



TALKING TOWNS

A Place-Based Conversational AI Project



HM Government

*This project is funded by the UK Government
through the UK Community Renewal Fund*

RENS
Race Equality North Somerset

Race Equality North Somerset (RENS) is a volunteer-run charity promoting the rights, interests, welfare and wellbeing of minoritised ethnic communities in North Somerset. This region has approximately 15% of its population born outside the UK, with over 80 languages being spoken.

RENS is the leading organisation exclusively dedicated to serving the growing demand for the identification, co-ordination and delivery of targeted strategies and services for this region's ethnically diverse communities.

'Talking Towns: A Place Based Conversational AI Project' is a project white paper.

It was developed as part of the Weston Community Hubs project that was led by RENS on behalf of North Somerset Council, funded by the UK Government Community Renewal Fund and managed by Redport Ltd.

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The speed and scale of change in communications methods has impacted communities in a variety of ways.

- There are now deep differences in the ways people communicate. While some may be decades behind the curve, refusing answering machines and mobiles, others are at the cutting edge and are in constant communication through multiple online apps
- The ways we communicate not only impact our access to information, they also change who we communicate with, and the types of conversations we are likely to have
- The mix of communication methods that many use generate their own levels of stress, with speed of adoption and partial understanding resulting in a range of unforeseen consequences that are still being worked through at a societal level.

Talking Towns explores a way of easing a range of stress points through place-based Conversational AI, developed in collaboration with community members. It considers:

- Accessibility issues
- The impact of information disconnects on people's sense of belonging
- The need to feel heard and included as a pre-condition for listening
- The importance of trust in knowledge transfer
- The importance of Knowledge Equity in building community cohesion.

Our place-based Conversational AI project was conceived as a way of sharing information and local knowledge in trusted spaces, in ways that reduce the burden on over-stretched service providers and volunteers.

The information will be crowd-sourced (with appropriate monitoring mechanisms) and the participatory process will, in itself, help to break down barriers and help to recognise the value of all local knowledge in building connected and resilient communities.

Talking Towns emerged in response to needs identified by the Community Renewal Fund supported Weston Community Hubs (WCH) project, including the need to address issues of inclusion, accessibility and knowledge equity.

From the outset, discussions with key partners identified issues with information management, with small voluntary and community organisations working with frequently marginalised communities overwhelmed with the quantity of information arriving from multiple sources via email, for onward distribution.

Additionally, while the information shared is often very helpful and pertinent, the absence of any delivery framework makes information filtering and onward distribution not only time consuming but also challenging for a variety of reasons.

In many cases, distribution through methods that work at scale was either impossible (due to lack of digital connection and/or capability), impractical (due to literacy or language issues), or unproductive. Personal contact, whilst the most effective way of presenting information in an appropriate way, inevitably limits reach and replicates information inequalities.

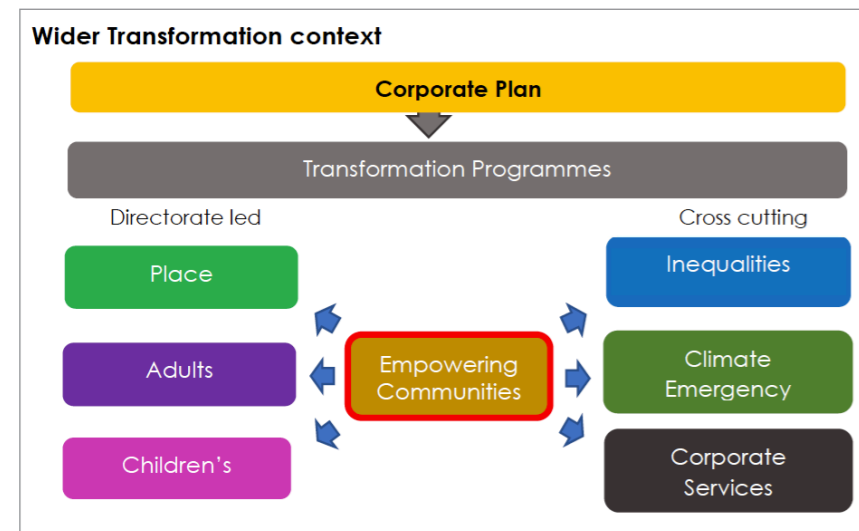
As the WCH project progressed, it also highlighted the need to consider the relationship between information and knowledge, together with associated issues of trust, belonging and agency.

If the vision for a strong, inclusive, connected, collaborative and easily navigable Community Hubs Network, that supports the development of a thriving community of active, engaged and empowered citizens, is to be realised, it is evident that these issues need to be addressed.

The Talking Towns Innovation Plan explores one possible approach.

North Somerset Council's Empowering Communities Strategy 2021-2023 sets out five key design principles:

1. To use NST (North Somerset Together) to deliver our Empowering Communities objective; enabling connected, cohesive & resilient communities
2. Achieve this by NSC continuing to be an enabler and facilitator of community-led action, focused on what matters locally
3. We will support devolved community action that is people-centred, strengths based, inclusive, creative, entrepreneurial & agile
4. Support community action with re-commissioned capacity building specialist voluntary services and clear commitment to wider VCFSE sector
5. Connect community action to statutory services delivered by NSC & our partners including BNSSG, Sirona & Police.



