RFID Assets Management Solution

1. Introduction

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- With 1,600+ major devices (iPads/PCs), and thousands of accessories, manual asset tracking poses significant financial and operational risks. This proposal presents a hybrid RFID/Barcode Asset Management System with Microsoft Entra ID integration, automated alerts, and comprehensive reporting to streamline asset lifecycle management in School.

2. Objectives

- **Centralized Tracking:** Maintain a digital inventory of all school assets.
- **Reduce Loss/Theft:** Implement barcode/RFID tagging for real-time tracking.
- **Maintenance Scheduling:** Automate reminders for repairs and servicing.
- **Reporting & Analytics:** Generate asset utilization and depreciation reports.
- **User Access Control:** Role-based permissions for staff and administrators.

3. Hardware Components

Component	Specifications	Photo
RFID Check In/Out Station	21" Touchscreen, Embedded PC with Card Reader	
RFID Box	UHF RFID Reader + Antenna Array	
RFID Handheld	RFID Handheld	
HID Card Reader	Proximity ID Card Compatible	
RFID Metal Tag	RFID Tag	

4. Features of the System

- 4.1 Asset Registration & Tracking
- Unique ID (Barcode/QR Code/RFID) assignment for each asset.
- Record asset details (purchase date, cost, location, condition).

- **4.2 Check-In/Check-Out System**
- Track asset movement (e.g., laptops, lab equipment).
- Assign responsibility to staff/students.

- **4.3 Maintenance Management**
- Schedule and log repairs.
- Alerts for warranty expirations and servicing.

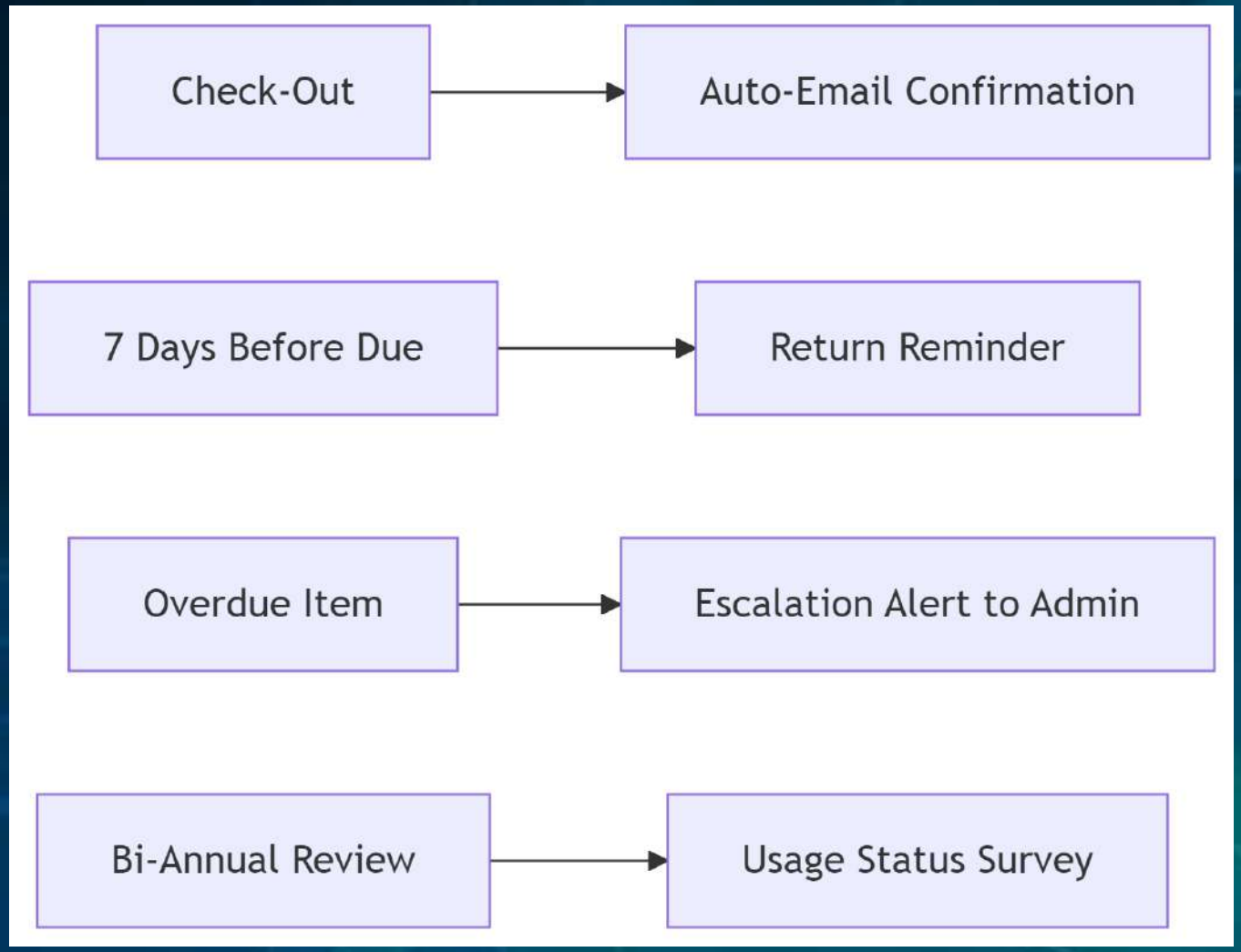
- **4.4 Reporting Dashboard**
- Asset depreciation reports.
- Loss/damage analytics.
- Audit and compliance reports.

- **4.5 User Management**
- Admin, teacher, and technician access levels.
- Secure login with authentication.

5. Software Features

- **5.1 Core Modules**
- **Hybrid Tagging Module**
  - RFID tags for high-value assets (iPads/PCs)
  - Barcode labels for accessories
- **Entra ID Authentication**
  - Staff/student login via Microsoft accounts
  - HID card tap-in for RFID stations access
- **Bulk Import**
  - Excel template for initial asset upload
- **Check-In/Out System**
  - Automatic detection in RFID Box
  - Email reminders for overdue items

- 5.2 Email Notification



- **5.3 Maintenance**
- Ageing reports for device replacement planning
- Maintenance lockout for damaged assets

- **5.4 User Portal Features**
- Self-service loan history with asset photos
- Extension requests for active loans
- Damage/loss reporting interface

