How to decide whether to use machine translation in church services

Written by Peter Bates, peter.bates96@gmail.com
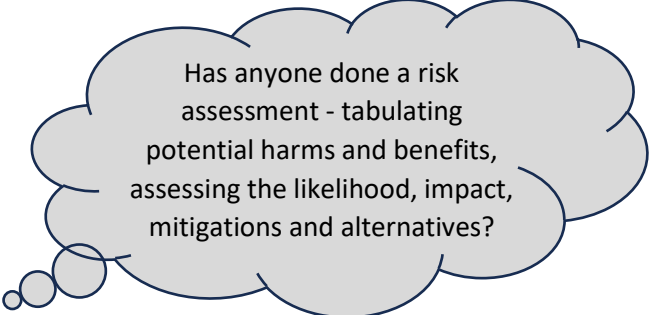
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Introduction

Several online systems are available that receive an audio feed from the front of church and use the internet to translate it into other languages without the use of a human interpreter. Different members of the congregation can simultaneously use an earpiece attached to their smartphone to receive the translated audio in their preferred language. This paper will summarise the practical arrangements, comment on the underpinning values and signpost to additional resources[1].

Some churches use the term 'intercultural' to mean that multiple languages are spoken from the front during a single service, while others may use the term to refer to segregated provision, such as St Stephen's, which hosts a Nepali service at a separate time to the English service. Achieving access for people who do not speak English is part of a wider effort[2] to include Deaf[3] people, people with learning disabilities[4] and others in the life of the church. It is underpinned by a deep pastoral work of reconciliation[5] that heals the wounds of historic cultural superiority. A particular view of the importance of relationships may favour human interpreters over machines[6]. Agreeing clear values and goals helps.

> Has anyone done a risk assessment - tabulating potential harms and benefits, assessing the likelihood, impact, mitigations and alternatives?

I am grateful to the people[7] who have contributed to this unfinished paper. Please send me your suggestions for further improvements. A fuller explanation of the approach taken to creating it can be found at How-to-write-in-public.pdf (peterbates.org.uk).

Summary of findings

I contacted churches in Nottingham City (n=186) and nearby Welcome Churches (n=500) in March 2024 and identified 21 churches that use machine translation as well as several specialist advisors. The most popular system is Microsoft Translator, so support is available. It offers real-time audio to text translation in 124 languages, of which a subset can receive audio to audio translation. A manual and video instructions are available for both technical and lay users, issues such as audio feed and access have been resolved and the system is free of charge. Most users will already have the app on their phones, so it expands the use of a translator they already know. Instructions for users are available as a video that does not use words and therefore avoids language challenges

Microsoft Translator

Microsoft Translator has a 'Conversation' function which translates speech into text in many different languages[8]. It therefore requires users to be literate in their chosen language. The system is free of charge and is by far the most popular solution found so far. An episode of use (e.g. a church service) is called a Conversation. Each Conversation must be launched on an Android or iOS device[9] and then others can join either by using their browser or downloading an App[10]. Limes Avenue say that MS are not upgrading their servers for this service and so the offering is becoming a bit flaky. They continue to use it and have generously created a set of videos, a guide[11] and QR codes for people wishing to set up and use the system.

Magdalen Road have written their own guide here advising users to select (a) 'presenter mode', (b) 'show original language' as this can help people check for the intended meaning; (c) 'show partial messages' and (d) 'mute all' but don't select 'lock the conversation'. Grace church Cowley have found the app to be more reliable than the web version. A feed from their church mixing desk goes via an adaptor (maybe this one) to an iPad with the app loaded on it. Each time the technician starts the app it generates a new 5-digit code which users need to type into the dialogue box at Microsoft Translator before selecting their preferred language.

Christ Church Liverpool use Microsoft Translator for all speech from the front, not just the sermon. They put up posters showing a dynamic QR code and then change its destination each week after they have launched the event, and this preloads the 5-digit code for users[12]. Microsoft Translator is also used at Christ Church Blackburn, Christ Church Worksop, Ladypool Road, Redeemer Nottingham and St Catharine's Gloucester.

