**System Design Specification for Club IT: POS and Inventory System Integration**

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**System Design Specification**

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# 1. Management Summary

**Summary of Requirements**

Club IT, which is situated downtown and offers a combination of dining and live music, faces a challenge with lag time between the ordering and inventory systems. Both are being done manually with handwritten tickets and entered into Excel spreadsheets; this often leads to stockouts, oversupply, and inefficient data usage. The proposed system will be a cloud-based Point of Sale (POS) and Inventory System, Square POS, to automate ordering, update inventory in real time, and provide actionable analytics..

**Development to Date**

A structured preliminary investigation, interviews with owners Lisa Tejada and Ruben Keys, and analysis of Club IT’s workflows led to the inefficiencies. The Square POS system has been chosen because of price, compatibility with what they already have, and able to grow along with it, as well as being cloud-based. The design of the system now comprises screen layouts, process models, role-based dashboards, and database requirements.

**Current Status Report**

The business case and system requirements are fully defined. Hardware requirements have been scoped, and vendor onboarding is scheduled. Training plans, testing strategies, and risk management have been outlined. A phased pilot-to-parallel deployment is ready to launch.

**Project Costs and Benefits**

|  |  |
| --- | --- |
| **Category** | **Estimated Cost** |
| Square POS Software | $0 (base version) |
| Hardware (iPads, printers) | $7,500 |
| Training and Testing | $3,500 |
| Integration & Support | $2,000 |
| Contingency | $2,000 |
| **Total Estimated Cost** | **$15,000** |

**Benefits**:

* Real-time inventory synchronization
* Improved order accuracy
* Actionable reports (staff performance, peak times)
* Reduced waste and better forecasting

**Implementation Schedule Highlights**

* **Week 1-2**: Setup and bar pilot launch
* **Week 3-5**: Parallel operation expansion
* **Week 6**: Full system adoption
* **Week 7-8**: System review and optimization

**Issues for Management**

* Staff adaptation and training time
* Internet reliability for cloud access
* Managing legacy system phase-out
* Budget compliance and vendor performance

# 2. System Components

**System Overview**

A new system will comprise Square POS terminals linked to a center for inventory databases with cloud-hosted backups and dashboards for real-time tracking performance. Roles will include those for waitstaff in ordering, kitchen staff in ticket handling, and managers in analytics and inventory control.

**User Interface**

* Touch-based POS UI for order entry
* Kitchen view for ticket display
* Manager dashboard with analytics and controls

**Output**

* Sales and inventory reports (daily, weekly, seasonal)
* Low stock alerts
* Employee performance reports
* Real-time dashboards for mobile and desktop

**Input**

* Order entries (tablets)
* Payment transactions (cash, card, digital)
* Inventory adjustments (manual and automated)
* Admin commands (role changes, pricing updates)

**Files and Databases**

* Cloud-based product and inventory database
* Local transaction logs with daily sync
* File exports in PDF, Excel, and CSV formats

**Network and Interfaces**

* Secured Wi-Fi for POS device connectivity
* Internet link to the Square cloud servers
* APIs to integrate with QuickBooks and vendor ordering

**Support Processing**

* **Backup**: Cloud-based, daily with 30-day retention
* **Recovery**: Rollback option within 24 hours
* **Startup**: System auto-syncs settings and inventory
* **Retention**: Activity logs stored for 90 days

***(Note: Insert Diagrams Here — DFD, ERD, UI Mockup)***

# 3. System Environment

**Constraints**

* Operations must continue during deployment
* Limited internal IT resources
* Budget capped at $45,000
* Most transactions occur during late-night hours

**Operational Requirements**

|  |  |
| --- | --- |
| **Category** | **Specification** |
| Operations | The system must process 300–600 transactions/day. |
| Storage | Must track 150 unique SKUs with change history |
| Processing | Each order processed <1 sec; reports <3 sec |
| Reporting | Must support dashboard and export options |

**Hardware**

* 4 iPads for order entry
* 2 kitchen ticket printers
* 1 cash drawer, 1 secure Wi-Fi router
* Future add-on: barcode scanner

**Systems Software**

* Square POS mobile/web app
* iOS/Android compatibility
* Browser access for the admin portal

