# Transforming Medical Engineering at Guy's and St Thomas' NHS Foundation Trust

**Streamlining management of medical equipment to support the delivery of front-line patient care**

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SIEMENS Healthineers

NHS
Guy's and St Thomas'
NHS Foundation Trust

# Programme on a page

18 months

>50 colleagues

satisfaction

38 meters

>500 days

28 engineers

digitally enabled

3 waves

Engineers (Clinical & Medical Equipment)
Nurses (Dental, Renal, PICU),
Physicists, Healthcare Scientists, Logistics, IT
Estates, Procurement, Finance, Helpdesk
Assistants

Project & Programme Manager
Siemens Healthineers

## Operational Scale (pre-programme)

Asset Base:

76,000

Acceptance: 8261

PPM: 5000

Repair: 6400

Diagnostics: 2000

2019: 8261 assets
2020 (Q2): 4262

**Event Planning:**

VSM & DATA

**8 Events:**

VSA

6S Methodology

2P Approach

Acceptance RIE

Maintenance RIE

Repair RIE

Diagnostics RIE

Spares RIE

**Visibility (greater control):**
- ✓ Baseline Metrics
- ✓ Visual Management
- ✓ Huddles "*one-team*"

**Estates:**
- ✓ Environment
- ✓ Design
- ✓ Use

**Smarter (not harder):**
- ✓ Building in quality
- ✓ Eliminating waste
- ✓ Satisfaction

**operational impact / proof of concept e.g.**

**Repair:**
Steps: 34 removed from (50)
RFT%: 85% from (4)
Engineer: 3hrs 40 min →1hr 27 min

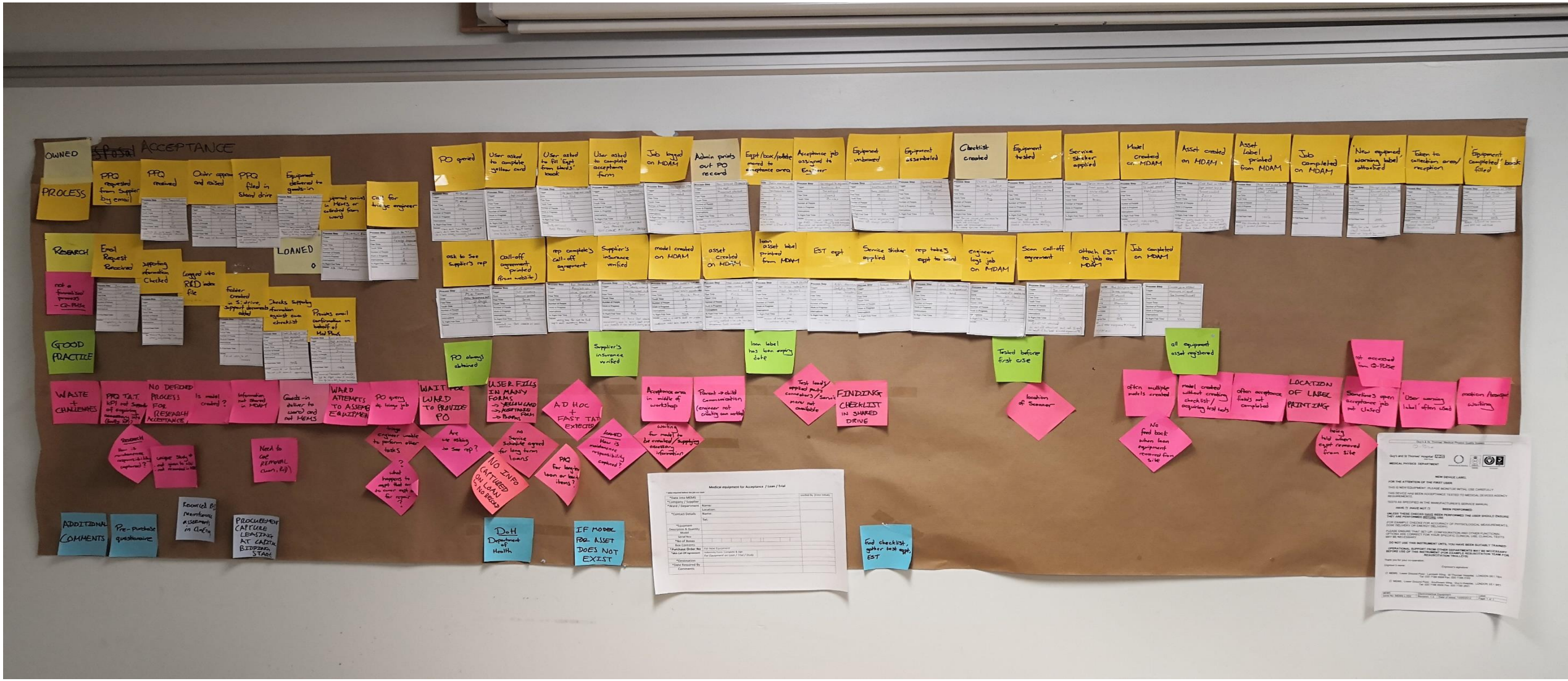
**PPM:**
Steps: 19 removed from (36)
RFT%: 71% from (36)
Engineer: 3hrs 10 min →1hr 27 min