PowerPoint Present Live

PowerPoint Present Live is explained in a a a guide written by Hope Luton. The system requires the web version of PowerPoint in Microsoft 365 with basic license as a minimum. Reach Derby send an audio feed directly from the PA sound desk to an internet connected laptop running the web version of PowerPoint via a Scarlett 2i2 USB Audio interface unit. The user can select a preferred language

which then appears as 'Captions and Subtitles' on the church screen. If the congregation needs multiple languages, a QR code appears onscreen[13] which individuals use to connect their own smartphone or tablet to the live presentation and then select their preferred language. Feedback from Hong Kong Chinese and Farsi native speakers is that it's generally accurate, but not quite as poetic. St Thomas' and St Luke's use it to convert audio in English to Farsi script that appears on the screen[14].

Holy Trinity Leicester send a signal from their sound desk's speaking microphone channels to a laptop via a USB to ethernet adaptor, which allows them to pick up spoken words even while music is playing in the background. The laptop has a Dante Virtual Soundcard and is sited at the sound desk running PowerPoint and Airtime software that broadcasts to the TV. Subtitle settings set the spoken language (i.e. the audio from the presenter), subtitle language and subtitle position (overlaid on top of anything else that might be on the screen). The TV has an Airtime device attached to receive the signal and broadcast it to the TV, like a Chromecast or Firestick. The TV is set to a simple black screen where captions in a single selected language appear.

Other options

Other forms of live machine translation. TranslateLive.com is Google's solution and is used by Gold Hill. Other machine translation tools are available, such as Wordly and spf.io but no UK churches have yet been identified that use them.

Are there more systems on the market?

YouTube captions are used at Cornerstone Nottingham. They stream their worship services to YouTube. Any viewer can then click on the cog in the bottom right of the screen and select automatic captioning and their preferred language from a choice of 125. There is a seven second delay[15] which makes it impractical for use in real time, but it can enrich playback.

Human Translators. LiveVoice[16] and Tourguide are systems that use a human translator sitting in a separate booth, so are not included in the list of translation machines above. Mosaic Leeds and St James & Emmanuel[17] use one of these systems.

Smartphone Apps provide a translation function which members of the congregation can use independently of one another on their own phone, so are beyond the scope of this paper. There are a variety of apps of this type such as SayHi which is used by some members of Altrincham Baptist. While the most expensive and sophisticated smartphones can do a reasonable translation job, accessing the Cloud via one of the machine translation systems named in the section above here will give access to a much more substantial service. Christchurch Thornton tried Microsoft Translator but people preferred to simply use the translation app on their smartphone, which they say works well if the PA system is loud enough and there are no auditory distractions.

There are several wider alternatives to the adoption of machine translation, including:

- **Signpost to churches held in another language.** We could point people to churches in the city that are led in a community language other than English. I have found 62 such congregations in my city[18], covering a total of 30 different languages, but major groups such as Turkish speakers remain without a gathering in their own language. It took me a year to find them, and some are of dubious credentials, such as the group promoting the prosperity gospel and another that denies the Trinity. Surely the history of the Black-led churches in England tells us that we should aim to integrate from the start, since integration rarely happens later. Small groups that meet in a community language may help. For example, St James & Emmanuel hosts an online group for Farsi speakers which is open to all.

- **Come back when you are fluent.** In this scenario, we would send people away for perhaps two years until they are sufficiently fluent in English to comprehend and rightly understand our service in English. The same approach arises when the church ignores people who are transient, such as asylum seekers who are frequently moved to another city. Habituating people who used to attend church to a lifestyle of not doing so seems unhelpful. Leaving people who need translation excluded from the worship seems to me to be a greater error than the danger that they will imbibe some heresy via clumsy translation. Building a bridge between welfare activities and church is surely the way to join up the different elements of church life.

- **Listen without understanding.** Alternatively, we invite our language students to the worship service, knowing that they will understand little of our English liturgy, and hope that they gain some benefit. I don't understand how the fragmentary understanding that the students will get along the way is different from the fragmentary understanding they might get from artificial intelligence. Anxiety may also arise due to an assumption that the people who are new to English are also new to Christian faith rather than already schooled, theologically knowledgeable Christians who are capable of rejecting mistakes in translation for themselves.

