



# Digital Transformation of Clinical Workflows in Hospitals

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# Why this matters

Digitising workflows is an easy first step towards total transformation

1

## OUTDATED PROCESSES

Communication still done with hand-written signs and manual phone calls.

2

## SILOED DATA

The data care staff need exists *somewhere*, but is rarely where they need it, when they need it.

3

## SYSTEM FATIGUE

Nurses are expected to know and use 20-30 systems on the job. That's too many for *anyone*.

4

## ACCOUNTABILITY

With nothing digitised, there is no way to measure and improve. The only constant is lack of time for patient care.

5

## NO ADAPTABILITY

Every hospital must "reinvent the wheel" because their digital systems are not flexible. Technology does not grow with hospital needs.

# Work smarter

Involve all relevant staff

Display pertinent information where nurses need it

Use data and events from multiple systems

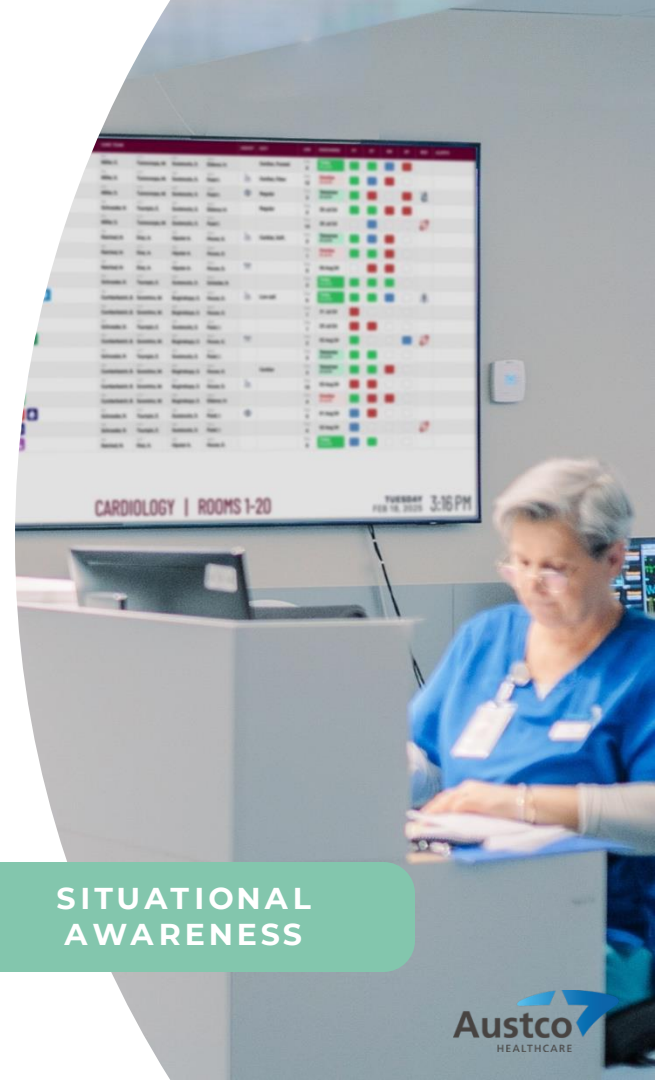
Incremental improvements – *not* an upheaval

Goes beyond merely digitising the manual processes used today

Nurse call uniquely positioned to leverage communications flows

CLINICAL COMMUNICATIONS

SITUATIONAL AWARENESS





# Careful planning

## SYSTEMS IN SCOPE

Electronic health record (EMR, EMH, EPR)

Bed flow software / capacity management

Real time location systems (RTLS)

Nurse call systems

Clinical communication & collaboration (mobile) apps



## Bi-directional communication is paramount

Vendors must have a *software API* for data exchange. Data formats like JSON, XML, SOAP, protocols like MQTT, REST (HTTP/S).



## Look for vendors with multiple solutions

Some systems integration work is already done. Must offer standards-based API, *not* a proprietary walled garden.



## Vendor roadmaps are important

Which are moving to support Hospital 2.0? Which are actively investing in R&D? How are they addressing cybersecurity?