These principles are central to the wider Corporate Plan and Transformation Programmes.

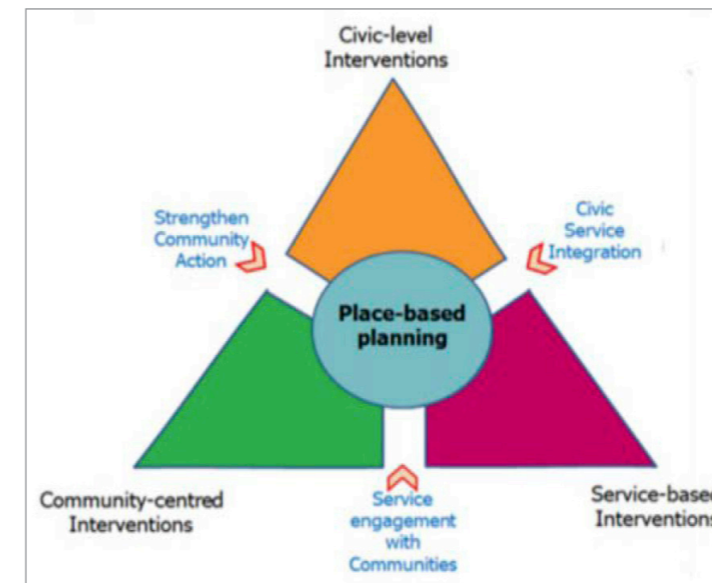
Source: North Somerset Council Empowering Communities Strategy 2021 – 2023.

Additionally, the pandemic highlighted the impact of inequality on health and wellbeing across the country.

Weston has areas of significant deprivation and is becoming increasingly diverse. Communities are disconnected, fragmented, and many are disenfranchised. The positive actions in progress in many sectors in Weston need to be able to reach all communities and there is an urgent need to build community cohesion.

However bridging networks between communities are weak and levels of trust are often low. The silos this creates significantly and negatively impact any aspirations for inclusive and equitable community development.

This not only undermines the Empowering Communities Strategy, it also impacts a Place-based approach to improving health and wellbeing and reducing health inequalities (one of the six guiding principles outlined in North Somerset Council's Joint Health & Wellbeing Strategy).



The population intervention triangle (PIT) captures key elements of the place-based approach.

Source: Public Health England (2019). Place-based approaches for reducing health inequalities. (Cited in North Somerset Council's Joint Health & Wellbeing Strategy).

Working within this context, the WCH project sought to:

- Improve understanding of community needs and aspirations
- Improve connections with frequently marginalised and excluded communities
- Improve levels of trust and increase collaborative activities
- Increase reach for existing community-led activities
- Increase activities grounded in lived experience
- Increase community-led innovation
- Develop more inclusive and equitable, community-centred approaches to knowledge management.

These were undoubtedly ambitious aims, but all are inextricably intertwined and act together to create the conditions for equity and inclusion. If the only communities engaged in transformation programmes are those already connected through existing methods, empowering these communities alone will only increase inequalities. The power relationships and assumptions embedded in all community engagement programmes need serious and urgent consideration.

Information Circulation

Prior to project start, RENS (then operating as North Somerset BME Network) was already very aware of the challenges associated with distributing information to the intended recipients. During early WCH project discussions with community partners it was evident that these challenges were also being experienced by others, with a number of unintended consequences. These include:

- **The high demand for information circulation to ensure all communities are reached:** The quantity of emails, from many to one, far outweigh the ability of small voluntary organisations to deal effectively with requests and emails are frequently forwarded by others on the circulation list to ensure contact has been made, but inadvertently multiplying the amount of email traffic.
- **The need for further research to understand the context of the request:** From an outsider and volunteer perspective, the source of requests is frequently unclear and lack of knowledge of the wider service delivery infrastructure creates confusion and makes information sorting challenging.
- **The creation of high levels of stress and anxiety:** Failure to respond appropriately or indeed at all, negatively impacts wider perceptions of the recipient organisations. Feelings of failure, resulting from an inability to deliver to expectations, disempower volunteers and increase volunteer burnout. For organisations reliant on good will and funding, the power relationships involved inevitably make it difficult to object for fear of becoming even more marginalised.
- **Suspensions about 'diversity and inclusion-washing':** The stresses caused and the apparent lack of awareness or concern on the part of large organisations of the potential impact of their requests undermines trust in intent and increases suspicion that requests are simply a tick box exercise.

However the difficulties go beyond those associated with the management of a large amount of input without sufficient capacity. Onward communication is often not easy. For example:

- Many of the most vulnerable people, particularly but not exclusively those in older age groups, are not online or lack confidence with technology and a phone call is the only way to make contact.
- There are still significant numbers of people who do not have mobiles, or even answering machines for their landline.
- Opportunities frequently need to be grounded in personal experience before they are fully understood.

