

# RFID Assets Management Solution



# 1. Introduction

- 1. Introduction
- 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.

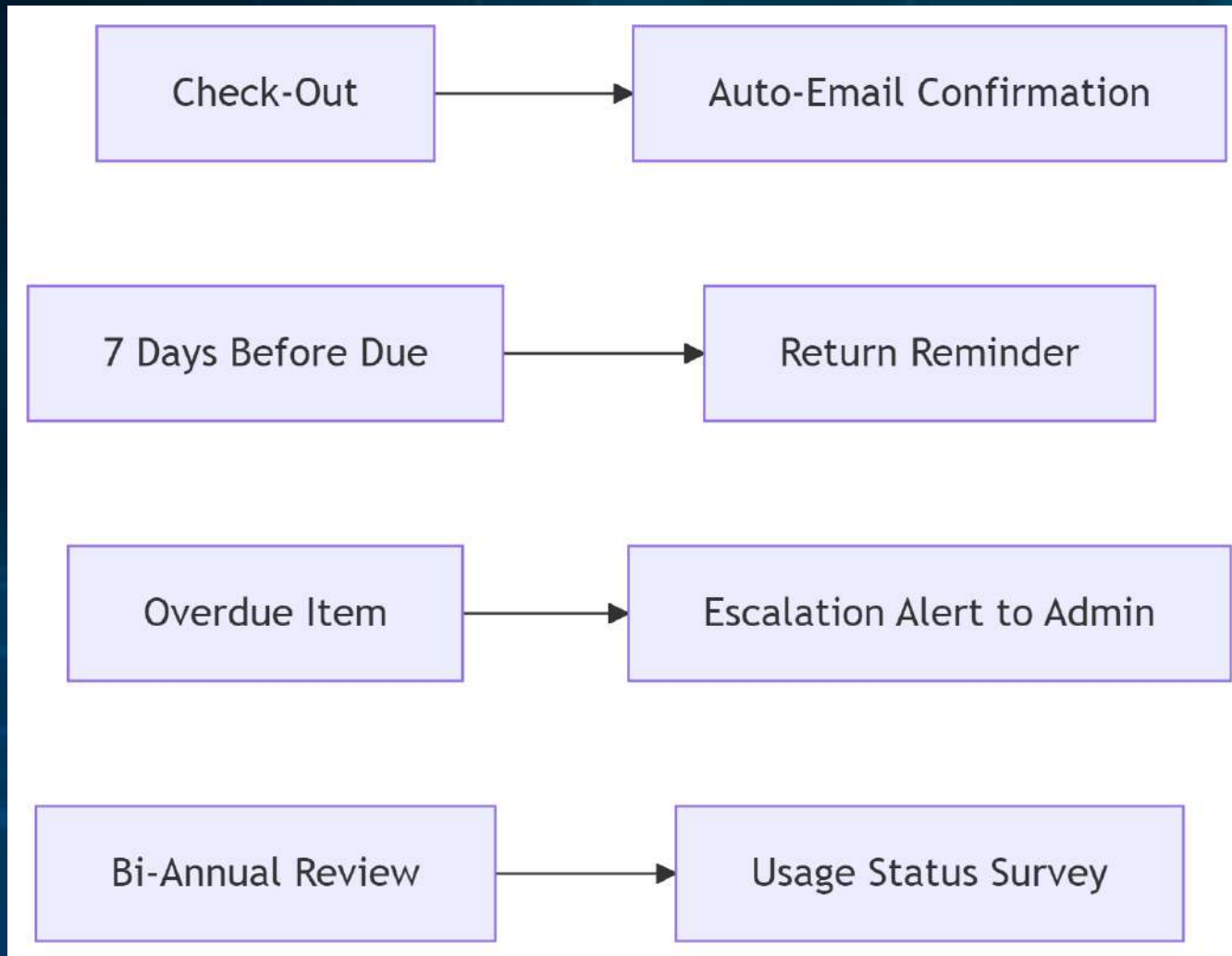
- **4.5 User Management**

- 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





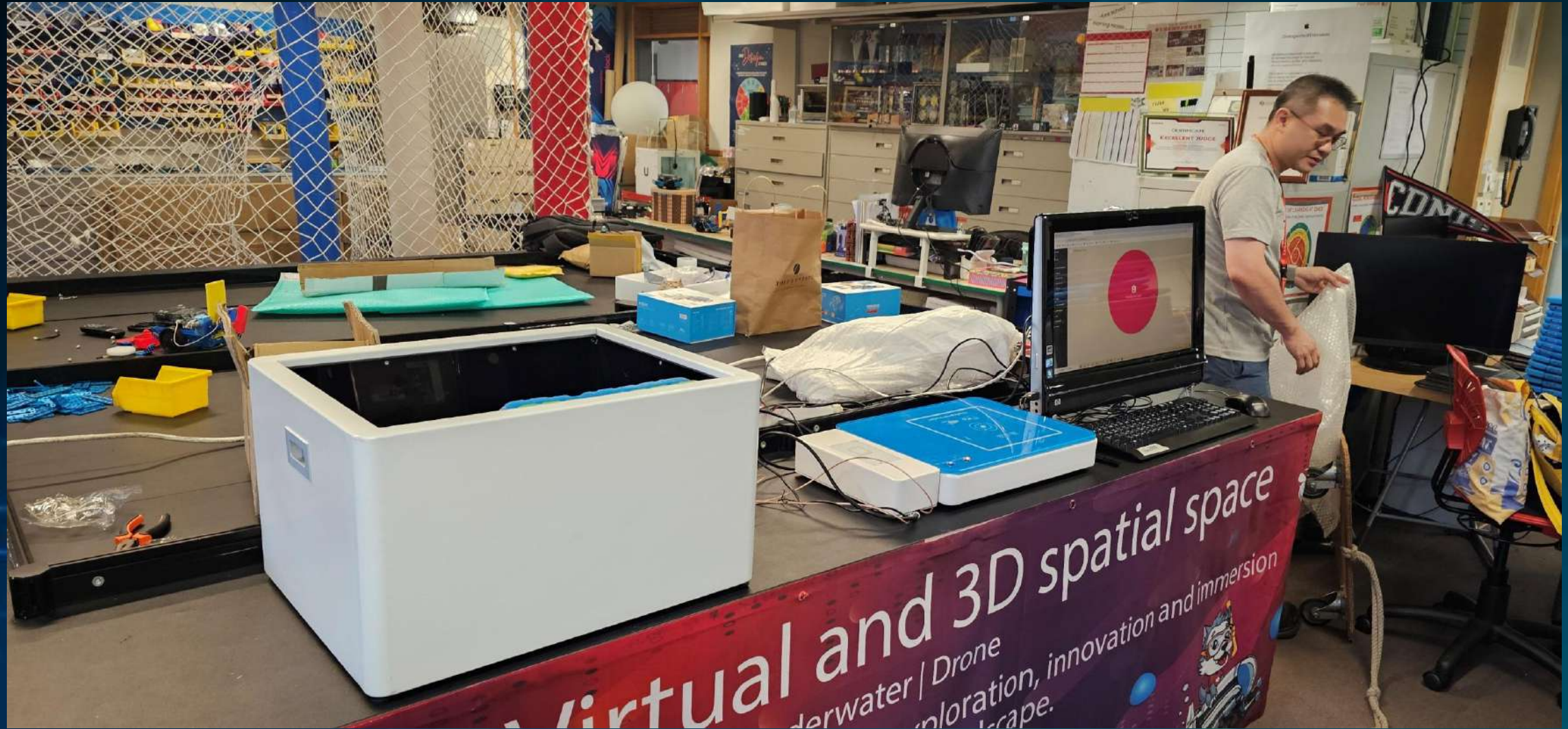