5. System Evaluation

6. System Architecture

Microsoft Entra ID integration

Import function for existing Asset Items

School Asset Management Server/Cloud

School IT Network

RFID Check in/Out Station in Service Centre

School Wifi

RFID Inventory Equipment for Stock Take & Locate Assets

Staffs check and verify their on-loan items

Automatic detection of Assets in RFID Box for Check In/Out

RFID Check in/Out Station in store room

Tap Staff/Student Card for User Identification

7. Work Flow: Asset loan Process (Check-Out)

Borrower tap Staff/Student Card for Identification

Put one or multiple items in RFID box for auto-scanning

Real-time database update for borrower profile and scanned items

Check display information and confirm borrowing

8. Work Flow: Asset loan Process (Check-In)

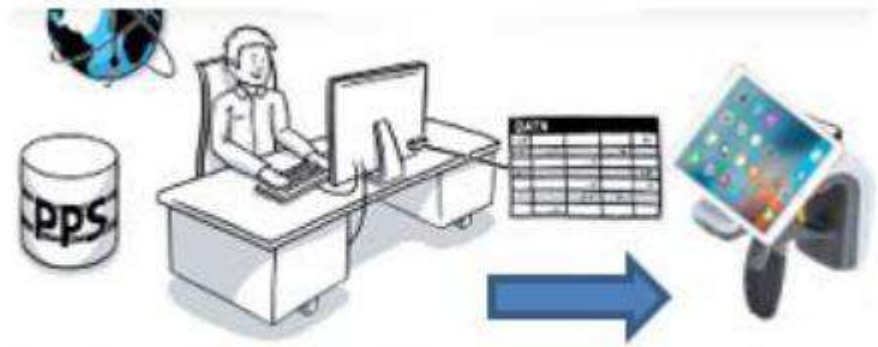
Borrower tap Staff/Student Card for Identification

Put one or multiple items in RFID box for auto-scanning

Real-time database update for borrower profile and scanned items

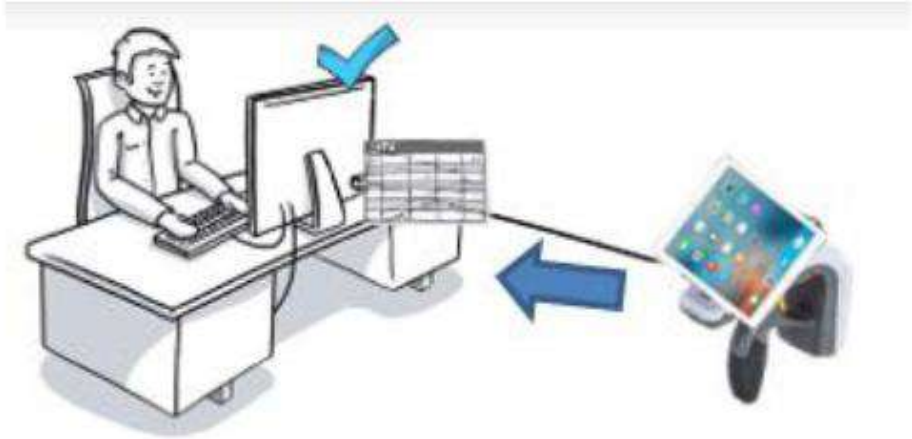
Check display information and confirm borrowing

