CLIENT SIDE TECHNOLOGIES



# Introduction

## BACKGROUND

Our world we are living on are on a change nowadays in both technology and its implementation. Organisations in the new century have to compete in a global market. Any organization who cannot embrace change and unwilling to compete are ensured to be obsolete. Due to the change in the organisational structures and its business practices client server architecture was proposed. It is the most effective architecture due the separation of data processes. The client side is where the user resides and the server being the one that receives any data sent by the user and processes those data fulfilling the requests.

requests

SERVER

CLIENT

response

## CLIENT SIDE

Client side refers to the communication occurring at the client side referring to the client server network communication architecture. Client side communication is usually conducted by a user with an interface. During an exchange of information on the internet, it involves two important segment of network architecture I.e. the client and server. The client is the user on a web browser or other internet applications who requests pages and data to the web server, the web server executes those request and serves the pages and data the client requested.

## Client side technologies for the web:

* HTML
* HTML5
* CSS
* JavaScript
* Jquery
* Ajax

### HTML

The HTML is the standard markup language to create web-pages. It is the language used by web browsers used to interpret texts and images, video and audio materials. Html is formed of tag elements like <html>, <body>, <head>, <a href=””>. These tags often come in pairs with a closing tag. HTML can support other scripting languages such as CSS, javascript, VbScript etc. these languages can be embedded inside the HTML markup document. A web browser can read HTML languages, interprets it and outputs it as a document, images, audio or video expression.

Example HTML file:

<html>

<head>

<title>My website</title>

<head>

<body>

<p>This is HTML document!!. </p>

</body>

</html>

#### LIMITATION OF HTML:

The continued evolution of the web and its worldwide growth has set HTML its own limitations. Some of the limitation of the old web markup language is as follows.

* *Multimedia Support:* The old HTML is really unfriendly when it comes to supporting multimedia materials. It has to use a third party software such as Adobe Flash which makes the page heavy which makes it difficult to load on a smaller bandwidth. The third party plugins and software are not SEO friendly.
* *Descriptive Elements:* HTML does not contain descriptive elements like the new HTML5.
* *Form Handling:* Developers are required to write their own validation code to validate the data entered by user which costs time and need experience.
* *Design Constraint:*  Tim berners Lee, the father of world wide we actually wanted the web to be simple and for document exchange, so it only contains a fixed set of tags, which current developers and designers are limited to affecting their design and development setting a unnecessary boundary.

### HTML5:

It is an improvement upon the older HTML. It allows for more content descriptive elements tags like, header, footer, video, section, article, nav etc. it also allows for graphics supports Svg and MathGl. Error handling will be easier in this new HTML5.7

### CSS3

Cascading style sheet or CSS is the look and feel of a website. Css determines the page design, the look like image, aesthetics, colours, gradient, hovers etc. Css3 is the latest technology in the field of web design. It implements new style properties, combinators, Css Selectors, pseudo-elements.

### Javascript

Javascript is a dynamic programming languages normally used in the client side of the browser. It is also used as a server side languages for network programming, games development and importantly, mobile applications. Javascript makes a page interactive. It adds behaviour to the web page, where the page responds without the need for it to load or refresh. It runs on the client’s computer and doesn’t require extra plugins or downloads. Javascript is normally used on the client side for, form validation checking the user input to make sure it conforms to what the database is expecting. The user does not need to wait until the form has been submitted to the server only to return back with the error of invalid input. With javascript the user gets immediate feed back as to where they made a wrong input. Javascript is the unmissable client side technology that exists and implementing it would improve our visitor’s experience by converting them into a more interactive from the regular static page.

### AJAX

AJAX stands for asynchronous Javascript and XML. It is exchanging data with the presence of a server side JavaScript. This allows for the web page to update data and contents onto it without having the page to refresh or make a new reload. Popular examples of AJAX are Google search, google maps, Facebook search feature etc. It is one of the techniques for building responsive web-applications. It enables to build more interactive web applications which behave in a similar fashion as a desktop application.

In a typical web application, the user action such as submitting a form or clicking a hyperlink triggers an HTTP request which is processed by the server. During the processing of the request, an entire page needs to be loaded on the user’s web browser. While this is happening the user is waiting for the page to load and thus is restricted from using the browser during that moment. It is not really necessary to load a whole page in activities such as, data validation, auto completion, user interface controls, refreshing data on the browser. Ajax solves this problem, which enables sending a request to the server and receiving a response containing only a small amount of data in the background and updating the data only on the part of the page.

Three technologies are required to build an AJAX solution. HTML/XHTML, DOM and Javascript.

Major Steps involved in an AJAX call are:

* User generates an event which in turn will trigger a javascript function.
* An XmlHttpRequest object is created and configured.
* It makes an asynchronous request to the server, i.e the user interface is not blocked during the request process.
* The XmlHttpRequest object calls a callback() function, it receives the data and processes the result.
* The HTML DOM is updated.

Although AJAX is a popular technology, it contains certain drawbacks

* Difficulty bookmarking an article or a specific content.
* Difficulty indexing by search engines and web crawlers.
* It cannot override any web browser that has their javascript turned off.
* This call back method of programming required can lead to complex code that is hard to maintain, to debug and to test.

### JQUERY:

It is a cross platform Javascript Library designed to simplify client side HTML scripting. It is most popular open source today and is used by over 60% of 10000 most visited sites. It is used to manipulate DOM, create animation, and handle events, interaction on the client web browser. It can be used as a plugin or developers can write their own plugins to fit into their business model.

## Recommedation for a business website.

For a small business website, I recommend they use HTML5 as their base markup language. I also suggest that they use CSS3 for the styling of the pages as CSS3 supports smooth animation and transition without the need for an external script. Jquery to be used for the slideshow of the images on the gallery. Javascript to be used to validate the forms and inputs that the user enters. AJAX to be used on the search bar where it will drop down a list of recommendation products. For a secure payment, paypal needs to be implemented as a payment gateway system.