

INTERACTION WITH LIFE-SIZE HOLOGRAPHIC KIOSKS FOR INDIGENOUS CULTURAL KNOWLEDGE PRESERVATION

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– BACKGROUND & MOTIVATION

Why life-size holographic presence?

For the First Nation of Na-Cho Nyäk Dun in Mayo, Yukon, the Northern Tutchone language and oral traditions face increasing threat from elder speaker loss and the disruption of intergenerational transmission caused by colonial policies. Static digital archives preserve words but lose what makes them meaningful: the presence of the speaker, the act of being directly addressed, and the relational depth of storytelling. A child cannot ask a question of a recording.

"when elders pass away, their language and associated knowledge are lost. Unlike Western societies, Indigenous communities cannot rely on written materials as substitutes, making the mode of access as critical as the act of archiving itself."

Godfrey et al., 2016

Life-size holographic displays offer something static formats cannot: spatial depth, the sensation of being spoken to directly, and the emotional affordances of presence. Kim & Wohn (2018) found audiences described holographic presentations as more like a conversation than observing a display.

The HoloBox kiosk

The HoloBox (ARHT Media), originally a conference telepresence unit, was repurposed as a cultural knowledge kiosk. It projects a full-height, three-dimensional rendering onto a transparent panel, producing the visual impression of a person standing in the enclosure at human scale. Visitors navigate via touchscreen. The device also supports live tele-presence when in-person elder visits are not possible.



– CO-DESIGN PROCESS

Community-driven iteration

Co-design sessions identified three primary areas: oral histories shared by community elders, demonstrations of traditional craft practices, and three-dimensional representations of cultural belongings.