- **Aim for bilingual.** We could negotiate with other churches in our city and each take on one language, hoping that a few bilingual people will show up in each place to serve as leaders and interpreters and everyone will get a whole lot better at signposting. This misses the 'every nation, tribe and tongue' vision of church and condemns churches to a bichrome life.

  Our experience with one language minority over recent years has been that, once a sufficiently large subgroup is established in the church, they support one another to understand. Sermons are accompanied by a constant murmur as fluent people whisper an informal translation to their neighbour, particularly helping newcomers get the gist of what is being said. Lay leaders in the minority language who are more mature in the faith help newcomers to feel at home, understand the notices about church life and follow the teaching. This is all fine, once a sufficiently large cohort are established as committed members of the fellowship, but before this, it is well-nigh impossible for isolated newcomers to engage unless some kind of language access is provided.

How machine translation works

Churches that use these translation tools may have to pay a subscription cost and perhaps purchase hardware too. The process involves the following steps:

- **Audio pickup.** A 'receiver' picks up the audio from the presenter. This could be by using the microphone on a smartphone[19] placed on the preacher's lectern or near a loudspeaker[20], or the audio feed can be drawn from the PA microphone[21]. Some machine translation tools are designed to facilitate conversations, so lectures are set up by switching on the feed from the presenter's microphone and switching off the feed from participants, effectively muting them.

- **Computer.** This receives the software which enables the technician to set up individual translation sessions. It can be done from a smartphone, tablet or computer, although Microsoft have tried to prevent Microsoft Translator being used on a computer[22], preferring to have it run on an iOS or Android device. St Catharine's Gloucester have found a way around this, so that the same computer can be used to drive their projection and translation functions.

- **Speech to text.** This is like automated subtitling and works best for clearly articulated language but struggles with poor microphone practice[23], unusual accents, hesitation words and some colloquialisms, humour, sentence fragments[24], mumbling and background noise[25]. The accuracy of this step affects the entire process. Call centres use this function to convert audio calls to text records 24/7, in comparison to which churches form a tiny market.

- **Text translation.** The accuracy of the translation depends on the volume of online materials in the input and output languages, since it includes the percentage likelihood of the next word alongside some understanding of grammar and syntax. This approach to translation is called a 'large language model' and means that translation of little-used languages will be inaccurate. Most systems offer the option of outputting to text at this point, which can be helpful for people with hearing loss who prefer to read, people who do not understand spoken English and people whose language is not available as audio output.

- **Text to speech** in the target language(s). This will be particularly important if listeners are not literate in their own language.

- **Set up your phone in advance.** For some systems, listeners need to download the app onto their smartphone and use headphones. Microsoft Translator works directly from their website so does not need an app to be downloaded. Users may also need to download two language packs – one for the input language and the other for the output. Offering free Wi-Fi helps people living on a low income.

  > What hardware, software, internet access and smartphone type is needed and how much does it cost per user?

- **Wi-Fi.** The quality of Wi-Fi available in the building may affect the number of people who can make simultaneous use of the translation service and its reliability, as even a momentary failure will close down the translation service. [Ladypool Road](#) uses a basic 36mb line costing £28 a month and this handles the speech to text[26] translation for around 10 simultaneous users alongside streaming a YouTube video.

- **Advertising your welcome.** Introductory messages can show that the church welcomes everyone[27] but this needs to be augmented with a general statement in relevant languages to say that translation is available.

- **User access today.** Listeners need instructing on how to access the translation service for today's service. Microsoft Translator issues the technician with a 5-digit code that must be shared with users to enable access. This is avoided at Christ Church Liverpool where they have generated a [dynamic QR code](#) which does not change and so is printed on posters displayed around the church. Once the Microsoft Translator Conversation is launched (well before the service starts), a technician updates the dynamic QR code register by adding the new 5-digit access code[28] so that the QR points to the correct Conversation. This means that users do not have to be issued with the 5-digit access code but are taken directly there. If the Wi-Fi fails momentarily during the service, the current Conversation will end, and a new Conversation must be begun by the Technician. Listeners simply wait a few moments after the Conversation is ended and then re-use the QR code.

