Green Hill

AI & Automation

Intelligent Cultivation Mod■3

Vision • Sensors • Control Logic • Robotics

Commercial Proposal (2026)

Prepared by: Rami Baydoun Nabhan

Contents

Contents

Project overview

We propose a **GxP■ready** digital traceability and control solution covering the full cannabis production cycle — from seedling to final product.

Objectives

- Food safety and product integrity
- GMP/GLP compliance support (audit■ready evidence and traceability)
- Predictive maintenance and operational optimization
- Maximum protection of intellectual property and client confidentiality

Layers

- Vision
- Sensors
- AI & Decision
- Robotics
- Unified platform

Operational context

This proposal is designed for a multi■room cultivation operation (mothers, flowering, rooting, quarantine, etc.). Baseline volumes and cycle parameters are *indicative* and should be confirmed by the client before final engineering.

Typical monitored zones

- Mother rooms
- Flowering rooms (multiple stages)
- Rooting / propagation
- Quarantine
- Defoliation / handling

*Figures are approximate; the client will confirm final values during Phase 0.

Scope of services — Design, vision & sensors

A1 — Design & engineering

- CRS / URS and requirements traceability
- Edge + cloud architecture for IT/OT integration
- Documentation aligned with GMP/GLP audit readiness
- Partner tooling examples: Qualipharma, PQE Group

A2 — Vision layer

- Industrial cameras per room to detect yellowing, pests and deformation
- Automated alarms and confidence scoring
- Example hardware: Teledyne FLIR Blackfly S

A3 — Sensor layer

- Moisture, EC, substrate temperature
- CO■, RH and differential pressure
- Example hardware: METER TEROS 12

Scope of services — Platform, robotics & connectivity

A4 — Unified platform

- Dashboards with KPIs by room, batch and cultivar
- Event & evidence management with export for audits
- Custom software layer (tailored to Green Hill processes)

A5 — Selective robotics

- Automation of critical tasks with human■in■the■loop supervision
- Selective cutting removal and precision pruning
- Example stack: UR10e + OnRobot RG2 (integrators: Seiki Robotics, NUTAI)

A6 — Industrial connectivity

- Industrial PoE switching, edge compute and reliable connectivity across zones
- Example hardware: NVIDIA Jetson AGX Orin; MOXA EDS■P510A (8 PoE + 2G)

Project phases

Phase 0 — Concept
Hypothesis validation, pilot room selection, KPIs & ROI.

Phase 1 — Pilot (1 room)
Installation, calibration, SOPs and first data cycle.

Phase 2 — Scale
Extend to all rooms with standardized SOPs.

Phase 3 — Optimization & robotics
Robotics integration, model tuning, continuous improvement.

Gates: client acceptance, KPI approval, green light and close■out.

Pricing model (indicative)

*Figures are indicative and subject to negotiation during scaling.

Element	Structure	Description
Base fee	Phase 0 — fixed price	≈ 30% of total budget
Monthly retainer	Operations & IT	≈ $4,000 — support, model improvements and reporting
Success fee	ROI / savings	10% of validated net savings

Indicative budget (CAPEX / OPEX)

- Cameras
- Edge compute
- Industrial PoE switching
- Sensors
- UR10e
- OnRobot RG2
- Integration
- Software / licenses
- Testing & documentation

Totals

- **Total CAPEX:** ≈ $140,000
- **Monthly OPEX:** ≈ $2,500

*Values adjusted to current market quotations at time of drafting.

Technical building blocks (examples)

Vision cameras (Blackfly S)

- 3.2 MP resolution (2048×1536) with Sony IMX265 sensor
- 35–51 fps with lossless compression
- Global shutter with on■board preprocessing

Sensors (TEROS 12)

- Water content: 0–100%
- Electrical conductivity: 0–20 dS/m
- Substrate temperature: –40°C to 60°C
- Typical range: 300–500 m (deployment dependent)

Robotics (UR10e)

- Payload: up to 12.5 kg; reach: 1300 mm
- 6 DoF; repeatability ±0.05 mm
- Average power: ~615 W

Connectivity (MOXA EDS■P510A)

- 8× PoE 10/100BaseT(X) + 2× combo Gigabit
- Redundant 48 VDC power; IP30
- Operating range: –40°C to 75°C

Benefits & ROI

- Early detection of disease and stress with confidence■based alerts
- Reduced operating costs and cycle variability
- GMP/GLP support and auditable evidence generation
- Scalability and replication to future facilities

Illustrative outputs: disease detection and segmentation visualizations (examples).

Contact & next steps

Next steps

- Choose whether you want a short 1■page summary or the full document (10–15 pages)
- Confirm branding and logo for proposal personalization
- Approve the draft version to start production within 3 business days

Contact

Email: **info@greenhill.ai**
Phone: **+34 600 123 456**
Website: **greenhill.ai**

Signature: Rami Baydoun Nabhan — AI & Automation Lead — Green Hill