An Agent-based centralized e-Marketplace in a Virtual Environment

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Outline

- Motivation
- Conceptual Design & Architecture
- The e-Tourism Environment “Itchy Feet”
- Showcases
- Conclusion & Future Work
Motivation

- **3D Virtual Worlds**
  - Realistic and immersive experience
  - Implicitly address social interaction

- **Agents**
  - Use Agents when data and expertise is distributed
  - Less is known about the interaction of Humans and Agents
Conceptual Design

Legend
1) Elaine attempts to open the door
2) Requests action: "open door"
3) Corresponding message is forwarded for validation
4) Agent is informed about the requested action
5) Validation response: "action permitted"
6) Response is forwarded
7) Action is performed and perceived by Elaine, i.e. the door opens
Environment Specification

- Start with an Electronic Institution design …
Environment Specification

• … create (generate) a floor plan …
Environment Specification

- … and specify a mapping specification
  - Agent Mapping – How an agent is visualized
  - Room Mapping – Which scene is mapped onto which room
  - Door Mapping – Which scene/transition is mapped onto which door
Architecture

Torque Layer

Middleware Layer

Ameli Layer

Data Management

Data Store (User Data, Domain Data)
The Itchy Feet Marketplace

- Electronic Institutions are useful for modeling marketplaces
- Itchy Feet: a marketplace for e-Tourism
  - Buy products in auctions
  - Buy products at fixed prices
  - Get advice from travel experts
  - Share knowledge and communicate with travelers around the world
3D Virtual World of Itchy Feet

- Consists of three buildings and a global service provider
  - Travel Agency, Forum, Auction House, Ether
Showcase 1
Elaine logs into Itchy Feet
… at the same time in the Multi-Agent System …
The message `{inform (ForumAgent ForumAgent) (all all) startScene }` has been said in the scene `{DForumScene ForumAgent}`.

The message `{inform (Auctioneer1 Auctioneer) (all all) startScene }` has been said in the scene `{DAuction AuctionScene}`.

The message `{inform (Auctioneer1 Auctioneer) (all all) startScene }` has been said in the scene `{DAuction1 AuctionScene}`.

The message `{inform (ValidationAgent ValidationAgent) (all all) startScene }` has been said in the scene `{DValidation V}`.

The message `{inform (AccountManagerAgent AccountManager) (all all) startScene }` has been said in the scene `{DESch}`.

The message `{inform (OfferManager OfferManager) (all all) startScene }` has been said in the scene `{DOffering Offerin.`

The message `{inform (Auctioneer2 Auctioneer) (all all) startScene }` has been said in the scene `{DAuction2 AuctionScene}`.

The message `{inform (AccountManagerAgent AccountManager) (all all) startScene }` has been said in the scene `{DEBh}`.

The message `{inform (FlightInformationAssistantAgent FlightInformationAssistant) (all all) startScene }` has been said in the scene `{DFlightInformationAssistant}`.

The message `{inform (BookingAgent BookingAgent) (all all) startScene }` has been said in the scene `{DBooking Booki`.}

The message `{inform (RegistrationAgent RegistrationAgent) (all all) startScene }` has been said in the scene `{DRegistration Regist.`

The `elaine` has been entered in the platform `itchyFeet`.

time stamp : 270699
platform: `itchyFeet`
agent: `elaine`
accessGranted = '0' for the agent 'elaine:User' that is at 'ItchyFeet.ItchyFeet-Federation.Ether'.
The message 'request (elaine:User) (ValidationAgent:ValidationAgent) validateUser(elaine, ])' has been said in the scene 1:0BookingAgent.

accessGranted = '1' for the agent 'elaine:User' that is at 'ItchyFeet:ItchyFeet-Federation.Ether'.

The message 'response (ValidationAgent:ValidationAgent) (elaine:User) accessGranted.' has been said in the scene 1:0BookingAgent.
Showcase II
Elaine in the Travel Agency
Showcase III
Violating the institution’s rules
Showcase IV
Paying the product
Showcase V
Participating in an auction
Conclusion & Future Work

- We have created an instrument to connect Electronic Institutions with a 3D World
  - Agents and Humans can participate
  - It is domain independent
- Tourism market place „Itchy Feet“
  - Services defined in Electronic Institutions
  - Visualization of services in 3D Virtual World
- Analysis of the usability evaluations
- Further functionality, e.g. 3D products
Thank you

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