

Amal Lab

Intelligent environmental monitoring for earlier health decisions

Documented air sampling, edge AI and laboratory verification in
one traceable workflow

Health technology venture proposal

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Turning air in busy healthcare facilities into documented evidence

AmaLab ONE

A portable station for documented air sampling, connected to a secure analytics platform and a partner laboratory.

For whom?

Infection prevention teams in healthcare facilities serving Hajj and Umrah pilgrims.

What?

Documented sample + measurement quality + analysis + traceable result.

Why now?

Growing visitor numbers and major events increase the need for comparable operational evidence.

An evidence chain connecting the sample, the result and the subsequent action.

Connecting data to decisions is not always fast or consistent

01

Fragmented sources

Environmental signals, laboratory results and health context arrive through separate workflows.

02

Difficult comparisons

Signals are difficult to compare across sites, as is the impact of interventions.

03

High-density settings

Crowd movement, changing occupancy and multiple operators share the same space.

Opportunity: reliable environmental evidence that complements existing surveillance systems.

Start with Hajj and Umrah, then expand after validation

01

Initial setting

A waiting area in a medical centre serving Umrah pilgrims, with one laboratory partner.

02

Expansion

Accommodation, reception facilities and indoor spaces with variable occupancy.

03

Integration

Add environmental evidence to existing surveillance systems and document its impact.

After demonstrating value: Riyadh Expo 2030, World Cup 2034 and One Health applications.

AmalLab ONE + AirGuard Platform

01

Sampling station

Collects a documented air sample and records flow and operating conditions.

02

Edge intelligence

Checks measurement quality and detects changes against the site baseline.

03

Laboratory and platform

Link the result to location, time and specialist review.

Supports environmental surveillance. It does not diagnose individuals or independently prove the presence of a viable microorganism.

A modular system with shared components



AmalLab ONE

Air sampling, flow logging, local processing

Sample Cartridge

Unique sample identity and secure sealing

Ground Dock

Charging, sync and sample handover

AirGuard Platform

Dashboards, trends, audit trail, permissions

Aqua Module

Future pathway dedicated to water sampling

Concept design. Not a manufactured device or an approved engineering design.

A traceable path from sample to decision

01

Collect and document

Cartridge identity
Location and time
Sample volume and
calibration

02

Verify and analyse

Local quality review
Laboratory result
Test limitations

03

Follow up and act

Alert the specialist
Record the investigation
Review the intervention's
impact

A traceable evidence chain from sample collection through to action.

Integration across previously separate layers

Capability	Traditional monitoring Operational readings	Laboratory sampling Sample + result	Data platform Display and analysis	AmalLab ONE Integrated evidence chain
Sample quality	—	✓	—	✓
Edge AI	—	—	Possible	✓
Laboratory verification	—	✓	Displays	✓
Traceability	—	Partial	Possible	✓
Documented action	—	—	Possible	✓

Conceptual category comparison, not a benchmark of named competitors.

Measurable capabilities with explicit limits

What it does

Detects sensor drift, missing data and disrupted flow

Compares readings with each site's baseline

Prioritises review by combining environmental and laboratory evidence

Shows uncertainty and abstains when evidence is weak

What it does not do

Diagnose individuals

Prove microbial viability from an environmental signal alone

Make the health decision

Replace laboratory testing or specialist judgement

Models will be compared with simpler statistical methods and tested on independent sites and time periods.

A waiting-room signal prompts a documented investigation

01	02	03	04
Observation	Verification	Response	Value measurement
A target indicator recurs in valid samples from a specific site.	A specialist reviews available context and requests confirmatory tests.	The responsible organisation decides on ventilation assessment, waiting-area management and maintenance.	Result turnaround time, alert burden and investigation usefulness.

The aim is an interpretable alert with a traceable record of what happened next.

A defined first customer, followed by evidence-based expansion

01	02	03
Now	After the pilot	Later
Healthcare facility serving Umrah pilgrims	Hospital networks	One Health
Infection prevention team + laboratory partner	Indoor event facilities	Veterinary, agricultural and aquatic facilities
25–40 proposed discovery interviews	Expansion conditional on proven value	A local partner for each market

No contracts with event organisers are assumed. Expansion follows success in the initial use case.

