Hyper-linked Communications: WebRTC enabled asynchronous collaboration

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June 22, 2015

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Overview

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Introduction

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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.

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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.

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Thesis Goals

Development of an application that applies the hypermedia concepts.

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

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Related Work

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Early days of the Internet and its remaining flaws

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

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Real-Time communications

Real-Time communications

WebRTC (Web Real-Time Communications)

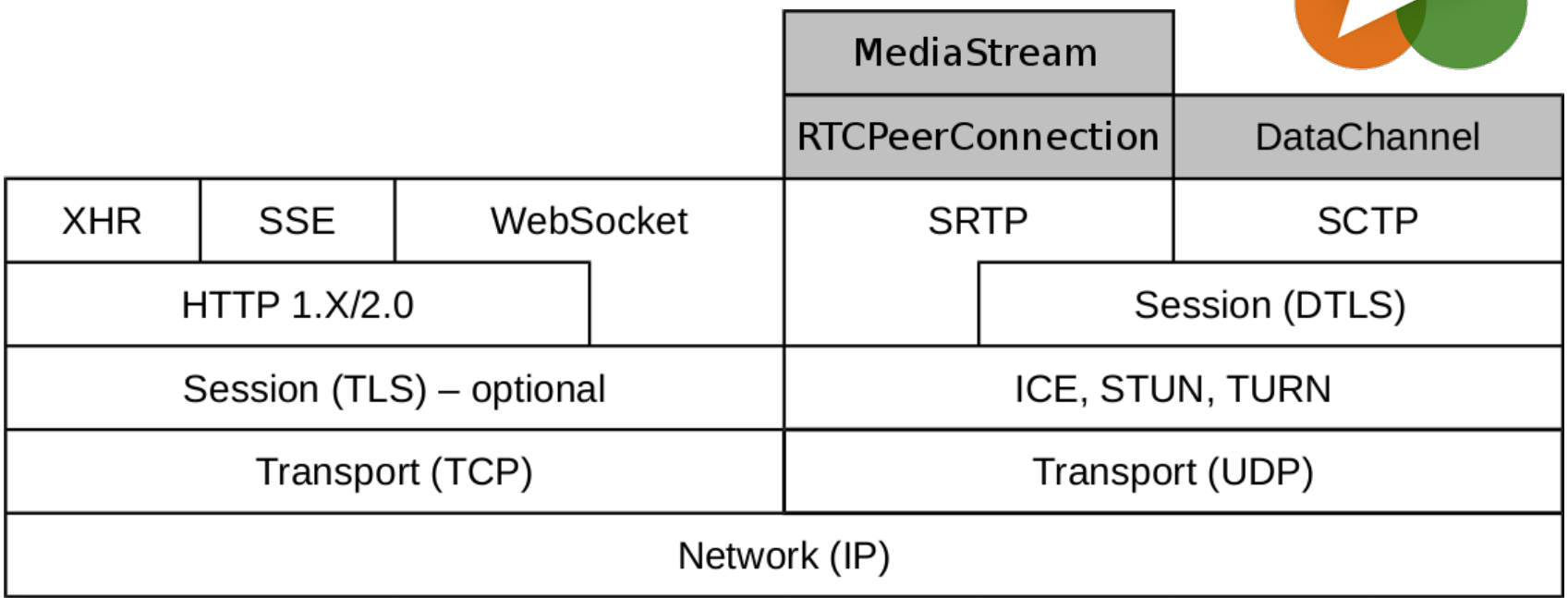

Figure: WebRTC protocol Stack

Signaling: meet and get to know

- Own Implementation
- SIP
- XMPP
- SigOFly

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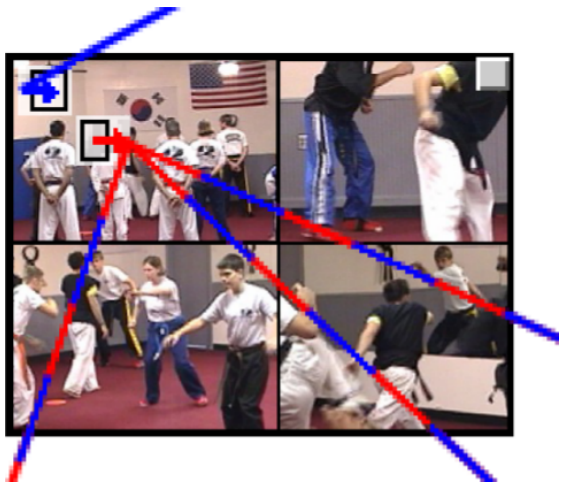
Hypermedia: more than words, more than images

