

Aether 360: AI Tool to Quantify Air Pollution's Health Impact

Aether 360 Launches to Unmask the Hidden Health Crisis AI to Quantify Air Pollution's Link to Acute Hospital Admissions in New Delhi

Opening Statement

The Aether 360 project has been launched as a self-initiated Proof-of-Concept (PoC) to develop the world's first [Artificial Intelligence](#) (AI) model capable of calculating the Attribution Rate—the probability that a patient's acute respiratory or cardiac hospital admission is directly caused by a recent spike in air pollution. By bridging the critical gap between environmental data and clinical records, Aether 360 aims to provide health agencies and governments with a novel, quantifiable metric to measure the true public health burden of air pollution.

Executive Summary: Aether 360

Air pollution presents the most significant environmental health crisis in India, yet public health systems currently lack the tools to measure its direct, acute impact on hospital resources. The Aether 360 project addresses this gap by pioneering an AI-driven system to establish the **Pollution Probability Link** (PPL) and calculate the Attribution Rate (A-Rate)—the probability that a specific acute respiratory or cardiac admission is caused by recent ambient air quality spikes.

This document outlines the **Proof-of-Concept** (PoC) phase, a solo, self-funded effort to demonstrate the technical feasibility of the core **A-Rate algorithm** using publicly available environmental data and a synthetic clinical dataset from the Delhi region. Key PoC deliverables include functional Python code, a trained **Explainable AI** (XAI) model, and a Dashboard Wireframe showcasing the simulated A-Rate.

The project is currently managed by [Rakesh Raman](#) with strategic assistance from **Google AI technologies**. Its advancement to a live Beta deployment is critically dependent on securing institutional partnerships. We seek collaboration and endorsement from agencies like UNEP, WHO, and major Indian government departments or academic medical centers to validate the AI's clinical utility with real, anonymized data and integrate this crucial metric into public health policy. Aether 360 is not just a

technological innovation; it is a vital tool for policy change, providing the first robust, quantifiable metric needed to justify, fund, and track the effectiveness of pollution control measures.

Aether 360: Concept Paper

Title: The Algorithmic Attribution of Air Pollution to Acute Health Events

Project: Aether 360 (Pilot City: Delhi, India)

Goal: To develop and validate a robust, Explainable AI (XAI) model that quantifies the Attribution Rate—the probability that a patient's acute respiratory or cardiac hospital admission is directly linked to recent local air quality excursions.

1. The Challenge and The Value Proposition

1.1. The Crisis: Hidden Costs of Air Pollution

Air pollution is the single greatest environmental health risk in India, drastically reducing life expectancy. Major global and national studies consistently show Delhi and the National Capital Region (NCR) as one of the world's most polluted zones, resulting in significant morbidity and mortality. The problem is a lack of actionable, personalized, real-time data that quantifies the public health cost. Hospitals currently log symptoms, not environmental causality.

1.2. The Solution: Aether 360

Aether 360 is an **AI-driven Clinical Decision Support System** (CDSS) Augment designed to close the gap between environmental data and clinical records. It is a predictive and attribution-based tool that:

1. **Analyzes:** Integrates granular air quality data (e.g., $PM_{2.5}$, NO_2) with de-identified patient data (time of admission, location).
2. **Attributes:** Applies a proprietary XAI algorithm to calculate the Pollution Probability Link (PPL) for a given acute health event.
3. **Quantifies:** Produces the Attribution Rate (A-Rate), a key metric for hospitals and public health agencies to quantify the burden of pollution-related disease (PRD).

2. Phase 1: Proof-of-Concept (PoC) & Simulated Pilot

This PoC will be a solo, self-funded, simulated pilot executed by the lead developer to prove the technical feasibility and core value proposition of the A-Rate metric before seeking institutional partnership.

2.1. Simulated Pilot Scope

The PoC will use publicly available environmental data and a synthetic health dataset to generate the core output.

Element	Specification for the Aether 360 PoC	Goal & Deliverable
Environmental Data	Historical CPCB AQI Data: Focus on 1-2 years of hourly PM _{2.5} and NO ₂ from one high-density Delhi station (e.g., Anand Vihar or RK Puram).	Proves data ingestion and time-series synchronization.
Health Data	Synthetic (Mock) Dataset: 1,000 mock patient records with synthetic age, gender, Proxy Health Event (PHE), and geo-coded admission timestamp/location.	Avoids real patient data handling complexities (HIPAA/GDPR/India-specific regulations).
Core Metric Output	Generation of the Attribution Rate (A-Rate) dashboard for the 1,000-record set.	Key PoC Deliverable: The live, functional Python code, trained model, and static HTML Dashboard Wireframe showcasing the A-Rate.
Deployment	Local, single-machine deployment to prove functional capability and computational efficiency.	Demonstrates feasibility for future low-cost hospital integration.