Elder Stories



Craft Demos

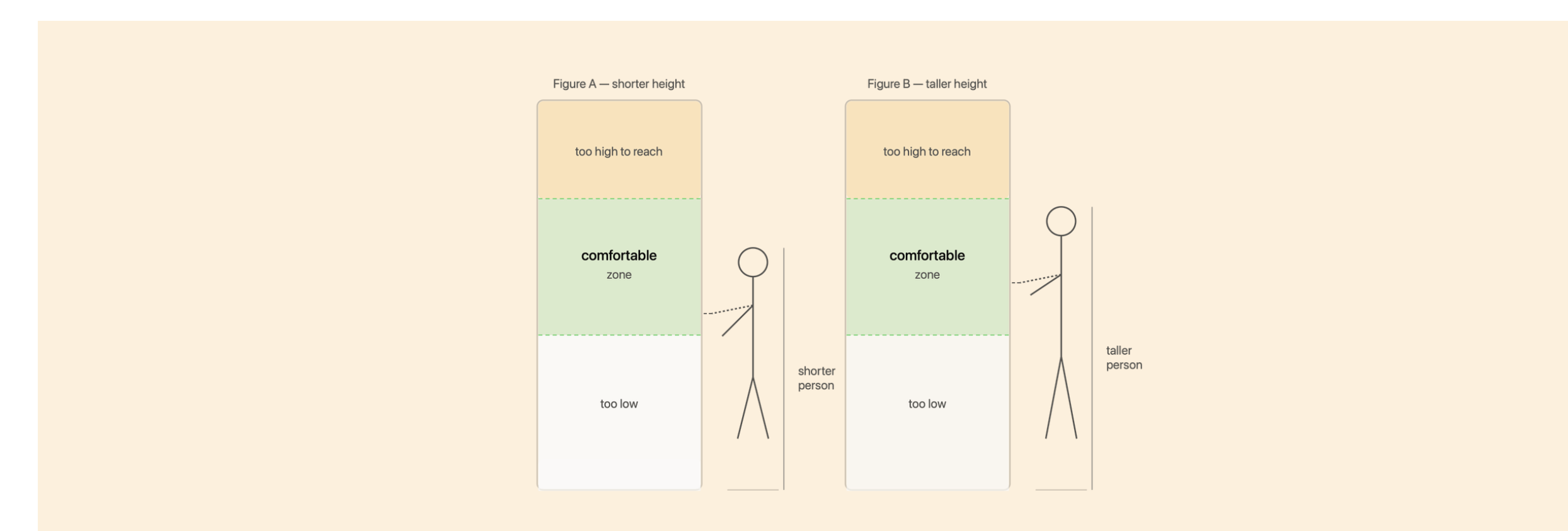


Community Belongings

– SYSTEM DESIGN

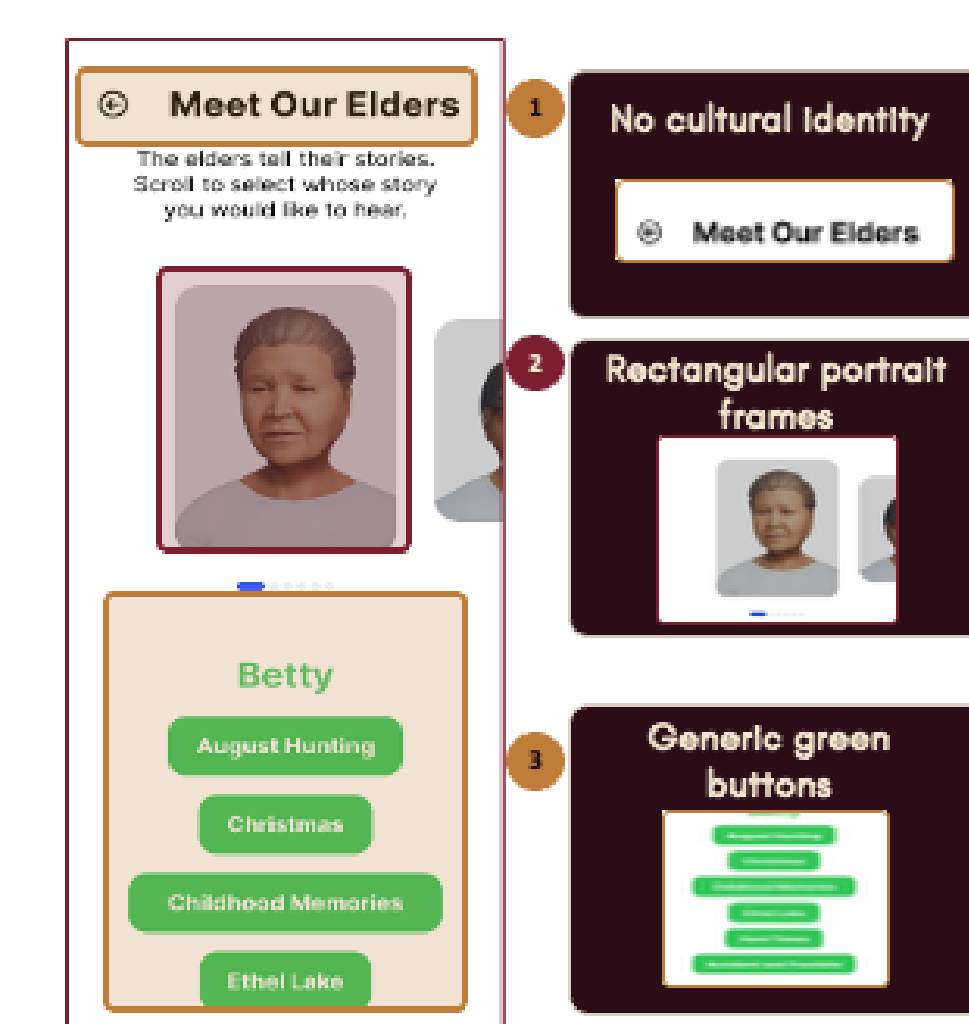
Designing the Holobox

The life-size format introduced specific design challenges related to physical interaction. The display is approximately the height of a standing adult.



First Iteration

The initial interface was functional but culturally generic.



Final Iteration

The final iteration replaced generic conventions with choices grounded in NND visual culture.



– KEY FINDINGS

Mayo community evaluation

- 1 Relational Presence**
Participants described the experience as like being told a story, not just watching a screen. The life-size format conveys the relational aspects of oral knowledge that static archives can't reproduce.
- 2 Group vs. Individual Mismatch**
Visitors came in groups, but the system was for individuals. Group behavior affected interaction, but the system wasn't designed to support it.
- 3 Trust as a Design Outcome**
As participants saw their decisions used in the system, community investment grew and open discussions about data sovereignty increased. Trust developed over time, not assumed at the start.

– CONCLUSION

Contributions to HCI

This research contributes to HCI by showing how holographic displays enable more immersive, culturally relevant ways to engage with digital knowledge. It highlights the need for co-design, attention to data sovereignty, and new interaction design approaches for life-size formats. The findings advance HCI discussions on culturally grounded technology and Indigenous knowledge preservation.

Future Directions

- 1 Integration of conversational artificial intelligence**
Conversational artificial intelligence will be integrated into the system to enable more responsive and dynamic exchanges between visitors and holographic cultural knowledge holders.
- 2 Redesign of group interaction models**
The interaction model will be redesigned to accommodate group arrivals, with specific attention to spatial zones, visitor approach strategies, and mechanisms for shared navigation.
- 3 Community-led content expansion**
The third direction is community-led content expansion. After the Mayo evaluation, more NND elders wanted to record stories and add cultural material.