NeuroHERO

BUILDING INDEPENDENCE THROUGH SUPPORT AND CONNECTION

NeuroHERO creates practical tools that help people express needs, build independence, and access support that works for them – in classrooms, at home, and in everyday life.

NeuroHERO Assist: Co-Design and Assessment Overview (mid-2026)

Overview

NeuroHERO Assist is an early-stage assistive communication concept designed to **support people who are non-verbal or minimally verbal individuals communicate needs to carers quickly and reliably**.

It is not intended to replace existing AAC systems, but to complement them by reducing communication breakdowns - particularly in situations involving unfamiliar or temporary support workers.

This overview outlines a proposed small, collaborative co-design and assessment process to explore whether NeuroHERO Assist can improve day-to-day communication and reduce frustration for participants and carers.

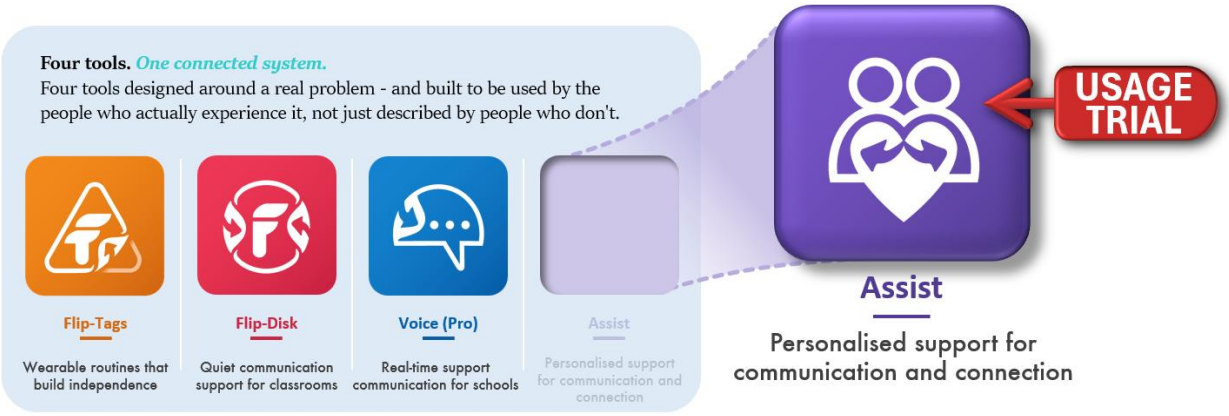

FIG-1: NeuroHERO Product Ecosystem, with Assist Positioning

Problem Context

Many individuals who are non-verbal or have complex communication needs:

- Rely on AAC systems that can be cognitively demanding (e.g. deep icon hierarchies)
- Use personalised gestures, sounds, or behaviours that are not easily understood by new carers
- Experience communication breakdowns with temporary or rotating support staff
- May not have a fast, reliable way to alert carers to important or urgent support needs
- May not have reliable ways to support routines and scheduled needs (e.g. meals, toileting, hygiene, medication, or activities), particularly with unfamiliar or temporary carers, which can contribute to missed supports, distress, or dysregulation

Example challenge(s):

- A participant may simply want an “orange” but cannot locate it within a category-based AAC icon system (e.g. under “bowl of fruit”), leading to frustration and unmet needs.
- A participant may rely on familiar carers who understand their routines, communication style, and daily needs. During respite, support-worker changes, or disrupted routines, important needs such as medication, meals, emotional regulation, or daily tasks may become harder to communicate consistently.

FIG-2: Current NeuroHERO Assist Prototype Devices (IoT ESP 32, M5-Stack Core-2)

Proposed Solution (NeuroHERO Assist)

NeuroHERO Assist is being explored as a flexible support device that may help participants communicate needs, receive routine prompts, and provide carers with clearer contextual information in real time.

The system is intended to complement existing supports - particularly during changing carers, respite, communication breakdowns, time-sensitive needs, or difficulties expressing routines and preferences consistently.

The initial assessment focus is intended for neurodivergent individuals who are non-verbal, minimally verbal, or who experience significant communication barriers during periods of stress, overwhelm, routine disruption, or support changes.

Particular interest includes situations involving:

- Temporary or rotating carers
- Supported Independent Living (SIL)
- Respite environments
- Difficulty communicating important or urgent support needs
- Missed routines, meals, appointments or medications
- Carers unfamiliar with a participant’s communication style

FIG-3: Planned NeuroHERO Assist Features for Co-Design, Review and Assessment

1. Enables Immediate Help Signalling

- Participant can alert a carer with a single, simple action (e.g. button press)
- Designed to be fast, low-effort, and discreet

2. Supports Individual Communication Styles

- Allows exploration of:
  - simple gestures (e.g. drawing shapes in the air)
  - device movement (e.g. orientation or motion)
  - repeated sounds or taps
- Patterns may be linked to specific needs over time and personalised to participant preferences

3. Provides Carer Context

- Carer/Support interface displays:
  - participant name and profile information
  - communication notes (e.g. “uses pointing”, “sensitive to noise”)
  - common needs (e.g. drink, toilet, break)
  - current support status and identified needs
- Supports consistency across familiar and temporary carers

4. Incorporates Routine Awareness

- Carer and Participant scheduled reminders (e.g. toileting, breaks, meals)
- May help reduce escalation and anxiety linked to unmet routine needs

Assessment/Trial Objectives

The design, trial and assessment aims to maximum capability from targeting practical use and benefits of NeuroHERO Assist in real-world settings - through feedback from participants, families, carers and clinicians.

