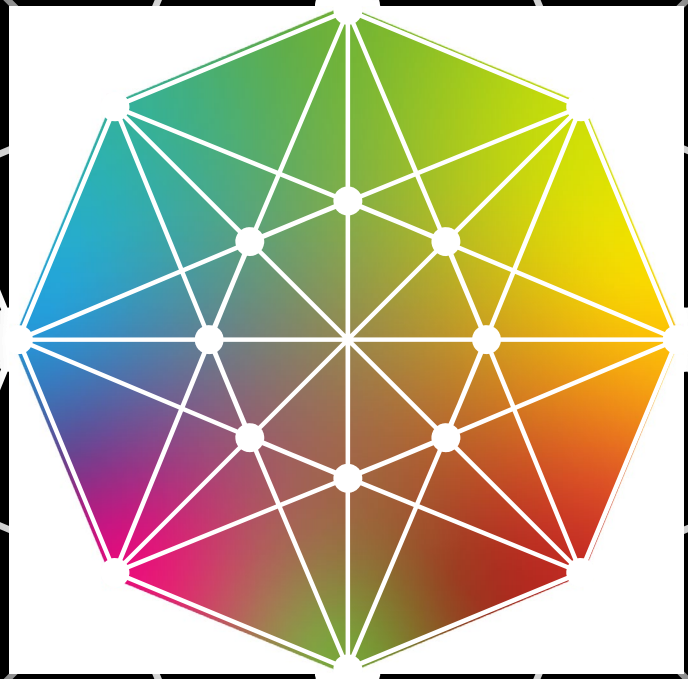
16TH ITU ACADEMIC CONFERENCE

ITU KALEIDOSCOPE
GENEVA2026

AI and frontier technologies for good

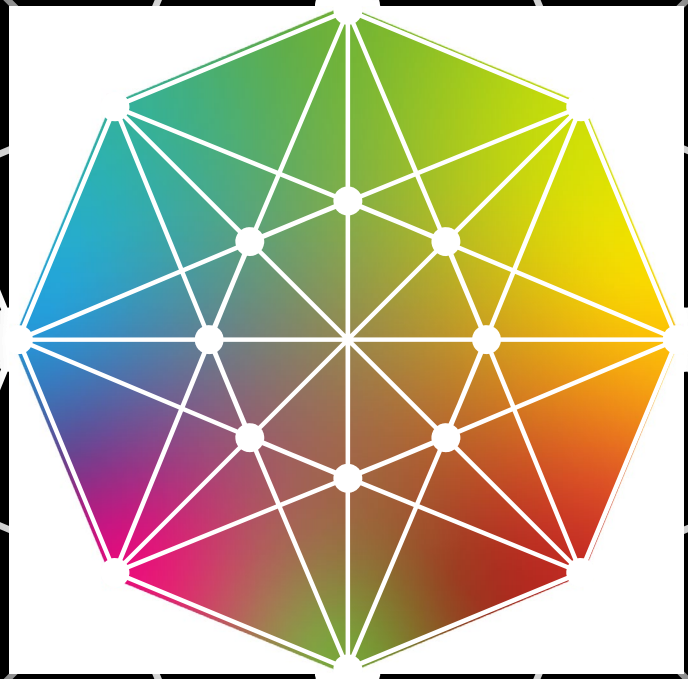
7-9 July 2026
Geneva, Switzerland

Hosted by AI for Good Global Summit



Artificial Intelligence Driven Sign Language Interpreting Avatars

July 2026



Estel·la Oncins
Universitat Autònoma de Barcelona

Track 3: Social, economic, environmental and policy dimensions of AI and frontier technologies

Accessibility in the Age of AI

Digital accessibility is essential for inclusion.

AI is transforming accessibility services:

- Close captions/Subtitling for D/deaf and Hard-of-hearing (SDH)
- Audio description
- Easy-to-Read content

Sign Language interpretation remains a major challenge.

AI-based Sign Language solutions

- Sign Language communication requires facial expressions, gaze, and body movements.
- These elements constitute **biometric data**, which the European AI Act classifies as **high-risk** in many deployment contexts.

Major barriers in AI-based Sign Language solutions

- **Under-investment** in Sign Language technologies.
- **Multimodal complexity**: meaning is expressed simultaneously through hands, face, eyes, and body.
- **Lack of large, high-quality datasets** for training AI systems.