9. Work Flow: Stock Take



Create stock take batch and download to handheld

Using handheld to stock take or searching

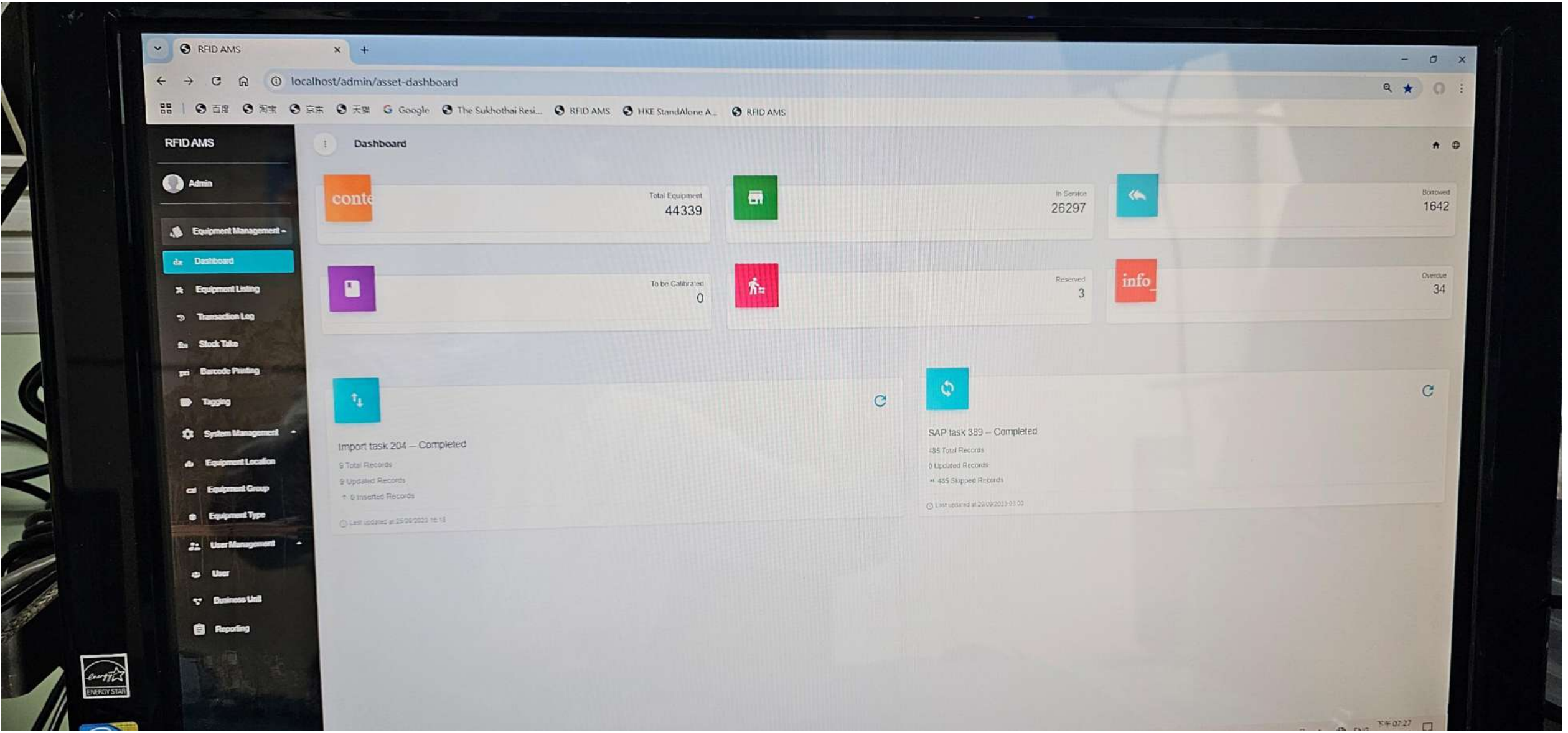


Confirm the stock take batch with adjustment and reasons

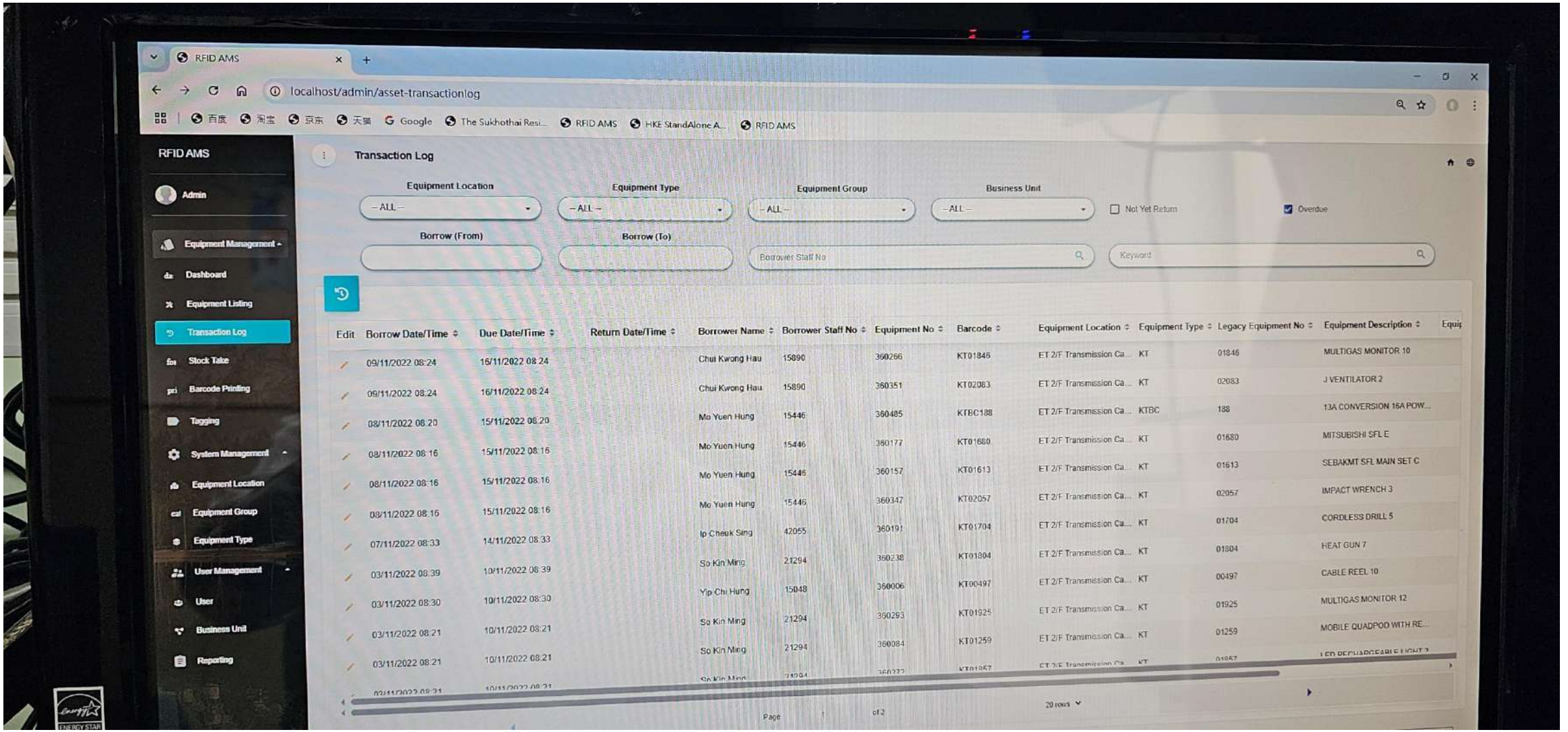
HomePage

Inventory Management System
21/05/2025 10:01
User Name
Staff Login
Staff Management
Check in Items
Check Out Items
Edit Items / Enquiry
Report
Inventory Management System (For Schools)

