UNIT 14  WORLD WIDE WEB

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14.0  OBJECTIVES

After reading this Unit, you will be able to:

- discuss the growth and development of WWW;
- explain the underlying technology behind WWW;
- describe Web 2.0 technology; and
- understand services of Web 2.0 technology and its impact.

14.1  INTRODUCTION

Internet has changed the life of people. While traveling in the train, airplane or any other mode of transportation one can keep oneself busy and connected to the world. It has influenced education, commerce, governance and entertainment, which have tremendous impact on day-to-day life of an individual. Internet was there even before twenty years but it is WWW (World Wide Web), which has brought radical change in the use of Internet. World Wide Web consists of interlinked hypertext documents. The transfer medium is known as Hypermedia, which carries the multimedia objects such as images, as well as audio and video files over network in addition to text. There is no doubt about the fact that the actual influence of Internet on society could be seen only after the introduction of WWW. It was a revolutionary break-through in the emerging technological environment.
14.2 WORLD WIDE WEB

The credit of developing World Wide Web (WWW) goes to Sir Tim Berners-Lee in 1989, and later on Robert Cailliau in 1990 at CERN laboratory in Switzerland where it was demonstrated over distributed hypermedia servers (ý1). The servers store hypertext documents, which can be accessed via a client (i.e., a web browser). The language used for creation of document is known as HyperText MarkUp Language (HTML). These web documents or hypertext documents are linked to each other using a specific pointer system known as Uniform Resource Locator (URL). These pointers are like handles and have the capability to fetch the document stored and scattered across various web servers. The servers where these hypertext objects are stored host the hypermedia documents, honouring the request to serve the documents to a client. Internet is collection of such servers also known as Web servers placed in different parts of world. Hence, WWW is a service over Internet. It is a collection of documents available over host servers worldwide.

A special kind of application software is used to access hypertext documents know as Web Browser. There are many web browsers available like, Mozilla Firefox, Internet Explorer, Opera, and so on. WWW supports hosting, dissemination and playing of multimedia documents that includes audio video.

In 1989, Sir Tim Berners Lee wrote a proposal “Information Management: A Proposal” for conceptualising WWW at CERN Lab. In 1991 the first web browser was released. The web browser used to work on hypertext with Graphical User Interface on platform called as NeXTStep. The web browser was a WYSIWYG (What you see is what you get) type with facility to support hyperlinks (Fig. 14.1).

![Early Web Browser]

14.3 CONCEPTUAL FRAMEWORK OF WWW

Web is one of the most widely used components of Internet. The Web allows access to information dispersed all across the world on different servers. The information is
available in diversified form such as text, graphics, animation, photos, audio and video. The Web physically consists of:

a) a personal computer or mobile device;
b) web browser software;
c) connection to an Internet service provider;
d) computers called servers to host digital data and routers and switches that direct the flow of information.

14.3.1 Communication Architecture

The basic web structure of WWW is two tiered popularly known as Client Server Model (Fig. 14.2). Those machines that provide services (like Web servers or FTP servers) to other machines are servers; and the machines utilising those services are known as clients. This kind of architecture depends upon the following:

a) **Standard Representation of Information on Web:** Markup Languages such as HTML, XML are some of the standards available for the content representation over the Web.

b) **Transfer Protocols:** These are the different protocols for transferring information between computers on the Internet. HyperText Transfer Protocol is the underlying protocol used by web. HTTP is a synchronous request-reply protocol that requires direct, online connections. HTTP defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands. For example, when you enter a URL in your browser, this actually sends an HTTP command to the Web server directing it to fetch and transmit the requested Web page. HTTP is called a *stateless* protocol because each command is executed independently, without any knowledge of the commands that came before it.

c) **Addressing Protocols:** Web utilises protocols to identify a web object based on names and addresses. These are known as Uniform Resource Identifiers (URIs). Uniform Resource Locator (URL) is an example of URI. It is the global address of web documents and objects. The first part of the address is called as protocol identifier and it indicates what protocol to use, the second part is called as resource name and it specifies the IP address or the domain name where the resource is located. The protocol identifier and the resource name are separated by a colon and two forward slashes. An example of addressing and addressing protocol is as follows:

http://www.bbc.co.uk/news/world-latin-america-11617094
Self-Check Exercise

Note:  
i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

1) What is a Web Browser?

