

# Responsive Web Design

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## ABSTRACT:

The usage of computers and mobile phones has increased considerably in the past few decades. But the current scenario suggests that the percentage of mobile internet users has increased immensely. The reason for this is nothing but the advantages of portable mobiles or tablets over the fixed computer machines. Now that people are resorting to mobiles there is a major need for the development of web applications which are mobile/tablet friendly. This will help ameliorate the user experience and in turn gain more clients. Up till now the tradition of building websites for PCs and apps for mobiles was being followed. But responsive web design has made it possible to design a single responsive website which can easily be accessed from various digital devices with different display screen sizes. Responsive web design favors the resizing of the elements present on any page of the website. The elements of the page may contain tables, images or simple texts as well. Thus it is evident that responsive web design is going to set a trend in the industry giving all sorts of benefits to the developers as well as the users.

This paper gives a brief introduction to the softwares that can be used for designing a website responsively and the implementation details as well.

**Key words:** *computers, mobiles, web applications, mobile/tablet friendly, responsive, resizing.*

## INTRODUCTION:

Whenever a user enters a website the fundamental thing he searches for is whether he can access all the information and navigate through the website as quickly as he can with minimum effort. RWD is a process of designing a single website which is compatible with different portable or handy devices. It is also known as AWD. The term RWD was coined by Ethan Marcotte in 2010 on his website "A book apart". It is regarded as an integrated approach of designing through which compelling and easy to use websites are built, to give an optimal viewing user experience across a wide variety of devices starting from desktop computers to mobile phones. As the content of the responsive website is flexible it prevents the user from zooming in and out or scrolling up and down repeatedly to seek the required information.

Following are the basic technical features that a typical responsive web design holds:

- 1) **Media queries** : A designer must use HTML and CSS Media queries to assign different style sheets depending on browser window size . It is used to tailor a website up to a specific range of output devices without changing the content itself
- 2) **Fluid grids**: Grids are the simplest, strongest and quick way to create page layouts. It enables the content of the site to resize and rearrange itself as the percentage based width of a webpage grid expands or contracts. Thus it targets the width of user's web browser to determine how much space is available and how it should display all the contents.
- 3) **Flexible images**: A responsively designed website would always display images at the right resolution for the target device. RWD automatically changes

page layout and resizes the images or crops them according to the target device.

Following diagram shows appropriate layouts to suit devices with different screen sizes:

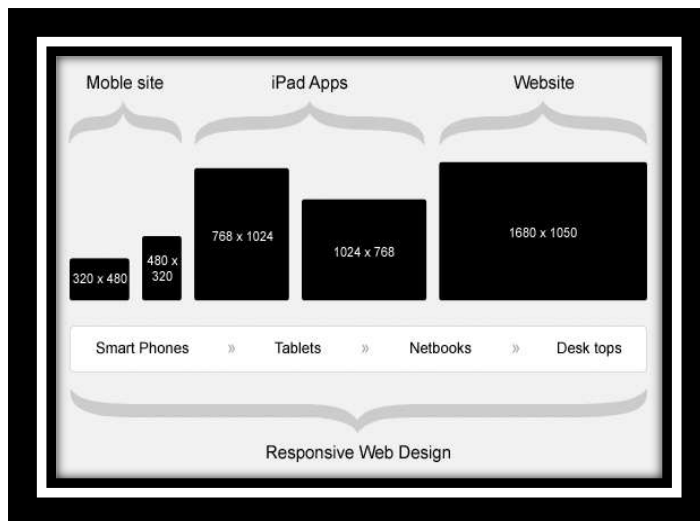


Fig (1): Average pixel density for various devices having different screen resolutions.

## LITERATURE SURVEY

Web technologies have developed at a high rate in recent few years. Also the range of devices that can access the web has risen immensely. Today websites are no longer viewed on the 'Desktop' as olden days. Instead they are viewed on devices with various sizes and resolutions. The amount of people using these desktop resolutions has been decreasing since 2009 and has been replaced by higher resolution screens and mobile.