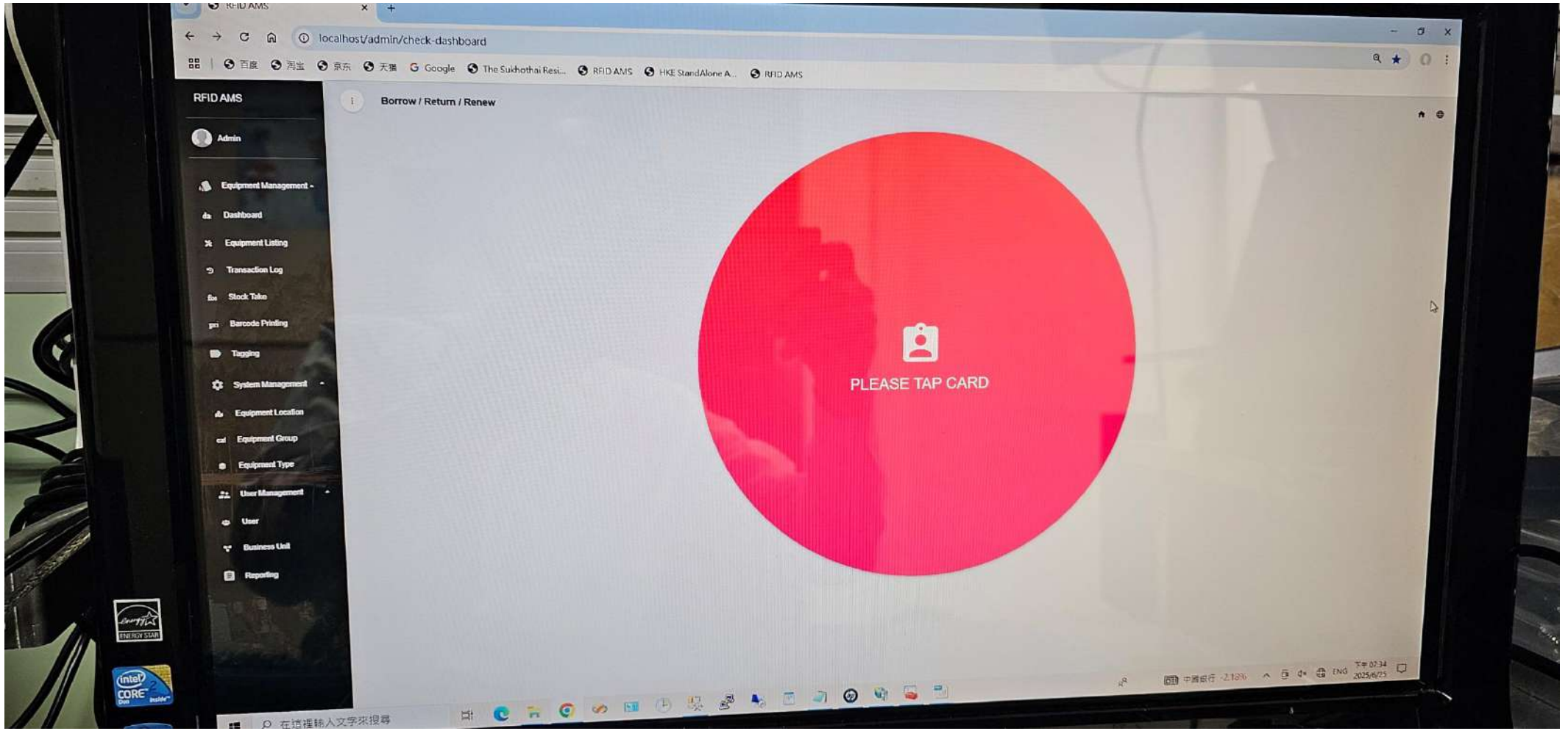
Equipment Management – Dashboard



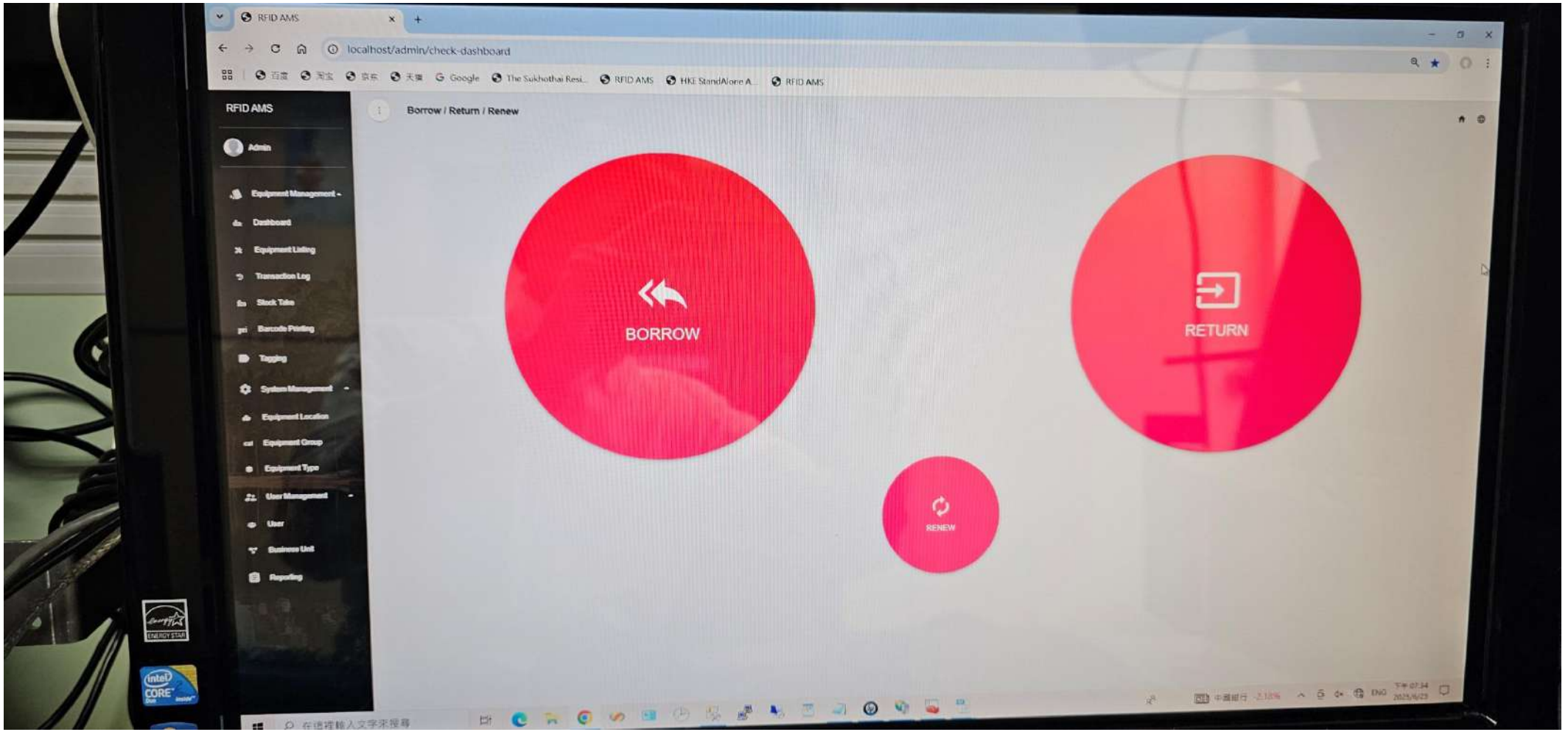
Equipment Management – Equipment Listing