- **5.3 Maintenance**

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

- **5.4 User Portal Features**

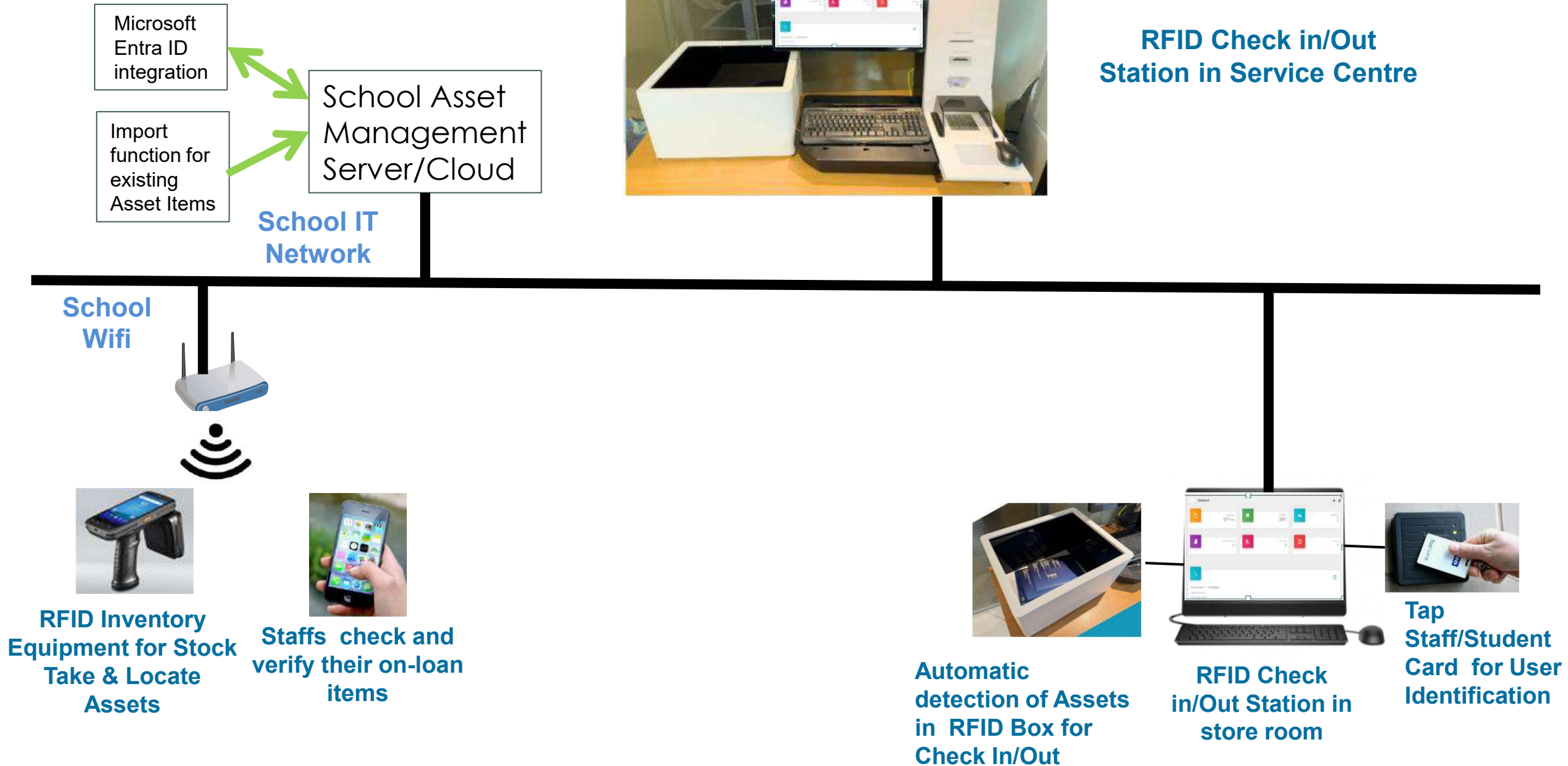
- Self-service loan history with asset photos
- Extension requests for active loans
- Damage/loss reporting interface