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



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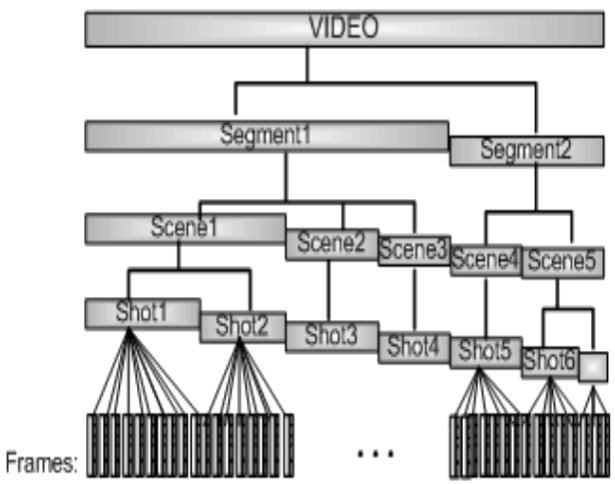
Hypermedia: more than words, more than images

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

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 <img id="btn_b" src="..." dur="5s" />
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 </excl>
 <audio src=".../todays_tune.mp3"
     repeat="indefinite"/>
</par>
```

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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

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Related Work

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Modules

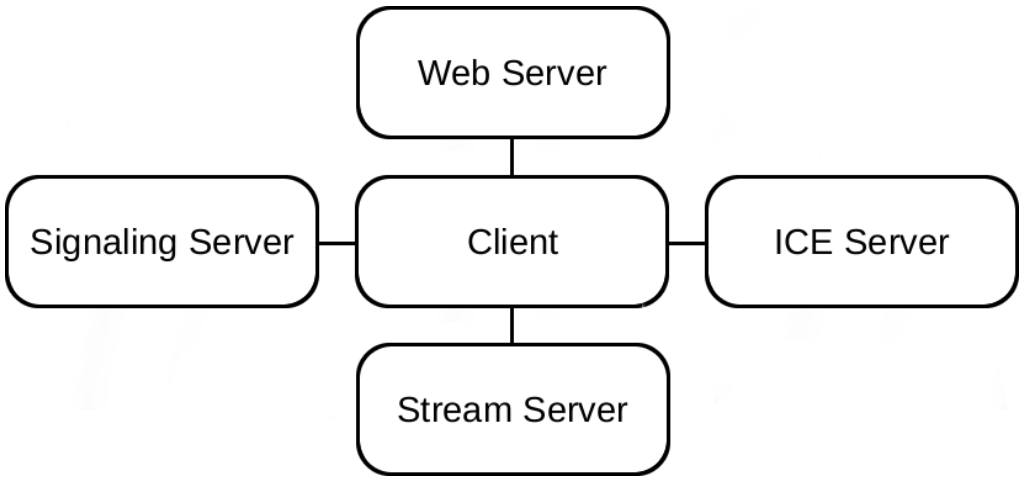

Figure: System Modules

Implementation Proposal

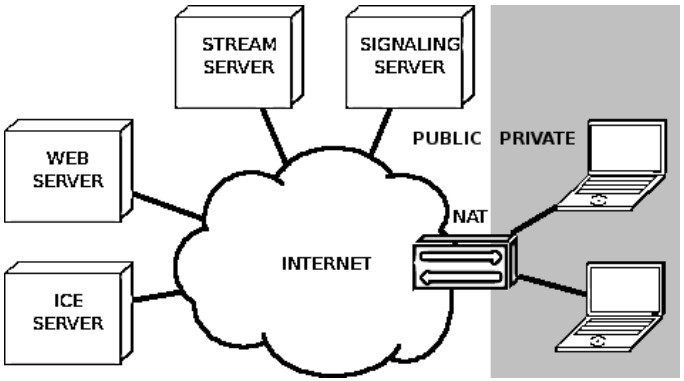

Figure: System Infrastructure

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

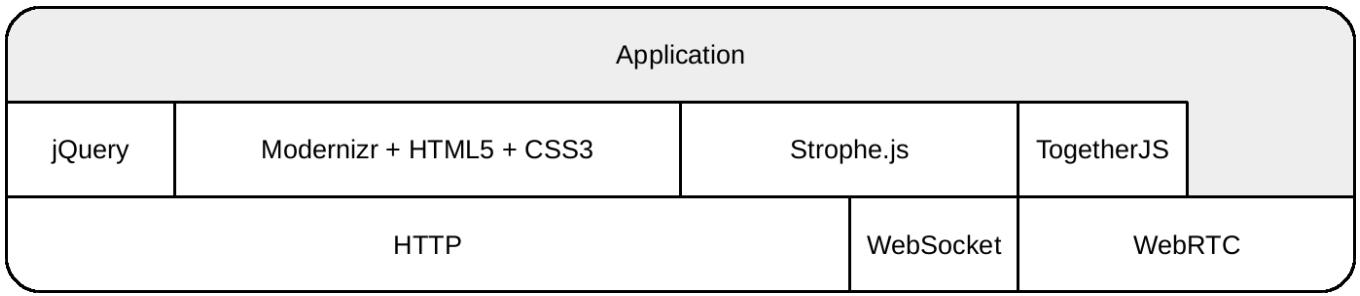

Figure: App Architecture

Wireframe

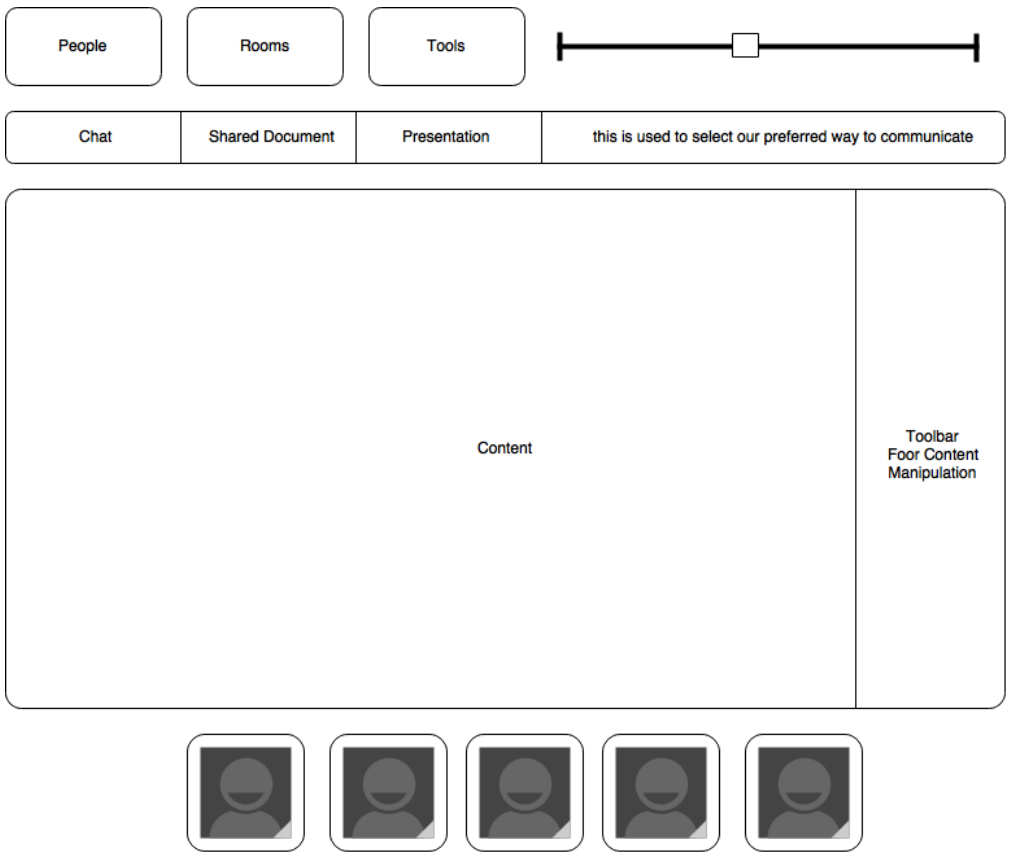

