Automated Equipment Maintenance Data Upload to RTLS

Developing a Resilient & Sustainable Workforce

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Aims

1. **Automate RTLS Record Updates:** Streamline the process of updating maintenance records in the Real-time Location System (RTLS) by automatically transferring relevant data from the Computerised Maintenance Management System (CMMS).
2. **Register New Assets in RTLS:** Ensure that newly added assets to the CMMS are promptly registered in the RTLS, enhancing visibility and tracking.
3. **Update Maintenance Dates in RTLS:** Synchronize maintenance date updates from the CMMS to keep RTLS records current.

Background

Prior to the project integrating the CMMS with the RTLS, BME staff uploaded equipment records to the RTLS using an Excel spreadsheet.

A time study revealed that BME staff made a total of 8,326 asset record changes or additions over a 12-month period. This equates to 416.3 work hours spent uploading changes to the RTLS, representing a time avoidance of 0.2 FTE per year.

Team Members

Name	Designation	Department
Andy Tan	Senior Engineer	BME
Ericia Goh	Principal Engineer	BME
Ho Khee Keah	Engineering Assistant	BME
Muhammad Faris	Engineering Assistant	BME

Implementation

To achieve these objectives, we developed a software application that:

1. **Monitors CMMS for Changes:** Continuously scans the CMMS for new records or updates to existing records.
2. **Transfers Data Securely:** Utilizes the Secure File Transfer Protocol (SFTP) to transmit relevant data to the RTLS system securely.
3. **Updates RTLS Records:** Processes the transferred data and updates the corresponding RTLS records.

Results

1. **Time Savings**: Reduced manual data entry, leading to substantial time savings for our Biomedical Engineering (BME) staff.
2. **Reduced Errors:** Eliminated the risk of human error associated with manual data entry, improving data accuracy and reliability.
3. **Enhanced Efficiency:** Streamlined workflows and increased productivity by automating routine tasks, allowing BME staff to focus on higher-value activities.

Conclusion

We have successfully improved the efficiency and accuracy of our RTLS system. This automation initiative has saved time, reduced errors, and enhanced our operation.

Onward 2026

F2: Operational Resilience

1. **Reduced Errors:**
- The automation minimises human error, leading to fewer mistakes in data entry, maintenance scheduling, and asset tracking.
- Ensures accurate and timely information, improving decision-making and reducing the risk of equipment failures.

2. **Improved Efficiency:**
- Streamlines processes and reduces manual tasks, leading to faster response times and increased productivity.
- Optimises resource allocation and maintenance scheduling, maximising equipment uptime and minimising downtime costs.

3. **Enhanced Asset Visibility:**
- Providing accurate data to RTLS improves real-time visibility into asset locations, status, and maintenance history.
- Facilitates proactive maintenance and timely repairs, reducing the risk of unexpected breakdowns.

4. **Stronger Compliance:**
- Adopting industrial best practices.
- Can reduce the risk of non-compliance with audit findings.

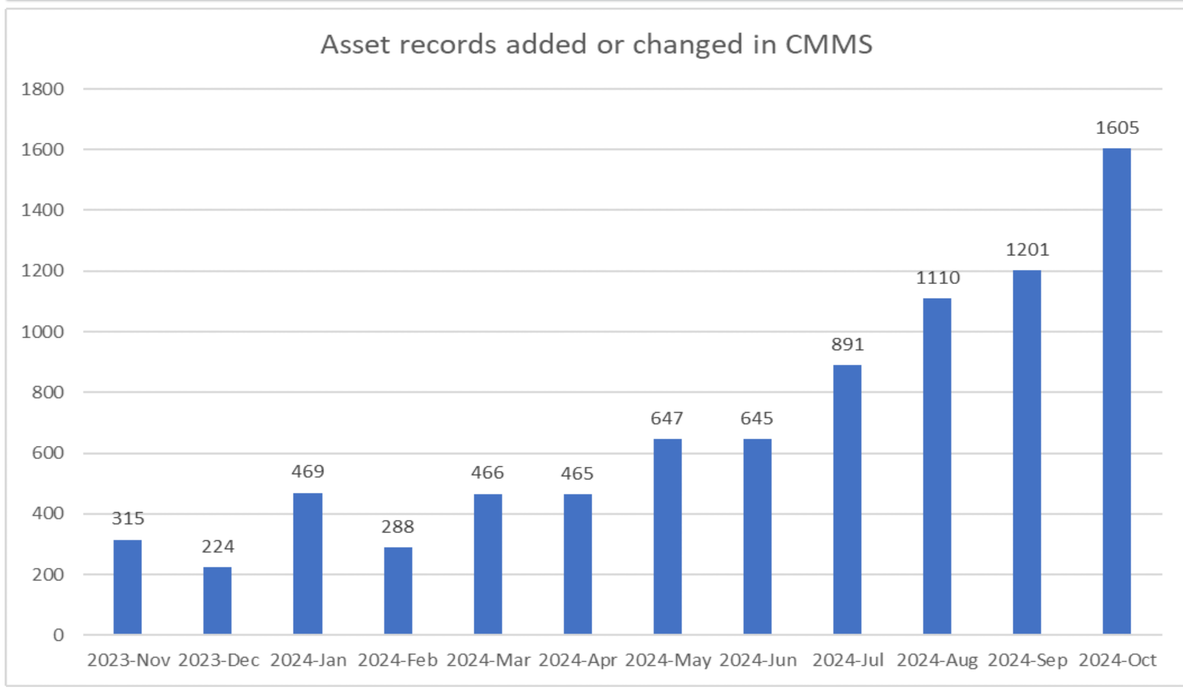
F3: Staff Well-being

1. Reduced Workload:
- Automates repetitive and time-consuming tasks, freeing staff to focus on more strategic and challenging work.
- It can reduce the risk of burnout and job dissatisfaction.

2. Improved Job Satisfaction:
- The project enables staff to spend more time on value-added activities that contribute to organisational goals.
- It can provide a sense of accomplishment and recognition for their contributions.

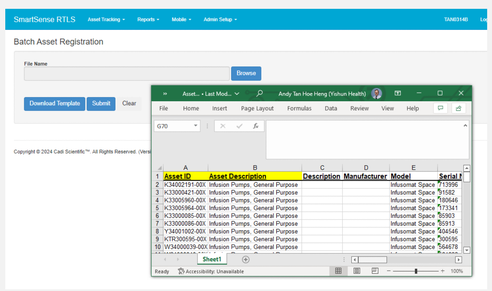
3. Reduced Stress:
- The project can minimise the stress associated with manual data entry and error-prone processes.
- It creates a more positive and supportive work environment.

Results & Outcomes



Picture 1: Data on CMMS changes was collected over 12 months, from November 2023 to October 2024.

Before



BME staff prepares data in Excel format for upload to RTLS.

After

Automated, no action from BME staff required

416.3 Work hours avoided per year

0.2 FTE time avoided per year