## 5. System Evaluation





## 6. System Architecture



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



Web base AMS system

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

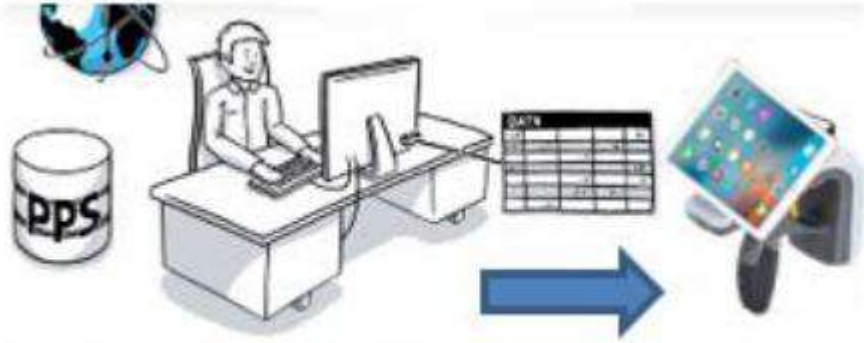


Real-time  
database update  
for borrower  
profile and  
scanned items

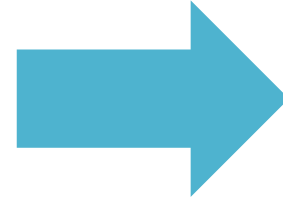


Check display  
information and  
confirm borrowing

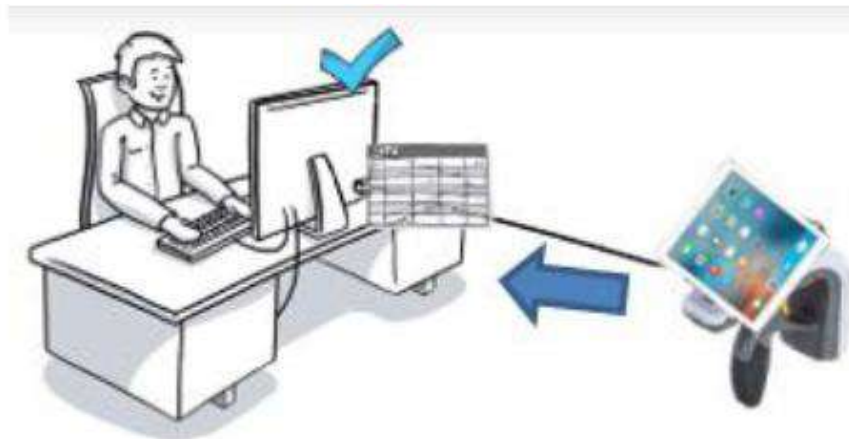
## 9. Work Flow: Stock Take



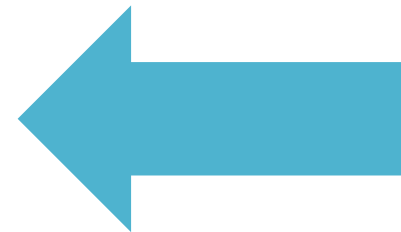
Create stock take batch and download to handheld



