Project Title

TTSH Pharmacy's Road to Automation with Robotic Process Automation (RPA)

Project Lead and Members

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Organisation(s) Involved

Tan Tock Seng Hospital, National Healthcare Group

Healthcare Family Group(s) Involved in this Project

Allied Health, Pharmacy

Applicable Specialty or Discipline

Pharmacy

Project Period

Start date: September 2022

Completed date: 2024

Aims

See poster appended/below

Background

TTSH Pharmacy department have explored and adopted Robotic Process Automation (RPA) since September 2022 and have been expanding our use cases ever since. TTSH Pharmacy have adopted RPA in their various divisions (i.e. Pharmacy Procurement, Supply Chain & Manufacturing Services (PSCM), Pharmacy Billing, Pharmacy Informatics).

Methods

See poster appended/below

Results

See poster appended/below

Conclusion

The rapid and consecutive implementation of RPA in TTSH Pharmacy allowed for the initial automation of 3 major laborious repetitive processes. Building on the initial success of the solution, the initiative taken by the team to ensure sustainability of the solution by building in-house capacity for RPA programming and maintenance maximised the usage of the tool. Adoption of new technology was not limited to the pool of staff with IT background, all staff of varied background within the Pharmacy department should be exposed and upscaled to maximise their potential regardless of age.

In conclusion, the successful adoption of the solution by TTSH Pharmacy, for a current total of 22 use cases, translated to a total savings of5,602 hours and $187,158 of savings per year.

Project Category

Technology

Digitalisation, Automation, Robotic Process Automation

Care & Process Redesign

Productivity, Time Saving, Cost saving, Quality Improvement, Lean methodology, Design Thinking, Workflow Redesign

Keywords

Billing, Code Creation, Labour intensive, Repetitive, Queue status

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TTSH Pharmacy's Road to Automation with Robotic Process Automation (RPA)

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INTRODUCTION

TTSH Pharmacy department have explored and adopted Robotic Process Automation (RPA) since September 2022 and have been expanding our use cases ever since. TTSH Pharmacy have adopted RPA in their various divisions (i.e. Pharmacy Procurement, Supply Chain & Manufacturing Services (PSCM), Pharmacy Billing, Pharmacy Informatics).

PHARMACY INITIATIVES & THEIR METHODOLOGIES

THE FIRST Initiative: ROAD TO AUTOMATION WITH RPA (PSCM) [Sep 2022 – Present]

