor air quality management.