






**NAME:** Dutch Sign Language Mixed Reality App  **TICT**  
**DATE:** June 26, 2026 8:21 AM  
**DESCRIPTION OF TECHNOLOGY**  
 A Proof-of-Concept Dutch Sign Language (NGT: Nederlandse Gebarentaal / SLN: Sign Language of the Netherlands) learning system to teach hearing-impaired (hard of hearing and deaf) young adults the finger alphabet, consisting of a Meta Quest Mixed Reality application.


**HUMAN VALUES**   
 It makes communication much more accessible and thus expands the users' opportunities. It does replace the role of a human, though.


**TRANSPARENCY**   
 Yes, there will be an onboarding and there will be explanations during the learning process.  
 There is no business model for this project.


**IMPACT ON SOCIETY**   
 Currently, you can learn Dutch Sign Language both free and paid via apps and (online and / or study) courses or from a hearing-impaired friend or family member, of course. However, (online and / or study) courses are not immersive and are difficult to convey and understand, since someone who already knows sign language needs to teach someone who cannot hear (well) how to use sign language. In addition, apps are not interactive and might go too fast. Moreover, when a friend or family member teaches you it, you are...


**STAKEHOLDERS**   
 - Young hard of hearing and deaf people  
 - Loved ones of young hard of hearing and deaf people


**SUSTAINABILITY**   
 The user can change the settings on their headset, e.g. the brightness, to limit the app's energy consumption. For the app specifically, I still need to think about it.

**HATEFUL AND CRIMINAL ACTORS**   
 Given the fact that the solution makes use of the Meta Quest headset by Meta, which has recently been exposed for illegally viewing videos of the cameras in the headset, it is possible that the technology violates the privacy of the user.




**DATA**   
 N/A

**FUTURE**   
 Society would get more sign language friendly and understand and get more empathy for hearing-impaired people.

**PRIVACY**   
 Yes, name, contact information, interests, location history and more.

**INCLUSIVITY**   
 Yes, it assumes all deaf and hard of hearing people are able to see and are flexible in their hands, which is not the case. Additionally, it assumes that everyone's memory works the same, in spite of the fact that society is neurodiverse. Also, it assumes that the user wants to learn Dutch Sign Language without a dialect, although speaking a dialect might be more convenient, and that everyone can afford a Meta Quest headset, even though the poor keep getting poorer.

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# QUICKSCAN - CANVAS - HELPSIDETCH Sign Language Mixed Reality App

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**HUMAN VALUES** 

**How is the identity of the (intended) users affected by the technology?**


To help you answer this question think about sub questions like:

- If two friends use your product, how could it enhance or detract from their relationship?
- Does your product create new ways for people to interact?...

**TRANSPARENCY** 

**Is it explained to the users/stakeholders how the technology works and how the business model works?**

- Is it easy for users to find out how the technology works?
- Can a user understand or find out why your technology behaves in a certain way?
- Are the goals explained?
- Is the idea of the technology explained?
- Is the technology company transparent about the way their...

**IMPACT ON SOCIETY** 

**What is exactly the problem? Is it really a problem? Are you sure?**


Can you exactly define what the challenge is? What problem (what 'pain') does this technology want to solve? Can you make a clear definition of the problem? What 'pain' does this technology want to ease? Whose pain? Is it really a problem? For who? Will solving the problem make the world better? Are you sure? The problem definition will help you to determine...

**STAKEHOLDERS** 

**Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by...**


When thinking about the stakeholders, the most obvious one are of course the intended users, so start there. Next, list the stakeholders that are directly affected. Listing the users and directly affected stakeholders also gives an impression of the intended context of the technology.

...

**SUSTAINABILITY** 


**In what way is the direct and indirect energy use of this technology taken into account?**

One of the most prominent impacts on sustainability is energy efficiency. Consider what service you want this technology to provide and how this could be achieved with a minimal use of energy. Are improvements possible?

**HATEFUL AND CRIMINAL ACTORS** 

**In which way can the technology be used to break the law or avoid the consequences of breaking the law?**


Can you imagine ways that the technology can or will be used to break the law? Think about invading someone's privacy. Spying. Hurting people. Harassment. Steal things. Fraud/identity theft and so on. Or will people use the technology to avoid facing the consequences of breaking the law (using trackers to evade speed radars or using bitcoins to launder...)

**DATA** 

**Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into...**


There are fundamental issues with data. For example:

- Data is always subjective;
- Data collections are never complete;
- Correlation and causation are tricky concepts;
- Data collections are often biased;...

**FUTURE** 


**What could possibly happen with this technology in the future?**

Discuss this quickly and note your first thoughts here. Think about what happens when 100 million people use your product. How could communities, habits and norms change?

**PRIVACY** 

**Does the technology register personal data? If yes, what personal data?**

If this technology registers personal data you have to be aware of privacy legislation and the concept of privacy. Think hard about this question. Remember: personal data can be interpreted in a broad way. Maybe this technology does not collect personal data, but can be used to assemble personal data. If the technology collects special personal data (like...

**INCLUSIVITY** 

**Does this technology have a built-in bias?**

Do a brainstorm. Can you find a built-in bias in this technology? Maybe because of the way the data was collected, either by personal bias, historical bias, political bias or a lack of diversity in the people responsible for the design of the technology? How do you know this is not the case? Be critical. Be aware of your own biases....

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