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Case Study: Robotics-Enabled Care at St Anna's Aged Care

Organisation Overview

St Anna's Aged Care is a residential aged care in Adelaide, South Australia that is a provider focused on delivering safe, high-quality, and person-centred care while responding to workforce pressures, hygiene standards, and operational efficiency requirements.

Challenge

St Anna's faced several operational and care delivery challenges:

- Increasing staff workload and physical strain from manual cleaning and repetitive tasks
- Rising expectations for hygiene, infection control, and audit compliance
- Need to improve resident engagement and internal service efficiency
- Labour shortages and escalating operational costs

Solution Overview

St Anna's implemented a **combined robotics solution** consisting of:

- **Temi Social Robots** for engagement, navigation assistance, information delivery, resident's feedback and internal support tasks
- **Autonomous Vacuum-Cleaning Robots** for consistent, scheduled floor cleaning across common areas and corridors

The solution was designed to augment staff and not replace them, allowing care staff to focus on higher-value, direct resident care and activities.

Innovation & Creativity

- First-of-its-kind integrated deployment of social and cleaning robots within the facility
- Creative application of Temi's AI-driven navigation and human–robot interaction in an aged care setting

- Use of automation such as vacuum cleaning and announcement of activities through temi to address workforce fatigue while enhancing resident experience

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Technical Excellence

- AI & SLAM navigation enabling safe movement in dynamic environments
- Obstacle avoidance and real-time mapping for resident safety
- Cloud-based scheduling and task management
- High-quality engineering designed for continuous and real-world operation

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Impact & Effectiveness

Operational Impact

- Reduced manual cleaning hours and improved task consistency
- Improved hygiene coverage and compliance with cleaning schedules
- Enhanced internal efficiency for guidance, reminders, and support tasks

Economic Impact

- Labour optimisation and reduced overtime dependency
- Predictable cleaning performance with lower long-term operational costs
- Improved asset utilisation through automated scheduling

Social & Environmental Impact

- Improved staff wellbeing by reducing physical strain
- They showed strong satisfaction with the cleaning performance by sharing an internal report that highlighted the effectiveness of the solution.
- Positive resident engagement and acceptance of technology
- Reduced water and chemical usage through optimised cleaning cycles

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Scalability & Adaptability

- Solution is **scalable** across additional wings, facilities, and sites

- Easily adaptable to hospitals, hotels, retirement living, and community care settings
- Flexible task configuration and software updates support evolving needs

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Collaboration & Teamwork

- Successful collaboration between St Anna's leadership, care staff, and robotics solution partners
- Strong change management approach, including staff training and feedback loops
- Clear leadership vision aligning technology adoption with care outcomes

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Measurable Outcomes (Quantified KPIs – Before vs After)

KPI	Before Robotics	After Robotics	Improvement
Manual cleaning hours per week	120 hrs	65 hrs	↓ 46%
Cleaning coverage consistency	75%	98%	↑ 23 pts
Staff physical strain complaints	High (frequent)	Low (occasional)	Significant reduction
Overtime hours (cleaning-related)	30 hrs / month	10 hrs / month	↓ 67%
Water & chemical usage	Baseline	Reduced	↓ ~20%
Resident engagement interactions (Temi)	N/A	1-5 / day	New capability
Staff satisfaction (internal survey)	3.2 / 5	4.4 / 5	↑ 38%

Figures are representative of post-implementation performance.

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Defensible Assumptions & Methodology Note

To ensure transparency and credibility, the quantified KPIs presented in this case study are based on the following **defensible assumptions and measurement methods**, commonly accepted in aged care and robotics implementations:

Baseline Assumptions (Before Robotics)

- Manual cleaning hours calculated from average rostered cleaning shifts across common areas and corridors.
- Cleaning coverage consistency measured using supervisor checklists and audit reports.
- Staff satisfaction based on internal pulse surveys using a 5-point Likert scale.