Using handheld to stock take or searching



Confirm the stock take batch with adjustment and reasons






User Name

 Staff Login

 Staff Management

 Check in Items

 Check Out Items

 Edit Items  
/ Enquiry

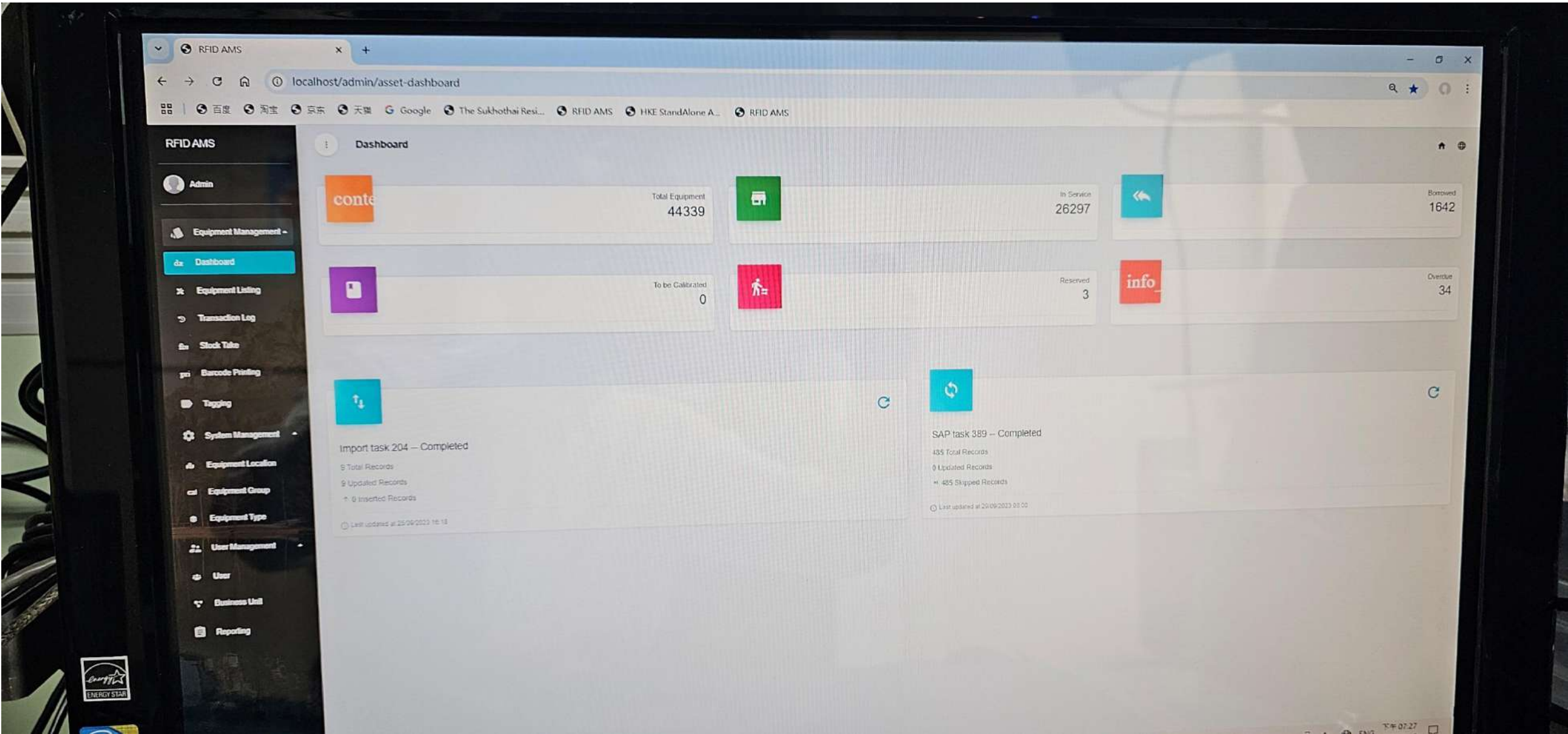
 Report

## Inventory Management System (For Schools)





Equipment Management – Dashboard





# Equipment Management—Equipment Listing

RFID AMS

Admin

Equipment Management

Dashboard

Equipment Listing

Transaction Log

Stock Take

Barcode Printing

Tagging

System Management

Equipment Location

Equipment Group

Equipment Type

User Management

User

Business Unit

Reporting

Transaction Log

Equipment Location

Equipment Type

Equipment Group

Business Unit

Not Yet Return

Overdue

Borrow (From)

Borrow (To)

