Robots--- helping your staff do what they do best – CARE



Autonomous Mobile Robots (AMR's)

Olaf Zalmstra



robots can make a difference...

- Improving care through technology
- Introducing the Lamson Robocart









Robots helping your staff do what they do best... Care



Eliminate manual handling

Reduce Workplace Health & Safety claims

More time to focus on residents and core area of work

Reduce damage to décor

Quick ROI

An Australian Innovation

people and robots CAN do better TOGETHER

- Historically, robotics in industry meant automation with machines performing more effectively than humans
- Now new innovation highlights what people and robots can do better together - acknowledging and building upon human capability
- The aged care industry needs innovative devices to help them do what they do best – CARE
- MiCare believes the industry has a big opportunity with robots taking out unnecessary leg work





Improving care through technology

There are a number of technologies that improve care delivery through improved safety, staff efficiencies, effective and 'on time' care

- Wireless communication
- Electronic medication administration
- Electronic clinical documentation
- Real time locations systems
- Workflow management systems
- Wireless monitoring
- Interactive elder/resident technologies
- And of course..... Delivery robots (AMR's)





Autonomous Mobile Robots (AMR)













Automating transport in aged care facilities for

- Food
- Linen
- Waste
- Deliveries

- Mail
- General goods
- Pharmaceutical goods
- Sterile goods
- Secure transport
- Nurse support during rounds









Factors considered - Material handling now...



- Heavy trolleys 200kg+ means significant WH&S risk
- Tall trolleys need 2 staff to transport elder/resident safety
- Large lifts required for manual trolley & staff
- Timing of deliveries effected by sick leave / other delays (timing of care/meals and temperature of food)
- Complex building layouts = ++ staff time
- Inconsistency of routes
- Inflexible times require more stock of trolleys
- Need staff physically capable of accepting external deliveries





Manual or Semi-Automated



Autonomous Mobile Robot Functionality

- Based on calling/sending on demand
 - Call button on wall or
 - Tablet for multiple pick ups/deliveries
- AMR stations are created, easily adapted or changed
- Identifies obstacles and will slow down and divert its path
- Flexible job requests at the touch of a button
- Payload from 1kg up to 130kg
- Speed 1.35m/sec to 1.8m/sec
- Run time 10 to 13hrs
- Lasers 100% visiblity and able to manuvour around residents and obstacles





AMR Functionality

- Automatic docking to charger when idle
- Full charge from flat in 3.5hrs
- Size 500mm x 620mm
- 360 degree turning radius
 - Perfect for navigating in and out of lifts
 - Retrofitting into existing buildings
- Automatic pickup and drop-off
- Integration with lifts and automatic doors
- Non-marking rubber tyres

https://www.youtube.com/watch?v=CFmmQA-dYMA





AMR aged care specific trolleys

- Designed for aged care meal delivery, dirty linen collection, clean linen delivery, personal clothing distribution, waste management and medical/housekeeping supplies
- Carry up to 130kg which is ample for our sector
- Options to adapt or create new style trolleys to suit needs













Robotics provides immediate outcomes, can have a fast ROI, will minimises damage to interior of buildings, will reduces WH&S claims and can provides staff workflow efficiencies...



Outcomes

- Reduced manual handling of trolleys thus reallocating time to care based activities, improving services - improving care through technology
- Accuracy and efficiency of service delivery (e.g. on time meals)
- Excellent elder/resident and family responses to the use of automated transport of trolleys – impacts, feelings, thoughts, acceptance positive
- Staff responses impacts, thoughts, acceptance positive





Outcomes

- Efficiencies time spent on pushing trolleys/day, 365 days/yr (sites could vary - 5 to 15 hrs a day of pushing trolleys 100% from point to point this does not include travel or distraction time to that job)
- Smaller trolleys & less trolleys required onsite saving space
- Less damage to décor with trolley incidents reduced
- Impact on staff morale no longer have to push trolleys, 'feeling like that the organisation is giving them the tools to do their job'
- ROI for organisations can be anywhere from 0 to 4 years depending on size of facility and how savings are treated



Outcomes

- Risks associated with injury from pushing trolleys and repetitive manual movement of trolleys in the aged care workforce
- Impact on sick leave, WHS claims (staff taking 2 trolleys at once, stopping and starting, causing gridlock at lifts and having to come back and forwards, straining backs and arms)
- Impact on agency staff use?
- Reduced labour turnover/recruitment issues
- Simplification of the material flow by automation (e.g. multiple one off deliveries, staff "just taking it anyway", lack of structured material flow in aged care is a significant issue)



Time wasted on pushing trolleys at Prins Willem

i.e.