**Diagnostic**
Steps: 11 added (1)
RFT%: 81% from (9)
Engineer: 23 min → 11 min

# A3 Structured Problem-Solving

- Reason for Action
- Current State
- Future/Target State
- Solution Approach
- Rapid Experiments
- Outbrief
- Benefits

# Value Stream Analysis (VSA): Current vs Future

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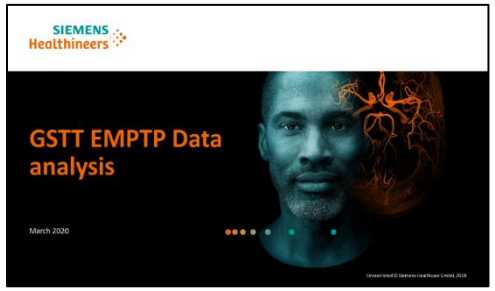
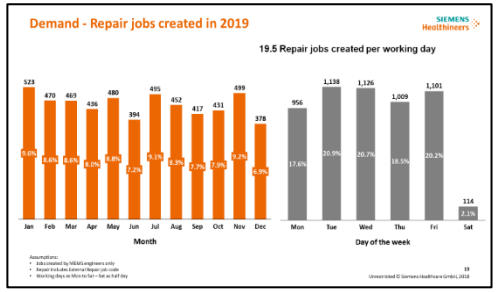
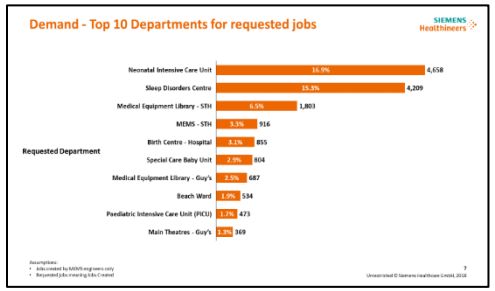
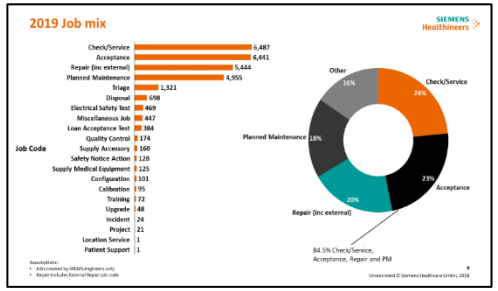
# Value Stream Analysis: Current vs Future