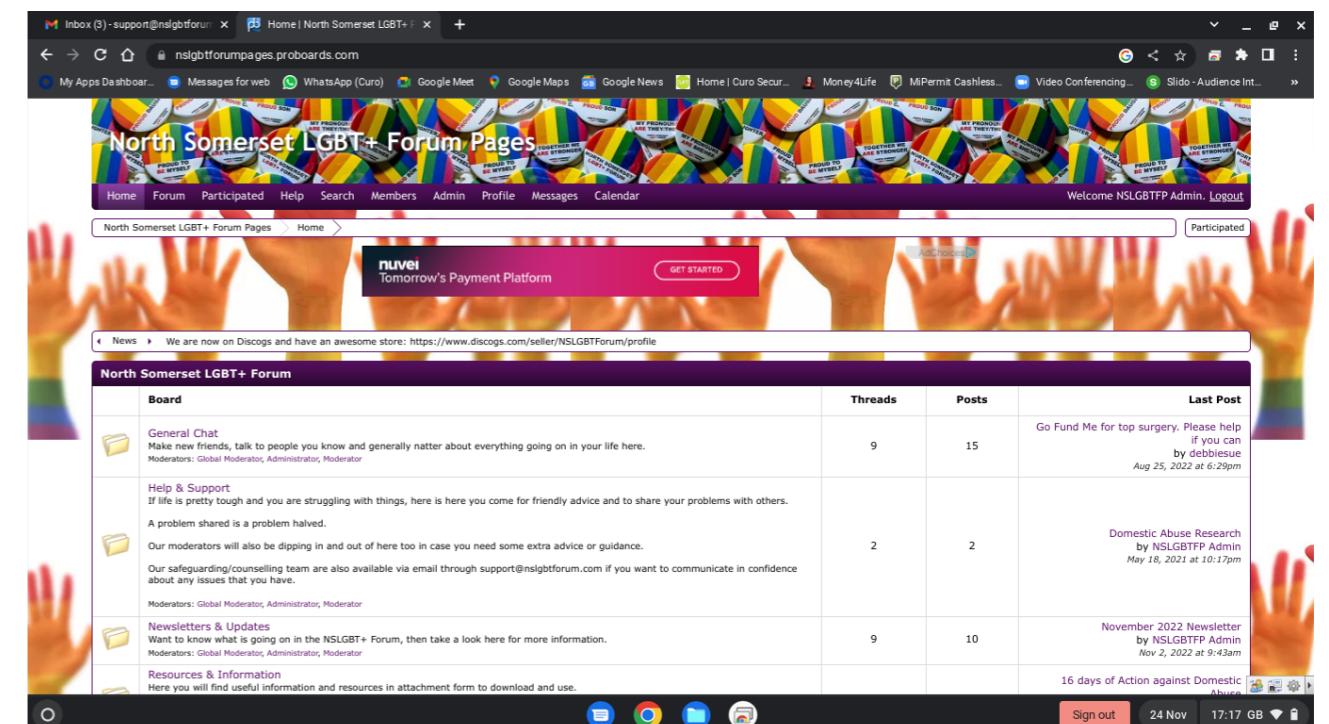
The unintended consequences inevitably generate a number of negative perceptions. Large organisations with paid staff can be seen as effectively outsourcing the challenge of reaching disenfranchised and disconnected groups to small voluntary organisations with limited resources, without any practical understanding of the scale of the challenges faced.

Equally, small community and voluntary organisations can be considered as unresponsive to initiatives that seek to address the changes they wish to see, and they seldom respond in the ways that large organisations hope.

While there is a shared desire to reduce levels of exclusion, there is little opportunity to engage in the kind of discussion that is needed to bring about real systemic change.

This is clearly an unhealthy and unhelpful situation that serves no-one, a cycle of misunderstandings and missed opportunities.

Both RENS and LGBT+ Forum have experimented with ways of improving the situation, RENS with a multi-user platform that would allow organisations to directly post information to the RENS website, and LGBT+ Forum with an online forum.



In both cases, take-up has been poor and neither organisation had the capacity to facilitate, or the power to compel, change.

Wider context

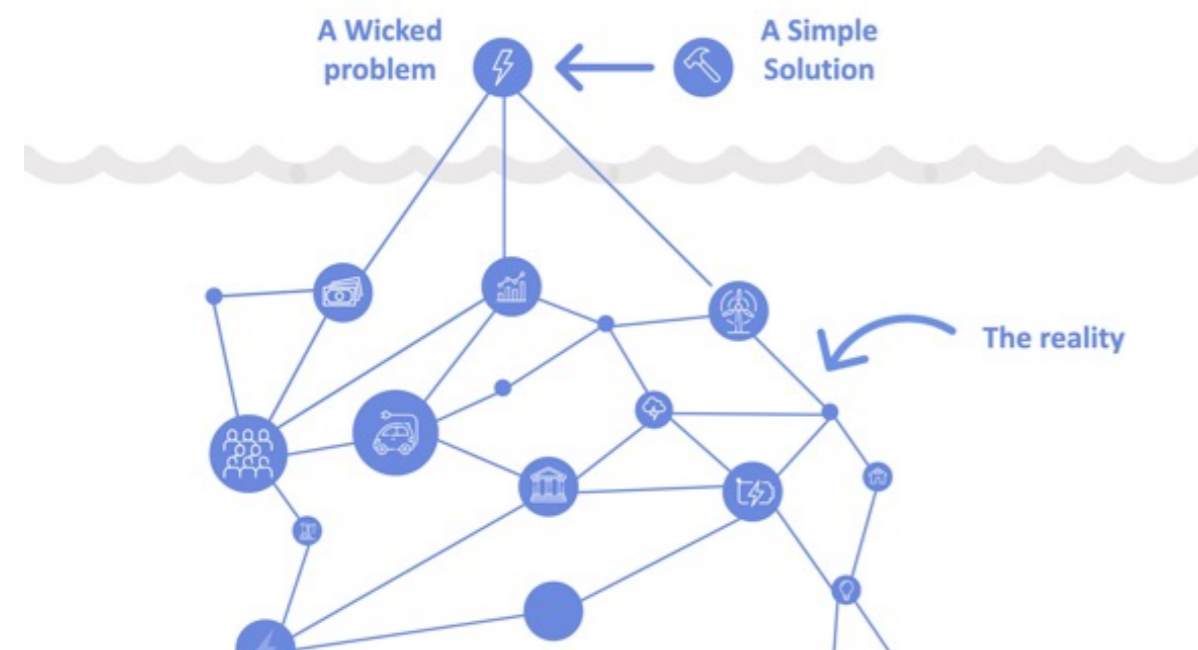
The issues identified do not exist in a vacuum.