2) What do you mean by addressing protocol?

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14.3.2 Protocols

Tim Berners-Lee implemented the HTTP protocol in 1991 at CERN, the European Center for High-Energy Physics in Geneva, Switzerland. HTTP stands at the very core of the World Wide Web. According to the HTTP 1.0 specification (26):
"The Hypertext Transfer Protocol (HTTP) is an application-level protocol with the lightness and speed necessary for distributed, collaborative, hypermedia information systems. It is a generic, stateless, object-oriented protocol, which can be used for many tasks, such as name servers and distributed object management systems, through extension of its request methods (commands). A feature of HTTP is the typing and negotiation of data representation, allowing systems to be built independently of the data being transferred.”

- HTTP provides a comprehensive addressing scheme with the concept of URI as a location URL. HTTP based hyperlink address is rendered in following format:

  http://host:port-number/path/file.html
  http://drtc.isibang.ac.in:80

- HTTP protocol is based on a request from a client and response from a server. A server hosts web pages and on request, delivers these web pages to client. The default port from any HTTP request is 80, however one can change the port number to any other port number as desired. However, one port number can be used only to run one program. This kind of request/response format of communication is known as Client – Server Architecture. Every request is treated as a new request and there is no dedicated connection between client and server. This is known as stateless connection.

- HTTP supports multimedia objects also known as Internet Media Types (MIME format). The header of information informs the client what kind of data will follow.

### 14.4 MARKUP LANGUAGES

It is an encoding system to annotate the text of a web document. The system consists of notations known as tags. They control the structure, formatting as well as the relationship between different parts of a document. A marked-up document thus contains two types of text: text to be displayed and markup language on how to display it.

Example of markup language is HyperText Markup Language (HTML), one of the document formatting languages of the World Wide Web.

A marked-up document will typically look like this:

![lib.html](image)

Fig. 14.3: lib.html (view through the notepad application)
14.4.1 Definition and Need

A markup language is a methodology to annotate text for its representation and processing over World Wide Web. IBM researcher Charles Goldfarb is considered as “father” of markup languages. A markup language uses codes, which are also known as tags to describe the layout and formatting of the document. Also, it can also describe the types of information conveyed by a given text.

For example:

```html
<html>
<Address> Flat No. 20, Rajajipuram, Lucknow </Address>
</html>
```

Thus, the piece of content included within `<Address>` tag is an address or a location. Over web, search engines processes these codes or tags and interpret the information accordingly. Thus, markup languages are important to define the meaning and context of the text on web. It also facilitates standard representation of text by different browsers.

14.4.2 Types of Markup Languages

Standardised Generalised Markup Language (SGML)

The markup languages that carry the instruction for text processing are known as ‘Procedural Markup’. The idea of markup was to format a particular kind of document. But later on it was felt that markup languages could be used for system-to-system information interchange also. This was first realised by Charles Goldfarb, Ed Mosher and Ray Lorie when they were working with legal documents. They designed the first markup language known as GML (Generalised Markup Language) based on the following observation:

- The document processing programs needed to support a common document format.
- The common format needed to be specific to their domain - for example legal documents.
To achieve a high degree of reliability, the document format would have to follow specific rules.

For example, take an example of a memorandum:

To: Bishwanath Dutta  
CC: Bibhuti Bhushan Sahoo  
From: Aditya Tripathi  
Date: 27.01.2003  
Subject: Appointment order

We are extremely happy to inform you that you are selected as the Coordinator of Knowledge Management Team.

There are six fields in this document:

- Who the document is intended for (the To: field).
- Who has been sent a copy of document (the CC: field).
- Who sent the document (the From: field).
- The date of document written (the Date: field).
- The subject of document (the Subject: field).
- The document body.

The structure of this document is fixed and one is bound to write it in the same structure. Hence, porting the information across systems will not be a problem as the structure of document is always same. The definition of the structure of document is known as ‘DTD (Document Type Definition)’.