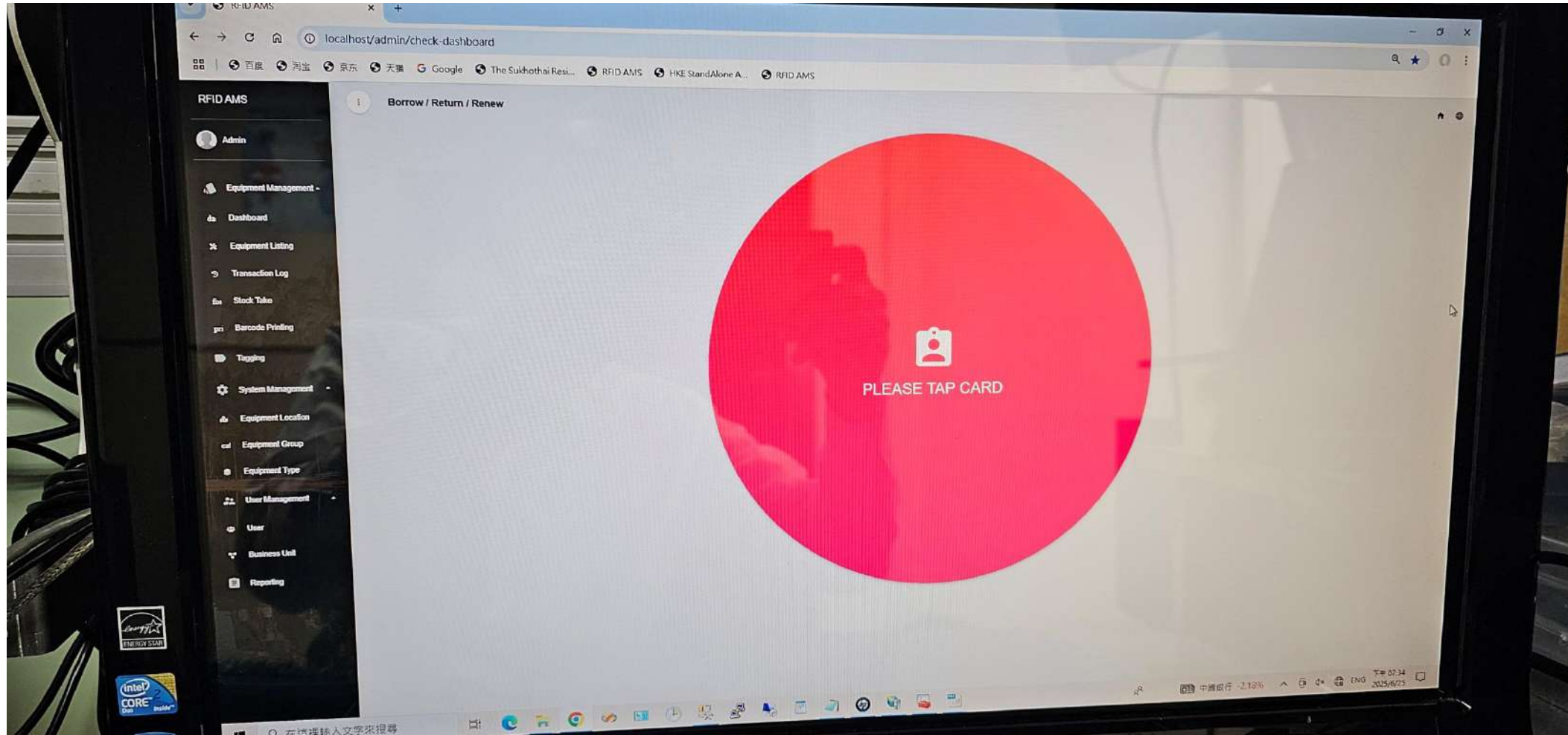
Borrower Staff No

Keyword

Edit	Borrow Date/Time	Due Date/Time	Return Date/Time	Borrower Name	Borrower Staff No	Equipment No	Barcode	Equipment Location	Equipment Type	Legacy Equipment No	Equipment Description	Equip
	09/11/2022 08:24	16/11/2022 08:24		Chui Kwong Hau	15890	360266	KT01845	ET 2/F Transmission Ca...	KT	01846	MULTIGAS MONITOR 10	
	09/11/2022 08:24	16/11/2022 08:24		Chui Kwong Hau	15890	360351	KT02083	ET 2/F Transmission Ca...	KT	02083	J VENTILATOR 2	
	08/11/2022 08:20	15/11/2022 08:20		Mo Yuen Hung	15446	360485	KTBC188	ET 2/F Transmission Ca...	KTBC	138	13A CONVERSION 16A POW...	
	08/11/2022 08:16	15/11/2022 08:16		Mo Yuen Hung	15446	360177	KT01680	ET 2/F Transmission Ca...	KT	01680	MITSUBISHI SFL E	
	08/11/2022 08:16	15/11/2022 08:16		Mo Yuen Hung	15446	360157	KT01613	ET 2/F Transmission Ca...	KT	01613	SEBAKMT SFL MAIN SET C	
	08/11/2022 08:16	15/11/2022 08:16		Mo Yuen Hung	15446	360347	KT02057	ET 2/F Transmission Ca...	KT	02057	IMPACT WRENCH 3	
	07/11/2022 08:33	14/11/2022 08:33		Ip Cheuk Sing	42055	360191	KT01704	ET 2/F Transmission Ca...	KT	01704	CORDLESS DRILL 5	
	03/11/2022 08:39	10/11/2022 08:39		So Kin Ming	21294	360238	KT01804	ET 2/F Transmission Ca...	KT	01804	HEAT GUN 7	
	03/11/2022 08:30	10/11/2022 08:30		Yip Chi Hung	15048	360006	KT00497	ET 2/F Transmission Ca...	KT	00497	CABLE REEL 10	
	03/11/2022 08:21	10/11/2022 08:21		So Kin Ming	21294	360293	KT01925	ET 2/F Transmission Ca...	KT	01925	MULTIGAS MONITOR 12	
	03/11/2022 08:21	10/11/2022 08:21		So Kin Ming	21294	360084	KT01259	ET 2/F Transmission Ca...	KT	01259	MOBILE QUADPOD WITH RE...	
	03/11/2022 08:21	10/11/2022 08:21		So Kin Ming	21294	360373	KT01067	ET 2/F Transmission Ca...	KT	01067	LED DEFLADABLE LIGHT 7	