## Data Wall

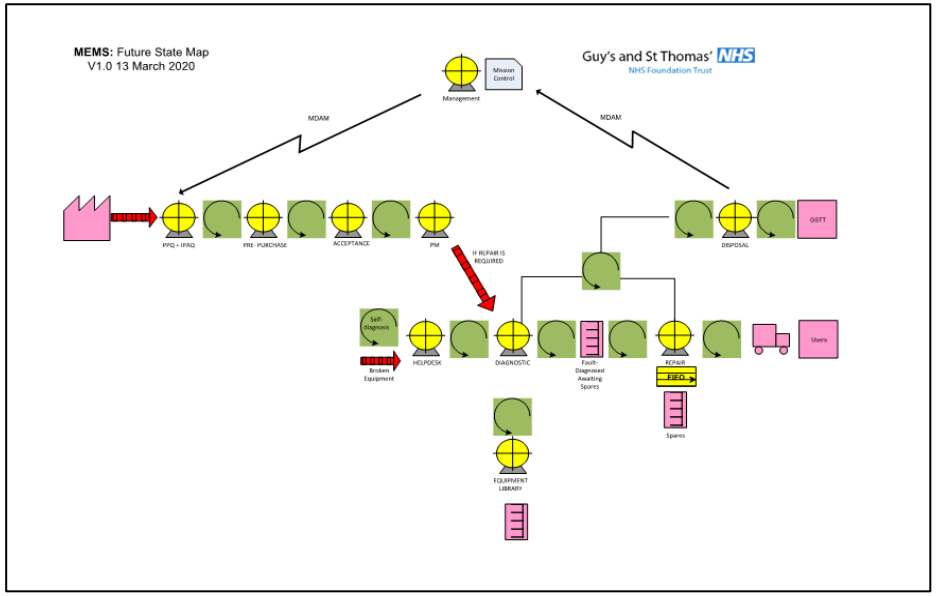


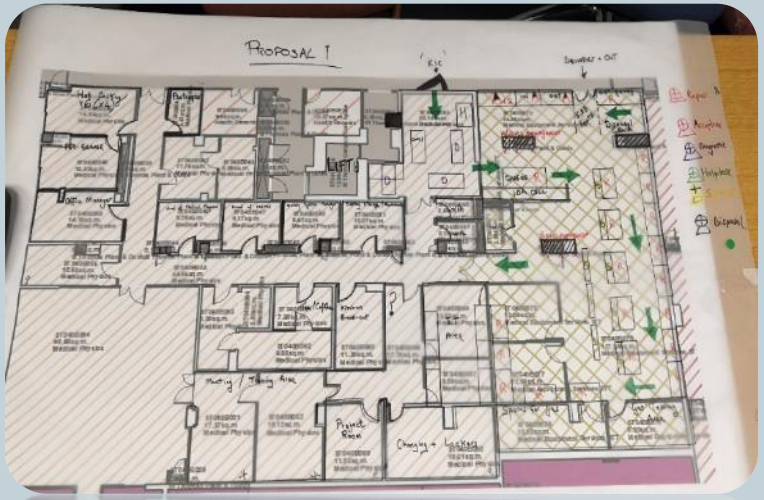



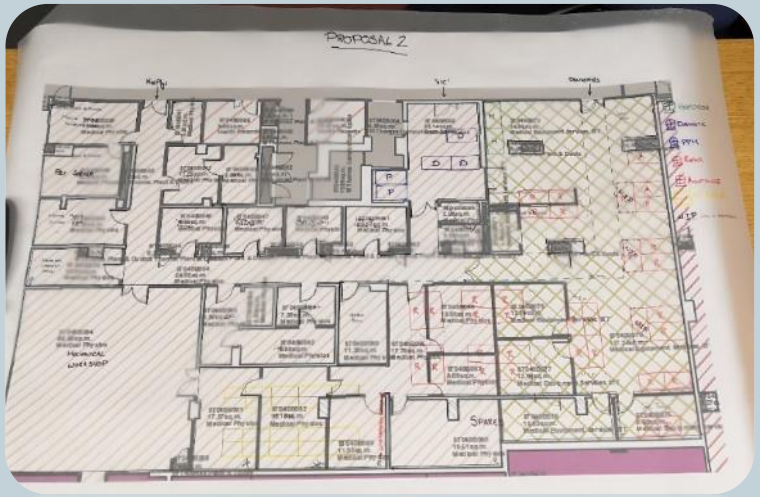

## Future State Map



# 2P: Designing a Future

## Process Preparation:

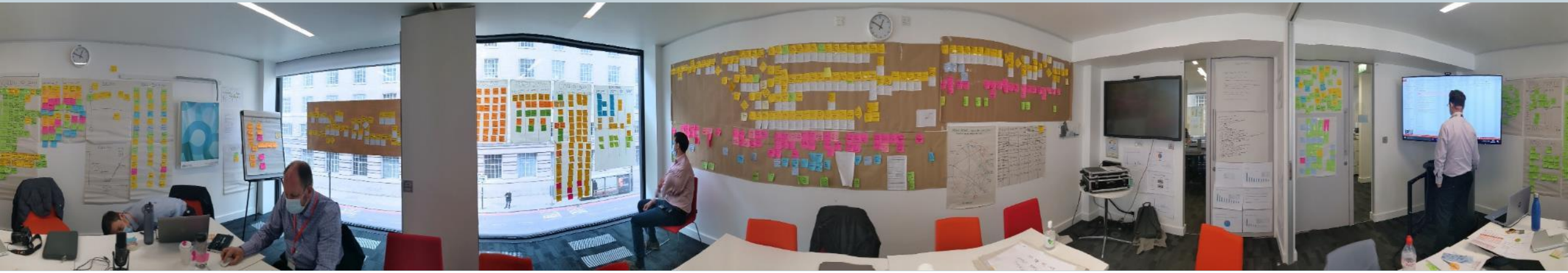



**Stages:**

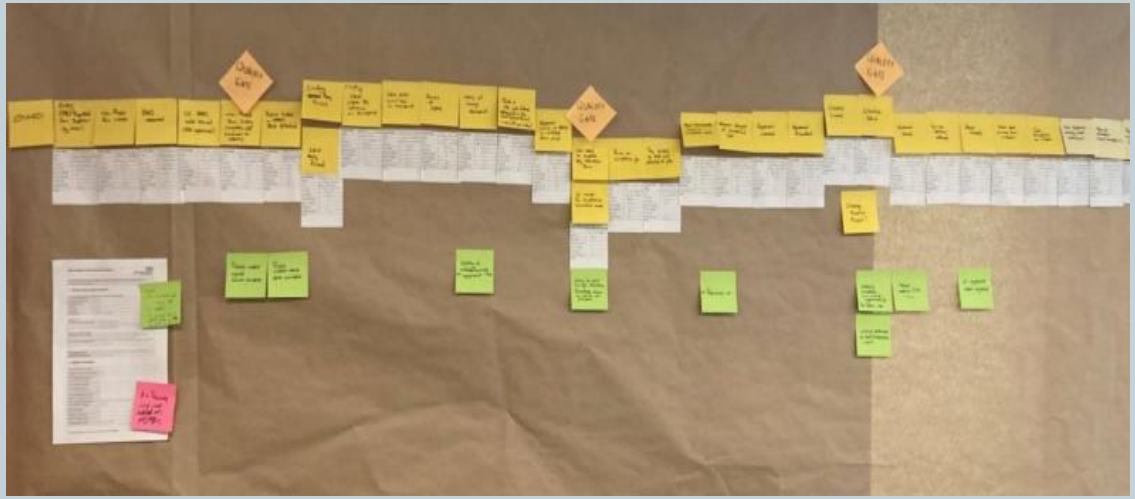
Defining the scope - Developing alternatives - Narrowing & evaluating alternatives - Agreeing on a proposed new process - Creating standard work - Creating an implementation plan (741 square meters)

# Rapid Improvement Events (RIEs): Change in Action



# Acceptance Rapid Improvement Event (RIE)

**Acceptance Cell: 6S: Kanban:** creating flow & efficiency by locating all the processing steps immediately adjacent to each other:



**Solutions**

- ✓ Dedicated acceptance bench incorporating the Lean principles of Flow, Pull, 6S, Standard Work, & Visual Management
- ✓ Simplified info flow
- ✓ Standard work – constructing, documenting & implementing clear standard process for acceptance
- ✓ Team huddles and daily performance monitoring implemented

**Key Benefits:**

- 81% improvement in RFT
- 2 unnecessary steps removed
- 24 minutes saved per job

# Diagnostic RIE: quick fix or replacement

**Diagnostic Cell: 6S: Kanban:** creating flow & efficiency by locating all the processing steps immediately adjacent to each other:

**Solutions**

- ✓ Dedicated Diagnostic bench for quick fix or replacement (≤ 30 mins)
- ✓ Simplified info flow
- ✓ Standard work – constructing, documenting & implementing clear standard process for Diagnostic

**Key Benefits:**

- 72% improvement in RFT
- 6 minutes touch time saved for Diagnostic jobs
- Added a necessary process step

# Repair RIE

**Repair Cell: 6S: Kanban:** creating flow / efficiency by locating process steps immediately adjacent to each other:

**Solutions**

- ✓ Dedicated repair bench incorporating the Lean principles of Flow, Pull, 6S, Standard Work, & Visual Management
- ✓ 6S & Kanban implemented systems ensured spare parts, consumables, equipment & tools were available at the point of demand
- ✓ Improved info flow – visual management dashboards on info system
- ✓ Syringe pump bench as proof on concept