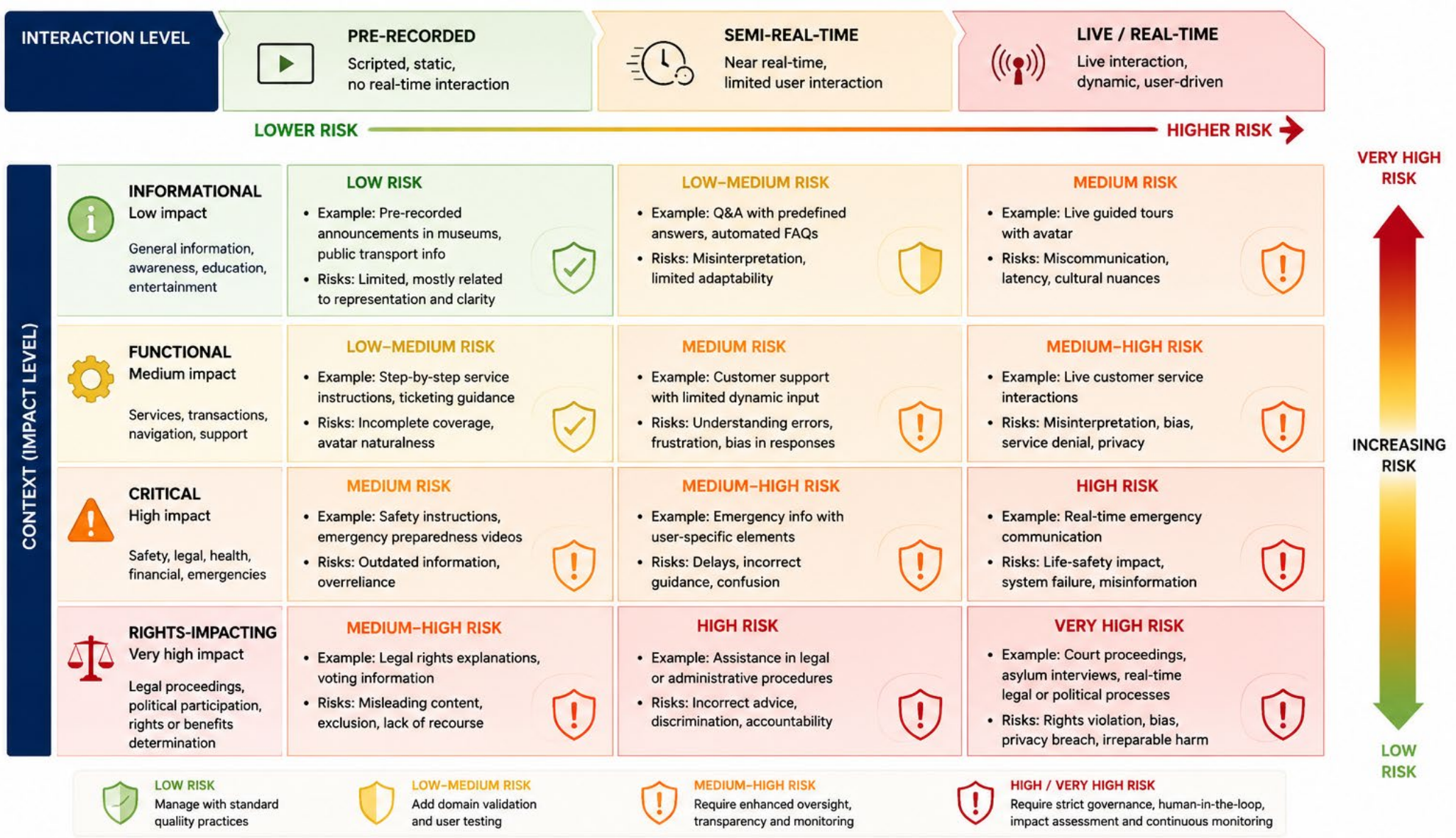
AI-Sign Language pipeline

Pipeline stage	Main risks	Recommended controls
Data collection	Biometric exposure, inadequate consent, demographic imbalance	Explicit consent templates, signer diversity targets, data minimization
Data annotation	Mislabelling, linguistic bias, inconsistent glossing	Sign Language validation, annotation guidelines and validation metrics
Model Training	Bias amplification, opacity	Bias testing protocols, explainability controls
Avatar Generation	Signing, cultural misrepresentation	Human evaluation panels, Deaf community co-design

AI-Sign Language risk management workflow

1. Identification of biometric and linguistic data categories during data collection.
2. Validation of annotation quality and linguistic consistency.
3. Assessment of model-related risks, including bias and opacity.
4. Evaluation of accessibility, transparency, and cultural representation in avatar generation.
5. Definition of mitigation measures and governance safeguards.
6. Validation with Deaf stakeholders and accessibility experts.

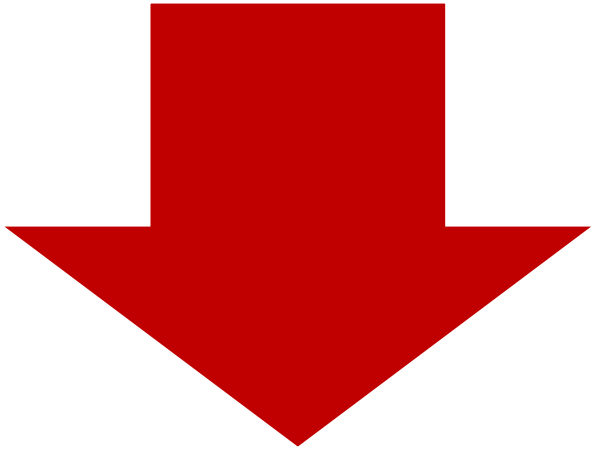
AI Risk Matrix: Context and Interaction Level



AI-Sign Language Avatars

Opportunities

AI-SL avatars can expand access to Sign Language across media, public services, and digital environments as requested by the European Accessibility Act.



Challenges

⚠ Current avatars still struggle with facial expressions, gestures, posture, and linguistic naturalness.

⚠ Concerns about transparency, trustworthiness, identity representation, and overreliance on automation.

Conclusions

Main considerations to build trustworthy AI SL solutions

Thank you!