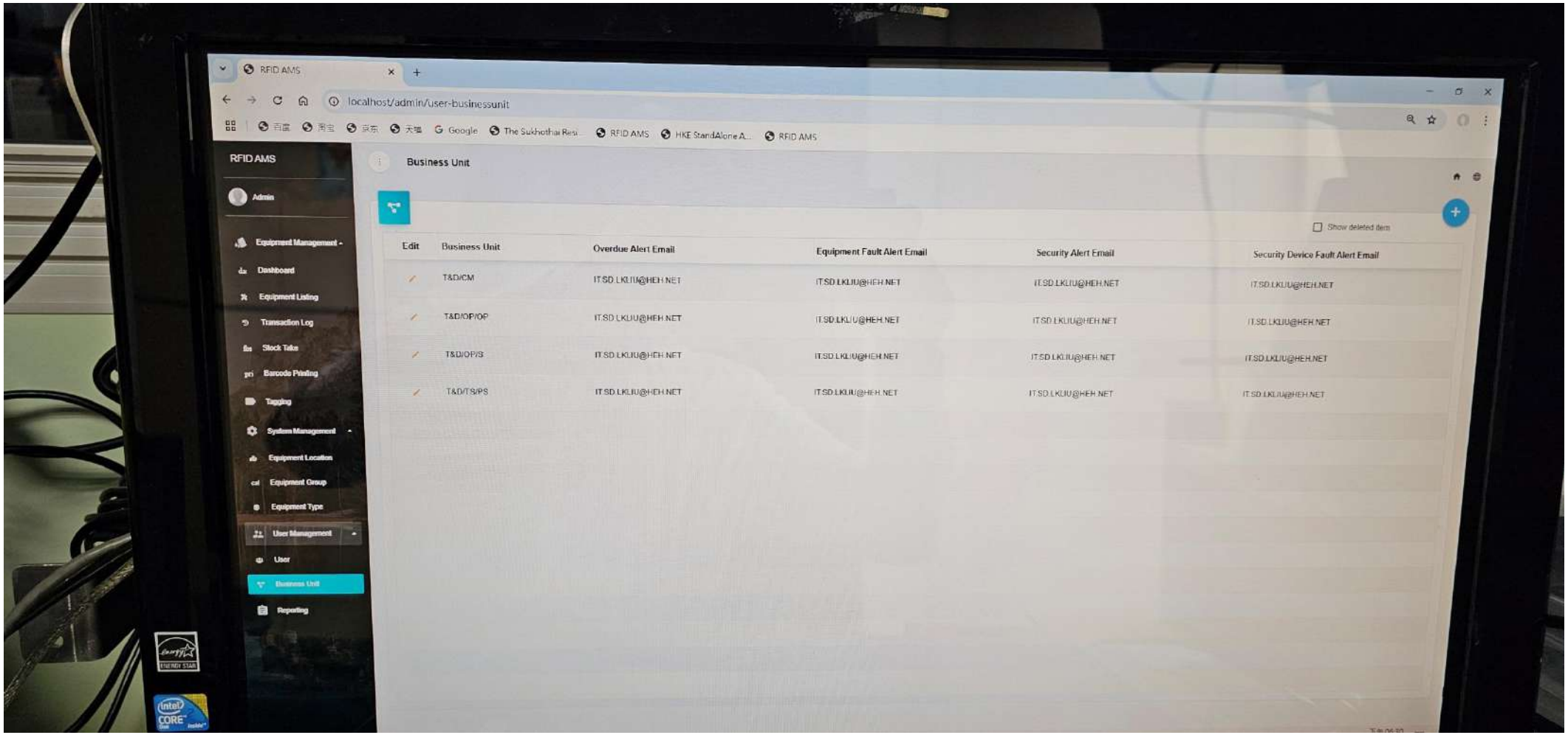
Equipment Management –Equipment Listing



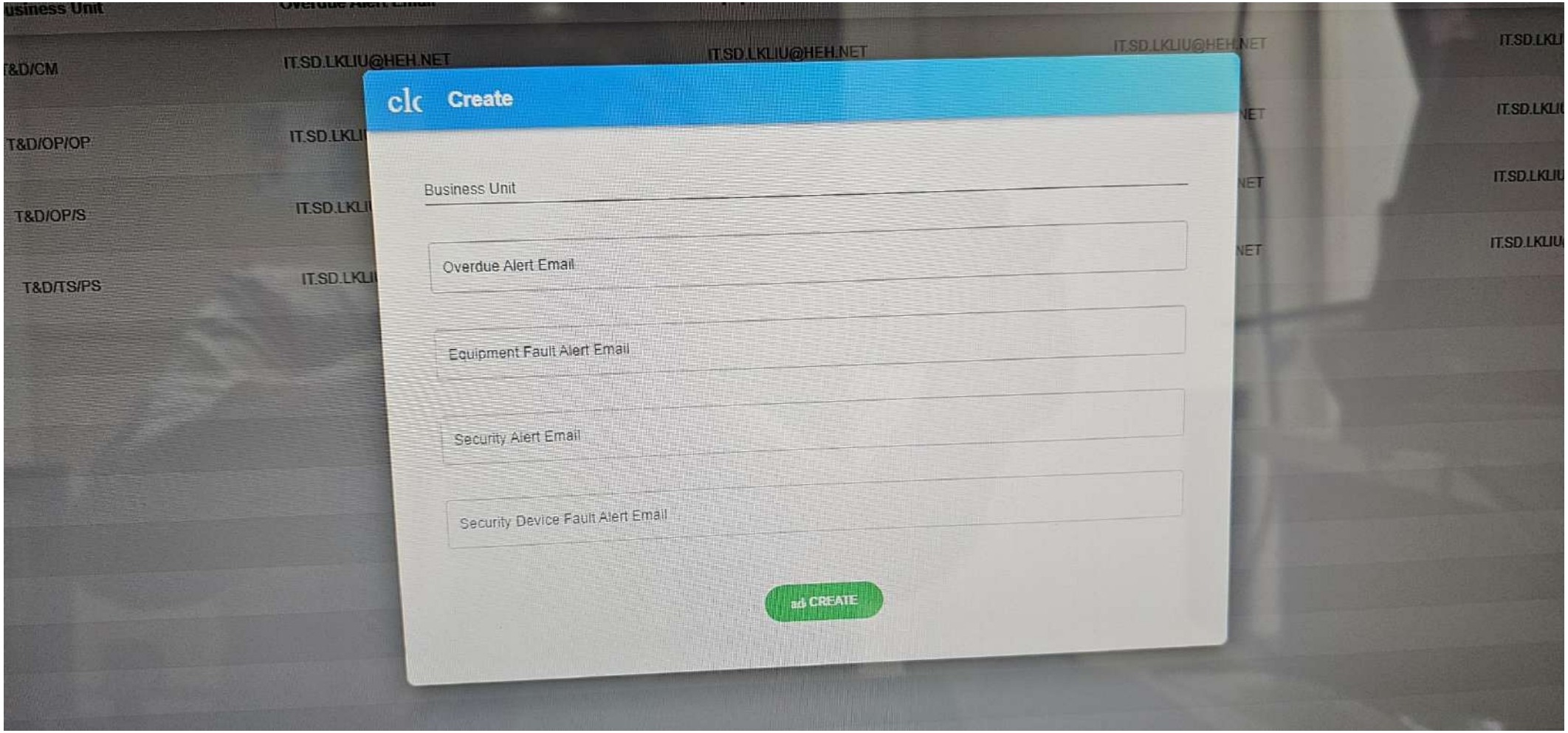
Borrow / Return / Renew



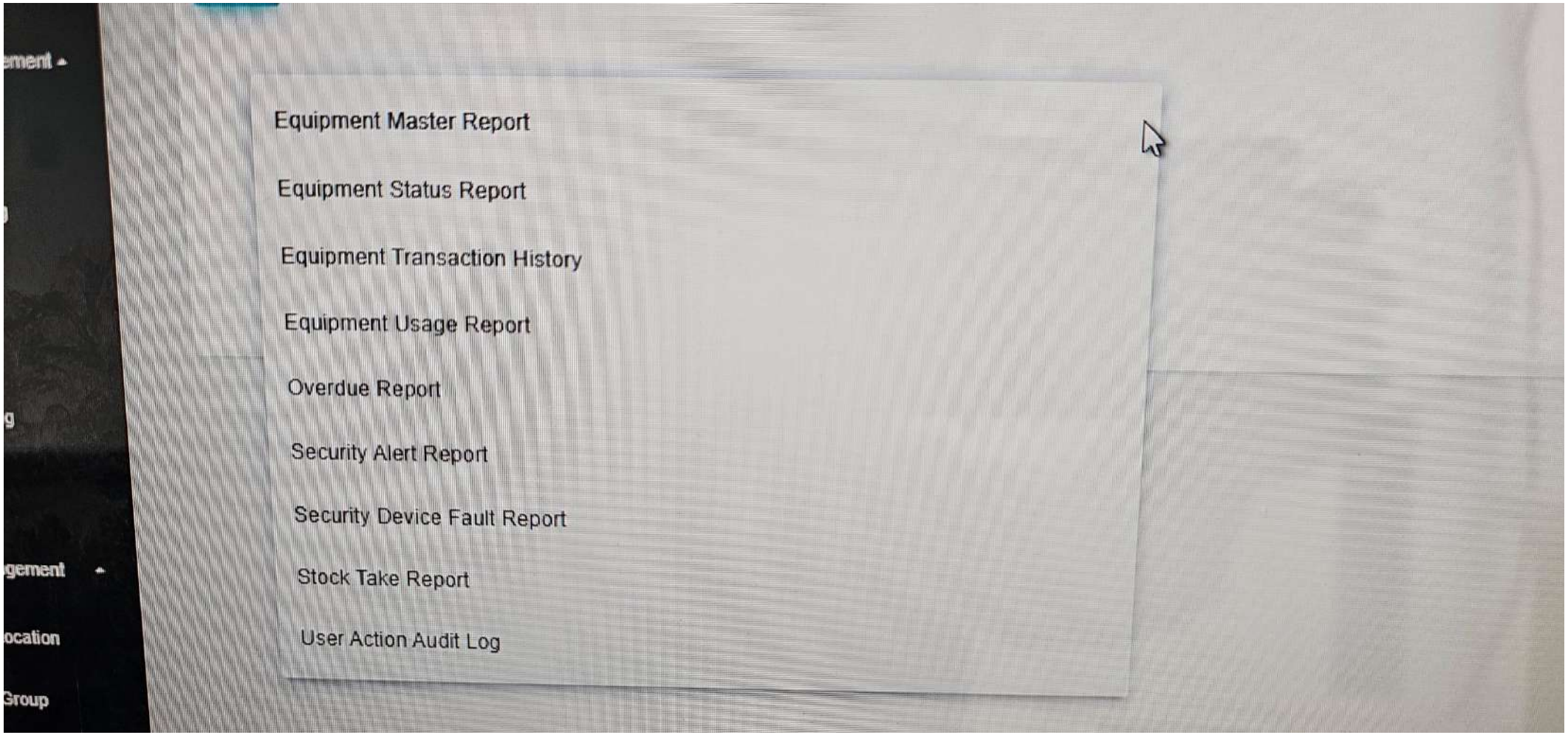
Equipment Management –Email Notification