Once GML was designed, Goldfarb fine-tuned his work and proposed the SGML (Standardised Generalised Markup Language) which was further approved by ISO (International Organisation for Standardisation) in 1986. Hence, SGML is for defining the format in a text document. Readable by both humans and computer programs, SGML is usable in a wide range of applications such as print publishing, CD-ROMs, and database systems. SGML was not a language itself but it was a meta language to develop other markup languages. HTML (Hypertext Markup Language) is a derivative of SGML. HTML is more like a formatting language. Thus it is difficult to pull out what kind of data is stored inside a HTML document. Once this difficulty was understood, the need for domain specific tags was felt, for information interchange, which is not possible with HTML. Hence the XML was developed. It is always said that XML is more near to SGML when compared to HTML.

HyperText Markup Language (HTML)

HTML stands for HyperText Markup Language. It is a language, which is used to develop web pages. It is a collection of several tags to describe visuals of a webpage. The goal of HTML is to provide a display format to the given set of data so that it can be read on a web browser. HTML was originally designed by Sir Tim Berners-Lee in 1991 at CERN Lab. HTML is an offshoot of SGML.

HTML is the building block of a website. It allows multimedia objects to be embedded in the webpage including audio, video, text and graphics. The language consists of
tags. A tag is an element (known as HTML element), which has certain properties. These properties are applied on the data embedded in between tags. It is an individual component of an HTML document. Hence, HTML documents are collection of tags. These tags may simply contain data or can co-exist with other tags establishing parent-child relation. A tag has certain attributes, which are applied, on the contained data or on the child tags (or elements).

The number of tags used in HTML is fixed hence the language uses closed vocabulary. The structure of a web page is as follows:

```html
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
 "http://www.w3.org/TR/html4/strict.dtd">
<HTML>
 <HEAD>
  <TITLE>My first HTML document</TITLE>
 </HEAD>
 <BODY>
  <P>Hello world!</P>
 </BODY>
</HTML>
```

Structure of HTML Document:
An HTML document has two parts,

- **Head**, and
- **Body**

‘HEAD’, contains elements (tags) for TITLE of the document. The ‘TITLE’ element stores information about the title of the document.

```
<TITLE>Website of Indira Gandhi National Open University</TITLE>
```

There is another element used in ‘HEAD’ section i.e., ‘META’ element. ‘META’ element stores information about the document such as author, copyright, location, relation, keywords and so on.

```
<META name="Author" content="Sneha Tripathi">
```

In the META tag first attribute or the property is defined under the NAME attribute and its value is given under CONTENT. In the above example Author is an attribute and value of author is ‘Sneha Tripathi’.

These attributes are the attributes of the document, which is being described. Sometimes an attribute may use closed vocabulary or a scheme. In such cases META element also specifies the SCHEME used.

```
<META scheme="ISBN" name="identifier" content="0-8230-2355-9">
```

The second part of an HTML document is BODY element. The body of a document contains the document’s content. The BODY element contains all the tags or elements, which are used to display the data over a web browser. It includes a variety of tags such as

```
<H1>...</H1>
```
Each element inside BODY tag can have various attributes, which is defined in HTML Standard Specification. The current version of HTML specification is 4.01. The next version of HTML, which is due, is HTML 5.0.

**Extensible Markup Language (XML)**

According to the abstract from the XML Specification version 1:

> "The extensible Markup Language (XML) is a subset of SGML that is completely described in this document. Its goal is to enable generic SGML to be served, received, and processed on the Web in the way that is now possible with HTML. XML has been designed for ease of implementation and for interoperability with both SGML and HTML."

- XML stands for eXtensible Markup Language.
- XML is a markup language much like HTML.
- XML was designed to describe data.
- XML tags are not predefined in XML unlike HTML where the tags are pre-defined.
- XML uses a DTD (Document Type Definition) to describe the data.
- XML with a DTD is designed to be self-descriptive.