- **Select language**. When users enter the Conversation on their smartphone, they will be prompted to select their preferred language for text and audio output. Text appears on the smartphone screen and audio can be directed to headphones plugged into the phone.
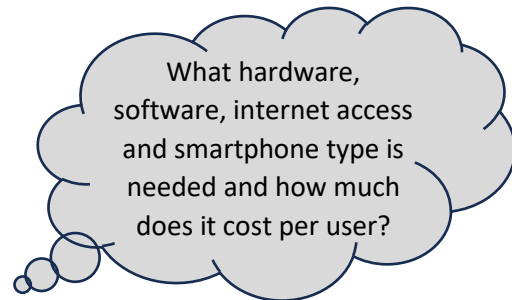
The technology is advancing at a rapid rate and so, while it is much better than it was only a few years ago, the quality of the translation will continue to improve over the next few years.

Where is machine translation used?

Lists were reviewed[29] and an inquiry sent out[30] which located 22 churches using machine translation:

Christ Church Blackburn, Christ Church Central Sheffield, Christ Church Dunstable[31], Christ Church Liverpool, Christ Church Newland[32], Christ Church Worksop, Cornerstone Nottingham, Grace Church Cowley, Holy Trinity Leicester, Hope Luton, Ladypool Road Sparkbrook, Lifespring Wolverhampton, Magdalen Road Oxford[33], Providence Baptist Chapel Bedford, Redeemer Nottingham, Roots Leicester[34], Reach Derby, Shevington[35], St Catharine's Gloucester, St Thomas' and St Luke's Ashton in Makerfield, Sunbridge Road Bradford[36], Walsall Independent Evangelical Church[37].

A further 64[38] churches responded to my inquiry by declaring that they do not use machine translation, 21 of which[39] expressed interest in finding out more about it.

Jonathan Downie challenges the church to be as multilingual as its local community[40]. One church commented, "we have a few different languages spoken and no one dominant language so machine translation is better than nothing." St Andrew's Leyland offered access to machine translation via a QR code, but it was not taken up, so they abandoned it, which points to the need to monitor perceived versus actual demand and uptake.

What might go wrong?

Risks associated with the use of auto-translate technology include:

- **Inaccurate translation.** Translation is a complex and contested space (Baioud 2022[41]). Language translators and the companies that offer multi-lingual services (like Meta) work well for the main languages but fall off a competency cliff for small languages (Mission Translate 2024[42], Hardach 2021[43], Měchura 2015[44]). Obscure theological or religious terminology may be a particular casualty of machine translation into small languages. On the other hand, some translation tools have used the Bible as a training source since it has been so carefully translated into so many languages. One person can apply their intuition on whether a sample text is translated well enough, or the findings from scientific evaluation[45] can be reviewed.

- **Hallucinations**. Generative artificial intelligence such as ChatGPT routinely invents and then presents fake data as if it were true, including quotations and references. These insertions are known as hallucinations[46]. It is not easy to discern whether particular machine translation tools use generative rather than traditional AI.

- **Misguided**. Poor quality translation may teach heresy or leave people bewildered[47]. From another perspective, if people are using their poor knowledge of English, poor literacy or a personal smartphone translation app in the absence of a church system, they will have less power applied to the task and so are more likely to be guessing at the preacher's meaning.

- **Too easy.** It may slow down the acquisition of English by the newcomers.

- **Ignored**. English speaking members of the congregation may neglect their social obligations to welcome other language speakers and assume that the technology does their job for them. They may be desensitised to cultural differences.

- **Subordinated**. Native English leaders of the church might assume that English speech should always be used at the front and always first, subordinating other language groups[48].

- **Partial**. Translating only the sermon denies access to sung worship, prayers, notices and interviews.

- **Formal**. The intention of jokes, anecdotes, and those friendly, off-hand, fun remarks are likely to be lost in translation and thus confusing to the viewer.