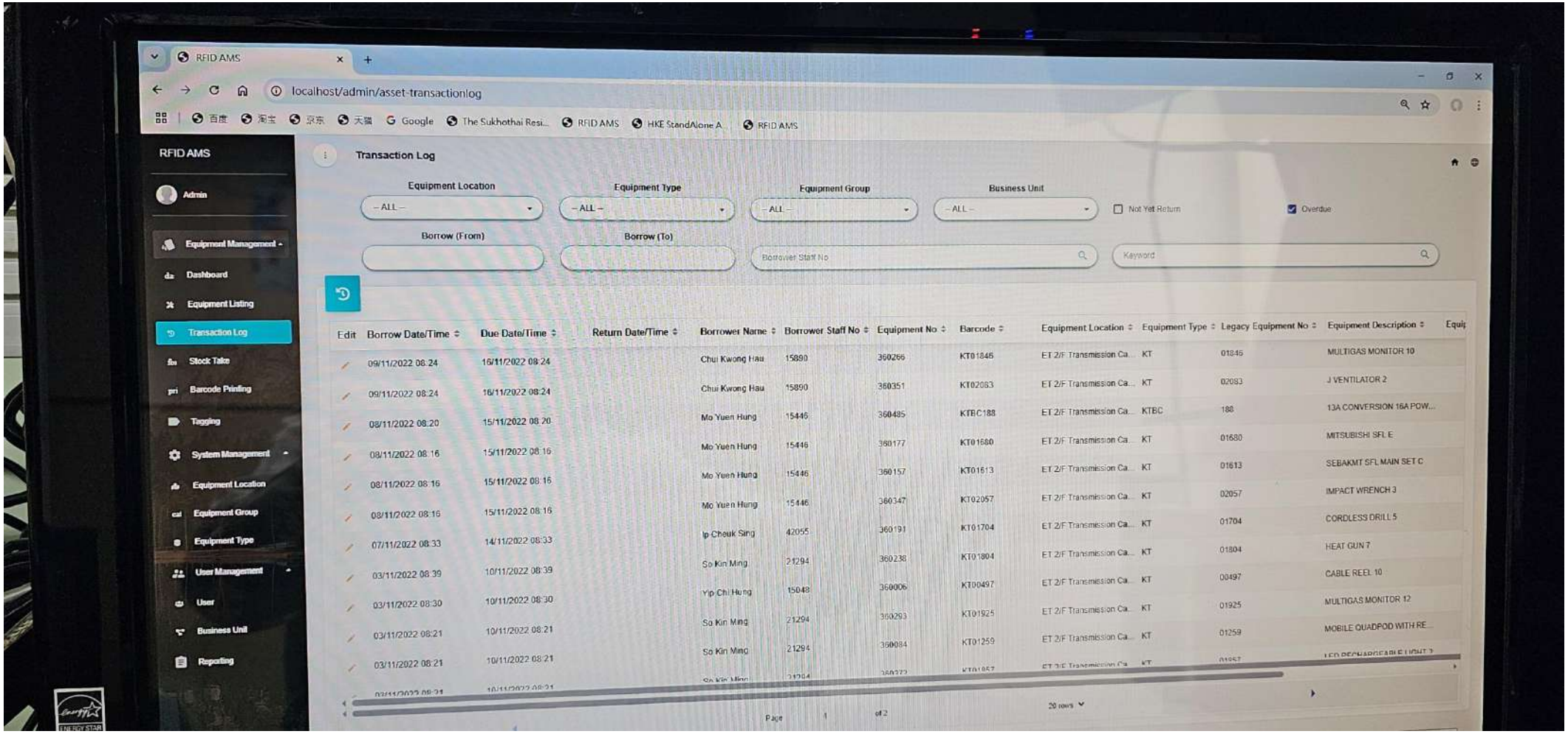
Equipment Management – User List

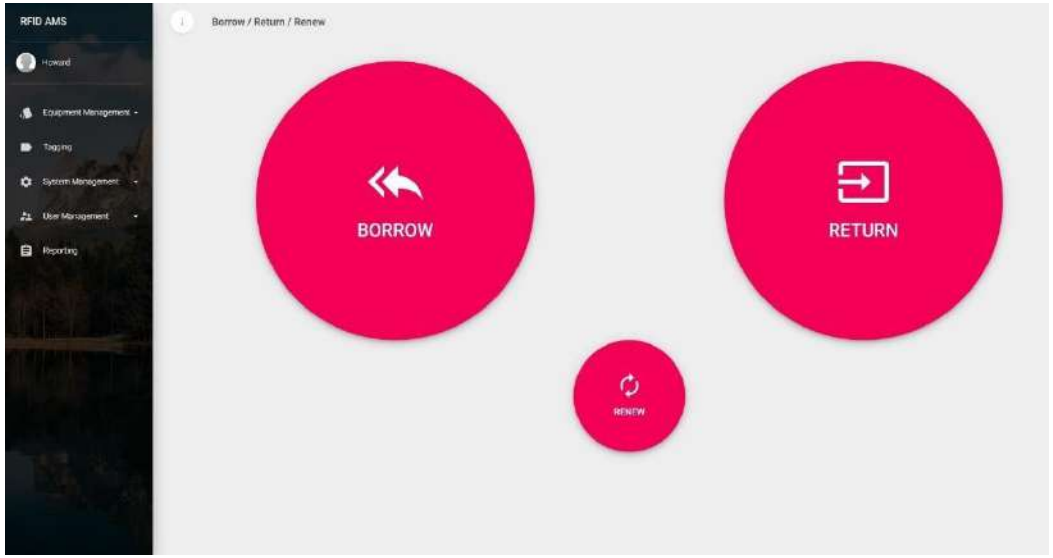


Reporting – Built in several types of standard report