- The Drugs Material Code Creation project was the **first mover for adoption** of Robotic Process Automation (RPA) in Tan Tock Seng Hospital (TTSH). The PSCM team has adopted RPA for material code set-up, as well as to perform changes across multiple databases.
- The team was experiencing increasing challenges in its time-consuming lengthy and tedious data entry process while ensuring accuracy and error free.
- RPA helps to enhance operational efficiency and data accuracy while reducing cost while improving staff experience.
- The initial implementation of RPA, helped to automate **447 steps out of 467 steps** in 3 different systems (i.e. SAP, iPharm and Microsoft Access) allowing staff to do higher value-added work.
- Sustainability of solution was ensured by developing a team of department-based citizen developers that further identified and built an additional 19 RPA robots to run in the department.
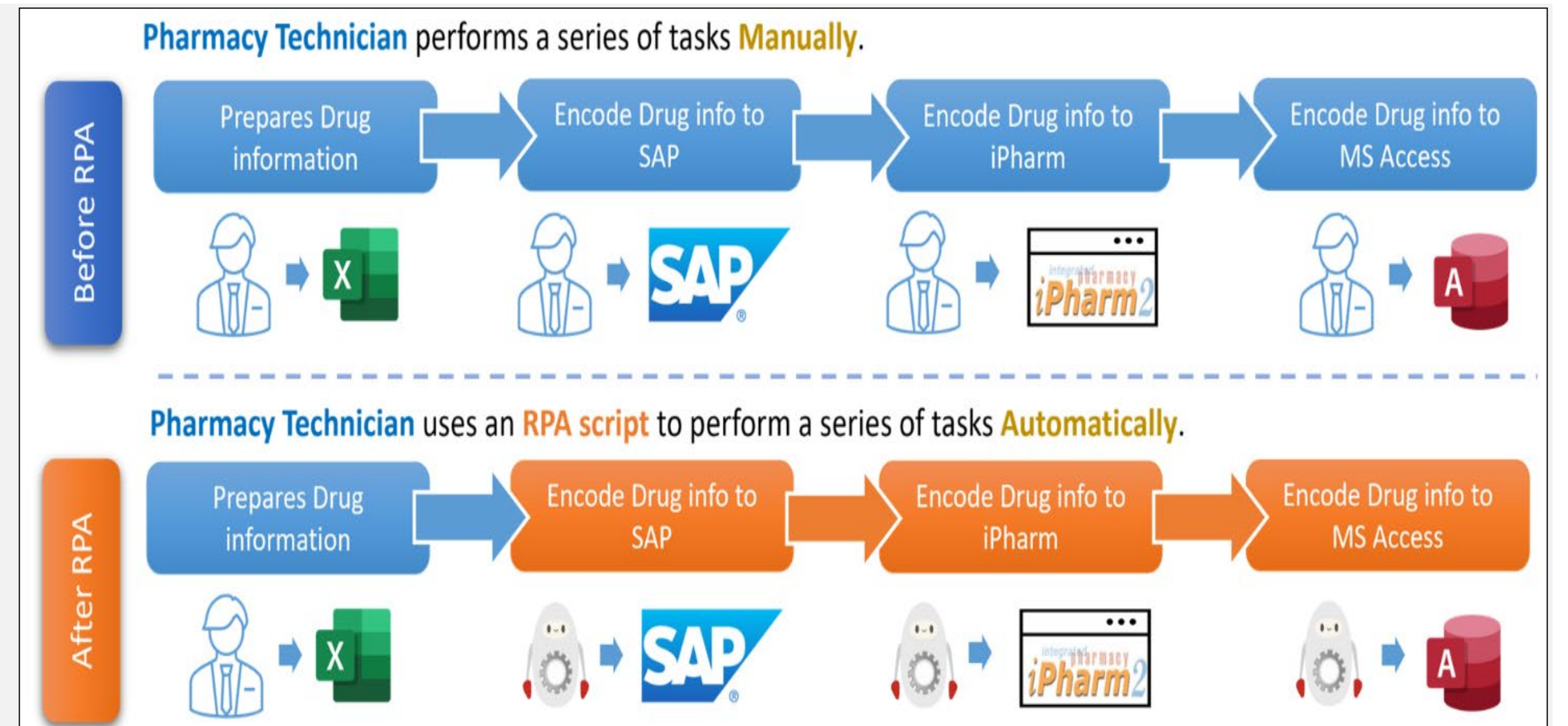

Figure 1: Workflow before and after Implementation of RPA for Code Creation Process

THE 2ND Initiative: Pharmacy Medication Billing (Outpatient Pharmacy) [Nov 22 – Present]

