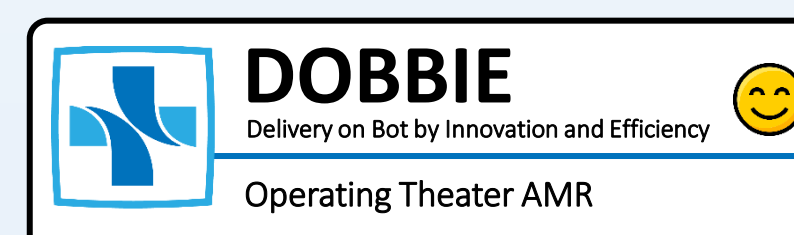




# Singapore Healthcare Management 2024

## Smart Materials Delivery: Autonomous Mobile Robots (AMRs) for Operating Theatre (OT)



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### Background

The increasing demand for healthcare services, driven by aging population is placing a strain on the healthcare system. At the same time, the workforce in healthcare is shrinking due to difficulty in recruiting and retaining qualified professional. AMRs are self-operating machines equipped with sensors, processors, and actuators that enable them to navigate and perform tasks without direct human intervention. The AMRs will help to relieve the daily burden on healthcare workers by handing routine supplies distribution and meet the high demand of supplies for patient care.

In OT and CSSD, staff used to spend a total of **1,175mins/day** to pick, replenish and retrieve supplies for all operating rooms (ORs).

### Challenges faced by the staff:

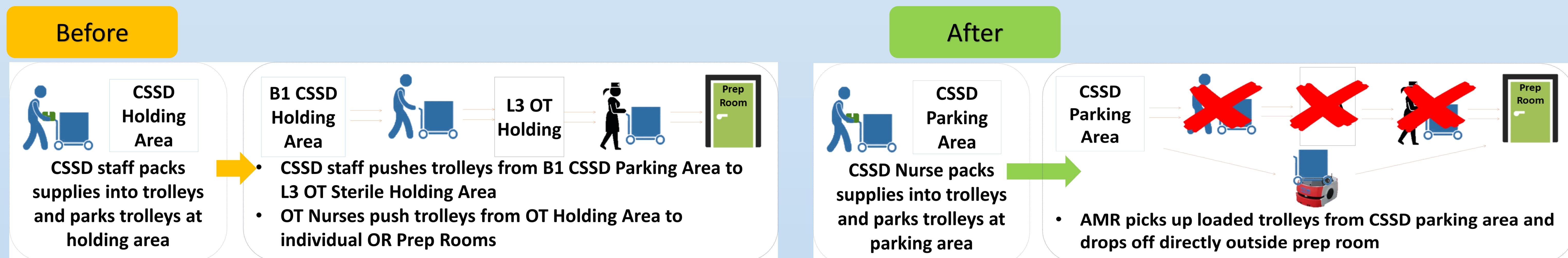
- Manual and labour-intensive logistics tasks: potential risks of injuries arising from managing of heavy loads (**up to 200kg per trip and requiring 2 staffs**).
- Scheduled and repetitive tasks: time consuming as it requires staff to make multiple trips to deliver / retrieve supplies

The aim of this project is to use 3 units of AMRs to autonomously deliver supplies from CSSD and Supply Chain Management (SCM) sub-store to 14 ORs to the point-of-use.

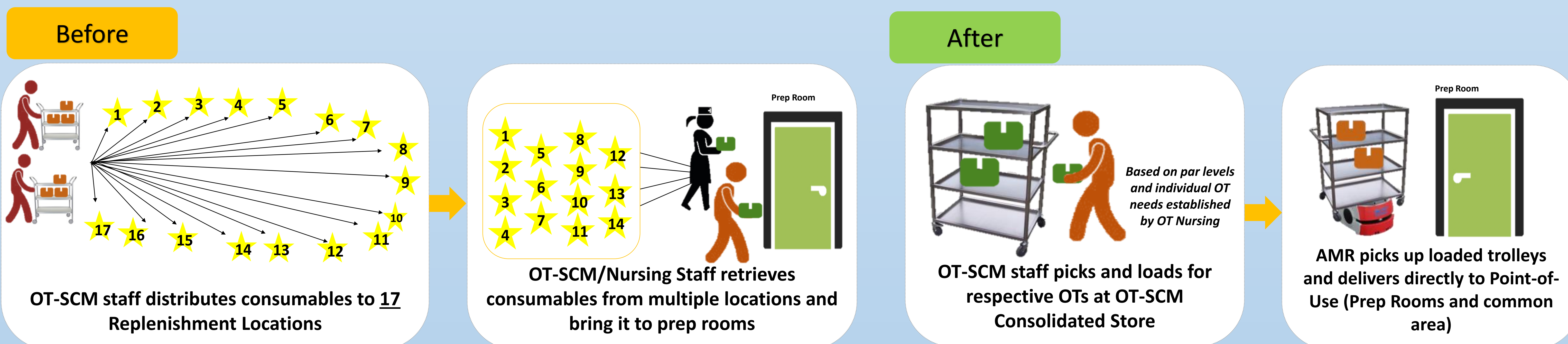


### Methodology - Observation studies on logistics in OT was conducted

#### 1. Sterile instrument sets from CSSD



#### 2. Consumables from OT SCM sub-store



### Result

- ✓ Eliminates all manual pushing of heavy loads as all supplies are delivered through AMRs
- ✓ Reduces excessive walking around the OT floorplate
- ✓ Increase time spent by nurses on direct patient care activities
- ✓ Improved productivity: reduce OT nurses' time on logistics management and allow time to focus on safe and quality care
- ✓ A safer and healthier environment for staff by eliminating need to push heavy loaded trolleys
- ✓ Full-Time Equivalent (FTE) Savings: **OT/CSSD Nursing (2.2 FTE)**

### Conclusion

The use of AMRs benefits healthcare worker by **improving productivity, efficiency,** and contributes to **joy at work.**

- Staff can focus on delivering direct patient care
- Reduce reliance on manpower during a pandemic
- Allows workforce transformation through workflow and job re-design
- Better retention and staff wellbeing