## What does *good* look like?

Establish concise needs that are more than a digitisation of the status quo



# → Dealing with silos

## THE SUCCESSFUL WORKFLOW PROJECT TEAM

Multidisciplinary team dedicated to effective workflow planning

“People champions” help break down silos

Maps out workflows per department, unit, ward

*Optimised* workflows: how can we improve upon current communication pathways

Vendors may facilitate discovery and documentation

Hold these team meetings on site, in a clinical setting if possible

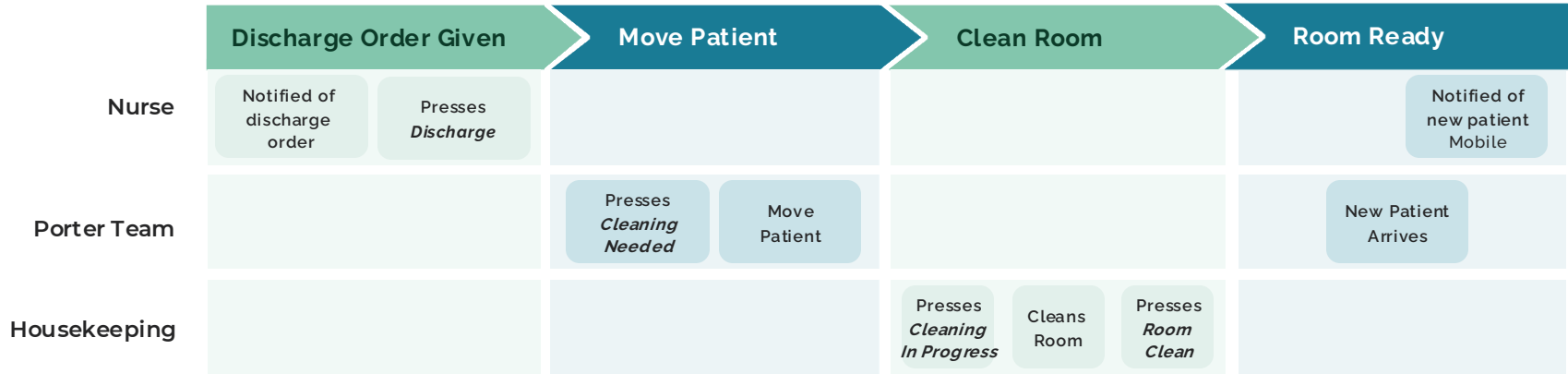
*Technology silos are easier to break down, but it's **people** who must drive this transformation.*



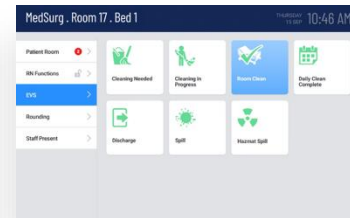
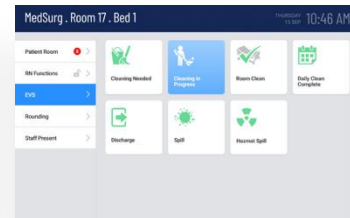
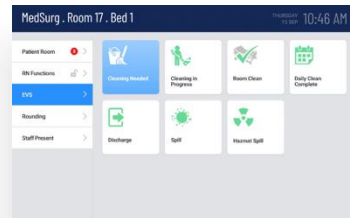
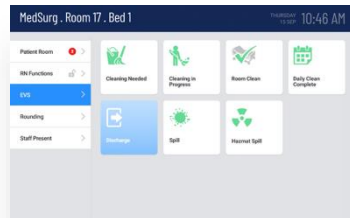
# Engage more staff roles

Notification of button presses sent to staff mobile devices or dedicated annunciation screens