More generally, the flow and visibility of information is often cited as a problem in Weston, and is the source of a number of negative perceptions. 'I didn't know', 'How was I meant to know?', are commonly heard sentiments.

There is an often expressed feeling that information circulation is deliberately controlled by those in power to include the favoured few and exclude others.

Conversely, there are significant frustrations felt by those distributing information that however much effort is put into publicity and finding ways to make information accessible to all, the response is still the same, 'I didn't know', and the suspicions remain.

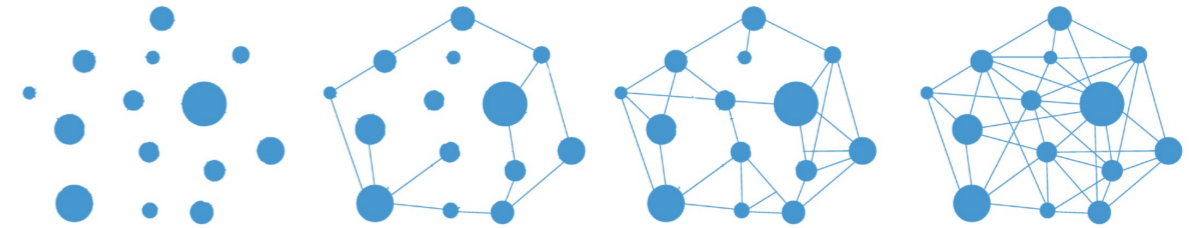
Proposed solutions to this problem often include ways of centralising information in one place so that people will know where to look but, based on the resistance of this issue to change, we believed that information flow represented a wicked problem (a complex social problem) in its own right, with multiple interconnected underlying causes.



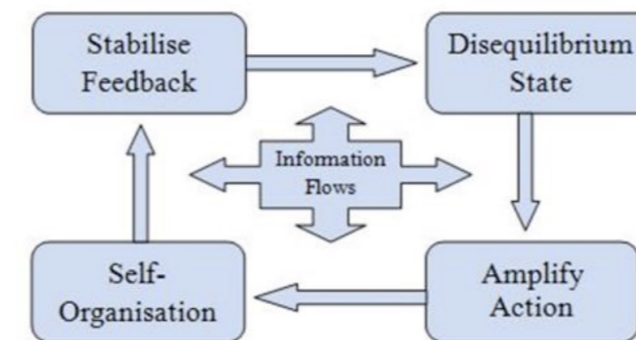
Graphic courtesy of Si, Systems Innovation Network www.systemsinnovation.network

Complex systems

Information flow, and the ability to connect in new ways across existing divides is a key element of Systems Change theory. Finding new ways to collaborate and innovate across divides was a central aspect of the WCH project.



'A non-linear approach to change hinges around the integration of networks and the emergence of new systems structure and functionality. Here we do not specify outcomes, but invest in changing the system's structure by creating new connections, alignment between the parts, integration and synergies so as to realise the emergence of a new overall state in the system that renders the old challenge no longer relevant.'¹



To transform an existing system to a new more desirable state, information flows are key.

