

Autonomous Agents and Avatars in REVERIE's Virtual Environment

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REVERIE is a



Siege of Haarlem (1572)



Teylers Museum (founded in 1784)

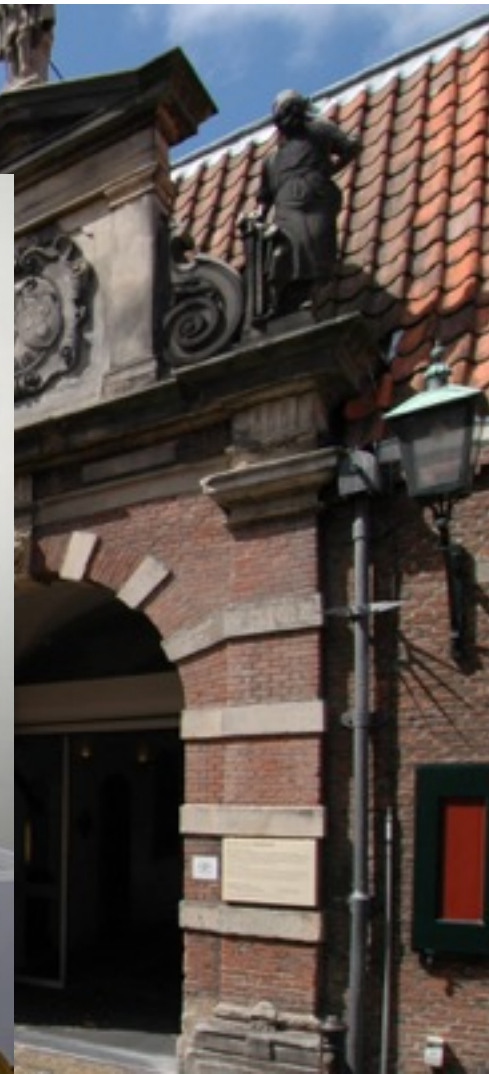


The Hiding Place (1940-1945)





Frans Hals Museum



These are facts and stories told on educational trips done in 1966-1967

Educational trips are not easy to organize

In REVERIE, an ambient, content-centric Internet-based immersive environment, people can work, meet, participate in live events, socialize and share experiences as they do in real life

REVERIE can be used for virtual educational trips (and for a 3D hangout and for Simon Says, and for ...)