Description: The proof-of-concept project integrates environmental and synthetic health data to demonstrate the feasibility of a localized health impact dashboard. It utilizes one

to two years of hourly PM_{2.5} and NO₂ data from a high-density monitoring station in Delhi to validate time-series synchronization and data ingestion capabilities. On the health side, it employs a mock dataset of 1,000 synthetic patient records, including age, gender, proxy health events, and geo-coded admission timestamps and locations, thereby avoiding the complexities of handling real patient data and complying with privacy regulations like HIPAA, GDPR, or India-specific laws.

The core output is the generation of an Attribution Rate (A-Rate) dashboard, built using functional Python code, a trained model, and a static HTML wireframe. Deployment is designed for a single local machine to showcase computational efficiency and functional capability, supporting the potential for future low-cost integration into hospital systems.

2.2. Key Data Assumptions (For PoC only)

The PoC operates under three critical data assumptions that will be explicitly addressed and resolved in the full production system (Phase 2).

#	Assumption	Rationale and Mitigation
A1	Proxy Health Events (PHE): Acute Respiratory Infection (ARI), COPD Exacerbation, and Ischemic Heart Disease (IHD) events will serve as the clinically relevant, pollution-correlated events.	Mitigation: We seek validation of this PHE set from a Pro Bono Clinician Advisor and will expand the set in the full-scale project.
A2	Nearest Data Approximation: The single closest AQI station's reading serves as the Spatial/Temporal Proxy for the patient's actual exposure at their residential address and time of symptom onset.	Mitigation: Full system will use multi-station triangulation and advanced dispersion modeling for higher spatial resolution.
A3	Future Data Standard: Success requires the post-PoC adoption of a new medical tag standard: [PRD-AG] (Pollution-Related Disease - Acute/Gaseous) or [PRD-SC] (Pollution-Related Disease - Secondary/Chronic) by partner hospitals to log the AI's output.	Mitigation: This requires institutional buy-in and a policy change, which is the ultimate target of the PoC.

3. Project Roadmap: From PoC to Production

Phase	Duration	Goal	Key Deliverables
1: Concept & Foundation (Current)	2-3 Months	Finalize Concept Paper, execute PoC, and secure an advisory team.	Aether 360 PoC Code, Simulated A-Rate Dashboard, Non-Monetary Clinician Advisor.
2: Institutional Partnership & Beta	6-9 Months	Secure one partner hospital and one funding/agency partner (UNEP/WHO/Govt. of India).	Formal MoU, Secure Health Data Pipeline (Anonymization/Encryption), Live Beta Deployment at Partner Hospital.
3: Validation & Scale	12-18 Months	Execute clinical validation, integrate feedback, and expand to 3-5 hospitals.	Peer-Reviewed Publication (to establish clinical validity), Scalable Cloud Infrastructure, AI-CDSS integration into Hospital EMR.

4. Call for Collaboration

The technical PoC proves that the A-Rate can be calculated. The next phase requires institutional support to prove its value in a live clinical setting.

We seek partners for the following critical roles:

4.1. Government/Agency Partnership (UNEP, WHO, Indian Agencies)

- **Role:** Strategic endorsement, funding for Phase 2, and policy integration.
- **Value Proposition:** Aether 360 offers the first robust, quantifiable metric (A-Rate) for reporting the exact health burden of air pollution, allowing for targeted resource allocation and the justification of pollution control measures. This tool directly supports national and international mandates on environmental health and empowers governments to make decisions that ensure public health and conserve costs.

4.2. Academic/Clinical Partner (e.g., IITs, AIIMS, Major Hospital)

- **Role:** Access to anonymized, real clinical data (in compliance with all regulations) for the Beta Phase, and clinical guidance to validate the Proxy Health Event (PHE) set.
- **Value Proposition:** The partner receives a state-of-the-art AI-powered research and clinical tool that will generate novel, publishable insights into the acute health effects of pollution, enhancing their reputation in the AI-in-Healthcare domain.

Project Disclosure

The Aether 360 Proof-of-Concept is currently being independently managed and executed by Rakesh Raman, a journalist, environmental activist, and founder of RMN News Service and RMN Foundation.

The initial architectural design, framework development (including the 10-Step AI Framework), and concept refinement were conducted with the strategic and technical assistance of Google AI technologies.

Crucial Notice on Stability and Validation

As this is a foundational solo effort utilizing advanced AI, the Aether 360 PoC phase is intended only to prove technical feasibility using simulated data. The model and its outputs require rigorous, independent verification by qualified clinicians, epidemiologists, and government data bodies. The ultimate success, stability, and clinical reliability of the Aether 360 project are entirely dependent on securing formal partnerships with academic institutions, hospitals, and major agencies like the WHO, UNEP, or relevant departments within the Government of India. We are actively seeking these collaborations to advance to the data-intensive, clinically validated Beta phase. | *Rakesh Raman*

We are ready to partner. Contact us to discuss the Aether 360 project.

Rakesh Raman

Editor, RMN News Service — [[Website](#)]

Founder, RMN Foundation — [[Website](#)]

463, DPS Apartments, Plot No. 16, Sector 4, Dwarka, Phase I, New Delhi 110078, India

WhatsApp / Mobile: +91-9810319059 | Email: editor@rmnnews.com