Following are the goals kept in mind while developing the specification for XML:

i) XML shall be straightforwardly usable over the Internet.

ii) XML shall be compatible with SGML.

iii) It shall be easy to write programs to process XML files.

iv) The processors could read the XML document easily.

v) XML document should be human-legible and reasonably clear.

vi) The XML design should be prepared quickly.

vii) The design of XML should be formal and concise.

viii) XML document shall be easy to create.

ix) Terseness in XML is of minimum importance.

XML is different from HTML in the following ways:

i) XML was designed to carry data.

ii) XML is not a replacement for HTML.
iii) XML was designed to describe data and to focus on what data is.

iv) HTML was designed to display data and to focus on how data looks.

v) HTML is about displaying information. XML is about describing information.

**What can be done with XML?**

i) XML does not DO Anything

XML was not designed to DO anything. Maybe it is a little hard to understand, XML was not developed to DO anything. XML is created as a way to structure, store and send information.

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<book>
  <title>Application of expert systems in libraries and information centres</title>
  <author>
    <f_name>Anne</f_name>
    <l_name>Morris</l_name>
  </author>
  <place>London</place>
  <publisher>Bowker-Saur</publisher>
  <physical_desc>241 p.</physical_desc>
</book>
```

**Fig. 14.5: An XML Document in a Web Browser**

The example shows the structure of a document, which describes a book, titled ‘Application of expert systems in libraries and information centres’. The book has a title, author, edition, publication related information, etc. Author Name is further divided into first name (f_name) and last name (l_name). Inside these tags the actual data is stored. If one browses the document in the browser, data will appear embedded in the tag without having any kind of formatting.

ii) Define Your Own Tags

XML provides the facility to create domain specific tag set which facilitates the information interchange within a specific domain. For example, NewsML is developed for information interchange among the news agencies like Reuter and others.

iii) XML is Not a Replacement for HTML

It is important to understand that XML is not a replacement for HTML. It is useful for describing the data.

iv) XML can be used to Exchange Data

With XML, data can be exchanged between incompatible systems. In the real world, computer systems and databases contain data in incompatible formats. One of the most time-consuming challenges for developers has been to exchange data between
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such systems over the Internet. Converting the data to XML can greatly reduce this complexity and create data that can be read by many different types of applications.

v) XML can be Used to Share Data

With XML, plain text files can be used to share data. Since XML data is stored in plain text format, hence it provides a software as well as hardware-independent way of sharing data.

This makes it much easier to create data that different applications can work with. It also makes it easier to expand or upgrade a system to new operating systems, servers, applications, and new browsers.

vi) XML can Make Data More Useful

With XML, data is available to more users. Since XML is independent of hardware, software and application, one can make their data available to more than only standard HTML browsers.

Other clients and applications can access XML files as data sources, like they are accessing databases. The data can be made available to all kinds of “reading machines” (agents). For example, a data set can be used to see a webpage in a web browser of a computer or it can be used see the display in mobile phone.

vii) XML is used to Create New Languages

XML is the mother of WAP (Wireless Application Protocol) and WML (Wireless Markup Language). The Wireless Markup Language (WML), used to markup Internet applications for handheld devices like mobile phones, is written in XML.

Self-Check Exercise

Note: 

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

3) Discuss HTTP protocol for information communication over WWW.

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14.5 WEB 2.0

14.5.1 Definition and Need

The term Web 2.0 is given by Dale Dougherty, Head of Maker Media division of O’Reilly in 2003. Since then it has become a popular concept. Web 2.0 refers to the second generation of the Web, which enables people with no specialised technical knowledge to create their own websites, to self-publish, create and upload audio and video files, share photos and information and complete a variety of other tasks.

While there is no set definition of Web 2.0, it generally refers to the use of the web more as a social platform where users can participate by generating their own content alongside the content provided by the websites.
“Web 1.0 was all about connecting people. It was an interactive space, and I think Web 2.0 is, of course, a piece of jargon, nobody even knows what it means” (12). The above two definitions and excerpt from the talk with Tim Berners Lee show that there is no hard and fast definition of Web 2.0 however it is agreed that it is the second generation of Web where users can participate in generation of web content with much of the knowledge technology. The spectrum of web based content and services cover online shopping, email, chatting, discussion forums, blogs, wikis, social networks, YouTube, Twitter and so on. The products are more personalised now compared to more generic as it used to be.

