

Usability Testing for Interactive Agents

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Interactive Agents: Avatars & Virtual Agents

Usability Matrix: will / won't use it

Dedicated matrix for evaluation of A&VA

Real Evaluation vs. focus groups

Fully automated rather than WOZ

Basic is Functional

Human-
User



Computer-
Any
machine

Mission- task



4 best practices for UX interfaces




A good interface does
not need instructions

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Interface should provide good feedback to the user

Please repeat again.....☹️

You are in a noisy environment, please move to a quiet area 😊

We noticed that you are having difficulties to get the info. Let me be of assistance 😊😊

Technology should be carefully designed

A pilot flying a Western-built aircraft – a Boeing 737-500 crashed because of disorientation. The official report says the accident was at least partly caused by the fact that the Western and Russian artificial horizons (AH) – alternatively known as attitude director indicators (ADI) – work on a completely different psychology

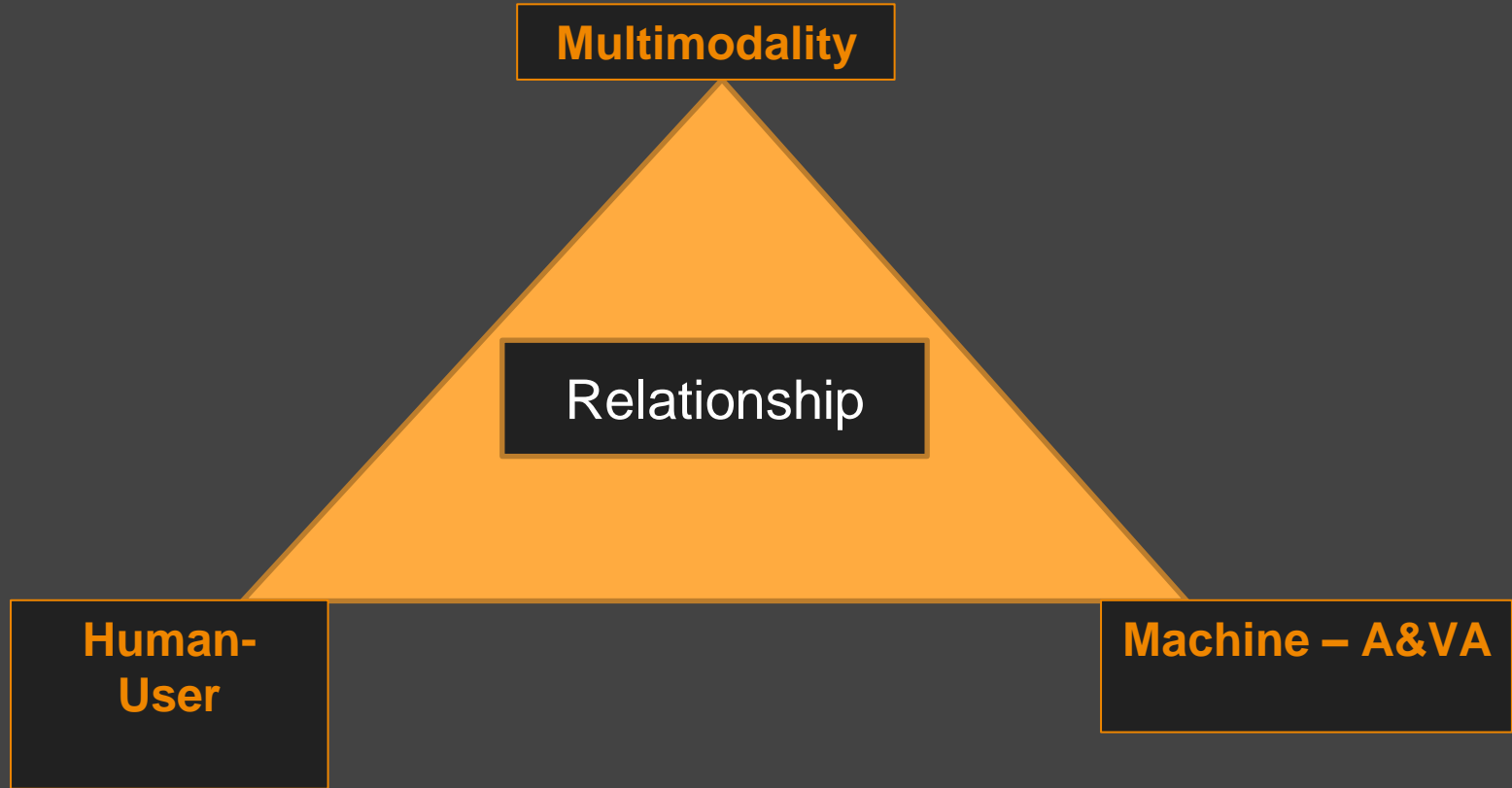


Usability Matrix for Avatars & Virtual Agents is a challenge:

- Cultural dependent
- Application & Domain dependent
- Target audience requirements and needs
- Involve emotional/relational issues