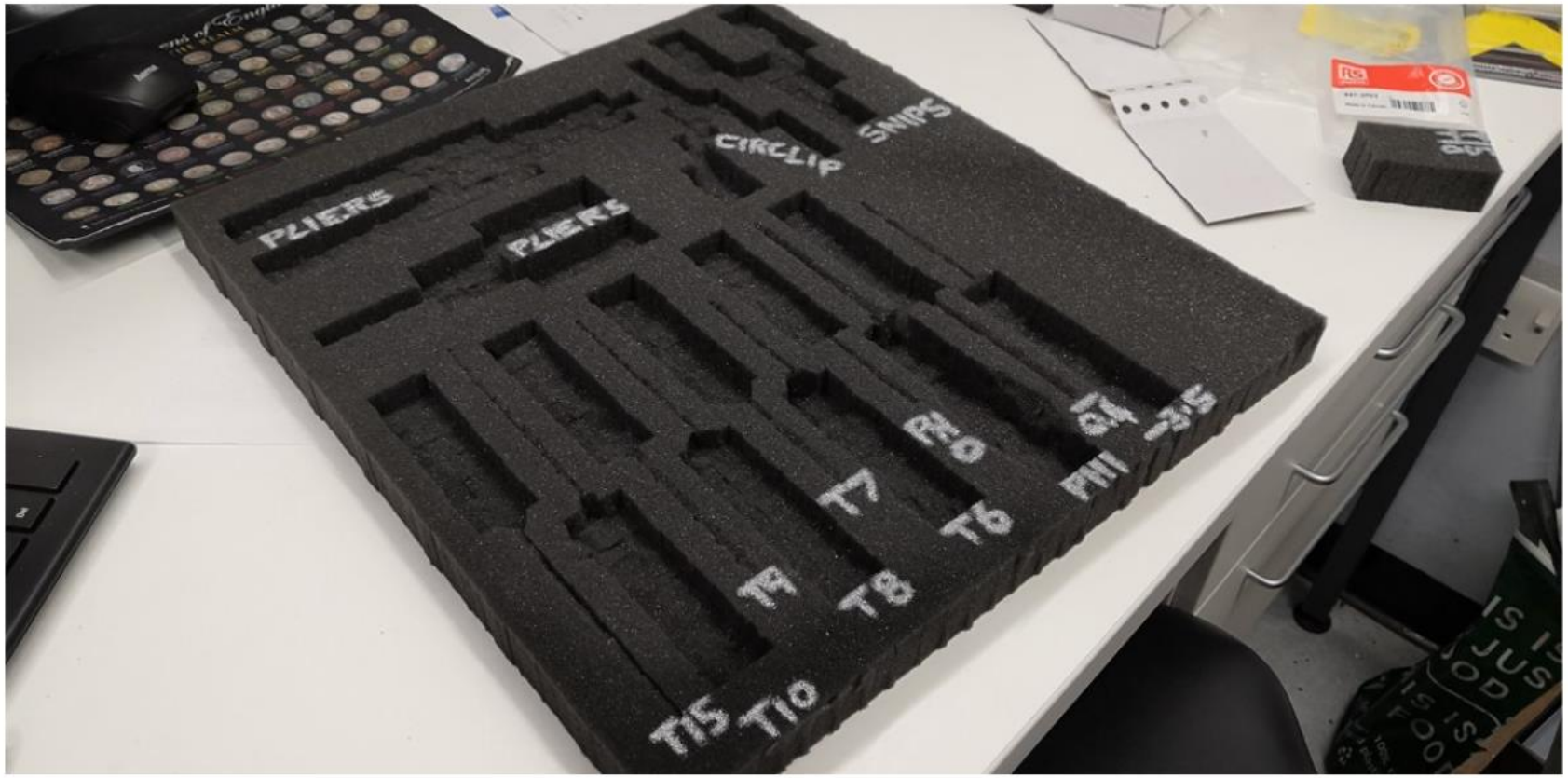
**Key Benefits:**

- 80% improvement in RFT