An educational trip to the European Parliament



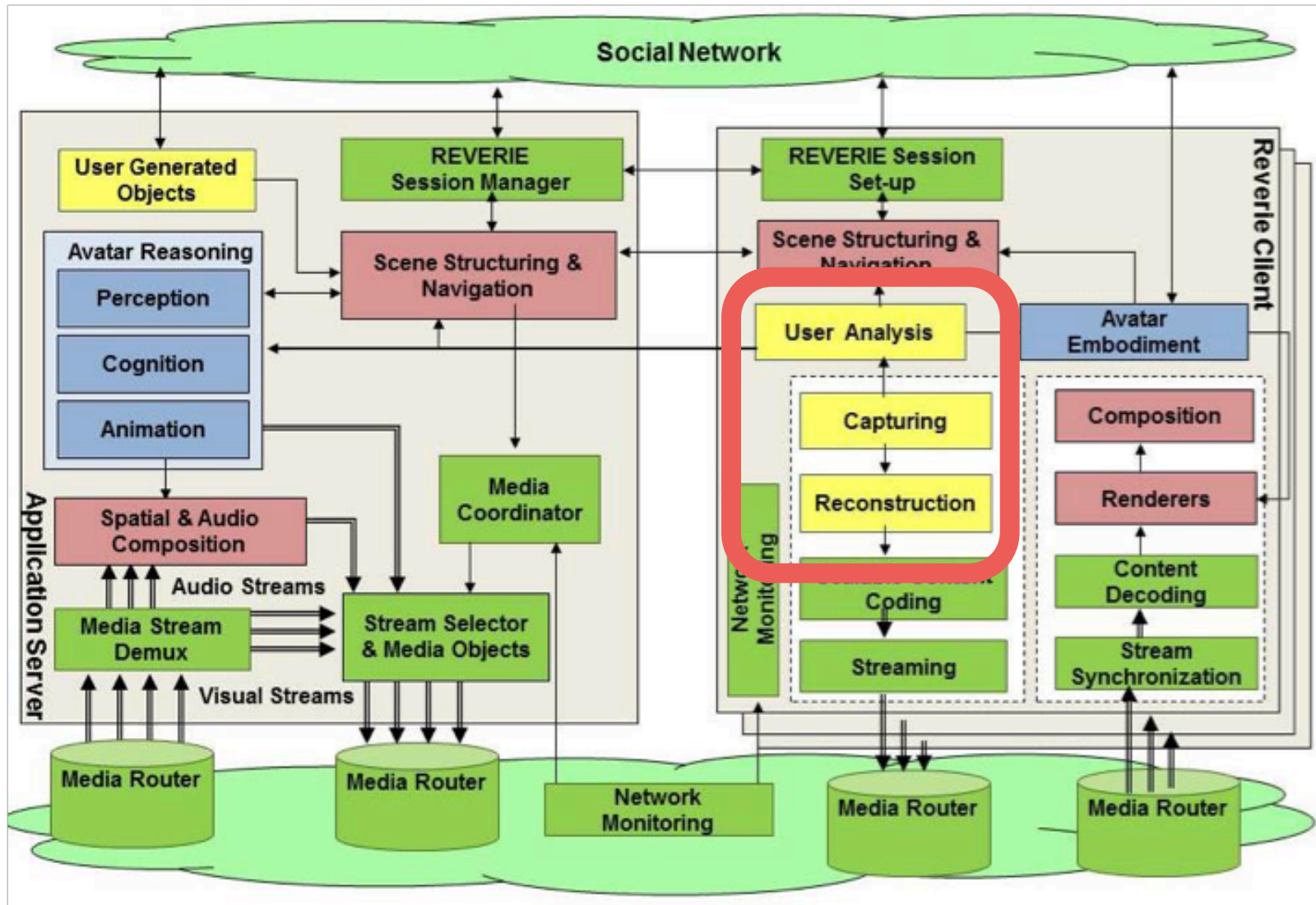
An educational trip to a virtual gallery



Objectives of REVERIE's Virtual Environment

- No need for fancy equipment.
- Users free to move and look around.
- Spatial audio.
- Virtual humans have natural behaviour:
 - gaze
 - movements
 - gestures
 - social interaction
- User driven and autonomous virtual characters plausibly interact.

REVERIE Architecture



HOW

User data captured by:

- webcam
- (Kinect)
- microphone

WHAT

Facial expressions for

- Puppeting (face)
- Arousal & Valence
- Agree or Disagree
- Attention

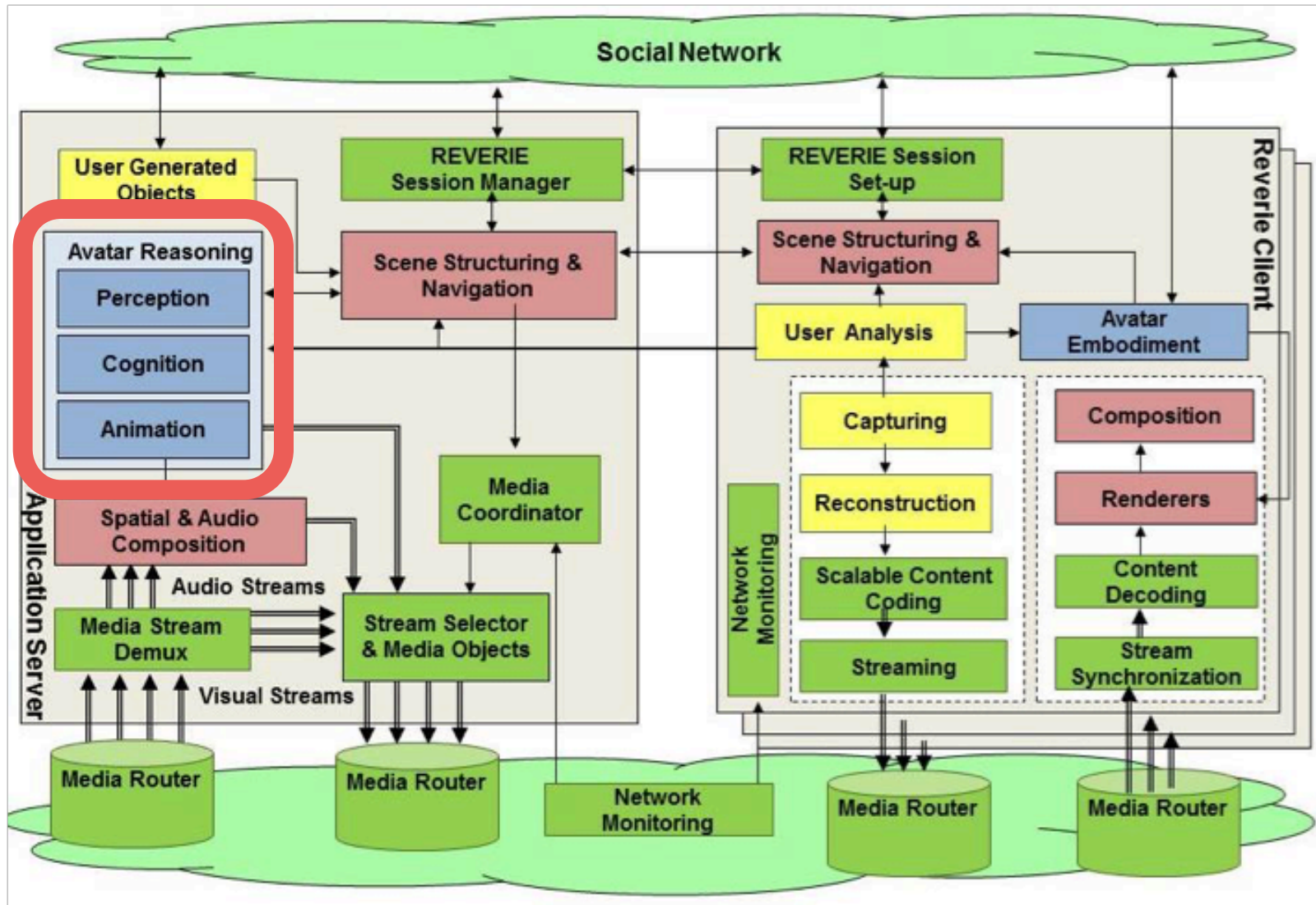
Body gestures for

- Puppeting (body)
- Navigation

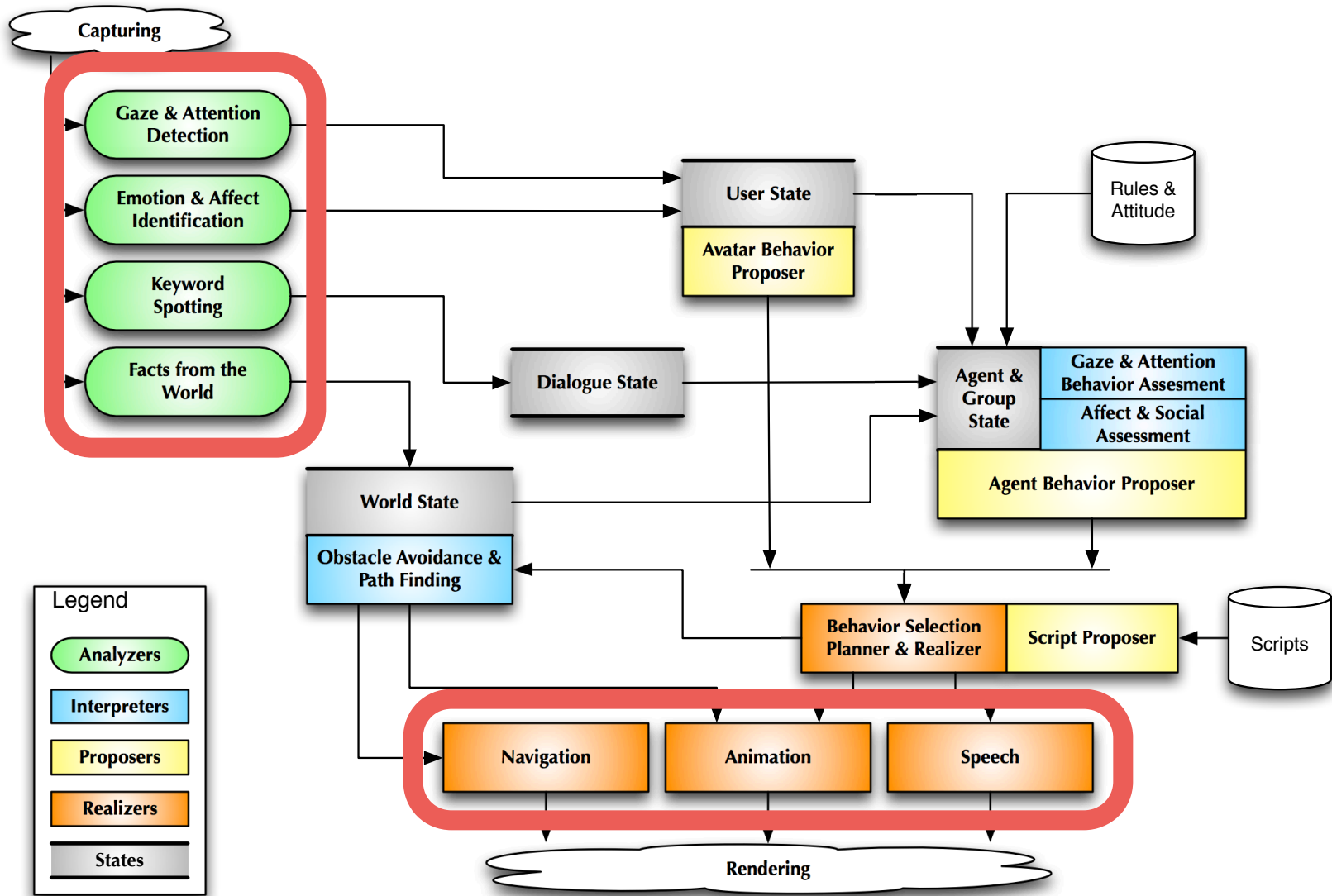
Speech for

- Simple dialog

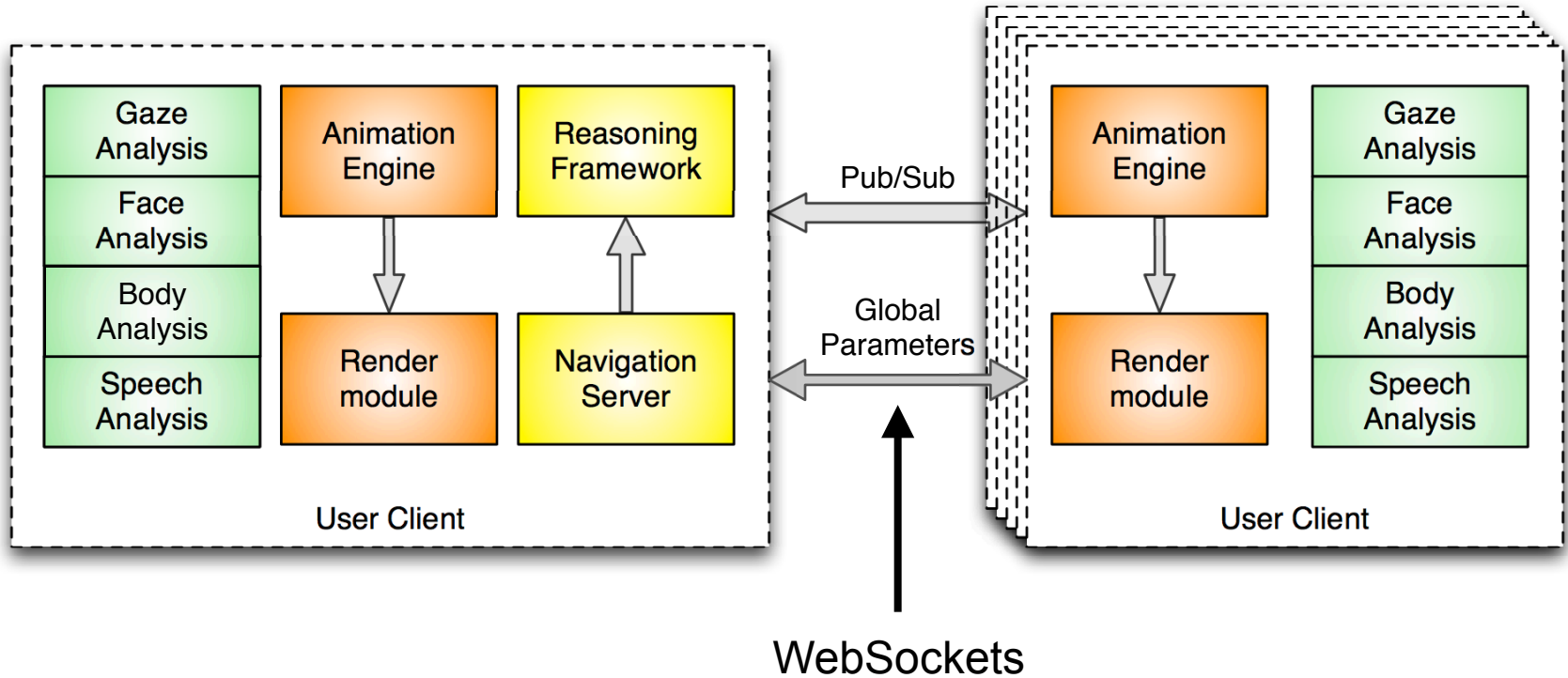
REVERIE Architecture



Reasoning Framework for Autonomy



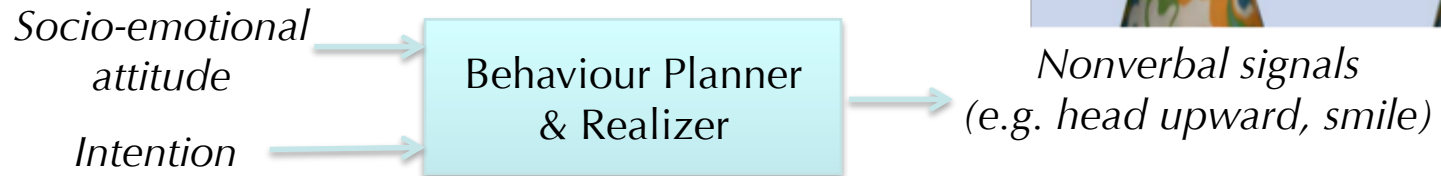