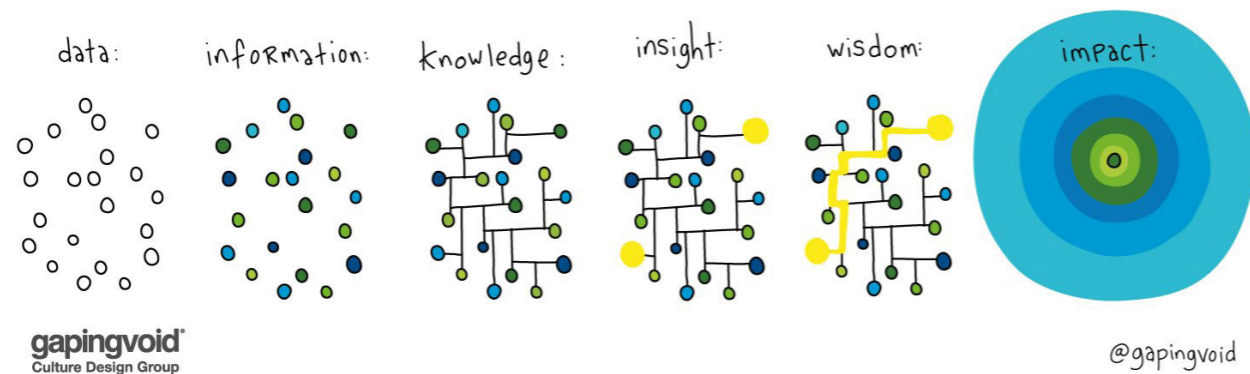
If the ability for information to circulate freely within a system is compromised by weak bridging networks, this impacts any attempts to transform current ways of working in an equitable way.

The Talking Towns Innovation Plan not only seeks to address initially identified issues associated with information circulation to frequently marginalised communities, but also to explore ways of facilitating a more inclusive approach to all community development initiatives.

¹ Quote and first graphic courtesy of Si, Systems Innovation Network www.systemsinnovation.network

Second graphic courtesy of Wicked Lab www.wickedlab.co

Information vs knowledge



Information is not the same as knowledge. Knowledge requires connections to be made with existing information, and meaning needs to be ascribed before information can have real impact and result in appropriate action.

With groups that are excluded in a variety of ways and for a variety of often interconnected reasons, information that arrives from statutory bodies and service providers rarely connects easily with existing knowledge and experience and is unlikely to be retained for future use at the point of need.

Received wisdom vs lived experience

Within the project, Knowledge Equity has been identified as a significant issue underpinning a range of disconnects, disempowering community members and undermining attempts to address areas of urgent and critical community need.

Observations suggest that there needs to be far greater focus on the pre-conditions for inclusive information sharing, with a focus on dialogue rather than one-directional transmission. The value of lived experience needs to be acknowledged and exchanges need to take place within an equitable framework that helps to address power differentials.

Equally, at a very practical level, the value of lived experience in navigating local systems has proved invaluable to The Other Place. When help has been needed to deal with urgent situations, (no food, homelessness, etc), navigating official systems has proved time consuming and time limited (with no availability at time of need) whereas advice and help from those with lived experience has helped address situations more rapidly and with greater understanding.

Graphic courtesy of Gaping Void Twitter feed twitter.com/gapingvoid

Early explorations

Information circulation and more broadly knowledge equity were identified as significant issues underpinning a range of disconnects, disempowering community members and undermining attempts to address areas of urgent and critical community need.

Given the complexity of the problem, we did not believe any single intervention would succeed in improving the situation and we took note of Ashby's Law of Requisite Variety, which is often quoted in systems theory.

*'In colloquial terms Ashby's Law has come to be understood as a simple proposition: if a system is to be able to deal successfully with the diversity of challenges that its environment produces, then it needs to have a repertoire of responses which is (at least) as nuanced as the problems thrown up by the environment. So a viable system is one that can handle the variability of its environment. Or, as Ashby put it, only variety can absorb variety.'*²

Rather than seeking to centralise information, we diversified.

- We discussed the issues and possible causes and solutions with community partners and within our wider networks
- We created a Media and Communications Team that was tasked with finding ways to break communication barriers
- We explored multiple communication methods, both on and offline
- We set up a Commonplace community engagement platform and asked 'How do you find out what's happening'.

However, the most useful feedback came from the launch of The Other Place. While we used a variety of communication methods, we were inevitably concerned about a poor turnout.

The diversity and numbers of attendees took us completely by surprise. We had hoped for 50+ over the course of the afternoon. We optimistically printed 100 feedback forms to avoid running out. Actual attendance was estimated at closer to 350, with people queueing down the street.

We had to ask why? What was it that had brought together so many people from different communities in Weston?

² John Naughton, 2017: What Scientific Term or Concept ought to be more widely known?, Edge <https://www.edge.org>

Collaboration and trusted networks

The philosophy and approach of The Other Place is to break down as many barriers as possible, to make it everyone's place, and collaboration around shared goals and aligned interests was central to the process.

Prior to the acquisition of The Other Place, RENS had created a Community Hub Action Team (CHAT), at their office in Orchard Place, which had been relaunched as The CHAT Room, a free to use, all-inclusive community space. Following occupation of The Other Place this group grew to around 18 members, became increasingly diverse and was renamed as The Meadow Collective.

Local community organisations were also directly involved from the outset, including LGBT+ Forum, North Somerset Training and Refugee Welcome North Somerset.

By the time the launch took place, a broad based team was working together to make it happen, and with initial activities underway there was already a sense of shared ownership.

Over the course of the project, the power of a collaborative and trusted network to bring people together very quickly has been demonstrated multiple times. In particular, we observed the positive difference that is made in levels of engagement amongst marginalised communities if the information is delivered by a trusted source.

Conversely, we also observed reductions in people's ability to receive and engage with information positively when their levels of power and control are reduced, when action is led by communities of which they do not feel a part and their sense of belonging is disrupted.