- 17 unnecessary steps removed

# IM...

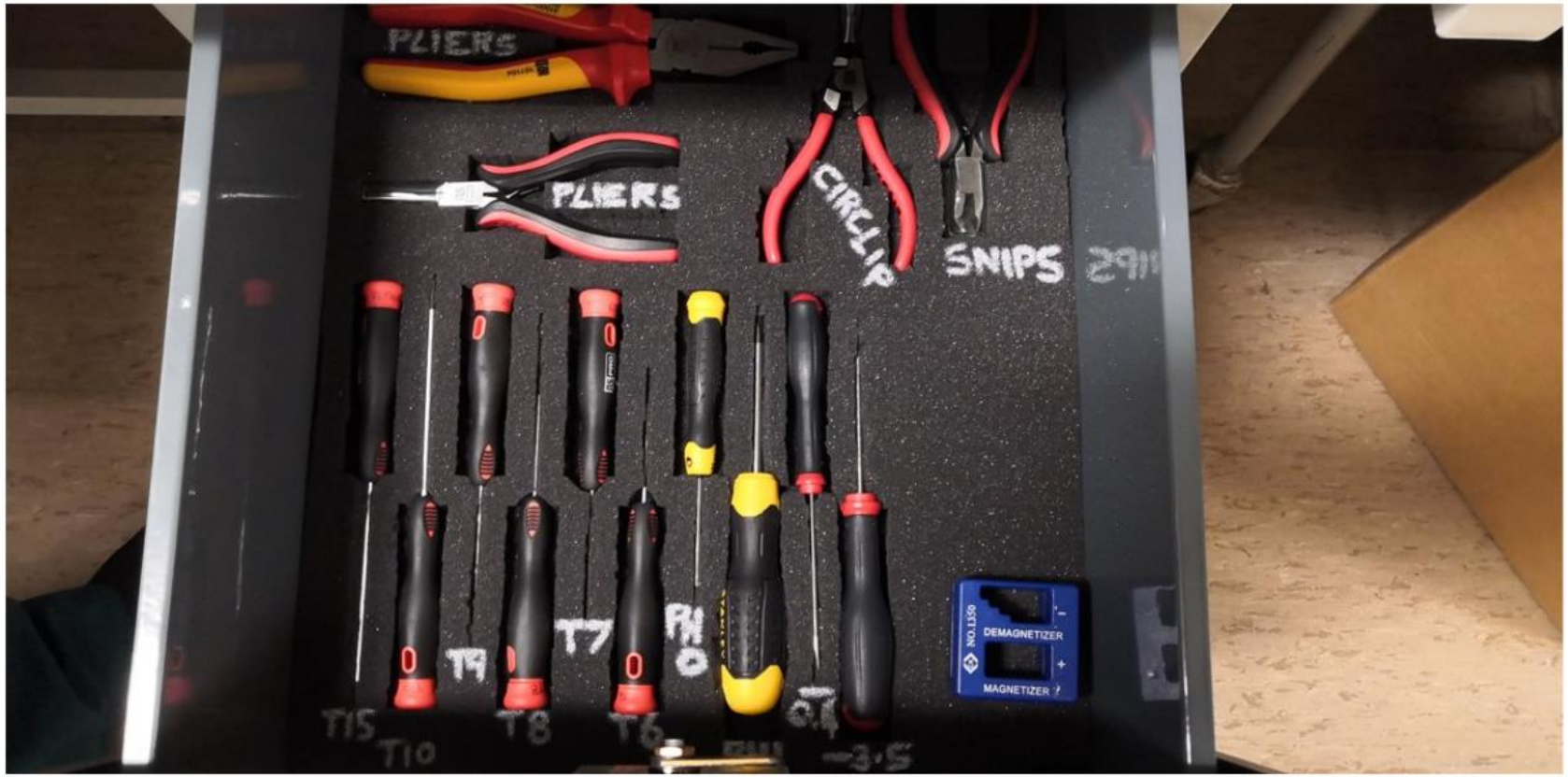
# IMPR...