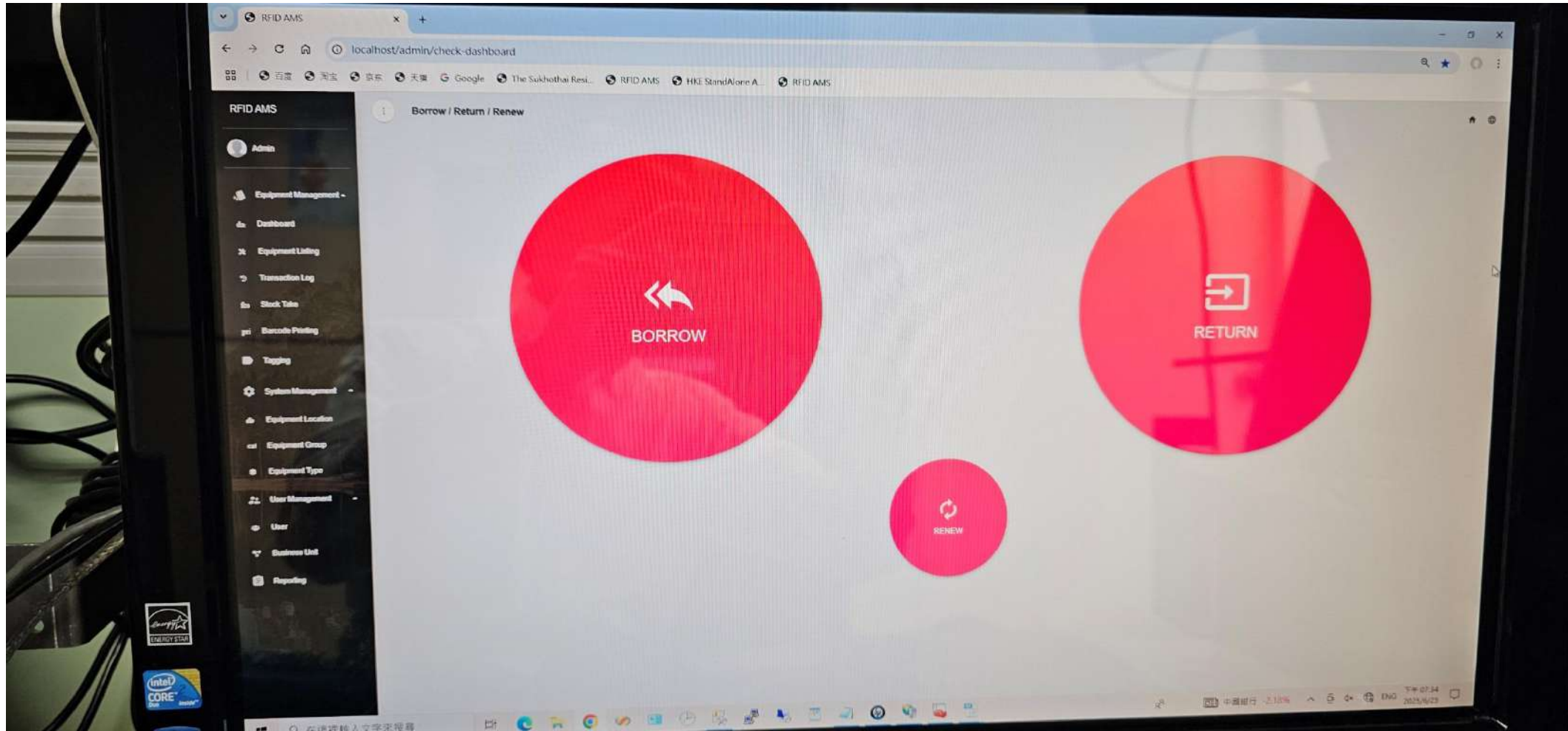
Page 1 of 220 rows

## Equipment Management—Equipment Listing

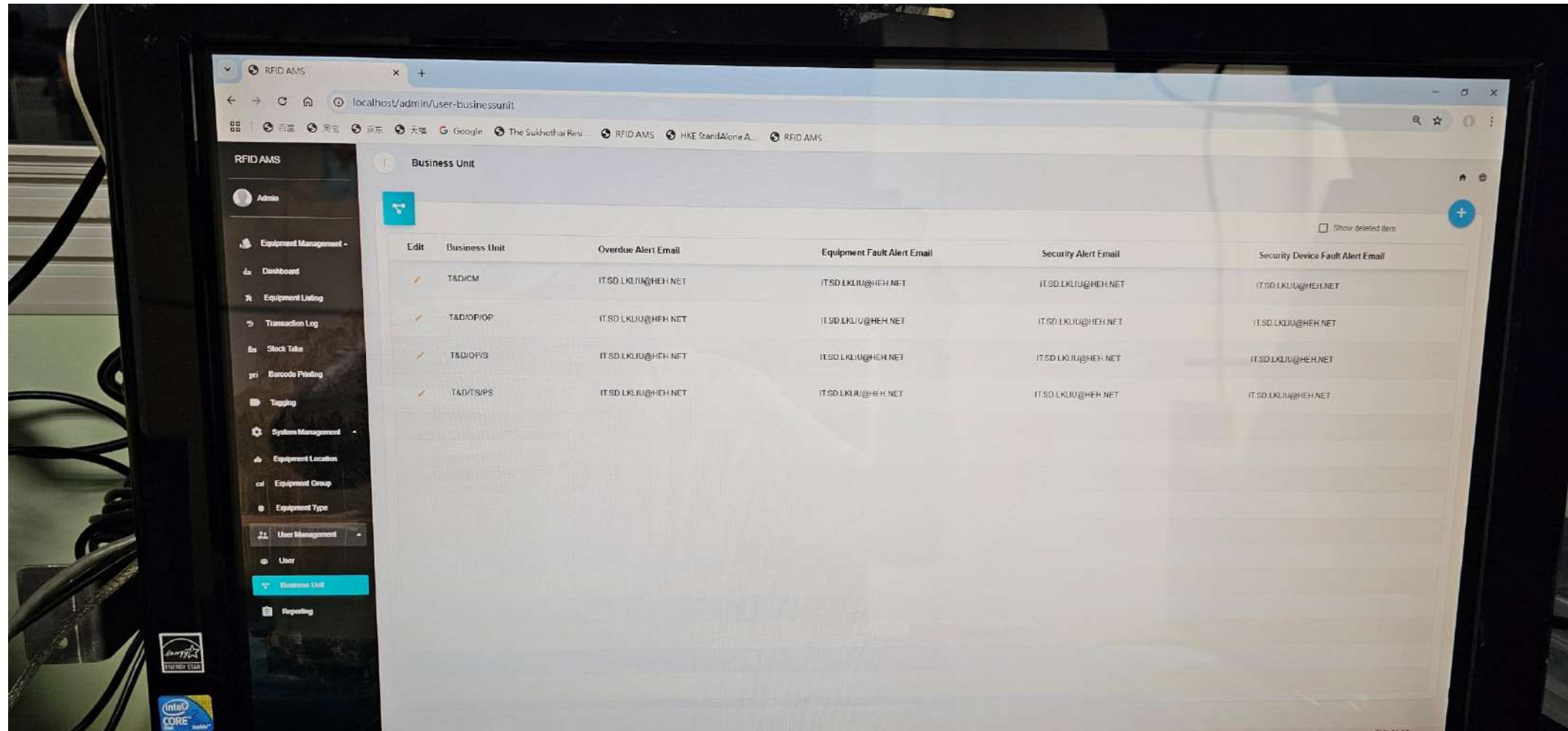




## Borrow / Return / Renew



# Equipment Management – Email Notification





## Equipment Management—User List

**clc Create**

Business Unit

Overdue Alert Email

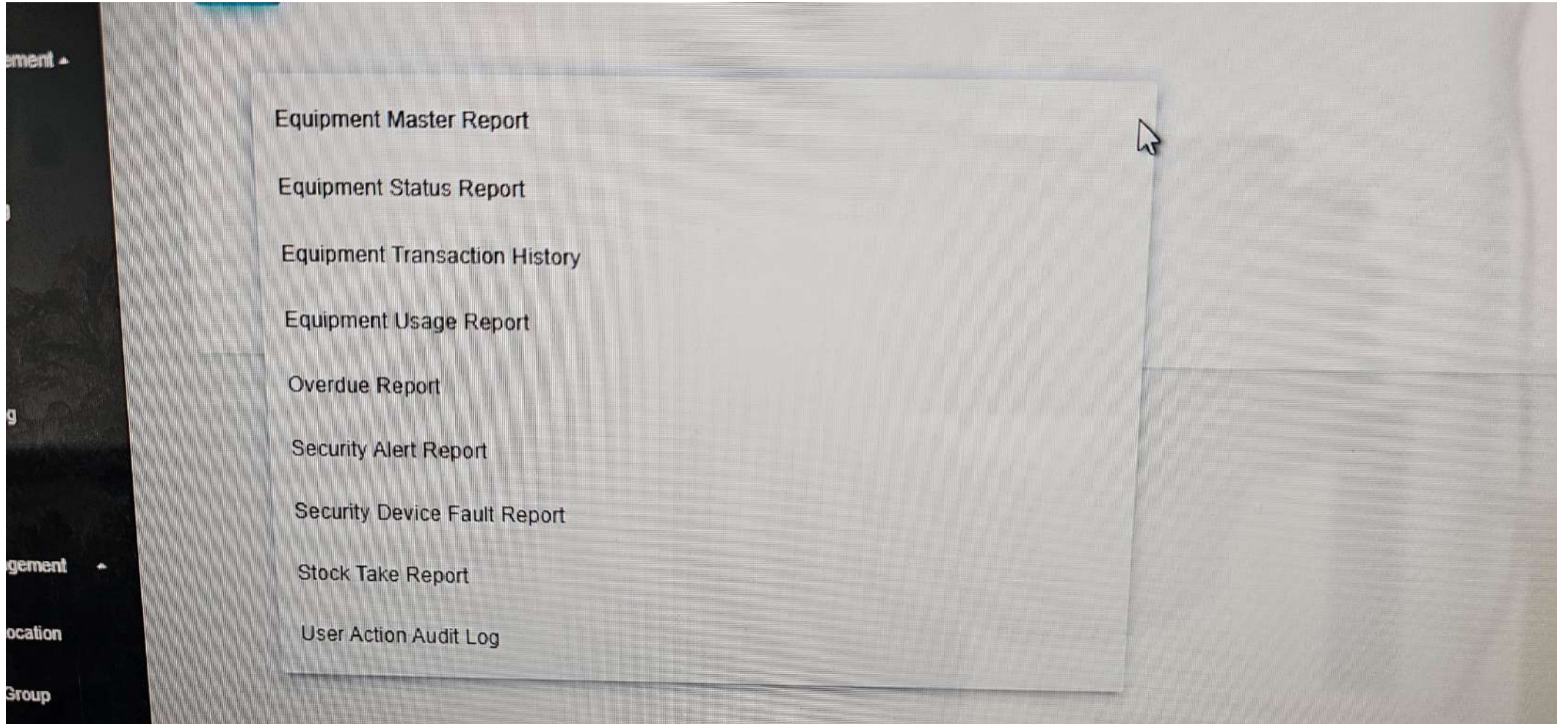
Equipment Fault Alert Email

Security Alert Email

Security Device Fault Alert Email

**CREATE**

## Reporting – Built in several types of standard report





# Transaction Log

RFID AMS

