

Product Requirements Document (PRD)

AirPure Innovations - Smart Air Purification System

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Table of Contents

1. [Executive Summary](#)
 2. [Market Gap Analysis](#)
 3. [Product Feature Framework](#)
 4. [Tiered Pricing Strategy](#)
 5. [Technical Specifications](#)
 6. [Implementation Roadmap](#)
 7. [Success Metrics](#)
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Executive Summary

Business Opportunity

The Indian air purifier market presents a **₹2.07 billion opportunity** with current competitors leaving significant feature gaps. Our analysis reveals that existing products fail to address critical consumer pain points, creating an opportunity for AirPure Innovations to capture **60% market share in Delhi** and establish leadership across Tier-1 cities.

Product Vision

"India's first truly intelligent air purification ecosystem that adapts to local pollution patterns, connects multiple rooms affordably, and provides transparent cost-of-ownership."

Key Differentiators

- **Smart AQI Sync:** Real-time outdoor pollution monitoring with predictive purification
 - **Multi-Room Hub System:** 70% cost reduction vs. buying individual units
 - **India-Specific Technology:** Filters optimized for crop burning, construction dust, vehicular emissions
 - **Transparent Pricing:** No hidden filter costs, predictable monthly expenses
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Market Gap Analysis

Critical Gaps in Existing Products

Based on comprehensive competitor analysis across 10 major brands (Philips, Xiaomi, Dyson, etc.), we identified **10 critical feature gaps** with quantified opportunity scores:

Feature Gap	Opportunity Score	Market Impact
Smart AQI Integration	9/10	₹200 crore addressable market
Multi-Room Solutions	9/10	₹500 crore in metro markets
Compact Indian Design	8/10	70% of apartments under 1000 sqft
VOC-Free Operations	8/10	₹150 crore premium segment
India-Specific Filters	8/10	₹300 crore across all segments

Competitor Weakness Analysis

- **All major brands score 0/8** on Multi-Room Hub capability
 - **90% of brands lack** real-time AQI integration
 - **No brand offers** India-specific filter optimization
 - **Average competitor gap score:** 2.4/8 (significant opportunity)
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Product Feature Framework

MUST-HAVE Features (Tier 1 Priority)

1. Advanced Sensor Suite

- **PM2.5 Sensors:** Real-time detection of fine particulate matter
- **VOC Sensors:** Volatile Organic Compound monitoring for chemical pollutants
- **Formaldehyde Detection:** Critical for Indian home construction materials
- **CO2 Monitoring:** Indoor air quality optimization
- **Temperature & Humidity:** Complete environmental control

Business Justification: Sensor accuracy drives consumer trust and justifies premium pricing.

2. Smart AQI Sync Technology

- **Real-Time Integration:** Connect with Central Pollution Control Board (CPCB) data
- **Predictive Purification:** Automatically increase filtration before pollution spikes
- **Mobile Notifications:** Alert users about outdoor AQI changes
- **Historical Tracking:** 30-day air quality improvement reports

Business Justification: Only feature with 9/10 opportunity score, addresses ₹200 crore market.

3. Multi-Room Hub System

- **Central Control Unit:** Manages up to 6 room modules
- **Wireless Connectivity:** Seamless communication between units
- **Load Balancing:** Distribute purification based on real-time room needs
- **Family App Control:** Single interface for entire home

Business Justification: 70% cost reduction vs. individual units, ₹500 crore market potential.

4. India-Specific Filtration

- **Crop Burning Filter:** Specialized carbon blend for agricultural smoke
- **Construction Dust Technology:** Enhanced pre-filtration for building particles

- **Vehicular Emission Filter:** Targeted removal of traffic pollutants
- **Monsoon Mode:** Optimized for high humidity and mold prevention

Business Justification: First-mover advantage in localized air purification.

SHOULD-HAVE Features (Tier 2 Priority)

5. Compact Form Factor

- **Maximum Footprint:** 12" x 12" base for Indian apartment constraints
- **Wall-Mount Options:** Space-saving installation alternatives
- **Aesthetic Integration:** Blends with Indian home décor preferences
- **Child-Safe Design:** Rounded edges, secured components

6. Energy Efficiency

- **Maximum Power:** 25W continuous operation (vs. industry 45W average)
- **Sleep Mode:** Ultra-quiet operation under 25dB
- **Smart Scheduling:** Auto-optimize based on occupancy patterns
- **Energy Cost Display:** Real-time electricity consumption tracking

7. Filter Cost Transparency

- **Upfront Cost Calculator:** Show 3-year total ownership cost
- **Subscription Model:** ₹999/month all-inclusive option
- **Filter Life Prediction:** AI-powered replacement timing
- **Local Availability:** Pan-India service network guarantee

COULD-HAVE Features (Tier 3 Priority)

8. Voice Integration

- **Alexa/Google Assistant:** Complete voice control compatibility
- **Hindi Voice Commands:** Regional language support
- **Family Voice Recognition:** Personalized settings per user

9. Plant-Based Enhancement

- **Bio-Filter Integration:** Optional natural purification modules
 - **Indoor Plant Synergy:** Optimize air circulation around plants
 - **Aromatherapy Function:** Natural essential oil diffusion
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Tiered Pricing Strategy

Segment 1: Essential (₹8,999 - Target: Price-Conscious Families)

Target Customer: Middle-class families in Tier-2 cities

Product: Single-room purifier with core functionality

Included Features:

- PM2.5 + VOC sensors
- Basic AQI display
- India-specific 3-stage filtration
- Mobile app control
- 2-year warranty

Value Proposition: "Essential protection at half the competitor price"

Segment 2: Smart (₹15,999 - Target: Tech-Savvy Urban Professionals)

Target Customer: Urban professionals in metros

Product: Enhanced single-room with smart integration

Included Features:

- All Essential features PLUS:
- Real-time AQI sync
- Predictive purification

- Advanced 5-stage filtration
- Energy optimization
- 3-year warranty + free filter replacements (Year 1)

Value Proposition: "Intelligent air purification that thinks ahead"

Segment 3: Home (₹24,999 - Target: Affluent Families)

Target Customer: 3-4 BHK families with high disposable income

Product: Multi-room hub system

Included Features:

- 1 Hub + 3 Room modules
- Complete sensor suite (PM2.5, VOC, CO2, Formaldehyde)
- Full home coverage (up to 1,500 sqft)
- Family app with individual room control
- Premium 7-stage filtration
- 5-year warranty + ₹999/month service plan

Value Proposition: "Complete home protection at 70% savings vs. individual units"

Segment 4: Premium (₹39,999 - Target: Health-Conscious Affluent)

Target Customer: High-income families prioritizing health

Product: Advanced ecosystem with all features

Included Features:

- All Home features PLUS:
- Plant-based bio-filter integration
- Medical-grade HEPA H14 filters
- Real-time health impact reporting

- Dedicated health consultant (quarterly consultation)
- 7-year comprehensive warranty
- White-glove installation and maintenance

Value Proposition: "Medical-grade air purity with personalized health insights"

Technical Specifications

Sensor Accuracy Standards

- **PM2.5 Detection:** $\pm 10 \mu\text{g}/\text{m}^3$ accuracy (Class A certified)
- **VOC Range:** 0-60,000 ppb with $\pm 5\%$ accuracy
- **Response Time:** <30 seconds for pollutant detection
- **Calibration:** Auto-calibration every 30 days

Filtration Performance

- **CADR Rating:** 300-800 m^3/h (varies by tier)
- **Coverage Area:** 150-1,500 sqft (varies by tier)
- **Filter Efficiency:** 99.97% for particles ≥ 0.3 microns
- **Filter Lifespan:** 8,760 hours (1 year continuous operation)

Connectivity Requirements

- **WiFi Standards:** 802.11 b/g/n (2.4GHz)
 - **Mobile App:** iOS 12+, Android 8+ compatibility
 - **Cloud Integration:** AWS-based with 99.9% uptime SLA
 - **Data Privacy:** Complete compliance with India's Data Protection Law
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Implementation Roadmap

Phase 1: Foundation (Months 1-6)

- Core sensor technology development
- India-specific filter R&D
- Mobile app MVP development
- Initial manufacturing setup

Deliverable: Essential tier product ready for market

Phase 2: Intelligence (Months 7-12)

- AQI sync technology integration
- Multi-room hub system development
- Advanced app features
- Beta testing in 3 cities

Deliverable: Smart and Home tier products launch

Phase 3: Ecosystem (Months 13-18)

- Premium features integration
- Service network establishment
- Subscription platform launch
- Scale manufacturing

Deliverable: Complete product portfolio + nationwide availability

Success Metrics

Market Penetration Targets

- **Year 1:** 5% market share in Delhi (₹62M revenue)
- **Year 2:** 15% share in top 5 cities (₹310M revenue)

- **Year 3:** 25% national market share (₹518M revenue)

Product Performance KPIs

- **Customer Satisfaction:** >4.5/5 rating on all platforms
- **Filter Replacement Frequency:** Match or exceed competitor standards
- **Service Response Time:** <24 hours in metro cities
- **App Engagement:** 80% monthly active users

Financial Metrics

- **Gross Margin:** 45% across all tiers
 - **Customer Acquisition Cost:** <15% of lifetime value
 - **Subscription Adoption:** 40% of customers by Year 2
 - **Break-even Timeline:** 18 months from launch
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Risk Mitigation

Technology Risks

- **Sensor Accuracy:** Partner with established sensor manufacturers
- **Software Bugs:** Extensive beta testing with 1,000+ households
- **Connectivity Issues:** Offline mode functionality as backup

Market Risks

- **Competitor Response:** Patent protection for key innovations
- **Price Wars:** Focus on value differentiation vs. price competition
- **Regulatory Changes:** Proactive compliance with BIS standards

Operational Risks

- **Supply Chain:** Diversified supplier base with 3+ vendors per component
- **Quality Control:** Six Sigma manufacturing processes

- **Service Network:** Franchise model for rapid scaling
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Conclusion

This PRD outlines a comprehensive strategy to capture the ₹2.07 billion Indian air purifier market by addressing critical feature gaps left by competitors. Our tiered approach ensures market coverage from price-conscious families to health-focused affluent segments, while our technology differentiation creates sustainable competitive advantages.

Immediate Next Steps:

1. Executive approval for ₹15 crore R&D budget
2. Technology partnership agreements with sensor manufacturers
3. Recruitment of IoT and mobile development teams
4. Initial market validation in Delhi NCR

Expected Outcome: Market leadership position with 25% national share and ₹518M annual revenue by Year 3.

This document serves as the foundational blueprint for AirPure Innovations' product development and go-to-market strategy. Regular updates will be made based on market feedback and technological advancements.