# IMPROV...



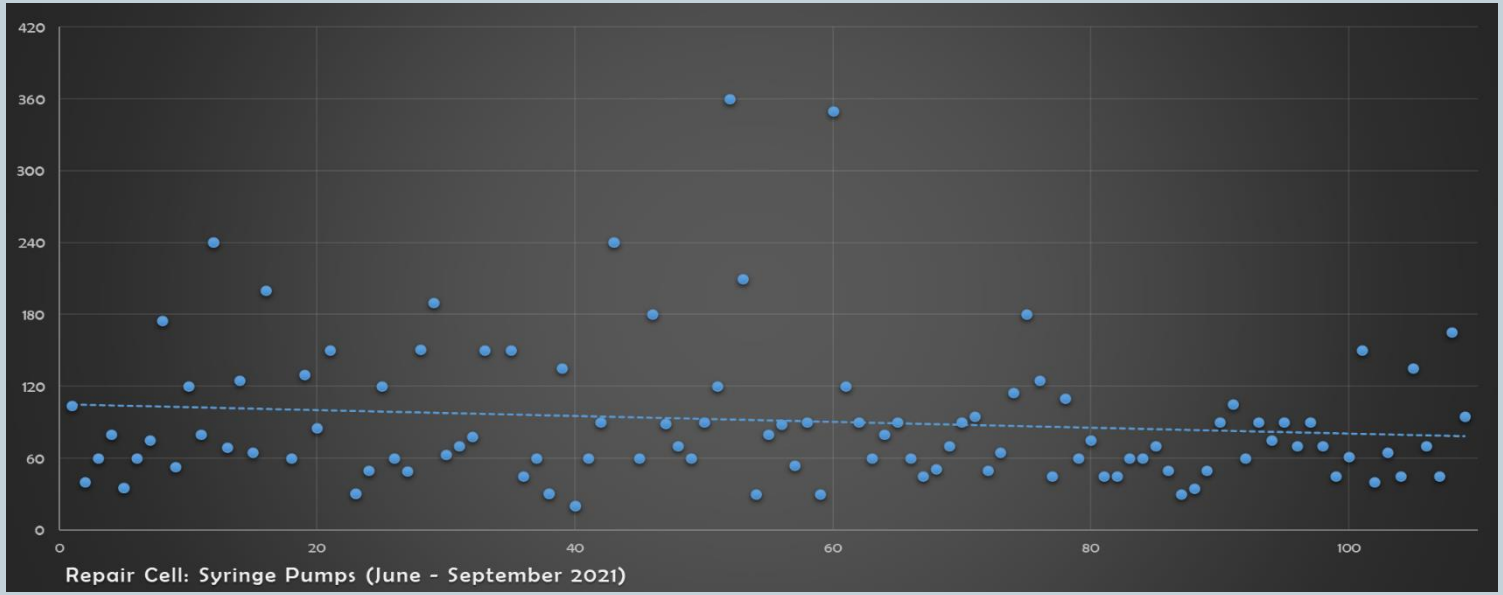
# IMPROVEM...

# IMPROVEMENT!!



# Syringe Pump Repair Cell

**Syringe Pumps** (high volume repair making up 9% of repair activity)




## Key Benefits:

- End to end process time cut by 28% on average from 128 minutes (from a control group) to 93 minutes (in the Repair Cell).
- Integrated feedback loops ensured continuous improvement / adaptation & a reduction in variation

# Reflections

### What went well?

- ✓ Test PC, equipment & spares kept at Repair Cell location
- ✓ Less interruptions: able to focus & get things done

### What helped?

- ✓ Checklist attached to product form
- ✓ Working on one device at a time & fewer interruptions
- ✓ Spares/tools & test kit all nearby / easy to access
- ✓ Issues resolved quickly

### Even Better if?

- ✓ New test equipment for Repair Cell
- ✓ Specific queue for jobs on MDAM
- ✓ Extend shift from 1 day to a week

### What hindered?

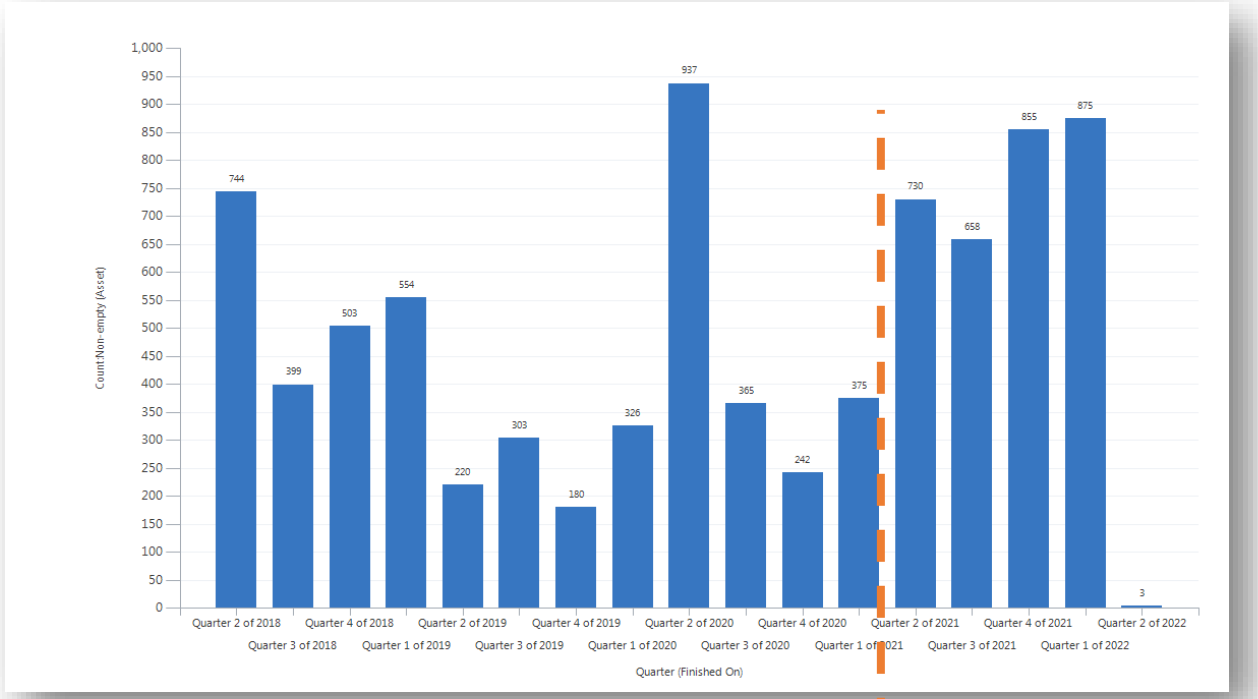
- ✓ Prefer working at my own bench
- ✓ Doing other's outstanding jobs

