

### **Project Title**

Innovation with Real Time Location System: Using Data Captured in Real-Time Location System to provide accurate asset utilization for Surgery Costing

### **Project Lead and Members**

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- Lok Hiu Ching
- Low Ying Ning
- Teng Jyh Lei
- Isabel Kuek
- Mohammad Shahari Bin Anshari
- Ng Siok Peng
- Ng Siew Fong
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- Wong Wan Chi

### **Organisation(s) Involved**

Sengkang General Hospital

### **Healthcare Family Group(s) Involved in this Project**

Healthcare Administration, Nursing

### **Applicable Specialty or Discipline**

Finance, Operating Theatre

### **Aim(s)**

To reduce the amount of time taken by Operating Theatre (OT) nurses for costing of surgical procedures by 70%

### **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Lessons Learnt**

See poster appended/ below

## **Conclusion**

See poster appended/ below

## **Additional Information**

Singapore Healthcare Management Congress 2022 – Merit Award (Finance category)

## **Project Category**

Technology, Digital Health, Sensors

## **Keywords**

Surgical Procedures, Real Time Location System, Asset Management, Radio Frequency  
Identification Tags

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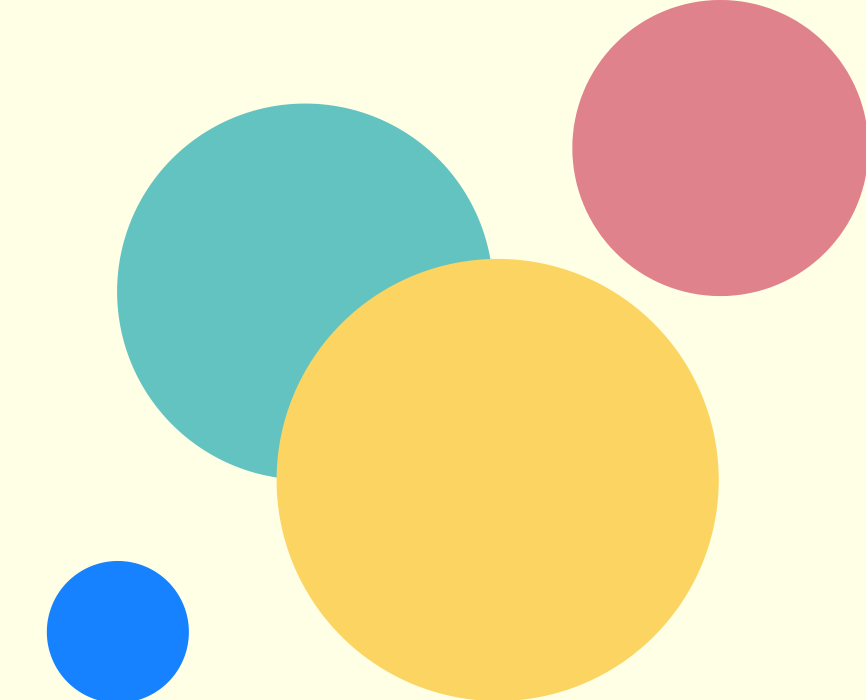


**Singapore Healthcare Management 2022**

# INNOVATION WITH REAL TIME LOCATION SYSTEM

Using Data Captured in Real Time Location System to Provide Accurate Asset Utilization for Surgery Costing

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Ng Siok Peng; Ng Siew Fong; Ye Biyin; Wong Wan Chi



## 1. Background

Traditionally, costing process for surgical procedures is a time consuming and labour intensive process. Extensive discussions are needed with various parties for mapping of assets to each surgical procedure.



## 2. Aim of Project

By innovating with data captured in the Real Time Location System (RTLS), this project aims to reduce the amount of time taken by Operating Theatre (OT) nurses for costing of surgical procedures by 70%.



## 3. Methodology



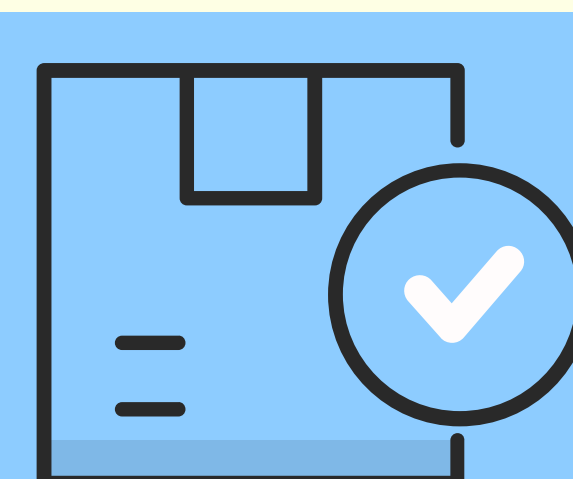
### TAGGING

Central Asset Management (CAM) tagged about 900 Operating Theatre (OT) equipment with active Radio-Frequency Identification (RFID) tags.



### TRACKING

The RFID tags allows usage tracking by capturing equipment location and duration of use, stored inside the RTLS.