- **Late**. There may be a processing delay[49] which can make listening and watching difficult.

- **Secret**. Where the quality of machine translation is poor, the church might feel that it is not hitting the high standards which mark their other activities. Because of this, one church has chosen not to promote the use of its machine translation service but show people who ask for it how to engage. Another church sees no need for information about the translation service to be on their website, since visitors to the church will see it in operation. If the translation service is kept secret, then people looking for an accessible church will go elsewhere.

Safeguards

There are several things that might be attempted to reduce risks when using human or machine translation, including:

- **Explain the risks.** Carefully and regularly explain the risks to anyone depending on it.

- **Check a sample of translation.** Test and compare the accuracy of translation into different languages by entering the English text, translating it into the test language and then translate it back into English to see if there are any glaring errors (assuming that the translation function is not entirely a commutative operation, and noting that this would only pick up on one kind of translation error). Test the system before inauguration by setting the output language to English and comparing input and output. Find all the bilingual people in church and ask them to compare the input with the output in their second language.

- **Provide hard copy too.** Use a translating app such as Google Translate to produce a printed copy in a specific language before the service which can be given to anyone who needs it[50]. This gives them both audio and written versions to help them understand what is being said.

- **Check the understanding of listeners.** Find a theologically trained, bilingual person who knows how to test the growing theological comprehension of listeners and check that the system is leading people in the right path. In the absence of a theologically trained interpreter, then a professional interpreter could be added to form an occasional three-way meeting where understanding can be tested. It is worthy of note that few churches offer such evaluation to English congregants.

- **Teach in multiple ways.** In one church, house groups follow up on Sunday teaching, so they can clarify any points where there might have been misunderstanding.

- **Appoint the right people.** A high view of the ministry of preaching insists that preachers are trained and competent. It may favour the scholarship of an English Bible translation over other language translations and reserve to ordained persons the task of explaining what the Bible means. Human translators can receive the sermon text some days before, prepare an accurate translation of difficult passages and become a co-preacher, delivering the message with as much passion and engagement as the author of the sermon text[51]. Alternatively, machine translation can supply a draft text which can be checked and amended by a bilingual person before going out to listeners. Control of who preaches and translates can ensure that they are 'fit and proper persons' rather than those who would intentionally or accidentally lead people astray.

- **Welcome**. Turning down the volume on these nuances of accuracy, comprehension and orthodoxy, what remains is that a church which tries to offer language access, however imperfectly, is communicating a powerful message of welcome. Providing translation demonstrates welcome, just like the multi-lingual welcome poster, the accessible bookshelf, the friendly greeting and the multilingual songbook.

A case study

> *We have a series of English classes running in our church and see around 100 people turn up each week to learn basic English[52]. Students need to work their way through our four stepped but informal classes before their English is good enough to enable them to gain a place at the local college and continue their language learning formally. This means that many have very low level of English comprehension. We are eager for these students to learn English and also find a friendly welcome in a Christian church, receive support with other matters which they bring to the attention of the volunteer teachers and have the opportunity to find faith in Christ. In any week, we welcome students whose first language is Cantonese or Mandarin, Ukrainian or Russian, Tigre or Tigrinya, Spanish or Portuguese, Arabic, Turkish or Farsi and a smattering of other languages.*
>
> *Our regular worshipping community includes people whose first language is Cantonese, Spanish and Farsi. We include these languages in our onscreen Bible reading and sometimes these languages can be heard spoken from the front at other times in our services of worship. We do not have the skills inhouse to provide human translators into the other languages or to check the theological comprehension of individuals.*

Help to improve machine translation

Wordly allows users to build an in-house glossary so that the system recognises names or local jargon. This glossary could be built up over time[53] and potentially feed into wider system improvement. Some systems allow users to define foundational texts and excluded content (such as the Bible which will always be the foundation for sense-making, and profanity which will never be used in a sermon) and these guides help the machine translate uncertain words or passages.

