

1. External Interfaces

3D Printers

Setup Octoprint: Install Octoprint on Raspberry for each 3D printer.

API Integration: Develop HTTP REST API endpoints for communication between printers and the Otello system.

Status Monitoring: Implement periodic status checks and job claiming mechanism.

Database Usage

Database Setup: Configure MySQL database for storing printer configurations, print job records, member data, and access rights.

Data Synchronization: Integrate Airtable for additional data synchronization.

Membership and Machine Access

Fabman.io Integration: Use REST API to verify user access to machines via RFID card scans.

Access Control: Implement access control mechanisms and duration settings for machine usage.

Payment Processing

PapayaPOS Integration: Develop endpoints for communication between LabPOS terminal and Otello system.

Transaction Handling: Implement payment processing and data storage in Airtable.

Membership Management

Woocommerce Integration: Synchronize memberships purchased or renewed through Woocommerce with Fabman.io via Make.com.

User Interface

UI Development: Design and develop user interfaces for monitoring printer statuses and managing print jobs.

3. Implementation Design

Member Management: Implement classes for managing members, memberships, and access control.

Printing Services: Develop classes for handling print jobs, printer control, and billing.

Printer Lifecycle: Implement state transitions for printer power states, user authentication, printing, and error handling.

Subsystems: Develop components for DoorLock, Database, Printer, Cash Register Terminal, and PrinterControlUnit.

Interactions: Define interactions between subsystems for card reading, user validation, billing, and print job processing.

4. User Interface Design

Printer List Interface

Responsive Design: Create a responsive list of printers with dynamic adjustments based on screen width.

Status Display: Implement clear status displays for each printer.

Printer Statuses

State Representation: Develop visual representations for printer states such as Printing, Paused, Finished, and Ready to Acquire.

Acquiring a Printer

User Interaction: Implement button interactions and card tap evaluations for acquiring printers.

Error Handling and Feedback

User Feedback: Provide clear messages and feedback for system states and errors.