**Security**

* Encrypted login for each role
* Role-based access (waitstaff, manager, admin)
* Daily audit logs
* PCI-DSS compliant for payments
* Remote wipe capability for lost/stolen devices

# 4. Implementation Requirements

**Start-Up Processing**

* Initial configuration of menus, tax rates, and user roles
* Square onboarding via web-based setup tool
* Admin training and access level assignment

**Initial Data Entry or Acquisition**

* Importing legacy data (menu items, inventory levels) via CSV
* Creating user profiles and passwords
* Establishing reorder thresholds and alerts

**User Training Requirements**

* 3-session training program (2 hours each):
  1. POS usage for servers
  2. Reporting and analytics for managers
  3. System maintenance and troubleshooting
* Off-peak scheduling (Mon–Wed afternoons)

**Software Test Plans**

* **Pilot Testing**: Live environment in the bar area
* **Unit Testing**: Functionality of reports and alerts
* **Integration Testing**: API sync with inventory and vendors
* **UAT**: Lisa and Ruben verify acceptance criteria

# 5. Time and cost estimates

**Schedule Overview**

|  |  |
| --- | --- |
| **Week** | **Milestone** |
| 1 | POS system configuration and pilot |
| 2 | Feedback and adjustments post-pilot |
| 3–5 | Parallel deployment in full operations |
| 6 | Complete transition and training refresher |
| 7–8 | Review, analytics optimization. |

**Cost Breakdown**

|  |  |
| --- | --- |
| **Component** | **Cost Estimate** |
| Hardware | $7,500 |
| Training | $3,500 |
| Integration & Setup | $2,000 |
| Contingency | $2,000 |
| **Total** | **$15,000** |

**Staffing Requirements**

* 1 external Square consultant (short-term)
* 2 owners (project oversight)
* 8 employees (front-of-house and kitchen)
* 1 part-time IT support (as-needed)

**Total Costs-to-Date**

* Hardware ordered: $4,000
* Staff training initiated: $1,000
* Remaining budget: $10,000

# 6. Additional Material

* **SWOT Analysis** from Preliminary Investigation

|  |  |
| --- | --- |
| **Strengths** | **Weaknesses** |
| Strong customer base | Manual inventory tracking |
| Unique live entertainment | Outdated hardware and software |
| **No real-time data access** | |

|  |  |
| --- | --- |
| **Opportunities** | **Threats** |
| POS + Inventory integration | Lost revenue from stockouts |
| Trend-based decision-making | Negative customer experiences |
| Future online ordering platform | Cybersecurity risks (no encryption) |

**BPMN Diagram**: Current ordering process

A diagram of a ticket

AI-generated content may be incorrect.

* **DFD (Level 1)**: POS order to inventory update

A screenshot of a computer screen

AI-generated content may be incorrect.

* **ERD**: Tables for MenuItem, Order, Inventory

A screenshot of a computer screen

AI-generated content may be incorrect.

* **Mock POS Interface Screenshots**

Screens screenshot of a computer screen

AI-generated content may be incorrect.

Image generated by Copilot AI tools. (2025)

* **Interview Summary**: Lisa Tejada and Ruben Keys

**Interviewees:** Lisa Tejada and Ruben Keys (Co-Owners, Club IT)  
**Interviewer:** Gildas Mbouna  
**Date:** May 20, 2025  
**Method:** Structured interview (in-person)  
**Purpose:** To gather operational insight for system design

**Key Findings:**

* **Current Workflow:** Orders are handwritten and transcribed later, leading to frequent stock discrepancies.
* **Inventory Tracking:** Spreadsheet-based, updated post-shift. No alerts for low stock or excess.
* **Pain Points:** Delayed service, frequent stockouts, lack of insight into item performance or staff productivity.
* **Desired Improvements:**
  + Real-time stock deduction
  + Touchscreen POS for servers
  + Role-based system access
  + Cloud dashboard with sales/inventory analytics
* **Budget & Constraints:** $45,000 cap; limited tech training among staff

**Quote from Lisa:**  
*"We need a system that’s simple enough for the team to use and smart enough to give us the insights we’ve been missing."*