Websites with fixed-width display poorly on mobiles and often require zooming to read the content on the smaller and lower resolution screens. While the recent published data shows that smartphone and tablet internet usage has almost doubled in the last 12 months and that smartphones and tablets now consume around 25% of all web traffic, it is important to address the issues of websites being displayed poorly on these devices.

### 1) Desktop first

The fact that only desktops could be used for net surfing led to the method of 'Desktop first'. This involved designing for the traditional desktop widths.

However recently, mobiles with data connection facilities have risen which led to revising the 'Desktop first' phenomenon.

### 2) Mobile First

There are over 1.2 billion mobile web users worldwide and as 85% of new mobile phone handsets can access the internet. Considering the statistics of mobile phones usage, many of the largest internet companies are also following this trend, including Google. In an announcement, Google's CEO Eric Schmidt announced that "the new rule is mobile first" and that all new Google product announcements will have a version that works on mobile devices.

In mobile first designing is done considering mobile device's resolution and then upgraded for a desktop version.

### 3) Search Engine Optimization (SEO)

Since the mobile sales have overtaken desktop sales and mobile internet usage is set to overtake desktop internet usage it is therefore expected that those who search the Internet on mobile devices shall outnumber those searching on desktops in coming years.

Statistics show that 67% of users are more likely to make a purchase from a mobile friendly website.

#### IMPLEMENTATION:

In the project, we have created a general insurance based website using Microsoft visual studio 2010. The programming platform used is c# asp.net. The bootstrap/foundation files have been added. Twitter bootstrap and foundation basically contain the css and jquery files. The specifications of the elements as to how their position would change according to the various screen sizes are provided in the css file. While coding in html for the website "12 large columns" as a class have been added. It enables us to resize the website occupying 100% of the target device's display screen size. Also, appropriate media queries and layouts for different browser sizes to make a service responsive have been specified.

A class file for the website has been created globally. It contains a class and its objects. The objects are declared so that using them in the class file of each page generates a corresponding XML file automatically. Thus, whenever a user accesses the website and enters any data or tries to login, the complete information entered by him will be added to

the xml file. Along with this, the XSD file for same website has been created by using various attributes of .net like StreamWriter. So whenever we run the website/project the data entered by the user will be generated in its XML and XSD format. This makes it easier to store large amounts of data entered by different users on the website. XSD file is also useful for validating the data. Direct validations can also be provided using XSD. These files can be used for security view purposes as well.

## CONCLUSION

Responsive web design is highly beneficial for the upcoming new phones and tablets, which would be in different shapes and sizes. It proves to be advantageous for content rich websites such as blogs or e-commerce websites.

Responsive web design is therefore a recent advancement in the field of technology. As a result, it is still not used by each website. With the usage of newer and better techniques it can thus be made available on every device having various screen sizes and form factors.

## FUTURE WORK/MOTIVATIONAL

The main motive of Responsive web design is to provide the user an easy access to various kinds of websites and applications without much of trouble. The concept of responsive web design must be made available to each and every user. However, our project deals with the software named Oracle Service Bus 12.1c which functions only on a 64-bit operating system. Therefore, it proves to be a hindrance to the users of 32-bit or lesser operating systems. Also, the time and cost required to build up a responsive website is comparatively more than a normal website. Using Oracle Service Bus 11c or any other appropriate software's these drawbacks could be removed and thus would be beneficial for every user regardless of the type and version of his operating system.

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## GLOSSARY

- RWD - Responsive Web Design
- HTML - HyperText Mark-up Language, the programming language for web pages
- HTML5 - The latest version of HTML
- XML - Extensible Markup Language
- XSD - XML Schema Definition
- CSS - Cascading Style Sheets
- AWD - Adaptive Web Design
- PC - Personal Computer