- TTSH Outpatient Pharmacy performs billing which is labour intensive, complex, repetitive and it requires toggling between 4 systems (i.e. SAP, iPharm, EPIC, SSRS).
- With the implementation of EPIC in Aug 2022, additional **20 steps** were required for each billing cases. Thus, creation of an encounter in EPIC were required before processing in SAP and iPharm.
- It takes an average of **7.5 minutes** to process each billing case with an average of **690** daily billing workload.
- The team has also scaled to automate Medication Delivery (MD) billing and to 2 other TTSH satellite pharmacy.
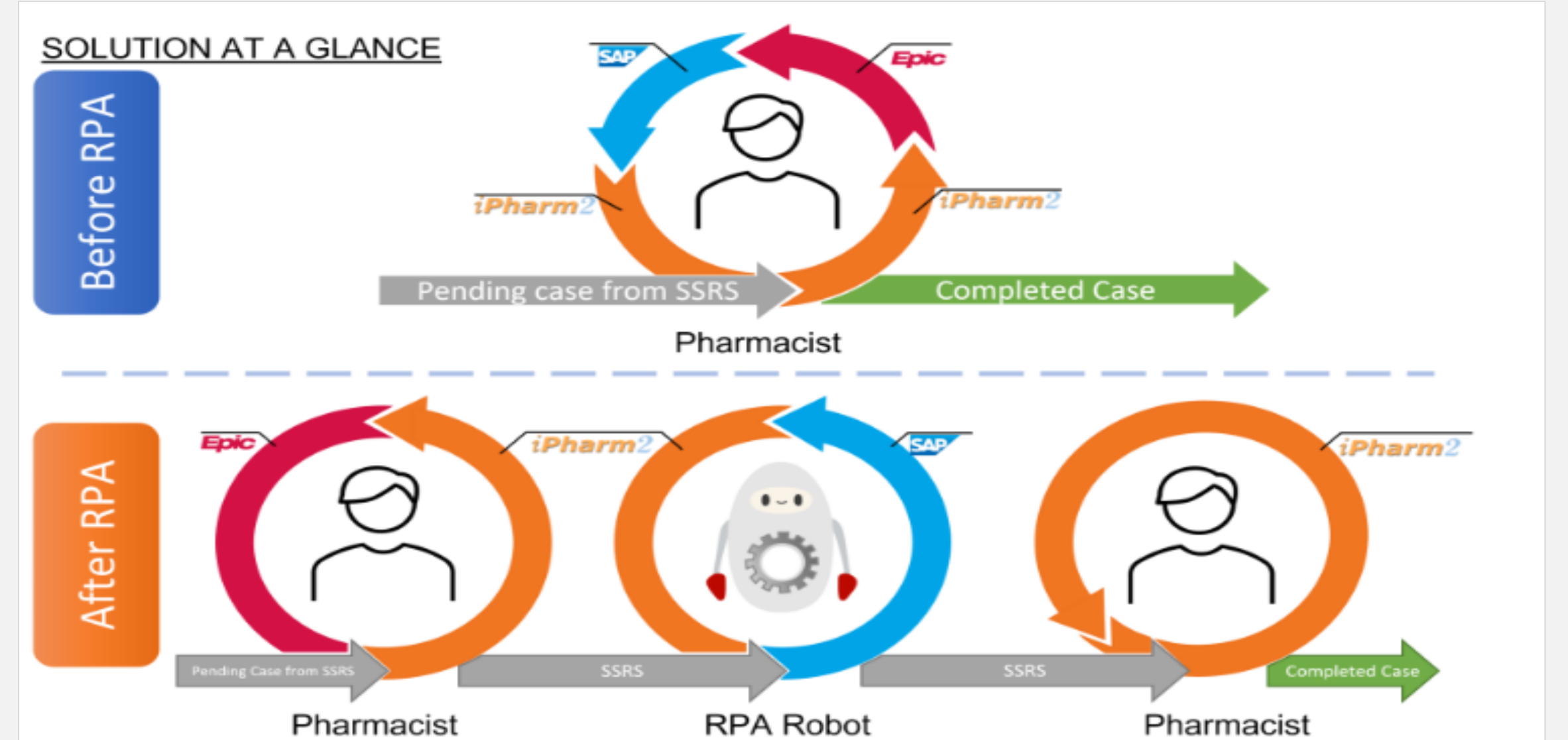

Figure 2: Workflow before and after Implementation of RPA for Outpatient Pharmacy Billing Process

THE 3RD Initiative: Automation of Short Message Service (SMS) Sending for Pharmacy Dispensing (Pharmacy Informatics) [Dec 23 – Present]

