Visual Metaphors for Notification into Virtual Environments

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Visual Metaphors – Motivation

- **Notification**
  - Communication between and within different stages on the RVC

  - Notify about ongoing events, distractions and communication approaches

  - Interrupts can occur at any stage, initiated by any involved stage

- **Plausibility Illusion**
  - Immersive media create the illusion that virtual content is perceived as if it were real

  - Requires Place Illusion and Plausibility Illusion

  - Slater et al. [1] recently stressed the importance of plausibility for a believable MR experience

  - Regaining plausibility is challenging

→ Using **visual metaphors** when designing **notifications** to maintain **high plausibility!**

[1] M. Slater, D. Banakou, A. Beacco, J. Gallego, F. Macia-Varela, and R. Oliva. A Separate Reality: An Update on Place Illusion and Plausibility in Virtual Reality. Frontiers in Virtual Reality, June 2022.

Visual Metaphors – Example and Related Work

- **Notification Source**
  - Human bystander
  - Moving or stationary objects
  - Animals

- **Degree of Notification**
  - Interruption and intrusiveness
  - Ranging from low to high levels

- **Type of Visual Notification**
  - Text, image and video notifications
  - Avatar
  - Pass-through

Visual Metaphors – Concept for Notification Metaphors

- ## User Notification – Hologram

(left) Hologram representation in Star Wars for remote communication.
G. Lucas (Director), I. Kershner (Director), and R. Marquand (Director).
Star wars trilogy. 20th Century Fox, 1977.

(right) Visual avatar representation as a Hologram in the video game Halo Infinite.
343Industries (Developer Studio) and SkyBox Labs (Developer Studio).
Halo infinite. Xbox Game Studios, 2021

- ## Abstract Notification – Display
- ## Abstract Notification – Wearable
- ## Abstract Notification – Message Delivery

Visual Metaphors – Concept for Notification Metaphors
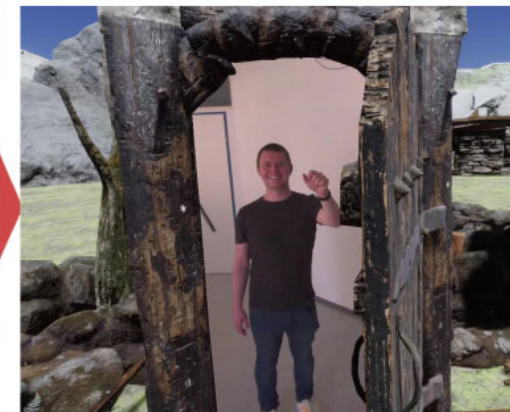
- **User Notification – Door**
  - Viewport or lens into another reality
  - Replicates recognisable behaviour linked to a door
  - Entering the same shared space
  - Corresponding graphic style
  - Example implementation

Visual Metaphors – Conclusion

- Available Technology
- Degree of Notification
- Setting of the Experience
- Type of Notification Source
- RVC stage

Technique	Avatar	Pass-Through	Text, Image and Video	Degree of Notification	Applicability
Door	✓	✓		High	Medium
Hologram	✓			High	High
Display			✓	Low	Low
Wearable			✓	Medium	High
Message Delivery			✓	Low	Medium

Acknowledgement

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