Navigation in Virtual Social Spaces

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Research Approach

Research questions
• What do users do in the virtual space? (activities & context)
• How do users navigate and orient themselves? (problems)
• How could navigation of users be supported? (usability)
• How can virtual, user generated content analytically be captured? (context)

Principles of Human-centric Reseach
interdisciplinary, activity centered, problem driven, context bound, usable

Approach
To answer these questions, an *interdisciplinary* research group has formed, consisting of members in the field of "technological Sociology" and "machine leaning". We investigate these question based on a detailed analysis of a navigation supporting prototype, the "Second Life™ Location Recommender System" (SLLoRS).
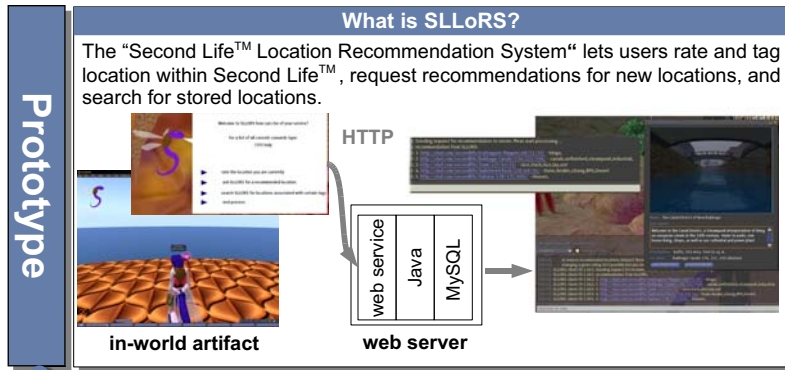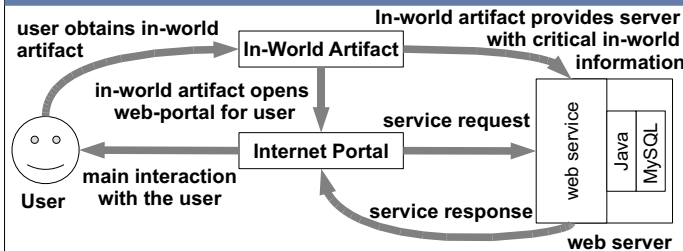
Interface Redesign

Usability tests on the prototype indicate massive drawbacks because the interface is implemented in the restricted environment of Second Life™
• slow interface response
• poor interaction possibilities with the user

Conclusion:
Move the main interface implementation to a Web service which is connected to a minimal Second Life™ artifact.
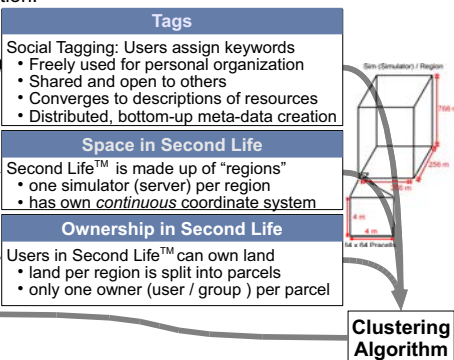
Interface Idea

user obtains in-world artifact
In-World Artifact
In-world artifact provides server with critical in-world information
in-world artifact opens web-portal for user
Internet Portal
service request
service response
web service | Java | MySQL
web server
main interaction with the user
User

From Positions to Locations

When do two ratings in one region belong to the same logical location? We solve this problem by clustering(G-Means clustering) ratings, using three different types of information:
• Tags
• Euclidean coordinates
• Ownership information

Tags
Social Tagging: Users assign keywords
• Freely used for personal organization
• Shared and open to others
• Converges to descriptions of resources
• Distributed, bottom-up meta-data creation

Space in Second Life
Second Life™ is made up of "regions"
• one simulator (server) per region
• has own *continuous* coordinate system

Ownership in Second Life
Users in Second Life™ can own land
• land per region is split into parcels
• only one owner (user / group) per parcel

Virtual 3D World

Model of 3D-World

Clustering Algorithm

Results

Users want to know who provided a recommendation, in contrast to conventional, anonymous recommender systems.
► Develop functions that mirror the navigation activities of users as:
• Search engine for virtual locations with user feedback in form of ratings or recommendations, based on user profile similarity
• Personalized bookmarking service for virtual locations, to store, manage exchange them landmarks between users

What is SLLoRS?

The "Second Life™ Location Recommendation System" lets users rate and tag location within Second Life™, request recommendations for new locations, and search for stored locations.

HTTP

web service | Java | MySQL

in-world artifact　　　**web server**

Usability Testing

Method: Usability tests conducted with „Thinking Aloud"
• „Thinking Aloud" study with 5 test persons
• Redesign of the control elements and the interaction flow
• Workshop for the dissemination of the results

Results:
• Central functions should be more prominent positioned
• Design should be arranged more compact to reduce the click-rate
• Functional and supporting system elements should be separated
• Stronger feedback to user input

Practice reconstruction

Methode: Focussed observation, interviews and structural mapping technique
• Observation of the navigation practices and problems of 8 test persons
• Interviews regarding the observed practices
• Validation of the data using the structural mapping technique
• Identification of typical and connectable navigation habits

Results:

Social Gamer
• Interested in getting to know new people
• Looking to visit parties and other social events

Fashionistas
• Working on self expression and avatar design
• Looking for places with extravagant and cheap clothing and accessoires

Builder
• Interested in displaying their creativity
• Searching for construction materials and inspiring places

Common navigation strategy
To find anything (people, products, places):
1. Go to your favorite place (mostly leisure or music clubs)
2. Find people with interesting and shared appearance or taste
   1. Watch their profile for recommendations
   2. Watch their clothing and accessories for   designer informations
   3. Talk to them to get even more landmarks
3. Go to the associated landmark and find what you want

Design workshops

Method: Participative tool development via design workshops
• Design workshops will be conducted with **2-4 test persons and developers** taking into account the afore identified activities and contexts as well as the navigation and usability problems
• Documentation of the identified functional proposals
To be conducted in February/March 09

(Vertical section labels: Prototype, Usability, Interface, Algorithms, Practices: Second Life, Services, Practices: Tool)