A JavaScript API for an eXtensible Virtual Shared Memory (XVSM)

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Motivation

- Multi-user participative web applications create new challenges concerning coordination, performance and scalability
- Space based middleware systems (e.g. XVSM) address these issues but are not focused on applications running in a web browser environments
- **Solution:** Combining XVSM with web 2.0 technology

System Overview

- Distributed web applications coordinating each other through a common space
- Bidirectional communication between the web application and the space server (server initiated event notification)
- Space replication over different space servers

Components

**Space Server**

- Bayeux Server handles communication
- XVSM/Bayeux connects the Bayeux server with the XVSM Space
- The Core API (CAPI) provides methods to manipulate the space

**Web application**

- Bayeux as transport mechanism
- JavaScript API sends/retrieves messages through the Bayeux Client
- The web application calls the methods of the JavaScript APIs
- Dojo Toolkit provides the Bayeux Client and GUI features

Advantages

- No software distribution, installation or maintenance necessary
- Available on every web browser enabled device
- Decoupling of application logic and communication
- Low message delivery latency and reduced communication overhead
- Scalability through space server replication
- Not affected by security restrictions (e.g. firewall)

Output of this thesis

- Protocol regulating the XVSM - web application communication
- XVSM Server implementation
- JavaScript API for easy web application development
- 2 Examples of use (Chat System, Space Monitoring Application)

Future Work:

- Caching and Offline Operations
- JavaScript Space Implementation

Related Publications