Nurses start the workflow on touchscreen



Nurse Call



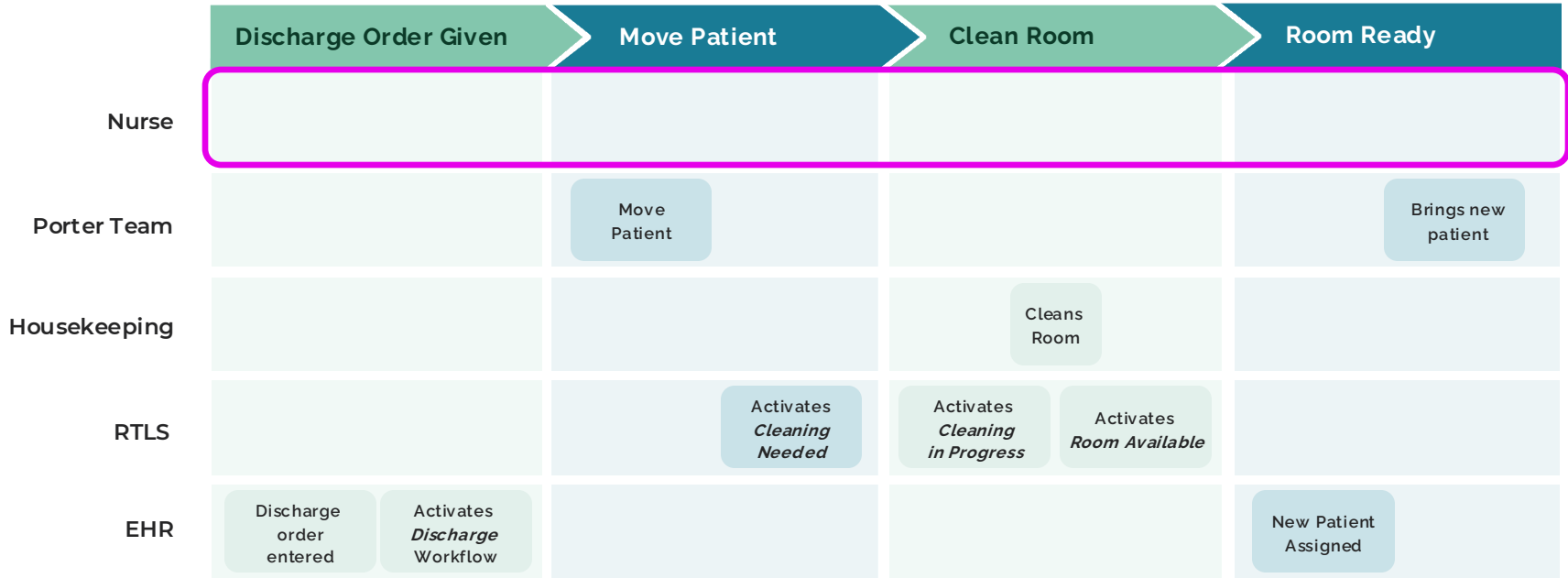


# Automate, where possible

Automated system events remove burden for staff to remember to press something

RTLS a common system integration with nurse call

EHR/nurse call integration is a reliable automation source






# Identify bottlenecks

Report on individual workflow components

Transition time from step to step

Most vendors have this level of reporting




**Patient in Room**



**Patient in Room**  
MedSurg

**18:15**

Last 7 days




**Discharge**



**Discharge**  
MedSurg

**47min**

Last 7 days




**Cleaning Needed**



**Cleaning Needed**  
MedSurg

**12:38**

Last 7 days




**Cleaning in Progress**



**Cleaning in Progress**  
MedSurg

**10:07**

Last 7 days



**Room Clean**



**Room Available**  
MedSurg

**27:43**

Last 7 days

How long do patients wait to see a care team member?  
Set and measured entirely automatically via EHR and RTLS



# Reduce audible alarms

## PRIORITISATION AND DIRECT COMMUNICATION

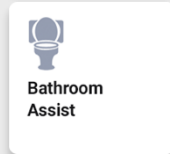
Each alarm and call type may be routed directly to the relevant staff, without sound



Porter Needed



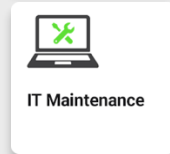
Alert Porter team, mobile device or office