Hardware adoption supports recurring revenue

Offering	Price (SAR)	Margin
AmalLab ONE station sale	28,000	43%
Operations and platform / site / year	36,000	75%
Sample with a specified laboratory analysis	450	33%
Research team subscription / year	12,000	75%
Analytical study with a defined scope	75,000	47%

Pre-tax planning assumptions. Supplier quotations and customer willingness to pay require validation.

18 months, with a proceed-or-adjust decision at each stage

0–2

Initial use case
Rights and data

3–5

Sampling and
platform
prototype

6–8

Laboratory
verification,
transport and
classification

9–12

Limited field
pilot

13–18

Pilot production
Conditional
expansion

Sample quality

Recovery, stability
and contamination

AI value

Comparison with a
simple baseline

Transport

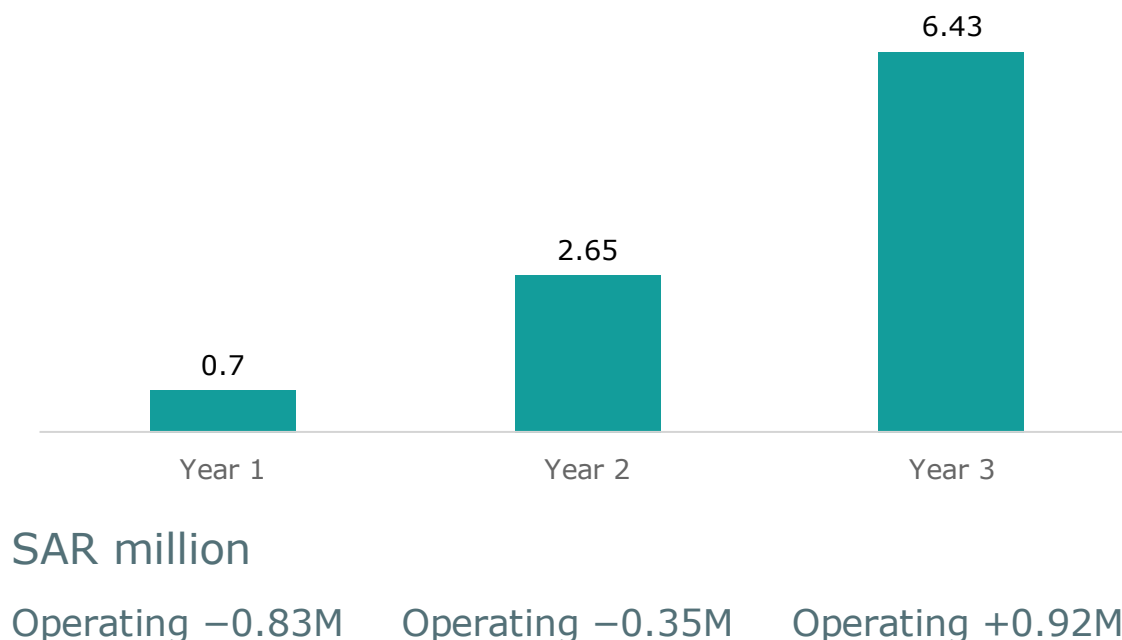
Safety and chain of
custody

Customer value

Usefulness and
willingness to pay

Preliminary assumptions, subject to pilot and sales requirements

Projected revenue



Total planned funding need

2.4
million SAR

≈ 1.98M maximum cumulative cash draw
+ ≈ 0.42M planning reserve

Total planned project funding need, not necessarily the amount requested from the supporting organisation.

Laboratory, public health & AI experience aligned with the market

01

Amal Haraka Scientific Lead

Medical laboratory background
Public health and advanced clinical research
Study design and scientific validation
Health use-case leadership and research partnerships

02

Mohammed Alsolami Technology Lead

AI researcher and senior developer
Edge AI
Platform architecture and data integration
Translating research requirements into a technical product

03

Expertise to add

Device engineering
Aerosol science
Biostatistics
Laboratory partner
Methodology advisers, once confirmed

Advisers and institutional affiliations will be named only after formal confirmation.

What we need now and what we will deliver in the first 12 months

We request

Funding within the organisation's programme scope
Customer discovery and business-model mentoring
Introductions to a pilot partner and laboratory

Intellectual property and technology transfer support
Access to prototyping and manufacturing facilities

AmalLab ONE

We will deliver

An initial product with a defined use case
A documented proof of concept
Laboratory and field validation report

An evidence-supported business model
Manufacturing and funding plan for the next stage

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