Product Requirements Document (PRD)

AirPure Innovations - Smart Air Purification System

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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)

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

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**: ±10µg/m³ accuracy (Class A certified)

- **VOC Range**: 0-60,000 ppb with ±5% accuracy

- **Response Time**: <30 seconds for pollutant detection

- **Calibration**: Auto-calibration every 30 days

Filtration Performance

- **CADR Rating**: 300-800 m³/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

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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

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

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.