2.6hrs of the 11hrs = delivering meals, not including distraction % rate and staff travelling to pick up spots prior to delivery route

ROI is achievable even without taking into account future WH&S claims and damage to decor



- KILOMETRES WALKED
 7,792 per annum
- HOURS PUSHING TROLLEYS
 4,160 per annum
- SAVING **11** HRS/DAY In excess of **\$193,908** per annum
- DAMAGE TO DÉCOR
 Significant decrease repairs and maintenance
- ▲ WH&S

Risk reduction for acute and RSI claims



Scheduled Services

	5:00 AM	5:15 AM	5:30 AM	5:45 AM	5:00 AM	5:15 AM	5:30 AM	5:45 AM	7:00 AM	7:15 AM	7:30 AM	7:45 AM	3:00 AM	3:15 AM	3:30 AM	8:45 AM	00 AM	9:15 AM	9:30 AM	9:45 AM	10:00 AM	10:15 AM	10:30 AM	10:45 AM	
Ward Support Activity	Return Linen								Тос	lbox	/Adı	min	Serve Food				Decant Materials								
Ward Support Shift		Night Shift							Day	Shift	t														
Breakfast send										1	3	2													
Breakfast return																	2	2	2						
Lunch send																									
Lunch return																									
Dinner send																									
Dinner return																									
Clean linen send						1	2	2	2												2	2	2	1	
Clean linen return							1	1	1	2		2									2	2	2	1	
Dirty linen clean trolley sen	nd						2	3	3	3	1														
Dirty linen return			3	3	3	3																			
Waste clean trolley send					3	2	1																		
Waste return			3	3																					
Personal Linen Send																	2	2							
Personal Linen Emtpy Return																									
Inco Supplies send																									
Inco Supplies return																									
Bibs/Bags send																									
Bibs/Bags return																									
Food Supplies Delivery													3	3	2										
Food Supplies Return empty																4	2								
Medical Supplies send																									
Medical Supplies return	4	2																							
Total send	0	0	0	0	3	3	5	5	5	4	4	2	3	3	2	0	2	2	0	0	2	2	2	1	
Total return	4	2	3	3	3	3	1	1	1	2	0	2	0	0	0	4	4	2	2	0	2	2	2	1	
Overall Movements	4	2	6	6	6	6	6	6	6	6	4	4	3	3	2	4	6	4	2	0	4	4	4	2	

Pick up and drop off stations strategically placed plus clever timing of the schedule makes the most of your vehicles





Robot planning the route...





Being future ready...

- Building / renovating door widths >1100mm, ideal >1200mm for main work rooms such as pan rooms/waste/lifts (larger the better in high traffic areas)
- Think differently every process for every service your staff provide (create the process during the planning stage)
- Main service areas close together for efficiencies of staff multi-tasking
- Charging of robots close to main service area close to the main pick up and delivery spots such as kitchen and laundry
- Internal robot use away from the weather, within Wi-Fi areas links to buildings enclosed etc.
- Waste solution 'no more handling' from households using Robocart and auto tippers in waste collection area
- Purchase AMR robot compatible trolleys (only 30% additional cost)



FAQ's

- Robots work life approx. 10 years
- Preventative maintenance >\$9,000 per robot per annum + GST
- Size of facility will determine if one or multiple robots required per site
- ROI between 2 & 4 years purely on trolley transport times
- Cost to install estimated at \$180,000 to \$350,000 + GST
- New robot proof Lamson trolleys (only 30% higher than manual trolleys), lift integration, automatic door integration – estimated additional costs of \$50K to \$180K + GST (depending on size of facility, retrofitting auto doors etc.)



Thank you.... now its your turn to make the move





Thanks also to the company behind the ideas