

Hyper-linked Communications: WebRTC enabled asynchronous collaboration

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Overview

- 1 Introduction
- 2 Related Work
- 3 Proposed Architecture
- 4 Methodology
- 5 Conclusions

Introduction

- 1 Introduction
 - Context
 - Problem Statement
 - Thesis Goals
- 2 Related Work
- 3 Proposed Architecture
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Context

Written communication could never replace face to face communication.

“No computer in our lifetimes will ever rival a human voice’s capacity to conveying rich and complex social and emotional meaning”

— Geddes, Martin

Today, we can achieve more.

Problem Statement

Real-time communication applications can make a difference on business, education and health sectors.

An application that provides a way to remember our past communications would be a strong tool.

Thesis Goals

Development of an application that applies the hypermedia concepts.

Use only standard technologies like JavaScript, WebRTC, HTML5 and CSS3.

Related Work

1 Introduction

2 Related Work

- Early days of the Internet and its remaining flaws
- Real-Time communications
- Signaling: meet and get to know
- Hypermedia: more than words, more than images
- Hypermedia: more than words, more than images
- Extending collaboration tools with time manipulation

3 Proposed Architecture

4 Methodology

5 Conclusions

Early days of the Internet and its remaining flaws

- IPv4 Address Exhaustion
- Network Address Translation
- Client-Server model
- STUN + TURN = ICE



Real-Time communications



Real-Time communications

WebRTC (Web Real-Time Communications)

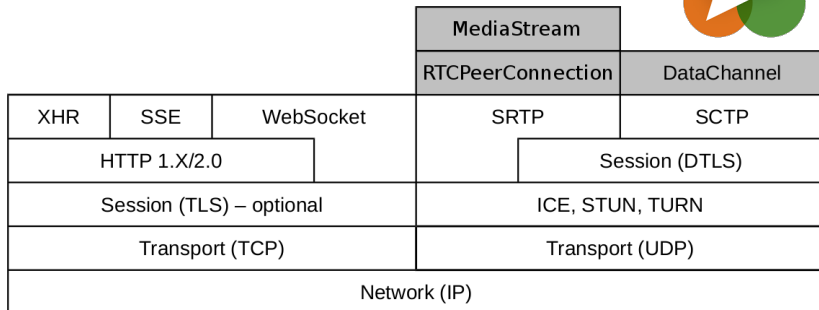


Figure: WebRTC protocol Stack

Signaling: meet and get to know

- Own Implementation
- SIP
- XMPP
- SigOFly

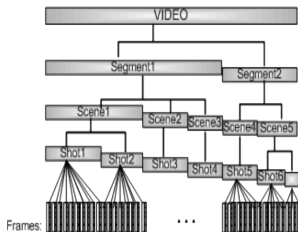
Hypermedia: more than words, more than images

- **Concepts:** HyperText & HyperMedia & HyperCommunications
- **Implementations:** HyperCafe & HyperHitchcock



Hypermedia: more than words, more than images

- **Languages:** HyVAL & SMIL
- **WebBrowser:** Ambulant & SmilingWeb & SVG



```
<par endsync="select">
  
  
  <excl id="select">
    <text src="../../../todays_txt.html"
      begin="btn_a.activeEvent"
      dur="25s"/>
    <video src="../../../todays_video.mpg"
      begin="btn_b.activeEvent" />
  </excl>
  <audio src="../../../todays_tune.mp3"
    repeat="indefinite"/>
</par>
```

Web-Browser plug-ins



ADOBE FLASH



Microsoft®
Silverlight™

Extending collaboration tools with time manipulation

- Streaming and Recording
- Media Types
- Recording and Streaming Interactive Media
- Collaborative Environment

Related Work

- 1 Introduction
- 2 Related Work
- 3 Proposed Architecture**
 - Modules
 - Implementation Proposal
- 4 Methodology
- 5 Conclusions

Modules

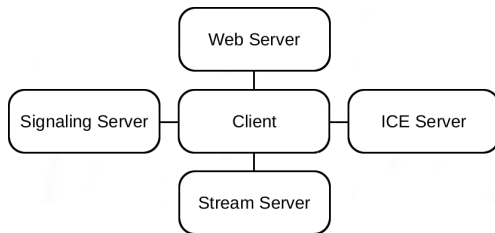
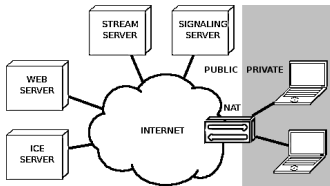


Figure: System Modules

Implementation Proposal



- **ICE Server:** restund
- **Signaling Server:** Ejabberd
- **Web Server:** Play Framework
- **Stream Server:** Jitsi VideoBridge

Figure: System Infrastructure

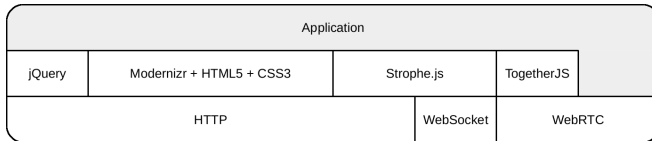


Figure: App Architecture

Wireframe

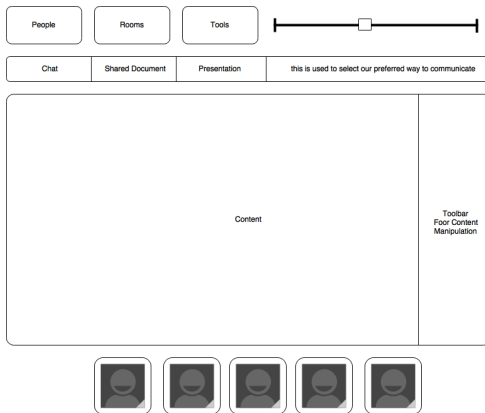


Figure: Application wireframe

Related Work

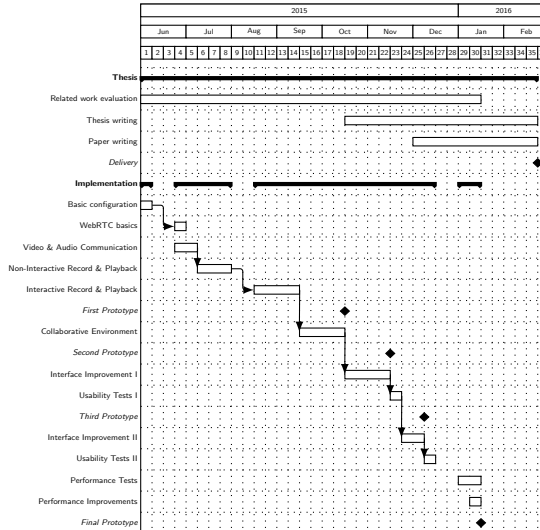
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 - Evaluation
 - Planned Schedule
- 5 Conclusions

Evaluation

Qualitative and quantitative evaluation.

- Unit tests.
- Tests with users.
- Benchmarks.

Planned Schedule



Related Work

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Conclusions

- New usage scenarios for communication and collaboration applications.
- Enrich communications using hypermedia concepts.
- Prototype implementation and testing.

Questions?