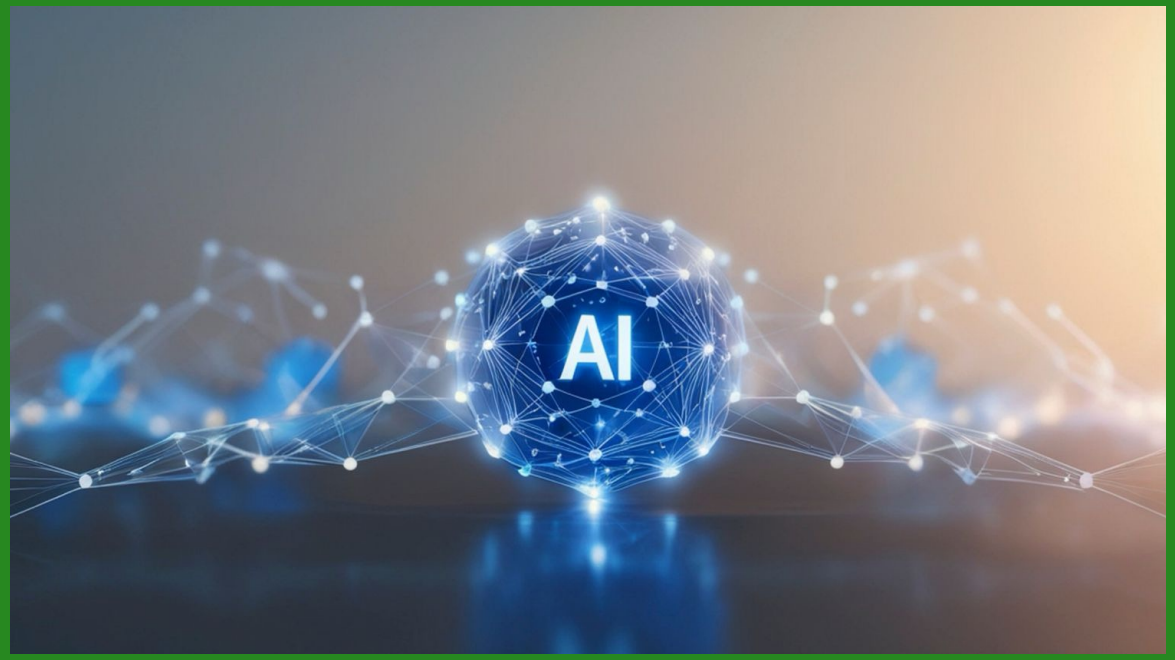


Foundations

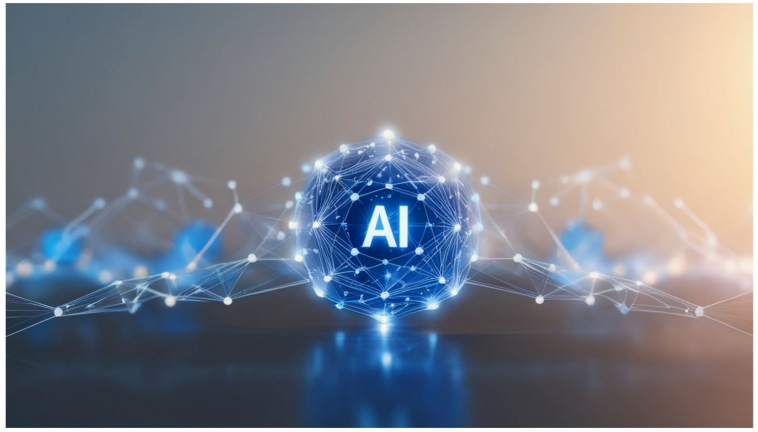
Dr Rachel Russell

Bridging worlds: occupational therapists as innovators in AI-enabled home modification assessments

OT-Wise Platform: Supporting the Home Modification Process in England

Four Interconnected Tools on one Platform

- AI-enabled Triage Assessment
- Personalised Assessment Platform
- **AI-Powered Clinical Reasoning Support for Determining Eligible Works (AI Agent)**
- VR Platform for visualising complex home modifications



The problem: The layers of complexity in determining eligible work

Layer 1 Occupational Needs

- Person factors (physical, sensory, cognitive impairments)
- Activities of daily living requirements
- Instrumental activities of daily living
- Person-Environment-Occupation interactions

Layer 2: The Built Environment

- Housing types (terraced, semi-detached, bungalow, flat, etc.)
- Existing features and constraints
- Structural possibilities and limitations
- UK-specific housing standards

Layer 3: Family & Social Context

- Carers' needs
- Other household members
- Long-term vs. short-term needs
- Impact on family routines and activities

