AUTONOMOUS LOOP CLOSURE BLUEPRINT

Modular Plant + Multifamily Operating System

Objective

- Close the loop from strategy artifacts to a licensable, measurable, autonomous operating platform.

1) CURRENT MATURITY SNAPSHOT (DONE / IN PROGRESS / MISSING)

A) Completed Foundations (DONE)

- BOS framework and expanded operating segments
- Human-to-humanoid transition framework (Pilot / Hybrid / Autonomous)
- Video/prompt/media assets demonstrating operating vision
- Financial/NOI/value framing and governance documentation

B) Partially Built (IN PROGRESS)

- Task-level workflow design by plant lane
- Cross-functional SOP packaging (plant + field + community ops)
- Early KPI and scorecard structures

C) Critical Gaps (MISSING)

- Unified digital thread (CAD/BIM !” ERP !” schedule !” QA !” commissioning !” property ops)
- Robot-ready atomic task library with tolerances and pass/fail logic
- Real-time telemetry and exception-loop automation
- Productized licensing architecture (tenanting, entitlement, SLA, update model)
- Replicable multi-site validation dataset

2) LOOP CLOSURE REQUIREMENTS

1. Digital Thread Backbone
   - Build single source of operational truth across design, manufacturing, field, and property lifecycle.
2. Task Intelligence Layer
   - Convert each station/process into machine-readable task blocks with success criteria.
3. Telemetry + Exception Engine
   - Capture cycle time, downtime, defects, and exception routing in real time.
4. Automation Orchestration Layer
   - Auto-dispatch, auto-reschedule, inventory triggers, and QA escalation workflows.
5. Licensing/Product Layer
   - Package software with enterprise controls, access tiers, deployment model, support model, and compliance controls.

3) WHO YOU NEED (MINIMUM TEAM TO FINISH)

Core Build Team

1) Autonomy Product Owner
2) Robotics Systems Integrator
3) Industrial Controls/SCADA Engineer
4) Data/ML Engineer
5) BIM/CAD Automation Engineer
6) Safety & Compliance Lead
7) QA/Validation Lead
8) Licensing/Commercial Counsel
9) Enterprise Implementation Manager

4) WHAT CAN BE AUTOMATED NOW

Near-Term Automation Candidates

- Lead-to-schedule-to-procurement workflow routing
- Line-side inventory/kitting triggers
- Quality exception routing and escalation
- Daily dispatch with dynamic sequencing
- Field closeout and commissioning checklist automation

- Leasing/resident service workflow automation

5) 90–180 DAY ROADMAP

Phase 1 (0–30 days): Architecture Lock

- Define digital thread architecture
- Select pilot lanes
- Build task taxonomy and exception taxonomy

Phase 2 (31–90 days): Controlled Pilot Loop

- Instrument 1–2 lanes with telemetry and exception routing
- Run baseline vs autonomous-assisted performance tests

Phase 3 (91–180 days): Scale + Productize

- Expand to multi-lane workflow orchestration
- Package licensing structure and implementation kit
- Publish validation evidence deck for enterprise buyers

6) KPI GATES TO DECLARE LOOP CLOSURE

Operational Gates

- Cycle-time reduction sustained
- First-pass quality increase sustained
- Rework and blocker aging reduced
- Safety events non-inferior or improved

Commercial Gates

- Documented ROI by lane/site
- Repeatable deployment playbook
- Licensable product terms and SLA finalized

7) EXECUTIVE DECISION RULE

Do not scale autonomy by narrative.
Scale autonomy only after measured performance passes KPI gates,
compliance controls are proven, and licensing architecture is deployment-ready.