# Planned Preventative Maintenance RIE

**PPM Cell:** next generation & integrating with asset tracking:

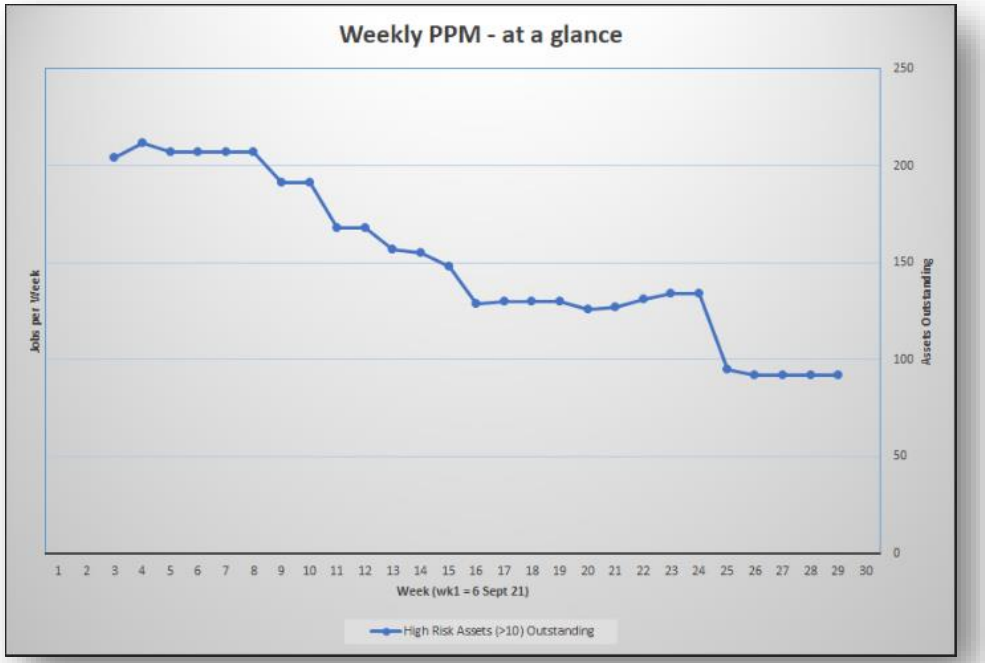
# PPM RIE Outcomes

## PPM Jobs per Quarter (last 4 years)




RIE in Q2 2021

## High Risk Assets - Outstanding




### Key Benefits:

- Dedicated PPM trolley saved 2 hours in start up and close down time and 18 process steps removed
- 69% improvement in RFT for start up process

# Spares RIE

**Kanban:** streamlining inventory through visual cards & product bins

**Steps:**

Forecast (optimal supplies) - Location (alphabetical & shelf) - Product Card (re-ordering information) - Trigger Card reordering (just-in-time) - Obsolescence (oldest first)

# 6S RIE

Sort out : Scrub : Safety : Set for flow : Standardise : Sustain

**Key Benefits:**

- Recovered Inventory (£125k)
- Waste Bags (105)
- Productive Space  (audit score: 20 to 50: target: 80)
- Released Estates Space (45 square meters: 6 engineering desks)
- 6S core team won Directorate Star of the Month award

# Thank you for listening! Any questions?

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