The wider agenda on moderating online content tends to concentrate on reducing access to violence and fake news. Unfortunately, there is some evidence to suggest that investment in moderation follows wealth, so is low in poor countries and small language groups (Shepherd-Vega[54]), while efforts to automate the moderation process have been shown to be of limited efficacy to date[55], suggesting a parallel weakness in machine translation. If opportunities arise through which

Christians could suggest improvements, it would be disappointing if they had rejected the tools and left the field. While helping these tools to acquire religious and theological language skills would be valuable, it would also be helpful if preachers could communicate the gospel in accessible language!

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[1] Keith Charlton at 100Fold (Keith@100Fold.org) and Limes Avenue has made available his 16 page guide on using Microsoft Translator as well as training videos and other resources. See also the work of Dr Jonathan Downie at https://churchinterpreting.com/ and in his book *Multilingual Church: Strategies for making Disciples in all Languages*. Intercultural Church promote networking between churches. Justin Gill at FIEC (justin.gill@fiec.org.uk) is willing to visit churches to demonstrate the hardware kit that goes alongside Microsoft Translator. Alfred Biehler is willing to run a demonstration of TranslateLive.com at Gold Hill. No online discussion fora have yet been found. The creators of the tools described here may have published their rationale and commentary on the field, but such material has not yet been found. Others may have undertaken a comparative study to find the most popular and the most effective option.

[2] The Equality Act 2010 enshrined the principle in UK law that discrimination should be overcome by making reasonable adjustments to enable physical, attitudinal and social access for all.

[3] Providence Baptist Church routinely offers BSL signing. Inclusive Church welcomes everyone. One church has two members who are Deaf and use an app on their mobiles (maybe Google Translate?) which transcribes audio into text. They use this for parts of the service where there is not a lot of background noise, i.e. mostly sermon and notices. It doesn't work during sung worship, or when there is background music. For these parts of the service the church previously provided BSL interpretation or, when there were not enough BSL interpreters available, lip speaking from the front. After a time the Deaf people decided to abandon sitting at the front where they could see the interpreter and, instead, sit with friends anywhere in the church.

[4] Gateway Church supports people with learning disabilities to take part.

[5] See resources at The Reconciled Church (trchurch.co.uk) which have been used at Emmanuel Oxford.

[6] King's Cross Hexthorpe use human rather than machine interpretation.

[7] Responses have been gratefully received from Jonny Barham, Tim Bateman, Emma Billington, Keith Charlton, Simon Cross, Adam Davies, Jonathan Etheridge, Jerry Fowler, Mike Frith, Justin Gill, Ben Griffin, Spencer Hampton, Katyana Malcolm, Jon Mason, Emma Moore, Ian Paul, Damian Platt, Dave Sudlow, Ben Vane and Francis Williamson. Any remaining errors and omissions in this paper are the sole responsibility of the author. The information is provided in good faith and so readers engage with the contents at their own risk and undertake not to hold the author liable for any injury, loss, or damage arising through reading or acting on it.

[8] Emmanuel Oxford note that Microsoft Translator can produce Farsi text but not Farsi speech. Limes Avenue note that Translator does provide an audio output in some languages, but it is slower than speech input so falls further and further behind, so they stick with text output.

[9] Microsoft used to allow users to launch a Conversation from a pc, but now it confines pc access to joining a Conversation rather than launching one. However, see below for details of another app which can make the pc emulate an android device. It requires a one-off setup installation and does not need starting for each new Conversation. Using it permits the church to drive its presentation and translation services from the same computer. Limes Avenue use the BlueStacks Emulator, but alternatives are available.

[10] Limes Avenue say that the App gives a much better experience than the browser route. Many people already have the App and use it for day-to-day translation tasks.

[11] See (1) Church Translation Linked Files - Google Drive

[12] Setting it up in this way also minimises disruption if the Wi-Fi fails and kills the Conversation. In this event, the technician needs to start a new Conversation and update the dynamic QR code registry. Users wait a moment after they have been dropped out of the Conversation and then use the same QR code to launch a new Conversation, which will therefore preload the new 5-digit passcode and get them in.

[13] The QR code appears at the start and then disappears, so is inaccessible to latecomers.