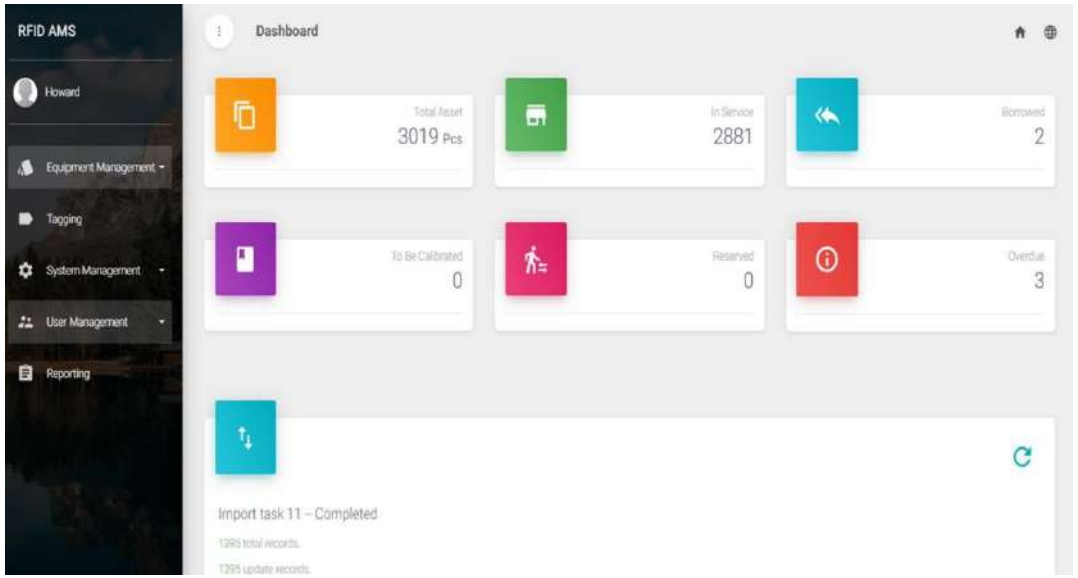


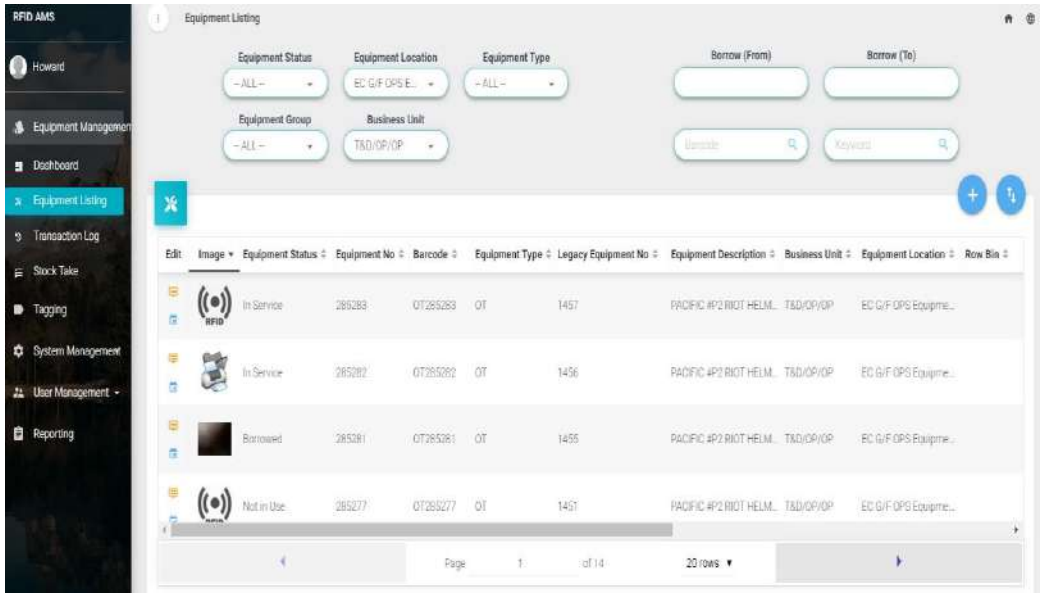
Transaction Log





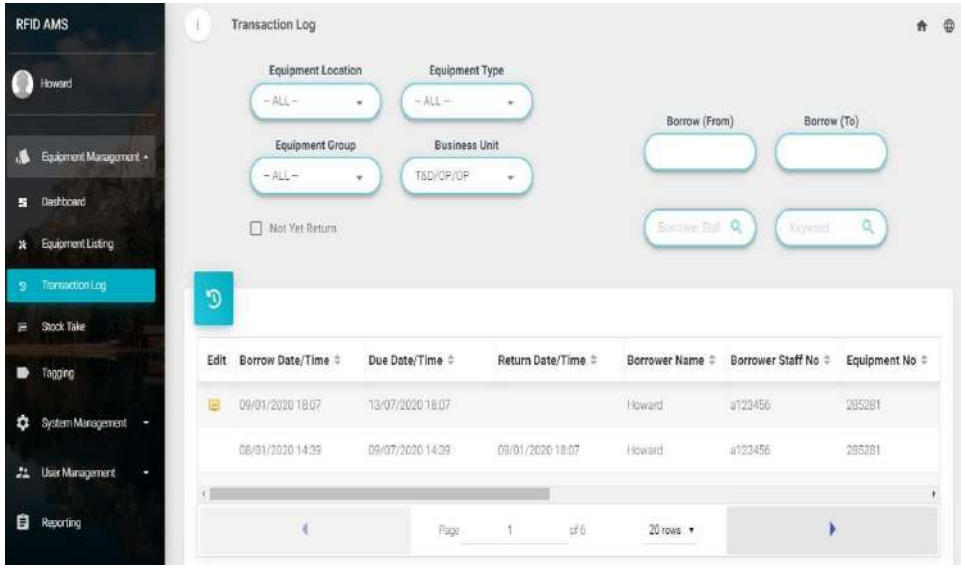
Spot Track Software module: Borrow / Return / Renew





