Developing an accurate and accessible end-to-end lip reading system

WHO are we empathizing with?

Who is the person we want to understand?
What is the situation they are in?
What is their role in the situation?

speech recognition developers

Individuals with hearing impairments

Audio engineers

What do they HEAR?

What are they hearing others say?
What are they hearing from friends?
What are they hearing from colleagues?
What are they hearing second-hand?

Individuals with hearing impairments: They hear less or no audio and rely on lip reading for understanding speech.

Audio engineers: They hear the challenges of audio quality and noise.

Speech recognition developers: They hear the potential for enhancing their systems with lip reading.

What do they THINK and FEEL?

PAINS

What are their fears, frustrations, and anxieties?

Individuals with hearing impairments: Difficulty in understanding speech in noisy environments.

Speech recognition developers: Challenges in achieving high accuracy, especially in noisy scenarios.

Audio engineers: Struggles with noisy audio signals and unclear speech.

GAINS

What are their wants, needs, hopes, and dreams?

Individuals with hearing impairments: Improved communication and understanding of spoken language.

Audio engineers: Enhanced audio processing in challenging environments.

Speech recognition developers: Challenges in achieving high accuracy, especially in noisy scenarios.

What other thoughts and feelings might influence their behavior?

Desire for Inclusivity: Individuals with hearing impairments may have a strong desire to be included in conversations and interactions, motivating them to use and support technologies that improve communication.

Optimism: There might be an optimistic attitude among all user groups, hoping that advancements in lip reading technology can lead to better communication and more accurate speech recognition.

Gratitude: If our lip reading solution proves beneficial, individuals with hearing impairments may feel grateful for improved communication opportunities.

What do they need to DO?

What do they need to do differently?
What job(s) do they want or need to get done?
What decision(s) do they need to make?
How will we know they were successful?

Individuals with hearing impairments: Understand and communicate with others more effectively.

Audio engineers: Improve audio signal processing in challenging conditions.

Speech recognition developers: Enhance the accuracy of their systems, especially in noisy environments.

speech recognition developers: They see the potential for improving speech recognition accuracy.

Individuals with hearing impairments: They see people speaking and the movement of lips.

Audio engineers: They might see the challenges of noisy environments and unclear audio signals.

What do they SEE?

What do they see in the marketplace?
What do they see in their immediate environment?
What do they see others saying and doing?
What are they watching and reading?

What do they SAY?

What have we heard them say?
What can we magine them saying?

Individuals with hearing impairments: Difficulty in understanding speech in noisy environments.

Speech recognition developers: Challenges in achieving high accuracy, especially in noisy scenarios."

Audio engineers: Struggles with noisy audio signals and unclear speech.

What do they DO?

What do they do today?
What behavior have we observed?
What can we imagine them doing?

Individuals with hearing impairments rely on lip reading to compensate for their hearing loss.

Speech recognition developers seek ways to enhance their systems' accuracy, and integrating lip reading may be a potential solution.

Audio engineers work on audio quality improvement and may look for technologies to assist in challenging audio environments.