WOLFRAM CONSULTING SERVICES

Using AI for Technology-Assisted Social Care

Industry: Healthcare & Social Care **Applications:** AIs, Recommendation Systems



ABOUT

Social services support thousands of people who struggle to live independently—whether after an accident, due to a physical disability or because of other debilitating conditions. The right technology deployed in the right circumstances can make a remarkable difference to these citizens and to the social workers who care for them. For example, a falls sensor can replace twice-daily "just-in-case" visits with help that arrives exactly when it is needed, and a video carephone can keep an isolated person connected to family and carers.

Wolfram partnered with WM5G to develop an AI-powered referral tool that helps to match the right technology to the right citizen. The tool, used by three local authorities in the UK, takes the existing case notes that social workers gather and turns them into concrete, evidence-backed recommendations for technology-enabled care (TEC). By doing so, the tool empowers social workers and citizens to make efficient technology decisions and to improve social care outcomes.

HIGHLIGHTS

INTEGRATED

Three local authorities using one shared recommendation platform.

FAST

Reduced time for recommendations from days to seconds.

SECURE

Privacy-first, custom AI deployment.

THE CHALLENGE

There is little doubt that technology can improve care. The difficult questions are the specific ones: which technology, for which person and in which circumstances? A GPS tracker is invaluable for someone who might wander at night but useless for someone who never leaves home; a voice assistant that reliably reminds one citizen to take their medication may be inappropriate for another with a severe hearing impairment. Matching devices to people requires detailed knowledge of both. A mismatch or a suboptimal recommendation carries real, tangible costs: accidents that could have been avoided, devices that go unused and citizens waiting longer for support that meets their needs. On the other hand, sensibly matched assistive technology can improve care, reduce costs and ultimately help citizens to live more independently.

Within the three local authorities that Wolfram worked with, the knowledge needed to make informed TEC referrals was concentrated in a small group of specialists. Because every TEC referral depended on this scarce expertise, this created a bottleneck for how many recommendations could be issued in a given time. The referral process itself, by requiring the manual input of information that already exists in the council's case management system, adds more friction, more opportunities for details to be lost in transcription and more time spent on administration rather than with citizens.

Yet the raw material for better, faster decisions already exists. Every citizen's particular situation is summarised in conversational assessment notes: a rich, detailed narrative of how a person lives, what they can manage on their own and where they struggle. Written in free form with no standardised structure, these notes are unsuitable for traditional software, but they are exactly the kind of input with which large language models excel.

"On-the-job training around digital technology was rare, with 27% of respondents having received none in the past two years, and a further 55% having had training only once or twice during that time."

—Alex Turner
CommunityCare

THE APPROACH

Wolfram's consulting team built a bespoke web application that enables social workers to input their free-text notes about a citizen and receive a ranked shortlist of suitable TEC devices, each with a written rationale. These recommendations are not simple pattern matches against a product list: they weigh the citizen's full context, including their needs, their capabilities and their living situation, so the technology fits the person rather than the other way around. The recommendation itself is produced by a four-stage pipeline:

- **Identification of care needs.** A large language model reads the case notes and maps them to a structured ontology of citizen needs, assigning each identified need a severity score. The ontology is built on the care needs set out in the Care Act 2014, the statutory framework for adult social care in England, and refined with the expertise of the councils' TEC specialists. It covers needs such as fall risk, medication management and social isolation.

- **Device matching.** Candidate devices are selected using a curated knowledgebase, built from the catalogues of the councils' existing technology providers, that links each device to the needs it addresses. The knowledgebase captures how devices work together as well as individually, so complementary technologies can be suggested as a bundle along with any prerequisites, such as connectivity for a home without internet access.

- **Capability assessment.** The citizen's own capabilities—dexterity, cognition, hearing and vision—are scored against the minimum requirements of each candidate device, together with practical prerequisites such as consent to monitoring. Devices the citizen could not realistically use are filtered out so that no time is wasted considering unsuitable options.

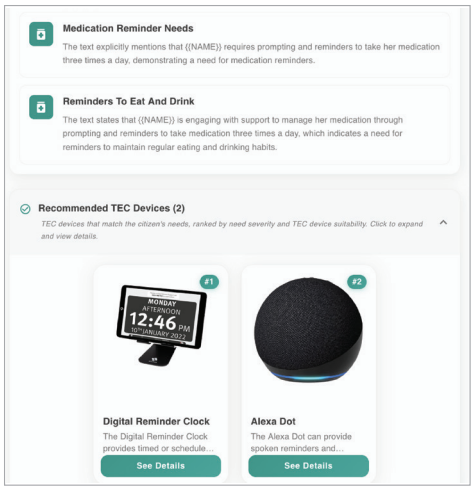
- **Ranking and summarisation.** The remaining devices are ranked by a weighted applicability score, and the language model writes a plain-English explanation of why each recommendation suits this particular citizen. This ranked, annotated shortlist is what the social worker ultimately sees—delivered seconds after they submit their notes, where a manual referral could take days to route through a specialist.

The AI model behind the pipeline is deployed entirely under the project's control, so it can be hosted wherever data governance requires. In this case, the entire pipeline runs in a UK data centre, and no citizen data ever leaves the country.

"Codifying a social worker's decision-making process into an ontology relied upon multiple iterations of feedback from experts. Guiding an LLM with this ontology means we receive reliable, substantiated and auditable technology-enabled care recommendations, rather than merely plausible-sounding suggestions."

—Joseph Brennan
Wolfram Lead Developer

Throughout, the professional judgment of the social worker remains central. The tool does not and cannot make care decisions; it merely equips the social worker for a more confident conversation with the citizen, so a decision can be made based on the maximum amount of information. Social workers can also browse a full catalogue of available TEC, complete with images, plain-English descriptions and real-world case studies.



An AI recommendation list based on a specific citizen's circumstances.

ACHIEVEMENTS

Providing personalised technology recommendations, grounded in evidence
Every recommendation is tailored to the individual citizen rather than drawn from a generic checklist. Because the pipeline runs on a structured ontology, each suggestion is auditable and backed by evidence: the social worker can see which needs a device addresses, why it fits this citizen and why the alternatives were set aside.

Making specialist expertise available to every social worker
By embedding the decision logic of domain experts into the recommendation model, the tool makes scarce specialist knowledge available to every practitioner. Social workers no longer need to be technology experts to have an informed, confident conversation about TEC, and citizens no longer need to wait for one of a handful of specialists to become available.

Reducing costs for a system under pressure
Better-informed TEC deployment means more devices that are used rather than returned, more care visits that are informed rather than precautionary and more citizens who remain independent in their own homes for longer—delaying or avoiding far more intensive forms of care.

LET'S TAKE YOUR PROJECT TO THE NEXT LEVEL

Find out how the Wolfram Consulting Services team can jump-start your project with in-depth troubleshooting, code optimisation, custom training or production deployment.

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