Changing the conversation

From our observations we came to a number of conclusions:

- That there needs to be far greater focus on the pre-conditions for inclusive and effective dialogue
- That the value of lived experience needs to be recognised within an equitable framework that helps to address power differentials
- That people will not engage productively in any dialogue if they do not feel included and valued within the wider context of the conversation; if they do not feel they belong

- That a sense of non-belonging impacts more than a reluctance to join in the conversation, it also impacts the ability to receive information in any meaningful way
- That if people do not feel heard, they are unlikely to listen.

Our Conversational AI project was conceived as a way of sharing information within a neutral non-threatening space on an equal basis, a way of overcoming the authority gap between theoretical and lived experience and a way of extending a sense of belonging beyond the familiar in a safe and non-threatening way.

Pilot project overview

For the project pilot, we chose to develop a participatory project that enabled local people to create, build and share their knowledge through Conversational AI devices.

These would be developed in collaboration with four local Community Hubs: The Other Place, LGBT+ Forum, North Somerset Training, and Bridging the Gap Together!.

Visitors to the hubs will be able to question the devices and ask for information about local matters and, if a question has no available answer, information can be added to the system for moderation and, if appropriate, subsequent release.

As the device learns, it will become increasingly valuable to the organisations running the hubs, providing answers to the wide range of questions asked and helping to mitigate some of the previously identified challenges associated with information circulation.

We believe that this place-based approach has the potential to expand information sharing opportunities within trusted environments at the point of need, and will also help to overcome a number of accessibility issues such as digital poverty, literacy barriers and lack of confidence.

Talking to an AI in development can be fun and also quite funny, which will help engage visitors to the hubs in the information production process, which will in turn help to demystify and humanise the production of knowledge.

Early decisions

The Big Tech solutions have been widely criticised for their commercially driven abuse of privacy, their data gathering practices, and their manipulation of social behaviours.

In consequence, we decided to adopt a different approach, centred in Community Tech. We chose the crowd funded, Mycroft³. A development kit was available and we decided to use this as the central point for our initial development of our own Smart Community Platform⁴.

The Mycroft is an open source voice input and voice output system and, at present, the majority of functions are also open source:

- The speech recognition for the 'wake' word is managed by pocket sphinx, an open source system
- During our experimental phase, the broader voice recognition is temporarily being provided by Google. However, we are looking to change this for future phases through use of a viable open source voice recognition system
- The vehicle for the conversation is another open source element, a system which has been under development for 10 years known as ChatScript⁶. This system has been the development engine for Elzware since it was first released and we recognise it as the most flexible, ethical and transparent of systems available at this time. It is what is described as "rules" or "symbolic" as opposed to "statistical" or "algorithmic" the later descriptors underpinning recent products on the conversational AI marketplace based on the modelling of Big Data into language models that predict the next words on the basis of trained data. There are significant ethical and quality issues with this approach which is why we have not used it for this experiment.
- Other open source 'skills' that have been uploaded are weather information and telling the time, and additional skills can be built over time.