Another aspect of Web 2.0 is the generation of product and services which are specialised and more users’ centric. The trend is to develop tailor made products on demand like online e-learning modules; information digests systems, literature review etc. that are more user oriented services. The Web 2.0 has empowered users to be more interactive with the existing services over World Wide Web.

14.5.2 Need and Features

Following points are instrumental towards the development of Web 2.0 technologies:

- Users’ Participation;
- User centric Services;
- Decentralisation and Interoperability;
- Hiding Technological Complexity;
- Modularity.

**Users’ Participation**

With legacy web, the communication was more from source to users where as reverse was not possible. Web 2.0 provides means and tools which empowers users not just to communicate back to the source but also generate content for the website. A user can express their feelings and view about the content. They can agree or disagree with the source. This participation leads in collaboration and development of innovative thoughts.

**User Centric Services**

The trend of services and its delivery is transformed in Web 2.0 environment. Earlier it was technology, which used to ride the market. But with the advent of new technologies, web services are more customer/user oriented. These services require enough flexibility in their modus-operandi to meet the ever changing needs of users. The user may keep changing their priorities and services options and the services have to stand themselves to each call of their users.

**Federated and Interoperability**

The applications in Web 2.0 environment are distributed over different nodes. And each node is responsible for its own services. However, collaboratively all the nodes can generate one service through a single platform. The service nodes generate services in a standard format, which can be amalgamated to a single service. This makes systems interoperable over a federated environment.

**Hiding Technological Complexity**

Web 2.0 platform aid their users to create services or contents without knowing much
of the technology. Thus, it is more user-centric. Web 2.0, in principle, is really not about the technological complexity though technology plays a major part from backend. The technology is developed in such a way that users need not bother about the hassles of technology rather they should concentrate on content of the services. The technology is kept hidden from the user.

Modularity

Modules are components of any system. A system functions in coordination of different modules to offer a service or product. Modular approach towards a system provides flexibility for adding or removing any feature out of the system. Legacy Web was about providing information in a robust but inflexible way. In Web 2.0, the modularity provides facility to add or remove components offering flexibility to a great extent.

Features of Web 2.0 Applications

Tim O'Reilly suggests that the true test of a Web 2.0 service relies on amalgamation of some or all of the following features: (18)

- services, not packaged software, with cost-effective scalability;
- control over unique, hard-to-recreate data sources that get richer as more people use them;
- trusting users as co-developers;
- harnessing collective intelligence;
- leveraging the long tail through customer self-service;
- software above the level of a single device; and
- Light-weight user interfaces, development models, and business models.

Self-Check Exercise

Note:  i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

4) Write features of Web 2.0 applications.

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14.5.3 Web 2.0 Applications

Collaborative Web

One of the important features of Web 2.0 is Collaborative services. In a collaborative approach content is generated by a number of persons working at different locations. Online Wikipedia is a good example of collaborative content development.

- Wikipedia

Wikipedia (23) is a community-based encyclopedia where anonymous volunteers from Internet contribute articles. It is free to use and one can write as well as change the
Wikipedia articles. The project was started in 2001 and has become one of the most consulted websites on the Internet.

It is a live service, which is being continuously updated. Newer topics are being added every moment. However, the control over the content is kept by the editing process to stop any kind of vandalism and misinformation.

The topics in the Wikipedia are arranged in a classified manner with following broad subjects:

- Humanities
- Social Sciences
- Natural Sciences
- Formal Sciences
- Professions and Applied Sciences

Each subject is further divided into narrower subjects. Articles are the leaf nodes, which are interlinked as and when referred within the text.

Each article starts with a small introduction followed by a content of topics covered in the article. At the end, a list of references, suggested readings, external links (links outside Wikipedia website) and further readings are given to facilitate the reading.

