

# IZA as a Multimodale Information Kiosk

Stefan Göbel, Johanna Dechau

## German Abstract

Das primäre Ziel der Entwicklung des Kiosksystems »IZA – Info zum Anfassen« besteht in der Bereitstellung einer innovativen, immersiven Mixed-Reality Plattform, bei der Anwender über multimodale Interfaces in narrative Umgebungen eintauchen und aktiv teilhaben können. Besucher sollen sich möglichst intuitiv in einem Informationsraum bewegen, dabei werden sie von einem Mixed Reality Interface unterstützt. Ein virtueller Ansprechpartner geleitet den Besucher durch die Anwendung und präsentiert dramaturgisch interessant gestaltete, in die narrative Umgebungen integrierte Demonstrationen. Der dramaturgische Verlauf der Präsentation basiert auf einem Storymodell, welches den entsprechenden Anforderungen einer Präsentation (Märchen, Firmenpräsentation, Entertainment, Lernanwendung o.ä.) angepasst werden kann. Im Falle von »IZA – Info zum Anfassen«, einer Infotainment-Anwendung (Firmenpräsentation über einen Info-Kiosk) dient die modellhafte Adaption eines Verkaufsgesprächs als dramaturgischer Leitfaden. Die entwickelten Methoden und Konzepte wurden in Form eines Mixed Reality Informationskiosks zur Firmenpräsentation des ZGDV Darmstadt prototypisch realisiert.

## Introduction

The primary goal for the development of »IZA – Info zum Anfassen« (engl. Tangible Information) is to provide an innovative, immersive Mixed Reality platform, which allows users to visit and interact in an narrative environment via multimodal interfaces. The visitor should be given the capability to move intuitively in the information space by using the Mixed Reality interface. A virtual contact person accompanies the visitor through the application and presents him dramaturgically structured presentations which are embedded into the narrative environment. The dramaturgical course is based on a storymodel – it can be adapted to the requirements of the presentation of e.g. fairy tale structure, business or entertainment presentation. In the case of »IZA – Info zum Anfassen« as an infotainment application (business presentation of the ZGDV Darmstadt e.V.) the structure of a sales conversation was model-like adapted as the dramaturgical guide. The developed methods and concepts of IZA are prototypically implemented in the peculiarity of a multimodal mixed reality platform telling the story of ZGDV (presentation of the company: Business areas, research departments or projects).

When we review current information systems such as POI/POS's (Point of Information, Point of Sale) it's imperative to think about new ideas for the market by integrating new concepts for multimedia presentations and multimodal interactions. This will enable users to interact in a human-like behaviour storytelling methods. Virtual characters combined with state of the art recognition technologies will lead the human-computer interaction to a novel stage. Within the IZA project an interaction concept was developed which shows a variety of capabilities that can be used for designing and developing exciting new interfaces which furthermore can be customized for specific needs.

## Scenario

The basic scenario of the IZA system is set up in a guest lounge or reception area within a company. A visitor enters the company and spends some time at the guest lounge or reception area. Each individual visitor has different reasons and motivations for spending time in the area – for instance:

- he is waiting for his appointment
- he likes to have a short introduction about the global aims and goals as well as current activities of the company



Figure 1: IZA information booth



Figure 2: Z-INI as virtual character



Figure 3: Selection via gesture recognition



Figure 4: Selection via speech recognition

- he would like to get some entertainment in order to bridge the temporal gap, e.g. playing an «interesting little game» would help pass the time while waiting for the prior arranged appointment

In each situation described above visitors can use the time to digest information about the company. The information is provided by a dramatic, interesting and entertaining presentation. When approaching the area of the kiosk system the user will be attracted by the virtual character and take a closer look at the kiosk. Standing in front of the kiosk the visitor will be greeted by a friendly virtual character who has the role of the contact person and who is delivering the integrated information in a presentation. A physical character plays the role of a facilitator between the real and the virtual world. Both characters are trying to involve the visitor in the story and encourage him to interact with them. Spending time at the kiosk visitors will be guided through the information space based on story. Before leaving the kiosk they will be asked for their business cards and contact information. Getting in contact with the visitor by scanning the business card is a possible future main objective for the IZA kiosk system.

