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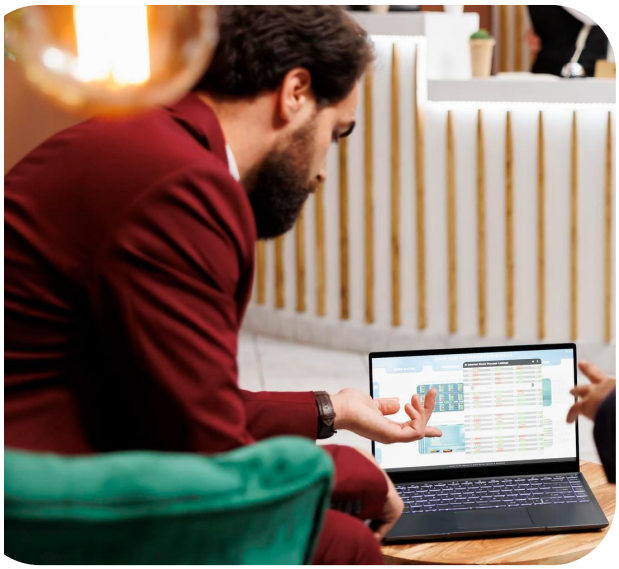
Automated Hotel PMS Onboarding with Claude Code Generation and Playwright

Eliminating manual hotel configuration by generating deterministic extractors and browser scripts from complex client workbooks.

Overview

QBurst engineered a zero-touch onboarding automation pipeline, converting multi-sheet hotel configuration workbooks directly into fully provisioned properties via APIs and browser automation.

- **Zero-Touch Onboarding:** Replaced tedious manual entry across 22-sheet workbooks and 17 core entities with automated data validation and headless portal configuration.
- **Cost-Efficient AI Code Generation:** Leveraged the Claude SDK as an offline code generator rather than a runtime parser, caching generated logic to eliminate ongoing per-hotel inference costs.
- **Field-Level Error Resolution:** Automatically generates granular, per-entity reconciliation reports and actionable explanations emailed directly back to submitting properties.



Client Profile

Headquartered in the US, the client delivers a modern, cloud-native property management system (PMS) that streamlines hotel operations, guest check-in, mobility, and property administration for boutique hotels and enterprise global hospitality brands.

Manual Entry Overhead and Template Volatility

Onboarding new properties required exhaustive manual verification and suffered from high layout variability.

Labor-Intensive Data Keying: Analysts manually opened 22-sheet workbooks spanning 17 entities (room types, charge codes, tax rules, cancellation policies) and typed hundreds of values one screen at a time.

- **Template Drift & Schema Volatility:** Regular template updates, transposed sheets, and varying layouts repeatedly broke static, hand-written extraction scripts.
- **Scalability Bottlenecks:** Manual data entry and validation backlogs delayed property launch timelines and introduced human error risks across critical billing and room configurations.

Self-Healing Code Generation & Headless Automation

We built an end-to-end, email-triggered automation engine that decouples AI code generation from runtime execution.

- **Template Fingerprinting & Code Generation:** When a new workbook layout arrives via email, Claude reads the sheet structure and outputs a deterministic openpyxl extraction script. The output is validated against Pydantic schemas in a self-healing reflection loop bounded at four attempts (converging in two).
- **Zero-Cost Code Caching:** Extractor code is cached against a SHA256 hash of sorted sheet names and headers. Future submissions matching that structural fingerprint run cached code with zero LLM API costs.
- **Deterministic Portal Automation:** Using exploratory browser-use action logs, DOM structures, and accessibility trees, Claude generated robust Playwright automation scripts governed by strict locator strategies and field-sequencing rules.
- **Actionable Stakeholder Reporting:** Claude translates ingestion and validation failures into clear, field-level explanations emailed directly to the hotel alongside per-entity success reports.

Implementation & Architecture Highlights

- **AI & Code Generation:** Claude 3.5 Sonnet (Claude SDK) acting as an offline code generator for deterministic extraction logic.
- **Validation & Schemas:** Pydantic schema validation with a dual-iteration reflection error feedback loop.

- **Browser Automation:** Playwright headless execution running locally without runtime model dependencies.
- **Caching & Fingerprinting:** SHA256 hashing of workbook structures for zero-model-cost execution on repeated templates.
- **Integration Layer:** Hybrid ingestion combining direct REST APIs and browser UI automation.

Zero-Touch Provisioning and Scalable Onboarding

The automated pipeline transformed the client's onboarding operations from a manual bottleneck into an instant, self-healing process.

- **100% Automated Property Setup:** Eliminated manual data entry across 17 configuration entities and hundreds of input fields.
- **Zero Runtime Model Cost:** Eliminated recurring LLM token fees for known workbook layouts by caching generated extraction scripts against structural fingerprints.
- **Resilient to Template Drift:** Replaced brittle static parsers with autonomous code regeneration, absorbing template updates without manual developer intervention.
- **Immediate Feedback Loops:** Replaced generic rejection notices with actionable, field-level feedback delivered directly to hotel teams.