Equipment Management – Dashboard

Equipment Management – Equipment Listing



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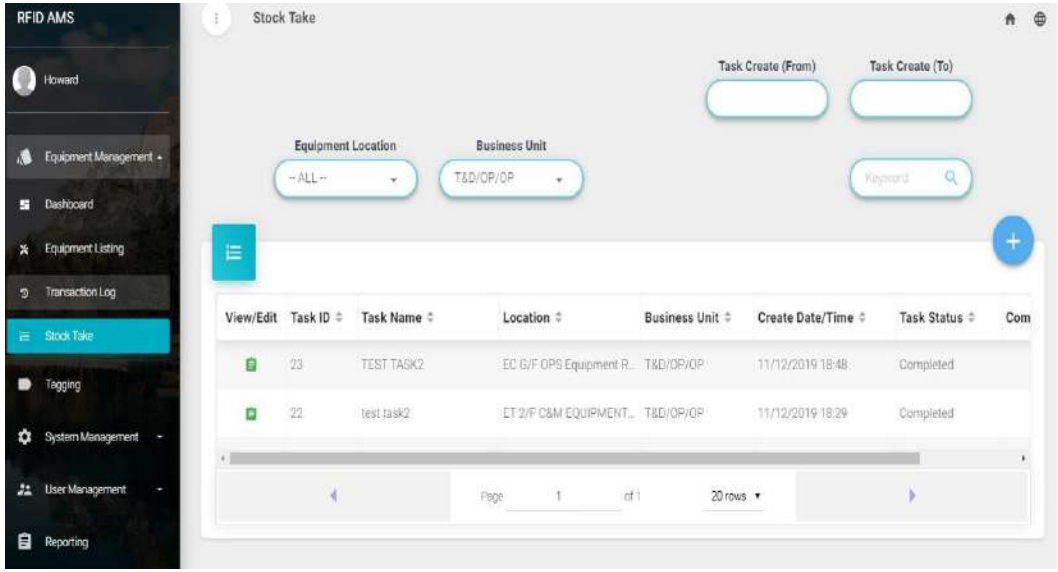
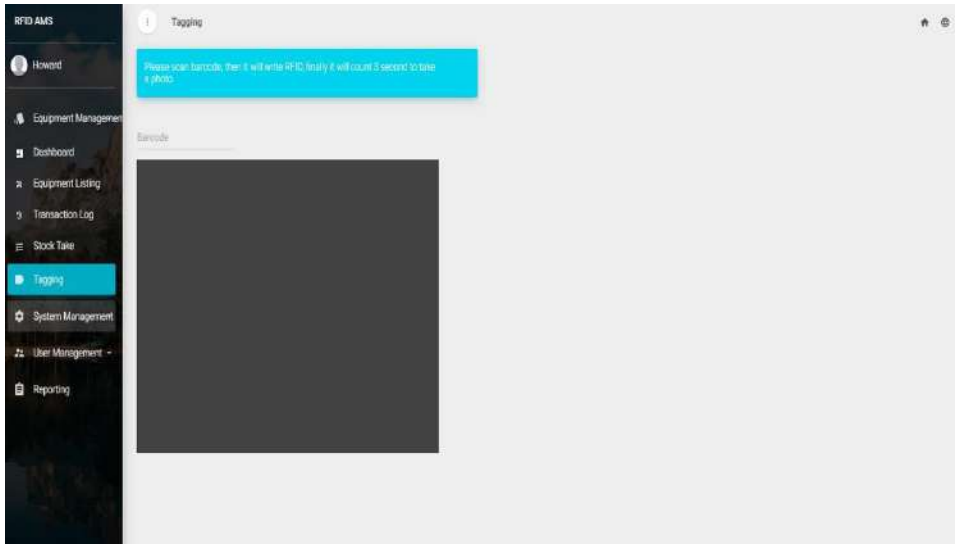
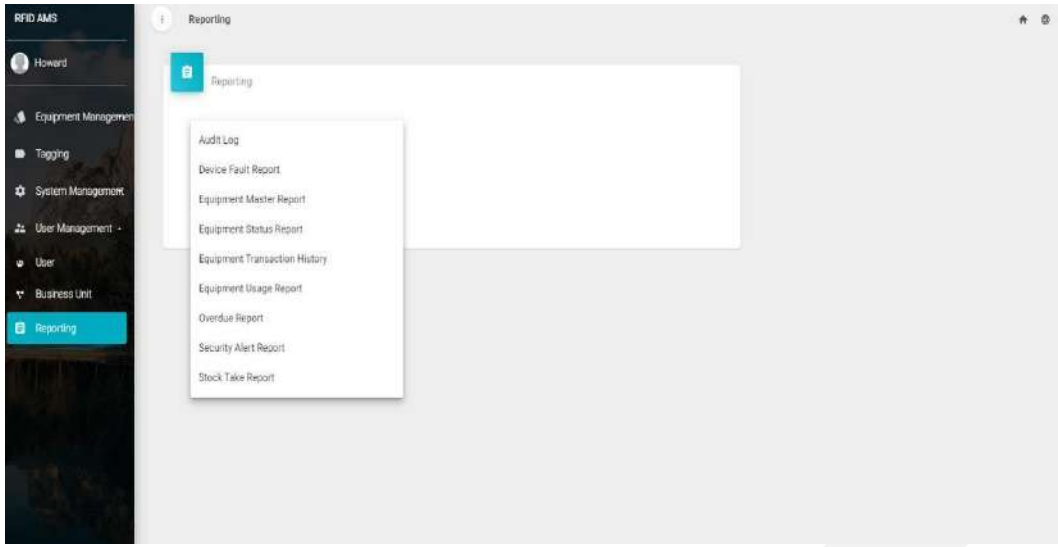


Stock Take



Tagging process



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