localhost/admin/asset-transactionlog

Admin

Equipment Management -

- Dashboard
- Equipment Listing
- Transaction Log
- Stock Take
- Barcode Printing
- Tagging
- System Management
- Equipment Location
- Equipment Group
- Equipment Type
- User Management
- User
- Business Unit
- Reporting

Transaction Log

Equipment Location: - ALL - Equipment Type: - ALL - Equipment Group: - ALL - Business Unit: - ALL -

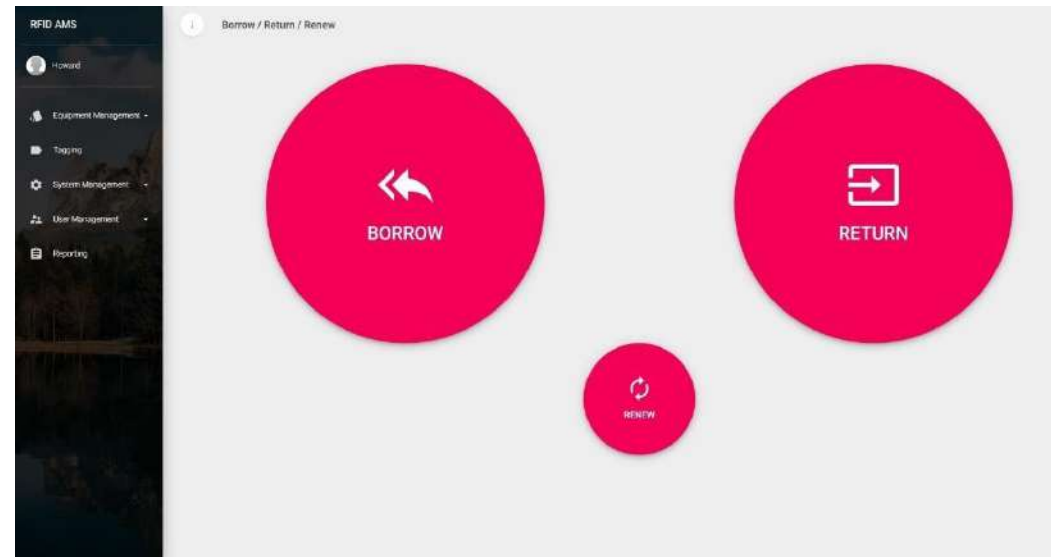
Borrow (From): Borrow (To): Borrower Staff No: Keyword:

Not Yet Return: Overdue:

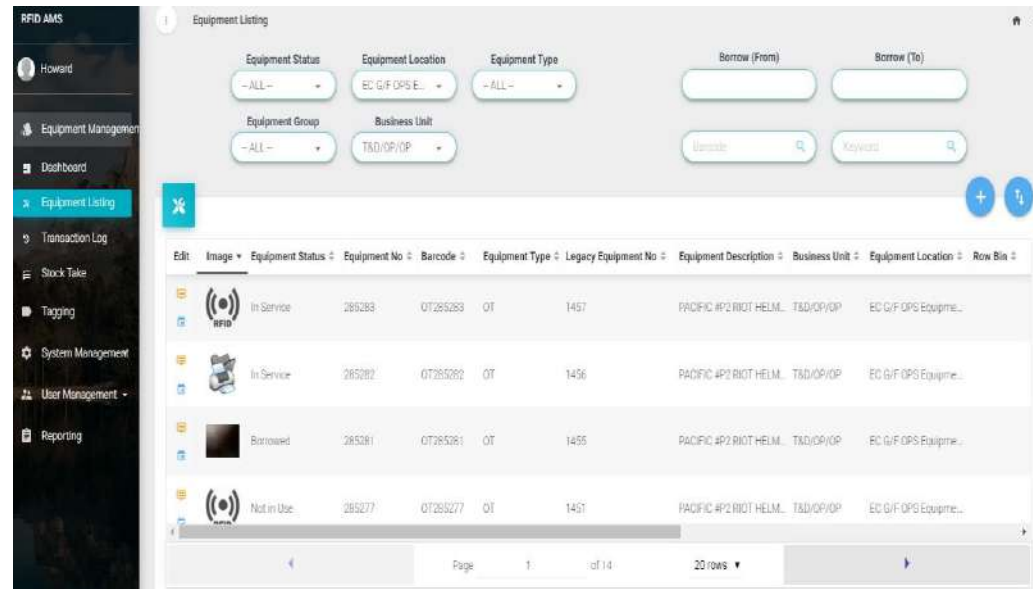
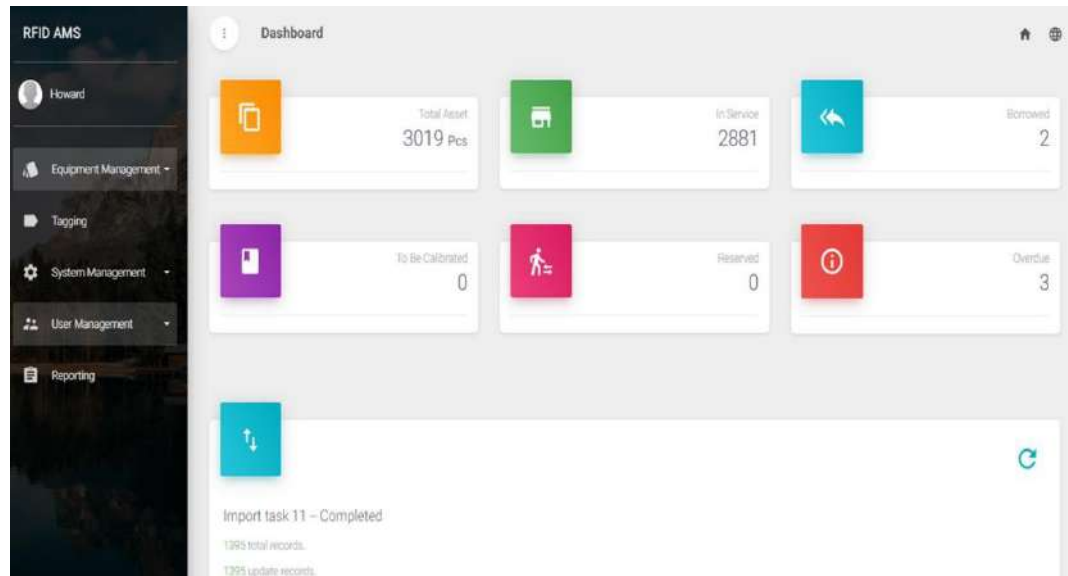
Edit	Borrow Date/Time	Due Date/Time	Return Date/Time	Borrower Name	Borrower Staff No	Equipment No	Barcode	Equipment Location	Equipment Type	Legacy Equipment No	Equipment Description	Equip
	09/11/2022 08:24	16/11/2022 08:24		Chui Kwong Hau	15890	360266	KT01846	ET 2/F Transmission Ca...	KT	01246	MULTIGAS MONITOR 10	
	09/11/2022 08:24	16/11/2022 08:24		Chui Kwong Hau	15890	360351	KT02063	ET 2/F Transmission Ca...	KT	02063	J VENTILATOR 2	
	08/11/2022 08:20	15/11/2022 08:20		Mo Yuen Hung	15446	360485	KTBC188	ET 2/F Transmission Ca...	KTBC	188	13A CONVERSION 16A POW...	
	08/11/2022 08:16	15/11/2022 08:16		Mo Yuen Hung	15446	360177	KT01680	ET 2/F Transmission Ca...	KT	01680	mitsubishi SFL E	
	08/11/2022 08:16	15/11/2022 08:16		Mo Yuen Hung	15446	360157	KT01613	ET 2/F Transmission Ca...	KT	01613	SEBAKMT SFL MAIN SET C	
	09/11/2022 08:16	15/11/2022 08:16		Mo Yuen Hung	15446	360347	KT02057	ET 2/F Transmission Ca...	KT	02057	IMPACT WRENCH 3	
	07/11/2022 08:33	14/11/2022 08:33		Ip Cheuk Sing	42055	360191	KT01704	ET 2/F Transmission Ca...	KT	01704	CORDLESS DRILL 5	
	03/11/2022 08:39	10/11/2022 08:39		So Kin Ming	21294	360238	KT01804	ET 2/F Transmission Ca...	KT	01804	HEAT GUN 7	
	03/11/2022 08:30	10/11/2022 08:30		Yip Chi Hung	15048	360006	KT00497	ET 2/F Transmission Ca...	KT	00497	CABLE REEL 10	
	03/11/2022 08:21	10/11/2022 08:21		So Kin Ming	21294	360293	KT01924	ET 2/F Transmission Ca...	KT	01924	MULTIGAS MONITOR 12	
	03/11/2022 08:21	10/11/2022 08:21		So Kin Ming	21294	360084	KT01259	ET 2/F Transmission Ca...	KT	01259	MOBILE QUADPOD WITH RE...	
	03/11/2022 08:21	10/11/2022 08:21		So Kin Ming	21294	360372	KT01857	ET 2/F Transmission Ca...	KT	01857	LEN DEFWADGEABLE HUB 3	

Page 1 of 2 20 rows





## Spot Track Software module: Borrow / Return / Renew



Equipment Management – Dashboard

Equipment Management – Equipment Listing

RFID AMS

Howard

Equipment Management

Dashboard

Equipment Listing

Transaction Log

Stock Take

Tagging

System Management

User Management

Reporting

Transaction Log

Equipment Location: ~ ALL ~

Equipment Type: ~ ALL ~

Equipment Group: ~ ALL ~

Business Unit: T&D/OP/OP

Borrow (From):

Borrow (To):

☐ Not Yet Return

Borrower Staff: Keyword:

Edit	Borrow Date/Time	Due Date/Time	Return Date/Time	Borrower Name	Borrower Staff No	Equipment No
	09/01/2020 18:07	13/07/2020 18:07		Howard	a123456	285281
	08/01/2020 14:39	09/07/2020 14:39	09/01/2020 18:07	Howard	a123456	285281

Page 1 of 6, 20 rows

Transaction Log

RFID AMS

Howard

Equipment Management

Dashboard

Equipment Listing

Transaction Log

Stock Take

Tagging

System Management

User Management

Reporting

Stock Take

Task Create (From):

Task Create (To):

Equipment Location: ~ ALL ~

Business Unit: T&D/OP/OP

Keyword:

View/Edit	Task ID	Task Name	Location	Business Unit	Create Date/Time	Task Status	Com
	23	TEST TASK2	EC G/F OPS Equipment R...	T&D/OP/OP	11/12/2019 18:48	Completed	
	22	test task2	ET 2/F C&M EQUIPMENT...	T&D/OP/OP	11/12/2019 18:29	Completed	

Page 1 of 1, 20 rows

Stock Take

RFID AMS

Howard

Equipment Management

Dashboard

Equipment Listing

Transaction Log

Stock Take

Tagging

System Management

User Management

Reporting

Tagging

Please scan barcode, then it will write RFID finally it will cost 3 second to take a photo

Barcode

Tagging process

RFID AMS

Howard

Equipment Management

Dashboard

Equipment Listing

Transaction Log

Stock Take

Tagging

System Management

User Management

Business Unit

Reporting

Reporting

- Audit Log
- Device Fault Report
- Equipment Master Report
- Equipment Status Report
- Equipment Transaction History
- Equipment Usage Report
- Overdue Report
- Security Alert Report
- Stock Take Report

Reporting— Built in several types of standard report