# Captions in XR Design Guide

## Purpose

This document is meant to sum up best practices on captions in XR. Organized by the [W3C Immersive Captions Community Group](#), it will be used to inform guidelines such as the [XAUR](#) and offer guidance for XR creators seeking to implement accessible captions.

If you have suggestions, please add comments or email the group at [public-immersive-captions@w3.org](#).

## Resources

- 📄 Immersive CG Findings - Final Draft
- [Meta VR caption guidelines](#)
- [XRA Developer's Guide](#)
- [Create accessible spatial experiences - WWDC23 - Videos - Apple Developer](#)
- Savio Menifer, Equal Entry: [Accessibility Virtual Reality: How to Add Captions Using Open Source](#) (and see [Chirp Captions on Github](#))
- ▶ Subtitles in XR: A Practical Framework  Video by creators of Job Simulator/Vacation Simulator
  - Also see this XR Access Symposium presentation on Cosmonius High subtitle implementation:
    - ▶ XR Access Symposium 2024 | 09 The Design of Owlchemy Labs' Subtitle …
- ▶ Virtual Worlds Made Accessible Beyond Sound: Presentation and Q&A with Myles …
- A11yVR:
  - ▶ Developing an Open Source Caption System for XR in Unity - Savio Menifer
  - ▶ Captions and Beyond: Building XR software for all users -
  - ▶ Live Subtitles in Augmented Reality Glasses - Alex Westner & Paul Mealy
- XR Access:
  - ▶ 2022 Deep Dive A1 | Immersive Captions and Sign Language
  - ▶ Multimedia for Deaf Viewers | Dr. Raja Kushalnagar
  - ▶ XR Access Stories: Meryl Evans - Full Video
- Research:
  - [Deaf and Hard-of-hearing Individuals' Preferences for Wearable and Mobile Sound Awareness Technologies](#)
  - [Live Captions in Virtual Reality (VR)](#)
  - [Immersive Captioning: Developing a framework for evaluating user needs](#)
  - [Towards Sound Accessibility in Virtual Reality](#)
  - [Universal access: user needs for immersive captioning](#)

- Advice
  - [What It's Like for a Deaf Person at a Captioned VR Presentation](#)
  - [Virtual Reality Accessibility: The Importance of Comfort Ratings and Reducing Motion](#)
  - [Accessible Virtual Reality: Advice from a Deaf Person on How to Make It Better](#)
  - [Automatic Captions: Our Experiments and Best Practices](#) (While not focused on VR ... the use of auto captions is possible)

# User requirements

# Anti-patterns

- Captions occluding important objects
- Captions being occluded by scene objects
- Caption depth different from objects in scene
- Captions too close to edge of vision

# General design guidance

- Font
- Background
- Speed
- Customization
- Positioning

# Design approaches for specific situations

- Speaker identification
- Non-speech sound
- Event identification
- Visually communicating volume/distance of speaker

# Recommended design patterns

Technical issues and solutions

Guidance for product-specific features