[14] St Thomas' and St Luke's say "We have a PowerPoint display on our church monitor which is constantly in use, switch on its subtitling function and select Farsi to translate spoken English into Persian"

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[15] Translation can occur at the level of the single word, which is fast but prone to error. Then is analysis at the level of the sentence, which is better for sensemaking but inevitably generates delay. The third level is to add context by reviewing previous and following sentences, which improves accuracy but adds a bit more delay.

[16] Livevoice is a way to connect speakers, human interpreters and audience members over the internet, enabling human interpreters to work from a different venue or even a different continent.

[17] They use the Tourguide ATS20 system where a fluent speaker translates into a transmitter and the listeners have a receiver with an earpiece. They use one language but the device has 16 channels so could use multiple translators, each serving a different language group.

[18] https://peterbates.org.uk/wp-content/uploads/2023/01/Christian-meetings-in-community-languages-in-Nottingham.pdf.

[19] At St Catharines Gloucester someone donated an old smartphone when they upgraded and the microphone is good enough to use as the audio pickup on their system.

[20] Magdalen Road uses a smartphone as an audio pickup. They fix it to a tripod like this one to raise the smartphone perhaps 80cm off the ground. Place it near a speaker with the smartphone's microphone (usually on the bottom edge of the phone) angled towards the sound source. A volunteer sitting close by stops it getting moved or stolen and can make discreet adjustments without distracting the congregation. It is easy to accidentally switch the phone off when mounting it on the tripod. The feed from the speaker's microphone may need switching off for singing and back on afterwards.

[21] Take care to use the right input or you can damage the computer. A mic input takes tiny electrical signals; Line Out from the mixing desk has already been amplified and so is more powerful.

[22] Preloading emulator software will make your computer appear as an Android device and so permit Microsoft Translator to run on your system. It remembers the settings between sessions so should need to be set up once only.

[23] Holding the microphone too far away lets in extraneous noise; moving it around a lot distorts the sound.

[24] The machine analysis listens for the pause that comes at the end of a sentence and then analyses the whole sentence. Sentences between 5 and 15 words are best, so check your script in Microsoft Word at Review - Editor. There is no need to speak slowly, but placing these pauses correctly helps.

[25] If the space is noisy, use a headset microphone.

[26] Keep in mind that receiving video requires the best Wi-Fi, most sophisticated smartphone and strongest battery, while receiving audio demands less and text almost nothing.

[27] St Chad's invites visitors to their website to select their preferred language from a pulldown menu and translate the whole website. The Alliance website declares how many languages are spoken by church members. Woodside Church states on the landing page of its website that they have live translation into Ukrainian during services. Dereham Baptist advertises its service in Portuguese. St Thomas & St Luke's advertise a range of supports for refugees and asylum seekers, but do not mention the translation service they offer during family services.

[28] This dynamic QR code generator has a security step to ensure that the target is being changed by an authorised person. It sends a code to the email address registered with the account and this must be entered to authenticate the amendment. The long url for the target is the same each week apart from the last five digits. The technician will take the 5-digit code issued by Microsoft Translator when a new Conversation is launched and paste it on to the end of the url. Once this is done, the technician must not logout of the dynamic QR generator site, as it might need to be amended again should the Conversation fail due to a break in Wi-Fi.

[29] This includes LinkedIn, Churches in Nottingham and my nearest 500 Welcome Churches.

[30] Inquiry posted on LinkedIn 19/03/2024. Email inquiry sent to all Nottingham churches 27/03/2024 and the 500 nearby Welcome Churches 30/03/2024.

[31] "We've just started trialling Microsoft Translator - link to Apple version here. It's been fairly successful so far with 2 or 3 trial friends, but there's a lot to think about before a proper launch. The audio pick up can be placed near a speaker or linked the microphone) it does audio and written translation. It is different on android and apple, so do trial it on both devices."

[32] "We briefly used Microsoft Translate running on a laptop attached to the mixing desk to get clean audio. It worked well until they started charging a fee. Continuing would have required us to supply decent Wi-Fi to the

building. Now we have a Farsi translator, who does live audio translation to headphones. We have 14 receivers that can drive 2 headphones each."