³ Power to Change: The Case for Community Tech, www.powertochange.org.uk

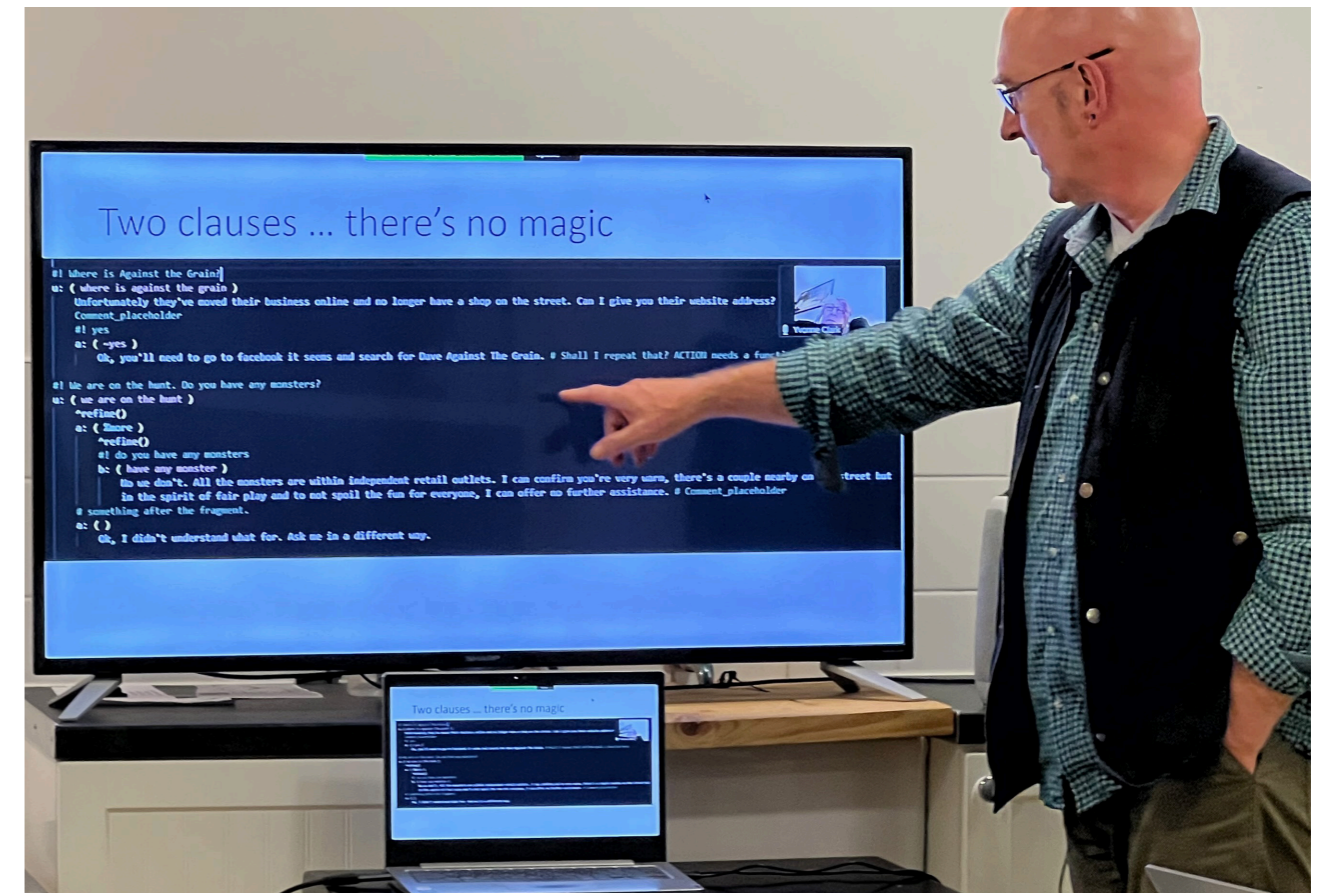
⁴ Tech UK: www.techuk.org

⁵ Mycroft: www.mycroft.ai

⁶ ChatScript: github.com/ChatScript/ChatScript

Codesign and collaboration

Codesign and community-focussed collaboration have been at the core of our data gathering, structuring and development process and a robust core architecture has been created through a series of meetings and discussions with the Meadow Collective and the four partner hubs: The Other Place, LGBT+ Forum, North Somerset Training and Bridging the Gap Together!.

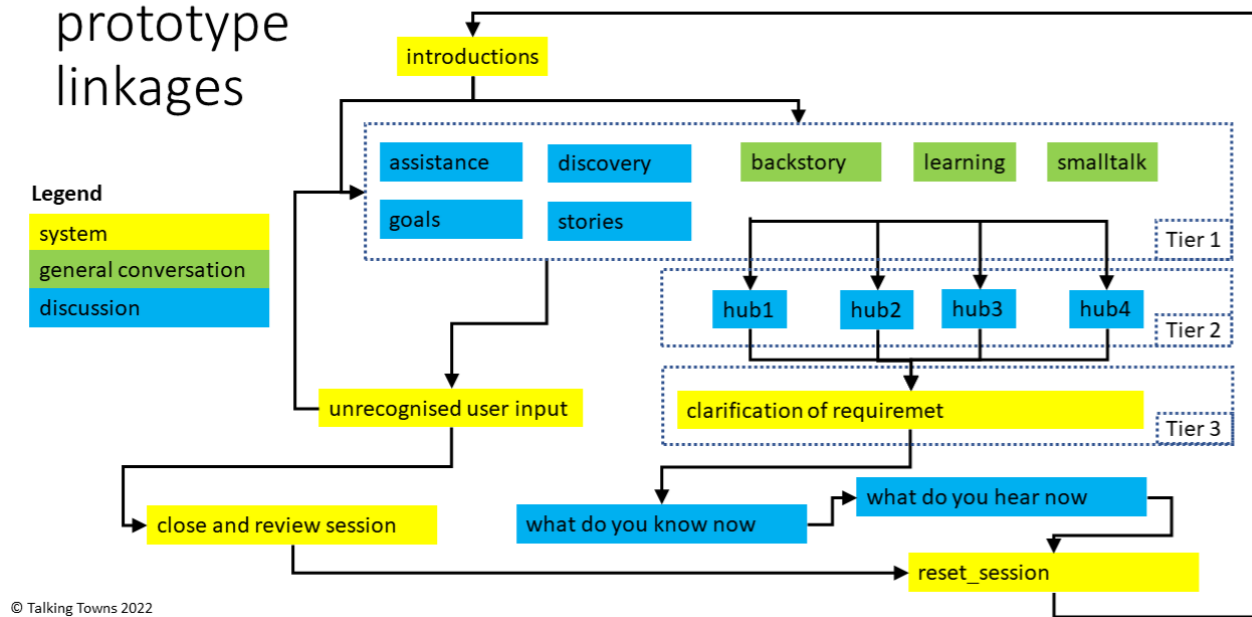


During the early stages of the project, a spreadsheet was set up for data gathering and shared. The various groups were asked for input on information they wanted to be delivered or recognised and for the corresponding elements to create an ongoing conversation.