Bathroom Assist



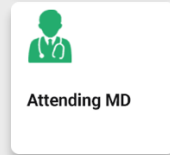
Assistant level caregiver mobile



IT Maintenance



Dedicated list of IT requests (in their office)



Attending MD



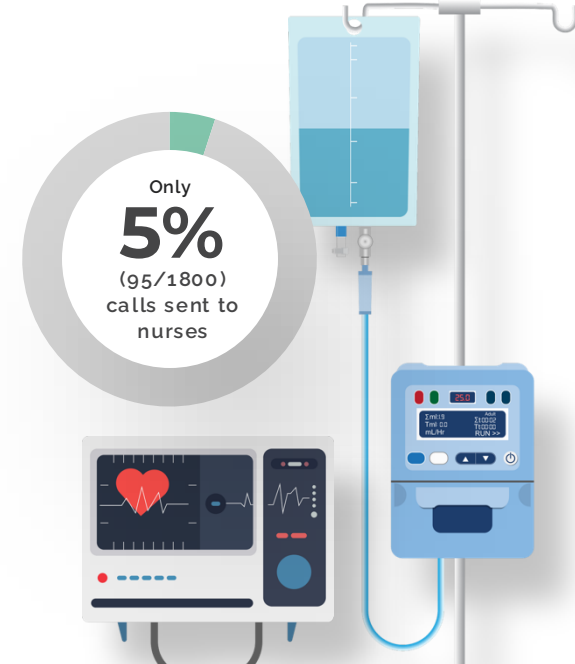
Text the on-call doctor's mobile or pager

## TRIAGE TELEMETRY AND OTHER AUTOMATED ALARMS

Telemetry, pumps, ventilators are the *true* cause of alarm fatigue

Implement technology which recognises the beeps and alert sounds

Only send the most important alerts to nurses





# Enable situational awareness

Situational awareness is using *carefully curated* data in the right context, to save time and attention

