Microcosm: Support for virtual communities via an on-line graphical environment

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ABSTRACT

Microcosm is an example of a virtual world, providing long-term, primarily (but not exclusively) synchronous communication among large, distributed communities, whose members are represented by virtual identities known as avatars. It provides support for establishing an identity, social interaction, navigation, interacting with objects, customization and extensibility, and security.

Keywords

Virtual worlds, virtual communities, avatars.

INTRODUCTION

Microcosm is an example of a virtual world, an environment that supports long-term, primarily (but not exclusively) synchronous communication among large, distributed communities, whose members are usually represented by virtual identities known as avatars. Although virtual worlds are currently used for socialization and entertainment, we expect them to become environments for learning, workplace collaboration, and commerce (Morningstar & Farmer, 1990). Microcosm provides support for establishing an identity, social interaction, navigation, interacting with objects, customization and extensibility, and security.

IDENTITY

The basic premise behind Microcosm, like most virtual worlds, is that users are represented by avatars. It is through the avatar that the user navigates, interacts with others, and generally behaves in the world. Although avatars may change their appearance and their name, Microcosm enables users to keep track of the constant identity behind the avatar so that avatars may build reputations while still having the freedom to experiment with their appearance.

SOCIAL INTERACTION

Social interaction is accomplished via word balloons, gestures and facial expressions, and point-to-point audio. Word balloons come in different shapes to support different types of non-linguistic content, which can also be expressed by a range of facial expressions (e.g. happy, angry) and gestures (e.g. jump, wave, head nod). Users can send each

other "telepathy" word balloons that are seen only by the avatar(s) addressed. Using audio gives users a more immediate but also more exposed feeling.

Figure 1. Some avatars in a Microcosm region. The word balloons are color coded and appear over their heads. The label over the avatar (Dax) indicates her name. The buttons at the bottom allow the avatar to gesture, change facial expression, and use different word balloon styles. The last balloon is a private "telepathy" message from Bumble Bee to Dax (as seen from Bumble Bee's point of view). Bumble Bee is an example of a user-created avatar.

Every user has an Address Book to keep track of avatars. Each avatar can provide information about itself, including demographic information, hobbies, and a general "essay." Anyone can get anyone else's address book page and find out what they've chosen to publicize about themselves. If they find someone who has similar interests, they might initiate contact with them about that topic. In addition, avatars can ask to be notified when their friends arrive and leave, and they can check the on-line status of any avatar. However, privacy controls allow avatars to block anyone from tracking them.

NAVIGATION

Like most virtual worlds, Microcosm is based on a place-based metaphor. The world is made up of neighborhoods, which in turn are made up of regions, single screen-sized views of a place. They may be inside a room or a part of an outdoor space. Each neighborhood has its own feel to it and is meant to attract different types of people. Avatars can walk around within a region, walk to an adjacent region, or teleport to a non-adjacent region via a teleport list or a portal in the world. For example, the photography club might have a poster on a public wall that teleports people to their region.

Each avatar has its own "turf," or a set of regions that it owns and that is hosted on the user's machine. Avatrs can choose from a set of turfs and then customize their contents and appearance. Turfs provide a place for private interactions, an alternative to walking around in the public spaces. In fact, it is possible for avatars to never go to Microcosm's neighborhoods. They can simply set up their turfs and connect them together to create their own little "micronets."

INTERACTION WITH OBJECTS

Microcosm is populated with objects. It has furniture, toys, household items, etc. Users can pick objects up and put them down. They can carry many objects with them anywhere they go by putting them in their "magic bag," which conveniently, if ridiculously, holds anything from a jelly bean to a car. Some objects are more active. For example, a glass of beer can be "drunk" by having the avatar bring it to its mouth, which causes level of liquid to go down. They can do this a few times before the beer disappears and it's time for a refill. Avatars can give each other objects, which helps develop social relationships.

CUSTOMIZATION AND EXTENSIBILITY

Avatars are given "catalogs" of objects, that display all the objects available to them and from which they can instantiate any object. Avatars use objects from their catalogs to customize themselves and their environment. For example, they can get furniture objects and use them to furnish their turfs. They can customize their avatar by wearing different articles of clothing and by putting on different "masks," which are essentially a way of changing the avatar's face. In addition, there is a "swatch" catalog, which allows avatars to change the pattern or color of other objects. For example, users can change a couch from blue velvet, to cow hide, to polka dots by applying different swatches to it. The combination of swatches with many types of objects allows avatars a broad range of expression as they customize themselves and their turf.

In addition, users can import their own art to create new swatches. They can also create their own avatars or masks. For example, someone could take pictures of their head in eight orientations, import them, and turn them into a mask. Or they can design their own mask in a image editing tool and import it. The Bumble Bee avatar in Figure 1 in an example of a user-created avatar.

SECURITY

Microcosm provides users with security assurances at various levels. One type of security protects users' privacy. Avatars can give out information about themselves so that only people with privacy privileges can see it. And they can choose who can track their arrivals and departures. They can decide on a global or per-avatar basis who can do such things as send them telepathy, make audio connections with them, hand them things, visit their turf, and a range of other social activities.

A different type of security allows users (and in particular parents) to protect themselves (or their kids) from things they do not want to be exposed to. It works like this. A region can require that all the objects in it have been granted specific types of "certificates," for example a "Kidsafe" certificate. If anyone tries to enter the region with anything that does not have a Kidsafe certificate, it will not be allowed entry. If they enter the region and then try to take a non-Kidsafe object out of their bag, they will not be allowed to do so. The owner of the region can be assured that they will not be exposed to non-Kidsafe things.

Users get their objects certified by applying to the appropriate Certification Agency, which evaluates the object and decides whether it meets their criteria. That agency establishes a reputation for certifying certain types of objects, and people choose whether they wish to require their "stamp of approval."

ACKNOWLEDGMENTS

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