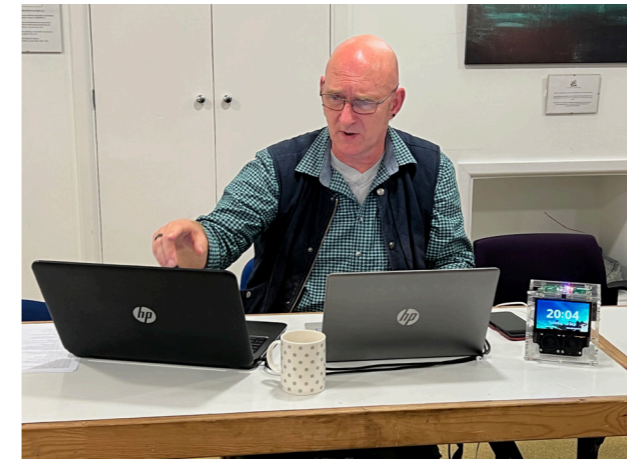
This process was not as productive as hoped, and a direct interface was built so that Mycroft could learn through speech. This enabled people to interact directly with the system via the public internet and either test or teach.

Interactions were then able to be drawn from system logs, so that the system architecture could be designed, cutting out the requirement for people to fill in spreadsheets. The diagram below shows the structure developed.

Talking Towns prototype linkages



The coloured elements in the diagram identify which parts of the broader conversation are open for discussion (for example the gathering of missing information to support a new service or activity) and which are for general conversation to allow people to build trust in the system. The yellow system elements help to build understanding and support the optimisation of the broader system over a period of time.



Place-based knowledge

This structure is now evolving into different conversational structures for each of the four Hubs. For example:

- **At The Other Place:** The creation of a library that can recognise a selection of languages and then speak back to people in their presented language if only, as a first step, to acknowledge them and signpost accordingly
- **At the LGBT+ Forum:** The creation of a broader testing and training method where people can add information to the common conversational core. Prior to publication, this information would be passed through a moderation and authorisation process ensuring content is in line with broader communication guidelines
- **At the North Somerset Training Hub:** The creation of a centralised conversational course management method, to reduce the distractions and confusions of multiple owners/parties. The Mycroft system would help to ensure a single point of truth
- **At Bridging The Gap Together!:** The creation of a system where people who struggle to communicate can engage in a non-human interaction to better understand social interactions and explore their own responses.

Location specific responses

Information entered at any of the Hubs will be available to all Hubs, but answers given will take account of location-specific context.

The hardware is 'aware' of where it is and also whether the response that it has, or the knowledge that it gains, will be relevant for the Hub at hand or for all the four Hubs.

To that end any question may have one or more response, including an 'always true' structure and a 'sometimes true' structure based on location.

Ongoing learning

Particularly during the early stages, Mycroft will need to learn from as many people as possible, through conversation in real time.

Questions need to be asked and, if an answer is not available, Mycroft will ask if someone has an answer. If an answer is provided, this will then be sent to a log for checking and moderation.

Swear words and hate speech will automatically be filtered out through natural language processing.

Data input through uploading structured data from a spreadsheet will also be possible. While this has not proved popular in the early stages, it is likely to be the most useful approach for quickly uploading large quantities of institutional and service based knowledge. For example, authorised users such as Community Learning or Weston College would be able to upload lists of all available courses so that this information is easily available to visitors to all the Hubs.

If no information is available, Mycroft will signpost to a human being.



Ensuring quality

The system logs will be monitored during Technical Team reviews. Content entered will be reviewed by subject matter experts and then automatically deployed.

No knowledge of code will be needed as data will be output as a spreadsheet. Content checking will be decentralised to avoid bottlenecks, and a tagging system will make it possible for individuals to only be asked to check relevant data.

Security

Additionally, a major advantage of open source solutions is data privacy and security.

During any given interaction with the system the log of the conversation is not stored unless the person talking has give explicit agreement.

This is in contrast to the proprietary market where all conversation is retained, analysed and monetised for private interest rather than public benefit. For our experiment, this means that relationships of trust must be patiently built from the ground up.

All code and data is hosted in secure UK based data centres with restricted access to Elzware workers for maintenance and upgrading.

There is a clear need for information distribution methods to be considered in relation to broader systems, including knowledge production, knowledge equity and belonging.

There is also a need to consider the impacts of inefficient communication methods that are time consuming but under-deliver, leading to frustration, disconnection, disempowerment and the undermining of community cohesion and resilience.

While the proposed Mycroft project certainly does not provide an off-the-shelf solution, it is perhaps the process of building a knowledge system through conversation and collaboration that is most valuable.

Gaining a greater understanding of the ways in which information is produced and distributed is in itself empowering and the opportunity to be directly involved in knowledge production systems can be transformational, particularly for those who are frequently excluded.

The contribution of a richer and more diverse range of lived experience is beneficial for all.

In the long term, the Mycroft project has the potential to revolutionise place-based communications and knowledge systems in a localised and non-surveillance based manner. In the short term it provides an important focus point for community dialogue, both teaching and learning, one that can help to build trust across entrenched divides.

While additional funding will be required to support development at scale, this pilot project already offers the opportunity for Mycrofts (or even simple tablets that run the core software) to be placed in a range of locations to help build content.

During the next phase, we will be continuing to test and develop content at the four Hubs and, as the system becomes more stable, we will also be looking for other locations where particular types of interaction may be beneficial, both for participants and for the project.



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