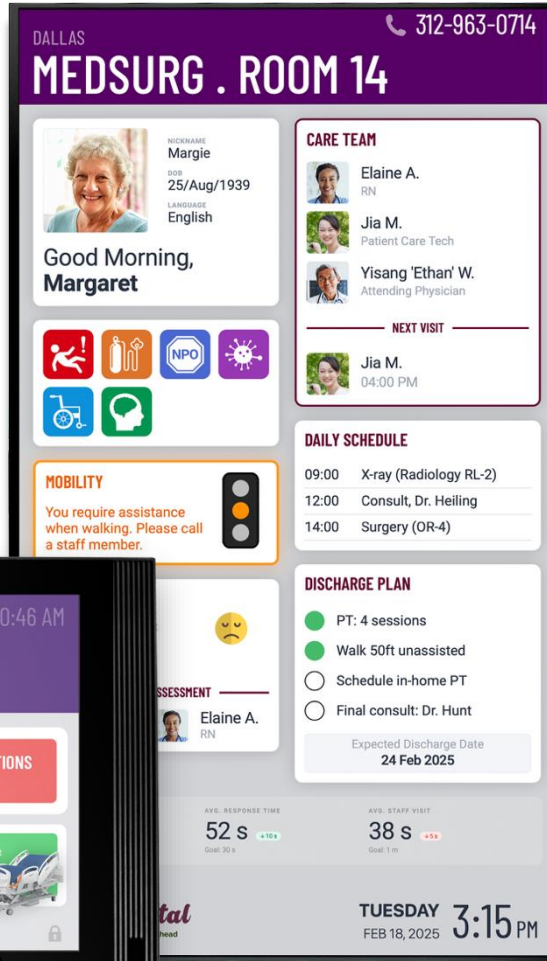
## OUTSIDE THE ROOM

Information for staff

Notices for visitors

Room, bed, equipment alerts for passers-by

Visible care initiatives: last staff visit, reminders to assess pain



## INSIDE THE ROOM

Digital whiteboard replaces dry-erase

Data auto updated in real time

Data pulled from multiple systems

Information for the patient

Information for families

Prevents nuisance calls



# Visualising discharge

Globally, discharge process is subject to delays

Hidden requirements often mean nurses must discover where the process stands

Challenge was to visualise all the steps on the discharge journey

*Adaptability* key as each ward, and each patient, have different requirements

■ Completed    ■ Not Completed    ■ In Progress     N/A

			ASSIST	DIET	LOS	DISCHARGE	PT	OT	SW	SP	BED	AL
A. M.	Sosterutis, S.	Eldenot, H.		Cardiac, Pureed.	Day 6	Today 25 Jul 24	<span style="color: green;">■</span>	<span style="color: green;">■</span>	<span style="color: blue;">■</span>	<span style="color: red;">■</span>		
A. M.	Sosterutis, S.	Patel I.		Cardiac, Fiber.	Day 12	Overdue 23 Jul 24	<span style="color: green;">■</span>	<span style="color: blue;">■</span>	<span style="color: red;">■</span>	<span style="border: 1px solid gray; display: inline-block; width: 15px; height: 15px;"></span>		
A. M.	Sosterutis, S.	Patel I.		Regular	Day 3	Tomorrow 26 Jul 24	<span style="color: green;">■</span>	<span style="color: red;">■</span>	<span style="border: 1px solid gray; display: inline-block; width: 15px; height: 15px;"></span>	<span style="color: red;">■</span>		
	Sosterutis, S.	Eldenot, H.		Regular	Day 2	30 Jul 24	<span style="color: green;">■</span>	<span style="color: green;">■</span>	<span style="color: red;">■</span>	<span style="color: red;">■</span>		
A. M.	Sosterutis, S.	Patel I.			Day 14	30 Jul 24	<span style="border: 1px solid gray; display: inline-block; width: 15px; height: 15px;"></span>	<span style="color: blue;">■</span>	<span style="border: 1px solid gray; display: inline-block; width: 15px; height: 15px;"></span>	<span style="border: 1px solid gray; display: inline-block; width: 15px; height: 15px;"></span>		
	Higster A.	House, G.		Cardiac, Soft.	Day 3	Tomorrow 26 Jul 24	<span style="color: green;">■</span>	<span style="color: blue;">■</span>	<span style="color: red;">■</span>	<span style="border: 1px solid gray; display: inline-block; width: 15px; height: 15px;"></span>		

1

## WORKFLOWS DOCUMENTED

Identify areas with greatest potential gains  
Map workflows, ideally in advance of procurement

2

## PROCUREMENT / VENDOR SELECTION

API answers in place for the specified workflow

3

## DEVELOPMENT

Offline work, as necessary, in sandbox environment  
Onsite workshops. Must be planned, likely to be disruptions

4

## INITIAL DEPLOYMENT

Limited area, a single ward or unit for example  
Mitigate disturbance of clinical teams

5

## REVIEW

Evaluate, implement improvements from lessons learned

6

## ROLLOUT TO ALL AREAS

Commit to regular reviews to leverage improvements



# → Project plan

### DRIVERS FOR SUCCESS

Engage teams at all levels – their expertise is fundamental to the project

Nurture a culture where staff contribute to continuous improvement as they *live* with the system





FUTURE WORKFLOWS

# AI-driven workflows

Staffing predictions

Proactive tasking for routine calls

Audio monitoring

Automatic task assignment

Automatic queueing for admissions

Manage patient discharge





FUTURE WORKFLOWS

# Voice assist technology

## For Patients

Specific requests, not a generic *patient call*

Command the room (entertainment, lights, blinds, HVAC)

Plays reassurance message "help is on the way"

## For Staff

Staff ask questions and generate events

"Is room 10 clean?"

"Room 10 needs water"

"Security to room 10!"

What's for dinner?

Security to room 4!

Turn off the lights

Turn on the TV.

I need water.

# Help!

Is room 10 clean?

Where is the patient in room 17?

Turn on the TV





FUTURE WORKFLOWS

# Augmented reality

Pending viable hardware

Overlay situational awareness on top of the real world

No more need for touchscreens, fixed interfaces, overhead alarms and paging



**Room 5201**

Code Call

**Room 6500**

Rounding Reminder

09:58



**Room 6502**

Bring water



» Thank you



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