Figure: Application wireframe

Related Work

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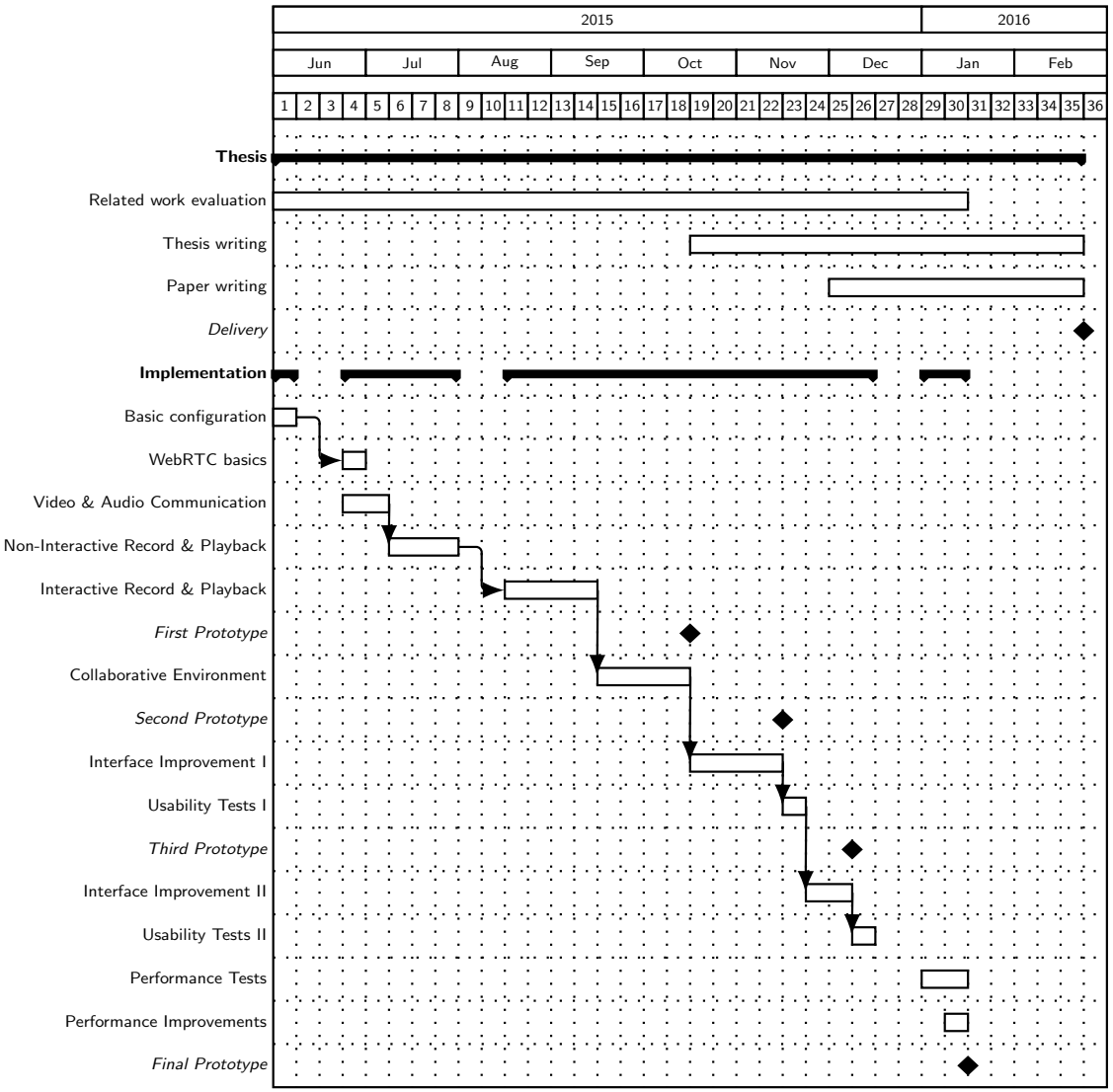
Evaluation

Qualitative and quantitative evaluation.

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

Planned Schedule



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Conclusions

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

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Questions?

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