Configurable Clients



Reasoning in REVERIE

Comes in levels:

Agents: fully autonomous



Avatars: system adds autonomy where needed

- gaze
- gestures
- pose based on user interaction.

Autonomous Gaze

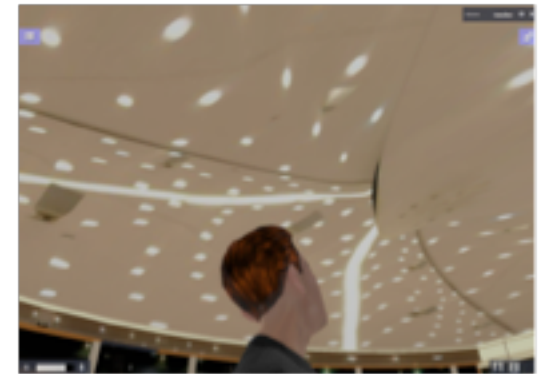
Attentive:



Not attentive:
(may lead to agent reaction)



Following user camera:



Autonomous Gesture



Request to speak

Options for Navigation

User controlled
(small incremental steps):

- Keyboard
- Mouse
- Kinect

Autonomous (path planning):

- Map
- Follow Me



Conclusion

- Agents react on users' activity.
- User control over avatar is configurable (the reasoning adds autonomy where needed).
- Agents and avatars have human-like behavior.
- Users feel being immersed.
- REVERIE components
 - can be deployed on regular computer system;
 - are well suited for web-based communication.

More detailed information:
<http://www.reveriefp7.eu/>