Post-Implementation Measurement (After Robotics)

- Robot utilisation and task completion data captured via system logs and scheduling dashboards.
- Cleaning coverage and missed tasks validated through automated reports and spot audits.
- Overtime reduction calculated from payroll comparisons over equivalent periods.
- Water and chemical savings estimated using manufacturer benchmarks and observed reduction in manual cleaning cycles.
- Resident engagement measured through recorded Temi interaction sessions per day.

Assumptions Used

- Facility size and layout remained materially consistent during the measurement period.
- Robots operated during defined schedules without reducing care quality or safety standards.
- Staff roles were augmented, not eliminated; time savings were redirected to resident care.
- External factors (e.g. outbreaks, occupancy changes) were normalised where possible.

Validation & Reliability

- Data reviewed jointly by operational managers and frontline supervisors.

- Results cross-checked against historical records and post-deployment observations.
- Metrics align with industry norms for aged care hygiene, workforce efficiency, and automation benefits.

This approach ensures the outcomes presented are reasonable, conservative, and replicable.

Limitations & Risk Controls

- **Limitations:** Results may vary depending on facility size, layout complexity, resident mobility levels, and staffing models. Short-term data may not fully capture long-term efficiency gains or learning-curve effects.
- **Risk Controls:** Comprehensive staff training, phased rollout, clear safety protocols, and continuous monitoring were implemented to mitigate operational, safety, and adoption risks. Regular audits and feedback loops ensure performance remains aligned with care quality, compliance, and resident safety standards.

Future Roadmap

To maximise long-term value and continuous improvement, St Anna's has defined a clear **future roadmap** for its robotics-enabled care model:

Short Term (0–6 months)

- Optimise robot task schedules based on usage analytics and staff feedback
- Expand Temi use cases to include translating & transcribing, family connect (telepresence), and delivery of documents internally
- Refine KPI tracking and reporting dashboards for management review

Medium Term (6–18 months)

- Scale deployment across additional wings or facilities
- Integrate robots with facility systems (e.g. scheduling, or incident reporting)
- Introduce predictive maintenance and utilisation optimisation

Long Term (18–36 months)

- Explore additional service robots (e.g. food or linen delivery robots)

- Use aggregated data insights to inform workforce planning and care quality improvement
- Position St Anna's as a reference site for robotics-enabled aged care innovation

This roadmap demonstrates a **sustainable, scalable, and forward-looking approach** that aligns with evolving care needs, workforce challenges, and industry innovation trends.

Stakeholder Quotes & Testimonials

*"The biggest surprise was how much dust and rubbish the vacuum robot picked up! far more than we expected. With every inch of flooring mapped, the level of cleanliness has noticeably improved. For a routine task like vacuuming hallways and lounge areas, handing it over to the robots allows our staff to focus on more in-depth and detailed cleaning and resident care."- **Isabella Calderon, Hospitality Service Manager, St Anna's Residential Care facility***

*"Before introducing robots, one of the main challenges was balancing cleaning demands with giving residents quality time. After implementation, cleaning robots improved efficiency and reduced manual work, allowing staff to focus more on resident care. Also, one of the biggest surprises was how quickly residents embraced the technology—especially temi, which supports reminders and wayfinding, enhancing engagement and independence. Overall, this solution is highly recommended as it boosts efficiency, improves staff safety, and allows teams to focus on more meaningful care, with Temi in particular, there are so many avenues to explore, making it a versatile and valuable addition to aged care environments." – **Athin Christou, Wellness, Allied Health & Technology Manager, St Anna's Residential Care facility***

Conclusion

The implementation of Temi social robots and autonomous vacuum cleaning robots at St Anna's demonstrates how robotics can deliver measurable operational, economic, and social value in aged care. The project highlights a scalable, sustainable, and human-centred approach to innovation that aligns strongly with the Robotics Excellence Awards judging criteria.