### MAPPING & VERIFICATION

CAM extracted RTLS data and mapped with OT Management System (OTMS) data, deriving equipment used for surgical procedures. OT Management Unit (OTMU) then verified OTMS data to determine if equipment were indeed being used.



### COSTING

Verified data was sent to Finance to form costing basis. Finance engaged OT nurses to review final list of equipment used for surgical procedures.

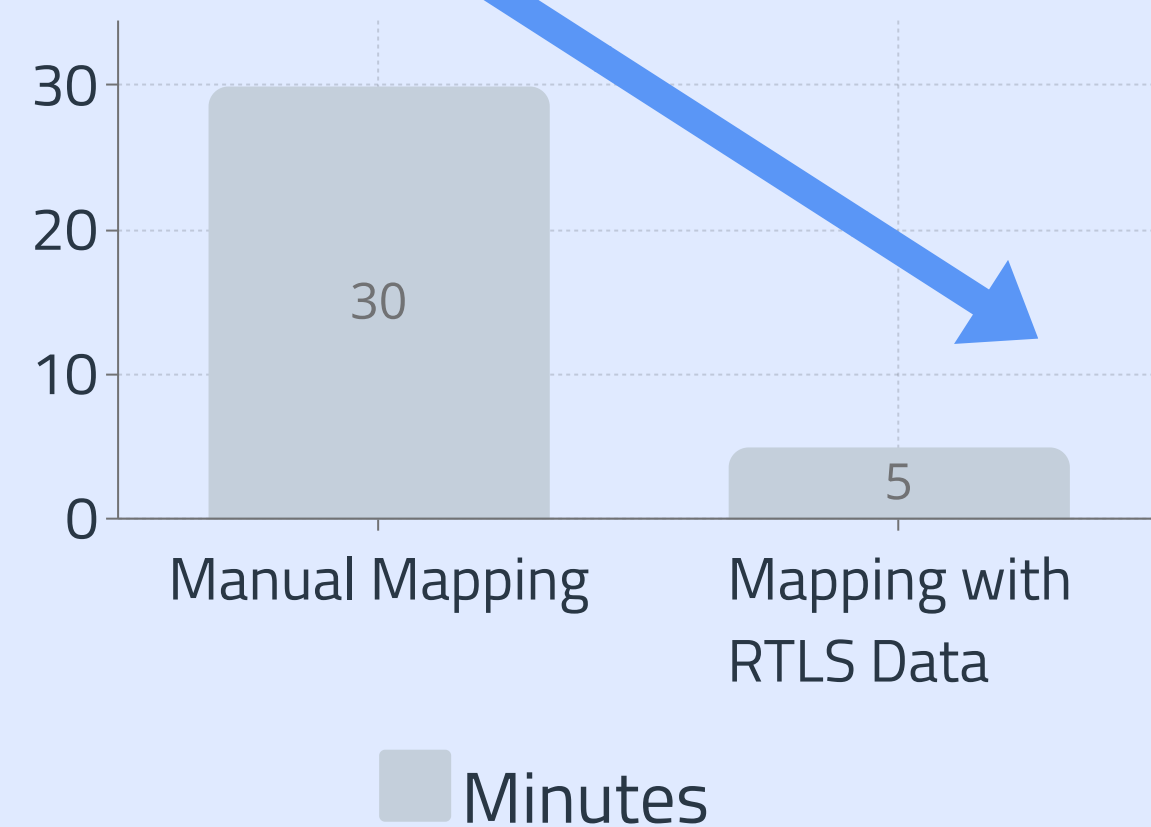


## 4. Results



For each procedure, OT nurses usually spend average of 30 mins manually mapping assets used for each surgical procedure. But with RTLS data, the mapping process took less than 5 mins, which is a **significant reduction of 83% in time taken**, meeting the target set.

Time spent (mins) to map assets used for each surgical procedure



**Annual Time Savings of 398.75 Hours**

**83% Reduction in time used for mapping**

There are approximately 957 procedures to be costed annually, hence this process of making use of RTLS data translates to **annual time savings of 398.75 hours**.

RTLS also improved accuracy of assets usage and eliminated decisions made on assumptions. During the trial mapping of 5 procedures, difference between manual mapping and using RTLS data was about \$101,000 over total of \$1.5 mil in asset cost.



Discrepancies were due to assets not in costing registry, replacement of asset, free equipment or standby equipment not identified during manual mapping.



Applying this difference over **957 procedures** and total OT assets, the potential impact due to **discrepancies in asset cost may be up to a significant amount of \$2.2 million**.



RTLS findings can also **assist OT & Finance to determine if the hospital needs to purchase more assets or reduce inventory** if utilization of asset is low.

**Mediates the Potential Discrepancy in Asset Cost of \$2.2 mil for 957 procedures**

**Assist in determining if hospital should purchase more asset or reduce asset inventory**



## 5. Conclusion

By innovating with RTLS and utilizing the captured data:



Provides **accurate** asset utilization



**Optimizes and enhances** costing process moving forward



Enables **significant** time savings