### An approach to a Sales Conversation

Structuring the visit at the IZA system an appropriate story has to be designed which fits the needs of the required presentation and other factors such as the target group, the purpose, the duration and the decided

environment in which the presentation will be given. The planned structure of the story is called the story-model. This storymodel is the underlying structure which guarantees the precise sequence of the presentation. For the needs of IZA an approach to a sales conversation needs to be suitable. During his visit to the kiosk the visitor passes through different phases of the presentation. The level of interactivity varies from phase to phase. The following phases are essential for the IZA concept :

### Interactions at the multimodal interfaces

The concept of the interface is based on multimodal interactions that allows users to interact and navigate at the kiosk. The focus lies with the development of user friendly and intuitive interaction techniques to access the information space. A set of interactions will be described:

#### Be aware of the visitor (Circles of perception)

- The virtual character must be aware when a visitor approaches the kiosk. The awareness is activated by distance sensors assembled around the kiosk. The area of recognition is subdivided into two circles – the outer circle of perception (ca. 7-10 m) and the inner circle of perception (ca. 1-3 m). The virtual character uses this information about the proximity of the user to catch their attention and attract him to visit the kiosk. The movements of the virtual character are large and expansive when the user is in the outer circle of perception in order to attract the visitor's attention

Phase	Description	Level of interactivity
Introduction of the characters /kiosk system (functionalities etc.)	The virtual and physical character are introducing themselves. Welcome the visitor at the kiosk and introducing the kiosk system and its functionalities	low
Overview of the topics	A short overview is given on the topics which can be presented.	low
Demo phase	The visitor is making his choices and the presentations are held – additional information is offered.	high
Contact	Before saying good bye to the visitor the characters have the motivation to get in contact with the visitor. A transfer of the business card is desired.	medium
Good bye	The character says good bye to the user.	low

even though the kiosk may only be in the visitor's peripheral vision. While staying at the inner circle of perception the character adapts to a face-to-face conversation.

**Choice of topic**

- The visitor should control the choice of topic of the presentation
- Physical information material (such as flyers) are laid out at the kiosk and maybe used by the visitor to select a topic. A video system recognizes the users selection and virtual character imparts details about the topic and shows the integrated multimedia presentation.

**Yes / No Decision**

- The visitor guides the virtual character to his points of interest During the presentation the user interacts with the virtual character to lead him through the offered multimedia content. Based on a conversation the visitor has the opportunity to agree or disagree on the suggested course of the presentation. Fixed areas at the interfaces perform as areas for YES (green area) and NO (red area) via video recognition. The selection of an area influences the ongoing course of the presentation. Running concurrently with the video recognition the visitor can also use speech recognition to select his choice.

**Selection of media**

- The visitor can choose different media types around the chosen topic. After choosing the main topic (choice of topic, see above)



Figure 5: Choice of a topic via flyer

the virtual character presents a selection of media based on the topic to the visitor. Different media can be presented such as video, slide shows, pictures and 3D animations. Three areas are shown on the display which can be activated through the visitors hand gesture. A feedback functionality gives the visitor a hint about his choice. The scenario can be seen in Figure 3. When the visitor chooses a media type the virtual character will present it embedded in its world.

**Getting in Contact**

- The visitor is able to get in contact with the company via his business card. When coming to the phase of Contact the virtual character is interested in information about the visitor. In order to ensure contact with the visitor the virtual character motivates the visitor to put his business card into the scanner which is installed at the information kiosk.



Figure 6: Projects detected by barcodes

**Are you interested in the new generation of kiosk systems?**

The IZA system can be designed for any individual solution in your company. The usage can be easily adapted to customers needs and ideas. For authoring the presented topics and themes an intuitive authoring environment is available. The modularity of the system provides different storymodels and allows customization of the following components:

- Storymodel (The overall concept of the presentation for e.g. »sales conversation« or »fairy tale«)
- Virtual character (The VRML-based environment can load and show a customized character. It also supports the H-Anim standard for Animation)
- The tangible Interface (The look and feel of the interface and the set of possible interactions can be easily customized)
- The content (The content and dialogs can be designed for your individual needs)

For presenting your content with the IZA renting of a prototype system is optional

**Points of contact**

Dr.-Ing. Stefan Göbel  
 Johanna Dechau  
 ZGDV, Darmstadt,  
 Germany  
 Email: stefan.goebel@zgdv.de  
 johanna.dechau@zgdv.de



Figure 7: Interaction board / YES/NO areas



Figure 8: Highlighted request