[33] Magdalen Road use Microsoft Translator and say it is quite good - people are mainly accessing Persian, which is a 'second tier' language, not available in audio translation, just text.

[34] celebrating our diverse cultural and ethnic roots - Roots IWC.

[35] "We currently use the PowerPoint translate facility as we translate only into Persian as our only non-English people are from Iran. We also have the English service book translated into Farsi using the same page numbers to help folk know where we are."

[36] Sunbridge Road translate only into Farsi and have a native speaker live checking it.

[37] "We have used Microsoft Translator. We have one member of the congregation with the app and prior to the service they share a code with any who want to listen in their own language. This person then makes sure they have their phone set up to receive the preaching which the others can then see the message in their language or listen through headphones."

[38] The churches that simply declared they do not use machine translation were: All Saints Eccleshall, Altrincham Baptist, Ark, Boulevard URC, Bridge Bolton, Broadway Baptist, Christ Community, Christ Walkley, City Sheffield, Community Burton, Coventry Vineyard, Didcot Baptist, Emmanuel Arnold, Emmanuel Northwood, Friends Nottingham, Gas Street, Halifax Elim, Heart Nottingham, Holy Trinity Heath Town, Kettering Vineyard, Kings Cross, King's Didcot, King's High Wycombe, Lifechurch Sale, Lightchurch, Longridge, Nazarene, Northchurch Baptist, Oxford Community, Polish Bakersfield, Poynton, Pudsey, Stapleford Baptist, Stevenage Vineyard, St Andrew's Kirk Ella, St Bart's Roby, St Francis Coventry, St George's Altrincham, St Helen's, St John the Baptist Leicester, St Matthew's Walsall, Trinity Leek, Witney, Woven.

[39] The churches that said they do not use machine translation but are interested in the findings from my survey were: All Saints Wellington, Christ Church Pennington, City Valley Shipley, Dominion Nottingham, Elmdon, Emmanuel Oxford, Hazlemere, Holy Trinity Oswestry, Ivy Manchester, Jubilee Derby; Kings Norton Baptist, Leominster Priory, Longsight Manchester, Mosaic Leeds, Parish of GHM Bradford, Park Church Stoke on Trent, Penny Lane Liverpool, Stapleford Baptist, St Christopher's Sneinton, St John's Bowling Bradford, St Mary's Risborough.

[40] Discover the main language spoken by your local population at datasheet TS024 from the Office for National Statistics. Ask a local interpreting service about the profile of demand they experience.

[41] Minority languages on social media – Language on the Move

[42] Embracing the Future: Translation Trends for 2024 – Mission Translate

[43] The languages that defy auto-translate - BBC Future

[44] Do minority languages need machine translation? (lexiconista.com)

[45] Available measures of the accuracy of machine translation include BLEU, CDER, GTM, METEOR and TER. See Meteor, M-BLEU and M-TER: Evaluation Metrics for High-Correlation with Human Rankings of Machine Translation Output (aclanthology.org)

[46] Hallucinating Law: Legal Mistakes with Large Language Models are Pervasive (stanford.edu)

[47] For example, Christ Church Central Sheffield tried Microsoft Translator but weren't happy with the quality of the translation so abandoned it for a while. They are now trying again to see if improvements are discernible.'

[48] Sunbridge Road run a monthly Persian service with translation into English.

[49] Delay between input and output is reported in technical data as 'latency'.

[50] City Valley does not use speech-speech machine translation but do make printed copies of sermon notes available for anyone who needs them in their preferred language. Holy Trinity Heath Town translate and print copies of the Bible reading.

[51] It is noteworthy that Christchurch Newland has a Translator on its leadership team.

[52] Snow DB (2001) *English Teaching as Christian Mission: An applied theology* has been recommended.

[53] Can the system be trained using your past data, such as old YouTube recordings?

[54] The consequences of Meta's multilingual content moderation strategies | Digital Watch Observatory

[55] This paper is paywalled: https://www.wired.com/story/facebooks-global-reach-exceeds-linguistic-grasp/