# Introduction

(First three paragraphs: essay)

The World Wide Web has been available for 20 years (TODO: History of the world wide web (1)), and is still considered a young technology. But over those 20 years it has changed in almost every thinkable way. What started out as a science project is now an important aspect of everyday life.

Over the years, the improvements to the Web have changed the way we use it. Visiting a web page before meant reading a page of text that maybe had some pictures on it. Today, Cascading Style Sheets (*CSS*) has given web pages a more vivid look with various styling options, Asynchronous JavaScript and XML (*AJAX*) has made them more dynamic, and with HTML5 really starting to make a push, more revolutionary changes are yet to come.

Along with HTML5 comes a new protocol for the Web: WebSockets. It was created to meet one of the newest aspect of web browsing, namely real-time applications, where clients can get updates from the server as they occur (TODO: crossref more info section). Real-time web applications has been around for some time, but previously they have relied on the aging HTTP 1.1 protocol.

## Problem statement

In this thesis, I will look at real-time applications in general, and WebSockets in particular, and investigate how much of an impact this new protocol can make on the real-time world. I will also look at the bigger picture, and investigate the necessity of real-time.

Furthermore, I will compare five different frameworks for real-time web applications based on both usability, from a programmers perspective, and performance through load testing. A detailed description of how this will be executed can be found in chapter (TODO: crossref Methodology).

The results will consist of my evaluations of the frameworks, charts and discussions about the performance tests and a general discussion that compares WebSockets with HTTP. Furthermore, I will assess whether or not a framework is necessary at all for building scalable real time applications across multiple platforms (browsers).

## Outline

## Terminology

TODO: Define framework == library in some cases (socket.io, SignalR)  
TODO: Transports == WebSockets, SSE, Long-Polling….  
TODO: WebSockets is not plural, websockets are.  
TODO: IntelliSense