synchronous MediaSharing: Social and Communal Media Consumption for Geographically Dispersed Users

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1. Motivation

Traditional forms of media consumption entail an important **social and communal aspect**. Technological advancements as well as modifying user habits are however causing fundamental changes, both in the media provision landscape and in the way people access and consume content. Although these evolutions definitely have their merits for the customer, they also introduce issues in the field of user interactivity. In particular, many of them intrinsically **individualize the media consumption process** and transform it into a much more **isolated activity**. This increased isolation manifests itself at 2 separate levels:

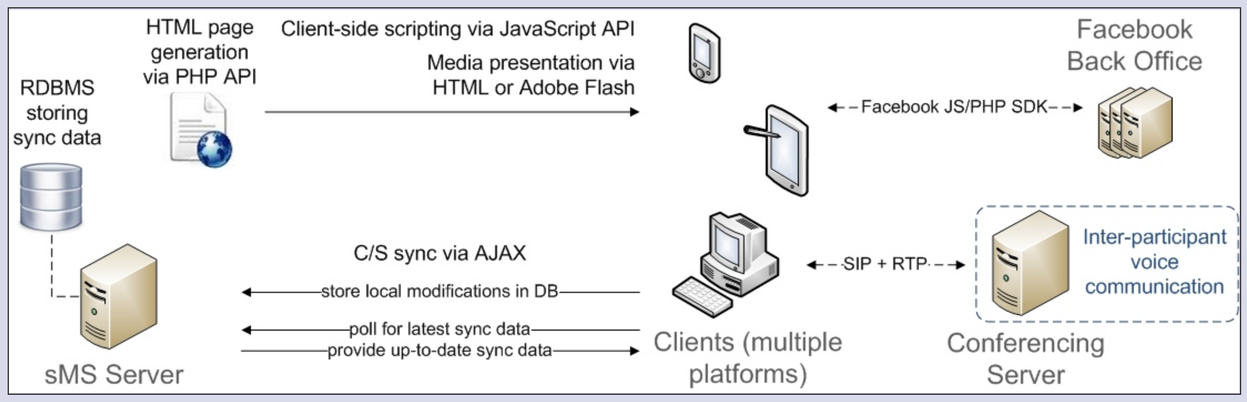
Temporal disparity Due to technologies such as PVRs and VOD, it is no longer guaranteed that users **consume content simultaneously**.

Spatial heterogeneity The nowadays ubiquitous accessibility of multimedia data causes people to less frequently **rendezvous physically** for content consumption purposes.

2. synchronous MediaSharing (sMS)

The web-based sMS framework, a combination of a collection of APIs and a back-end, aims to emulate the feeling of **concurrently and synchronously consuming media content for geographically distributed persons**. As such, it attempts to **bridge the social interaction divide** that is caused by media customers' spatial disparity; temporal asynchrony is at the moment deliberately not considered by the service as it represents a radically different research topic.

3. Architectural Design, Technologies and Methodology



The sMS framework adopts a **client/server** network communication model. The server hosts a **relational database** maintaining **media synchronization data**, whereas clients are simple end-user devices primarily responsible for **content presentation**.

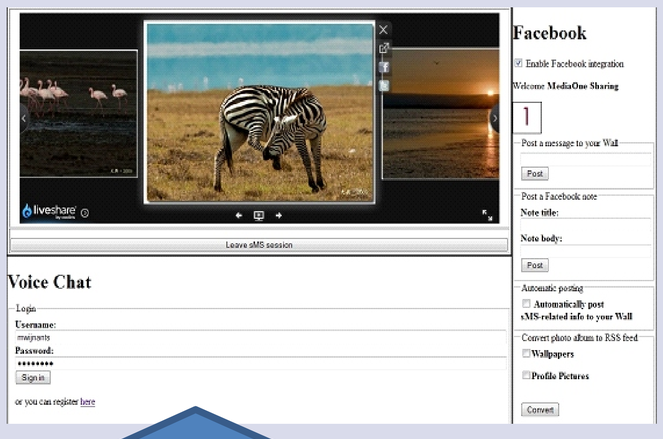
The sMS service has been exclusively designed around **open, standardized web technologies and languages** available on most current major platforms. These include PHP, JavaScript, AJAX (client/server sync), Media RSS (content syndication) and Adobe Flash (content presentation). Real-time inter-participant communication is supported in the form of SIP- and RTP-based voice conferencing.

A direct benefit of the standards-compliant methodology is **automatic multi-device and multi-platform support**: the sMS service is available on all platforms that support web browsing. As such, the sMS framework maximizes its potential customer base by catering to the plethora of devices via which end-users can nowadays access multimedia content.