- Waiting time at the Outpatient Pharmacy can be long and uncertain for the patient.
- Yet, there is a lack of information available to patients regarding their queue status, leading to dissatisfaction.
- Currently, due to system limitation, the pharmacy is unable to automatically update patients of their queue status.
- Informing the patients about their queue status by sending short message service (SMS) to each patient will have to be done manually and is time consuming.
- Therefore, the implementation of robotic process automation (RPA) help to automate this laborious process.
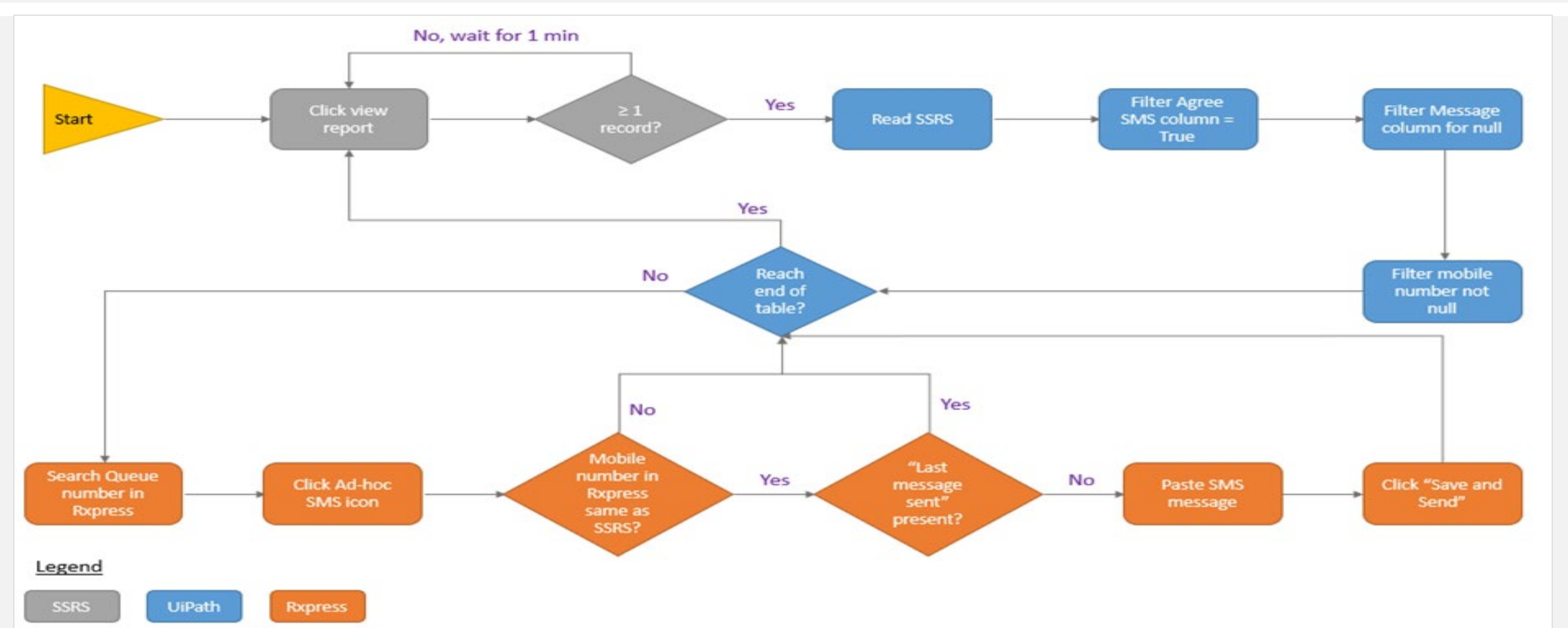

Figure 3: Illustration of Process map of interaction between RPA and pharmacy systems for automated SMS generation

RESULTS

The FIRST Initiative: **ROAD TO AUTOMATION WITH RPA (PSCM)** [Sep 2022 – Present]	• Initial implementation allow time savings of up to **608.2 hours per year** from a small team of 7 staff. • New use cases encompass both routine and adhoc repetitive tasks that requires updates or creation of across 100-700 codes in a short span of time. This translates to a total time saving of **782 hours** and **$27,067 productivity savings per year**.
The 2ND Initiative: **Pharmacy Medication Billing (Outpatient Pharmacy)** [Nov 22 – Present]	With the implementation of RPA, it has help to automate and **save 3 minutes** for each medication billing cases that the staff has to perform previously. This translates to **time saving of 2,096 hours** and **$87,403 productivity savings** per year.
The 3rd Initiative: **Automation of Short Message Service (SMS) sending for Pharmacy Dispensing (Pharmacy Informatics)** [Dec 23 – Present]	• With the implementation of RPA, it avoided the need to enhance the system to send out SMS alerts automatically, which would be a throwaway cost when the system sunsets. • This led to an estimated **cost avoidance of more than $40,000**. • The alternative of an enhancement would be to allocate one manpower to constantly send SMS to update the patients. • This translates to **10 manhours saved per weekday** and **4.5 hours on Saturday**, equivalent to **54.5 hours per week** and approximately **2,724 hours and $32,688 productivity savings per year**.

CONCLUSION

The rapid and consecutive implementation of RPA in TTSH Pharmacy allowed for the initial automation of 3 major laborious repetitive processes. Building on the initial success of the solution, the initiative taken by the team to ensure sustainability of the solution by building in-house capacity for RPA programming and maintenance maximised the usage of the tool. Adoption of new technology was not limited to the pool of staff with IT background, all staff of varied background within the Pharmacy department should be exposed and upscaled to maximise their potential regardless of age.

In conclusion, the successful adoption of the solution by TTSH Pharmacy, for a current total of **22 use cases**, translated to a **total savings of 5,602 hours and $187,158 of savings per year**.