Chapter IV

SENDA:
A Whole Process to Develop Virtual Environments

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Abstract

The use of virtual environments (VEs) is increasing rapidly, and people are demanding easier and more credible ways to interact with these new sites. We define VEs as a special kind of 3D virtual environment, inhabited by avatars which represent humans in the VE, or even autonomous agents. This kind of software was selected because of its increasing importance as the new future trend in interactive software applications. From a software engineering point of view, VEs can be seen as a special kind of information system, so they must be analyzed, designed, and implemented in this respect.
Our aim is to improve software engineering’s traditional software processes to achieve quality VEs. In this chapter, we present a framework called SENDA, which defines a formal process model to develop VEs.

**Introduction**

With the increase of computer networks, and especially Internet, people have felt attracted to applications like CHATs, MUDs (multi-user dungeons), and social VEs (virtual environments). These are different generations of applications where the main idea is not only interacting with the system, but also interacting with other users connected through these networks in different parts of the world.

Today, virtual environments are being used in many fields: social, finance, commerce, banking, information system sciences, communication, CSCWs (computer supported collaborative worlds), education, entertainment and leisure, medicine, architecture, and geography (CALT, 2000). This kind of application also seems to be the future of interactive programming (Berenguer, 1997) and can be used especially to demonstrate situations at risk.

We are going to focus on the most recent VEs based on 3D graphics and inhabited by Avatars and autonomous agents. These types of applications are called VEs, the acronym for virtual environments. They are also referred to as multi-user virtual worlds (Damer, 1997), but in essence, they are the same.

In the earlier VEs the following technological problems were solved:

- Multi-user communication
- Graphic representation
- Real-time communication

Much of the research done in the inhabited virtual environments field has focused on computer graphics rendering technologies and communication protocols.

Nowadays, a large number of VEs’ technical problems have been solved. Therefore, our next goal is to provide these VEs with enough support to develop these environments. However, it is difficult to find reports on the process that must be followed to develop VEs. This may be due to insufficient experience in this field. We can say that VE development methods and processes are in their infancy. At the moment, the development of VEs is not following a mature
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