FIG-4: Planned Features Under Exploration

Specifically, the assessment process will explore whether NeuroHERO Assist can:

1. Improve speed of communication between participant and carer
2. Reduce frustration for participants
3. Improve carer understanding of participant needs
4. Support temporary carers in responding more effectively
5. Provide a reliable method for signalling important or urgent support needs
6. Support services to respond to participant needs in a more timely and consistent manner
7. Enhance the support and prompting of routines and scheduled needs in a clear and reliable way
8. Explore whether optional participant-controlled notifications and support history features may assist families and carers in understanding support patterns, response timing, continuity of care, escalation triggers, and urgent support situations when additional assistance or contact is requested

Important Note:

NeuroHERO Assist is not intended to replace existing AAC systems or communication supports. It is designed to complement existing supports where communication, routines, or service consistency may become difficult - particularly with unfamiliar carers or time-sensitive needs.

Initial Assessment Scope

- 1–3 participants (identified in collaboration with OT and/or Speech therapist)
- Short assessment period (e.g. 2–4 weeks)
- Initial observations may be followed by a further 4–8 week refinement period before broader trial expansion.
- Period of supported use within natural environments (home, supported living, therapy) (e.g. 2-4 weeks)

Approach

- Devices will be provided, configured, and supported at no cost, with no expenses incurred by participants or families at any stage of the trial
- Trial participants and their families may keep the configured devices following the trial period, regardless of whether they choose to continue providing feedback or participating in ongoing co-design discussions
- Where possible, participants will continue receiving relevant software updates and improvements
- Participant profiles and support preferences will be configured collaboratively with participants, families, carers, and/or therapists as appropriate
- The project will follow an iterative co-design approach, with refinement guided by lived experience, observation, and participant/carer feedback
- NeuroHERO Assist is intended to complement existing AAC systems and supports, not replace them, and will be used alongside current communication approaches where appropriate

Ethical Considerations

- Participation is entirely voluntary, and participants or families may pause or withdraw at any time without obligation
- No costs will be incurred by participants, families, carers, or support providers in relation to the trial
- The project will respect participant dignity, autonomy, regulation needs, and communication preferences at all times.
- Feedback and participation will remain flexible and considerate of the significant time and workload demands often experienced by families and carers, with input sought only at suitable and mutually agreed times
- NeuroHERO Assist is intended to complement - not replace - clinically recommended AAC systems, therapies, or existing supports
- Participant information and data will be handled securely and used only for trial-related support, configuration, and device improvement, with no external sharing without explicit consent

Success Indicators

- Participant is able to signal needs more reliably
- Carers respond more quickly or with greater confidence
- Reduced instances of communication breakdown or distress
- Positive feedback from participant (where possible), carers, and therapist

Collaboration Request

We are seeking guidance and collaboration from:

- Allied Health (Speech Therapist, Occupational Therapist, Psychologist) and Support workers
- **Participant families**

To:

- identify suitable participants
- ensure clinical appropriateness
- guide safe and effective use
- interpret outcomes meaningfully

Next Steps

- Discuss suitability and interest
- Identify potential participants
- Agree on trial structure, boundaries, timing and methods to minimise impacts or disruption
- Prepare and deploy prototype devices
- Work with carers, family and loved ones to understand;
    - needs and challenges
    - priorities and options
    - suitability and possibilities

About the Project

NeuroHERO was created by Anthony (Tony) and Mary Watkins, a Gold Coast family with lived neurodivergent experience and backgrounds spanning technology, disability, advocacy, education, and health-related programs.

Tony has worked across government and transformation programs, including within NDIA-related environments during COVID and more recently within the Department of Health, Disability and Ageing reforms for Support at Home changes. Mary and Tony also bring many years of lived family advocacy experience supporting autism, ADHD, and dyslexia.

Since relocating from Geelong to the Gold Coast in 2023, NeuroHERO concepts have been progressively refined through real-world family, school, and support environments in collaboration with educators and allied health professionals, including connections with Mastery Schools Australia.

NeuroHERO Assist was created after recognising that many communication systems still rely heavily on familiar carers, rigid workflows, or complex category structures that can become difficult during stress, respite care, routine disruption, or communication breakdowns.

The Assist trial program is intended as a collaborative co-design process alongside participants, families, carers, clinicians, and educators.

Project Contact

admin@neurohero.com.au

For more information, please contact Anthony, Mary, or see the NeuroHERO website at:

https://neurohero.com.au