Proof-Of-Concept Demonstrator

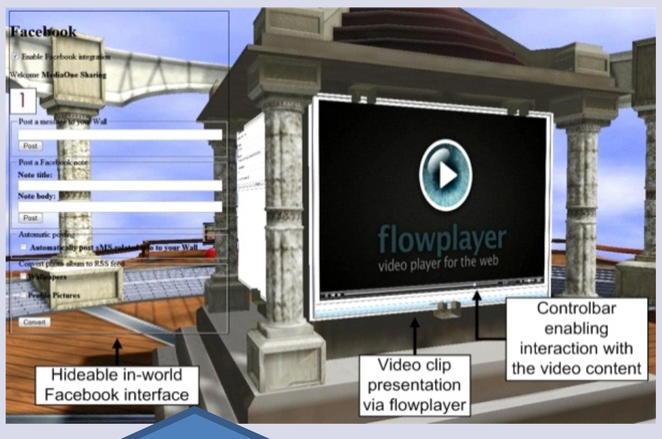
The sMS framework resides in a proof-of-concept (POC) stage, awaiting qualitative evaluation by means of user experience research methods. To enable interim experimental assessment and validation of the sMS methodology and technology, a prototype has been developed. The POC demonstration includes both a web interface (i.e., a HTML page that provides access via a web browser) and a 3D NVE implementation as front-ends.

Picture synchronization via sMS web interface (Flash-based content presentation)



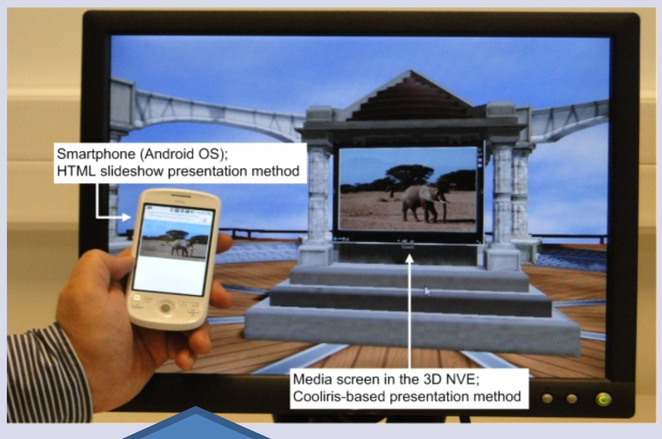
Web interface (HTML website)
- Session control and content presentation
- Facebook interfacing
- Voice communication configuration

Accessing shared video content inside the 3D NVE front-end



3D NVE front-end
- Embodies user via avatar
- Free exploration of 3D environment
- Media screens afford in-world sMS participation

Example cross-platform sMS session (picture sharing scenario involving a desktop PC and a smartphone)



Converged access
- Seamless content sync between physical devices and digital world
- Differences in contextual framing evident

4. Content Synchronization

User actively influences state of sMS session → Client initiates AJAX request to update sync data in DB

Clients periodically solicit most recent sync data from DB (via AJAX) → Clients perform synchronization locally

- Display current content item at involved distributed sites
- Also sync playback time for video

5. Social Network Integration

Social aspects and stimuli might be indispensable factors for the adoption of a media sharing system by end-users. The sMS service has therefore been **interfaced with Facebook**.

Manually post messages

Transform Facebook photo Albums
- To Media RSS feed
- Serve as input for sMS sessions

Automatic message publishing triggered by sMS-related events or actions
- E.g., on initiating a sMS session
- Includes URL to participate in session
- To incite user interest and encourage participation

6. Supported Content Types

Picture collections

Digital analogy of browsing through and discussing a (physical) photo album with a number of (co-located) friends

Sets of continuous media

Video clips

7. Synchronous Sharing in Digital Spaces

The applicability of the sMS framework is not limited to web-based services and applications. Its exclusive reliance on standardized web technologies unlocks **encapsulation in any environment supporting HTML rendering**. The sMS service might hence be incorporated in distributed desktop/mobile software, and Networked Virtual Environments (NVEs) in particular. In case the distributed software affords constructs for in-application web browsing, the sMS functionality automatically becomes accessible for its users.

The benefit of staging sMS sessions inside a (3D) NVE is that it enables the creation of an **appropriate framing** and that it automatically induces a **sense of shared presence and togetherness**. This in turn will likely evoke a **more immersive experience** for users compared to plain HTML pages.

This feature represents a chief innovation and principal scientific contribution of the sMS framework, since it enables the service to achieve **cross-platform interactivity** and **ubiquitous content synchronization** by **seamlessly uniting physical devices and virtual environments** with regard to synchronous multimedia sharing.

EDM participates in the Interdisciplinary institute for BroadBand Technology (IBBT)

The work presented on this poster is conducted as part of the IBBT ICON 3DTV 2.0 project, funded by the Flemish government. Part of this research is also funded by the EFRD.