Interfacing Interactive Agents- The Context



Relationship Classification will be an essential factor for usability evaluation matrix

3 main relationships types between human users and Avatars & Virtual Agents:

Type 1- The Avatar as virtual me

Type 2 – A personalized/specialized agent

Type 3 - Me and a random conversational agent (Bot)

Health related interactive agents/avatars usability research of different segments in health environments:

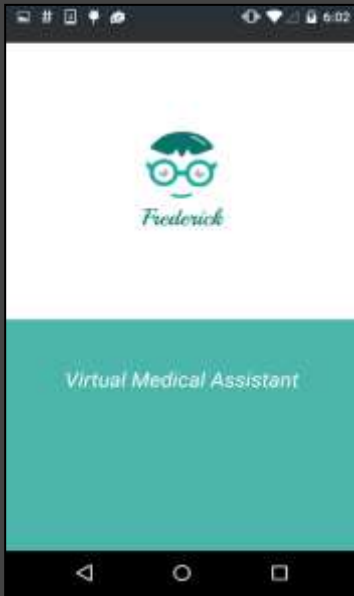
- ❑ Diabetes Patients
- ❑ Elderly Users
- ❑ Pregnant women

Why is Health interesting ?

- The health area is going through a technological transformation
- Patient / Care-giver → Customer / Service Provider
- Patients are knowledgeable, informed and suspicious
- They adapted self service for medical assistance

HaaS- Health as a Service

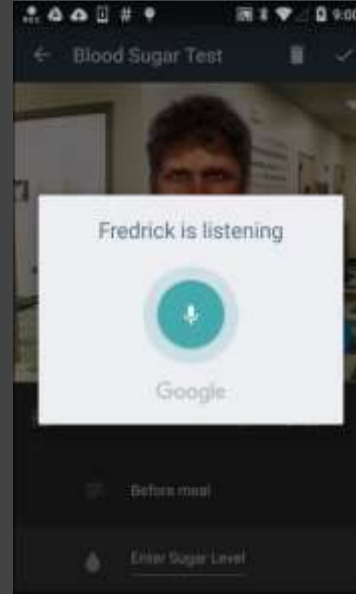
Fredrick- a Medical Avatar for Diabetes Patients



- Medical Avatar designed for mobile platform, assists Diabetes patients with day-to-day routines.
- Designed as a virtual representation of a medical assistant.
- Users can communicate using Multimodal interface.

Fredrick multimodal application includes the necessary components to manage the basic routines of the patient:

- Track blood sugar level
- Set reminders
- Watch blood sugar level statistics over time
- Share the data with external reviewers, and more.



Avatars for Pregnant Women



- Implementing the 3 types for relationship A&VA
- Using Multimodal interface for interaction
- Providing support in health, well being and lifestyle
- Focus group and pilot

Matrix for Evaluating A&VA

- ❑ The matrix will help us best assess the overall quality of the Avatar.
- ❑ Type of Relationship is critical to the “success or failure”
- ❑ This matrix of features, relationship type and grading & provides a novel approach to the evaluation of an avatar or virtual agent.
- ❑ User Experience hence determined by the type of relationship

“Terms of Endearment” (not the movie):

Skills

empathic

Informative

reliable

Sociable

Personal

Encouraging

trustworthy

medical

Intelligent

Predictive

Pleasant

Best
practices

Feature Matrix for Evaluation

- ❑ An evaluation framework which is based on a set of assessment features and directly linked to the 3 User-Avatar relationship types.
- ❑ For each relationship type the priority and weight of the feature is scaled and graded as L (low), M (medium), or H (high).
- ❑ For each feature we ask how crucial it is for the Interaction Type. Some of the features are based on general quality assurance best practices while others are specific to the A&VA platform.

Evaluation of Relationship

- **Ease of Use:** how friendly and easy it is to navigate the interface, and if it requires a sophisticated learning effort.
- **Visualization:** the external appearance of the A&VA in the application. How likeable is it and how well it represents the user, will determine the elderly's level of cooperation.
- **Persona:** the Avatar and its personality which is conveyed through visual, speech, facial and emotional gestures.
- **Personalization:** how important it is that the A&VA will be able to offer an array of services specifically personalized to the daily tasks and needs.

Relationship Techniques

- **Multimodal Interaction Technologies:** the ability to incorporate the largest number of input/output technologies
- **Gamification:** adding gaming components and rewards for task completion and improvement into the A&VA-user dialog.
- **Prediction algorithms and AI capabilities:** a natural, human-like interaction that leveraging the user experience and generating cooperation from the user.

Relationship Techniques

- **Data & Behavioral Analytics:** facilitate the recognition of user behavior patterns and the prediction of future user behavior which create a sense of familiarity and intimacy for the elderly user.
- **Error recovery:** the ability of the A&VA to gracefully recover from a dialog mistake or misunderstanding rather than create an infinite loop and a bad interaction experience.
- **Latency:** the delay between input into the system and the appearance of the desired output.

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