Layer 4: Legislative Framework

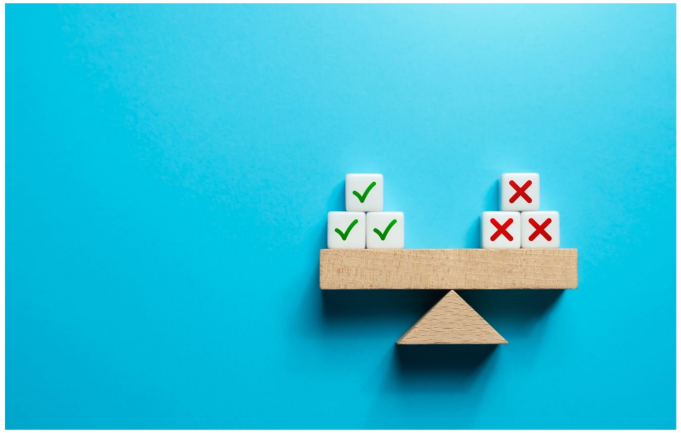
- Housing Grants, Construction and Regeneration Act 1996
- Care Act (2014)
- What constitutes "eligible works"?

Foundations

The Challenge: How Do OTs Make Quality, Equitable Decisions About Statutory Funding for Home Modifications?

How do we:

- Bridge clinical reasoning with "necessary and appropriate" legislative requirements **(layer 4)**
- Ensure comprehensive consideration across all dimensions of person-environment fit, avoiding familiar patterns
- Avoid unconscious bias and ensure equity
- Support quality regardless of experience level
- Reduce delays in decision making



Developing an AI Agent

1. **Started with developing the framework**: "Necessary and Appropriate" dimensions as a foundation (next slide)
2. **Mapped clinical reasoning patterns**: How experienced OTs think through each dimension
3. **Created prompt structures**: Teaching AI Agent what questions to ask and when (rail guards)
4. **Iterative testing**: OT reviewed AI challenges, refined prompts based on clinical validity
5. **Plain English translation**: Ensuring challenges are accessible, not technical jargon

Key insight: "We did not just feed it the framework; we taught it how OTs use the framework in real cases"

	Category	• Considerations (for the Purpose selected)
Necessary	**Due to disability**	• Are the adaptations primarily due to a disability, taking into account future use?
	Suitable alternatives	• Are there better alternative solutions to meet the need that can be done safely?
	Long-term & Sustainable	• Will the works provide a long-term and sustainable solution to meet the need(s)? And how will the works do this?
Appropriate to the Person	**Body functions**	• How will the works support relief from pain, discomfort & danger or support growth & change in children or as a condition progresses?
	Roles & routines	• How will the works support the disabled person's roles and routines, including looking after others or supporting carers looking after the disabled person?
	Values & beliefs	• How will the works support the values and beliefs of the disabled person and their family - e.g. sleeping arrangements or restoring / maintaining dignity
Appropriate to the Environment	**Environment**	• How will the works minimise barriers to independence in and around the home?
	Economic	• Will the works provide value for money in reducing/minimising care costs? And how will the works do this?
	Social and cultural	• How will the works meet the social and cultural needs of the disabled person and family/household?

How it works in practice – The Clinical Challenge Process

1. OT completes initial assessment using our structured tool
2. AI Agent analyses against the Necessary & Appropriate Framework (next slide)
3. AI Agent gives clinical challenges across all dimensions: "Have you considered…?“
4. OT reviews challenges, refines reasoning and recommendations
5. Completed documentation demonstrating necessary and appropriate justification

Key point: AI ensures comprehensive consideration of eligibility criteria, OT makes the final determination

An example of AI-generated clinical challenges

Necessary dimension:

- "You've recommended a stairlift - are there better alternative solutions that could meet the need safely, such as relocating the bedroom downstairs?"
- "How will the level access shower provide a long-term and sustainable solution as the person's condition progresses?"

Appropriate to the Person:

- "Given the visual processing difficulties noted, how will the works support relief from danger when using the stairs?"
- "How will the bathroom adaptations support the person's role as a parent and their morning routines with their children?"
- "Have you considered how the proposed sleeping arrangements align with the family's values and beliefs around dignity and privacy?"

Appropriate to the Environment:

- "How will the through-floor lift minimise barriers to independence compared to alternative solutions in this terraced house?"
- "Can you articulate how these works will provide value for money in reducing care costs?"

OTs as Architects of AI: The Impact

- We can translate the layers of clinical complexity into an AI-supported tool
- Technology can enhance the quality and consistency of eligibility determinations
- AI can support equity in "necessary and appropriate" decisions
- OTs can learn through AI challenges, highlighting gaps in documentation

The Opportunity of OT-Wise

1. Position OT expertise at the heart of healthcare AI development
2. Address process delays (challenges happen upfront, not during approval)
3. Support workforce capacity - novice OTs have expert guidance available
4. Advance social justice - equitable access regardless of which OT assesses

Foundations

Thank you