Abstract. Computers are moving more and more from the desktop into our everyday life. Today’s challenge is to build a suitable visualization architecture for anthropomorphic conversational user interfaces which will run on different devices like laptops, PDAs and smart phones. Concrete implementations as part of conversational interfaces are User-Interface Avatars which are anthropomorphic representatives on the base of artificial 3D characters. The existing system methods, the graphical output chain and different optimization strategies are discussed.

1 Introduction

Computers are becoming more and more ubiquitous. You can see it, if you look around you: Laptops, PDAs, smartphones and other gadgets like MP3-Players. They are moving from the desktop into our everyday lives. This leads to the important question of how the user interfaces should look like for this new generation of computing.

An important field of activity at the Interactive Graphics Systems Group (GRIS) are Conversational User Interfaces where the primary goal is to give the computer a face to talk with. Conversational User Interfaces uses natural dialog-centric communication patterns to interact with the computer. The user is migrating from the paradigm of direct manipulation to the usage of assistance functionality [1]. The goal is the development of software architecture to shift complex tasks to human like assistants (avatars) which can be incorporated on different stationary and mobile devices like laptops, PDAs and mobile phones.

Concrete implementations at the Interactive Graphics Systems Group (GRIS) as part of conversational interfaces are User-Interface Agents/Avatars which are anthropomorphic representatives on the base of artificial 3D characters. They represent a human-computer interaction with the explicit presence of emotional aspects contained in every communication using facial expressions, gestures, and poses [2], [3]. The overall human-machine dialogue is controlled by a preceding dialogue control, which manages all user-interface components and modalities. It also decides on given sen-
tences to be generated by a speech synthesis software, and delivers them to the avatar platform.

The main idea behind this paper is to make this avatar interface available on different devices and optimize the graphical output. This includes different types of avatars (3D, 2D and pseudo-3D) and optimization methods for them. We will describe possible optimizations for the 3D-avatar including the whole graphical processing chain. In figure 1 the idea of the different renderers and the adaptation is illustrated.

As far as known there are no efforts to implement an avatar with such different graphical output. The systems use either 3D or 2D output and often stream the graphical data in a mobile context. Furthermore nobody scales the complexity of the avatar automatically while the system is running. Of course there are systems where you can load avatars with different graphical complexity at the beginning. Some examples of avatars, even in a mobile context can be found on the sites [4].

2 Overview

Our goal is to make this conversational user avatar available for different use cases, different users and different devices. This leads to the following requirements of a scalable avatar. The user interface avatar should be adaptable to different performance conditions, environments and devices. To achieve this goal the graphical representation should be scalable depending on the graphic performance, the environment, the