Example: http://en.wikipedia.org (Fig. 14.6)

- **Blogging**

Phenomenon of blogging has picked up immensely among new as well as older generation. According to a statistic, a new blog is created on average every second; 54,000 posts are created every hour, translating into roughly 1.3 million new posts per day. The area or the usage where blog is created is known as blogosphere. A blog promotes freedom of speech, interaction with audiences, and a tool for aggressive marketing.

Blogger offers service to host individual blogs online. Initially, it was started as a small company but now owned by GOOGLE. It facilitates people to express their thoughts online.
Another important blogging website is Wordpress.com (Fig. 14.7) which allows hosting of individual blogs and maintains it.

These blogging websites provide an administrative panel to administer one’s own blogging site. Normally, two kinds of subscription are offered by these blogging sites, free and fee-based subscription. The later one is used by commercial organisations, celebrities and so on whereas free ones are available for all. The topics in a blog can be classified and comments can be moderated by the blog administrator.

Example of Blogs:
- http://www.blogger.com/
- http://wordpress.com/

- Project Management System

Managing a project requires collaborating different activities together with definite time schedules. Particularly, during the project different versions of products are developed which has to be tracked so that they do not create confusion.

A project management system is ideal for managing project of software development. However, it can manage projects apart from software development. These systems support charting down the work-plan and share it with all the members. These systems use version control for a particular set of file or software and highlight the differences among the different version. These systems have strong user control mechanism, which does not allow a non-authenticated user to look into the areas, which he/she is not concerned with. These systems highlight the landmarks and project the time frame for the stakeholder participating in the project.

Trac is an open source lightweight project management tool, which can be implemented as a web based API. Trac supports to monitor and resolve individual bugs, issues, feature requests, and ideas. It has a ticketing system, which is numbering system for any of the issues mentioned during the project. Trac has supervision module with built-in documentation server, which can be used to keep of documentation in a form of a Wiki.

Bugzilla is another Defect tracking system, used to track the bugs of software. It has a feature to notify through email about the changes in the versions of software system.
Interactive tools of Web 2.0 are used for collaboration of users to share their ideas and work. It covers all the tools, which are used for sharing works and conducting online discussions and meetings.

- **Online Chat**

There are many free applications, which can be used for online chatting using text, audio and video. Important chatting applications are, Skype, GTalk (or GoogleTalk), Yahoo Chat. These applications are free to use over computer-to-computer chatting. One can hold conferencing as well as one to one chat. These applications can be also used to transfer the files over Internet.

- **Document Sharing Tool**

These are tools which can be used to share documents, images and audio visuals over Internet.

**Document Sharing: GoogleDoc**

It is free tool for sharing documents over Internet. It supports online upload, editing and sharing of documents, spreadsheet, presentation, drawing and forms. It supports the following functionalities:

- Real-time collaborative highlighting in documents
- In-cell dropdown and cell validation in spread-sheets
- Shows all formula
- Spell checker
- Page sizes
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- Auto-linking the text in the documents
- A new curve tool in drawings
- Convert files in the document list
- In built dictionary – one can add terms in the dictionary also
- Create Tables and draggable rows and columns to resize
- Document translation
- Searching of text in the document
- Mobile support
- Format painter in spreadsheets
- In built Optical Character Recognition (OCR) for PDF (Portable Document Format)
- A keyboard shortcut pop-up and more in drawings
- Including drawings in the text
- Sorting of text
- Create forms

GoogleDocs (Fig. 14.8) has almost all the functionalities to support document texting and sharing with a group of people.

GoolgeDocs (Fig. 14.8) has almost all the functionalities to support document texting and sharing with a group of people.

Image Sharing: Picasa

Image sharing is an important feature of Web 2.0. People can share their albums online, which can be viewed online by others. One can define the level of access to their photographs. Local album on computer can be synchronised with online album using a client software and any addition in the local album will be uploaded to the website. Picasa (Fig. 14.9) is an online image sharing tool by Google. Another example of image sharing is Flicker.
Movie Sharing: YouTube

It is a website to share video clips (Fig. 14.10). Presently, it is owned by Google and acting as subsidiary firm to Google. It was developed in 2005 by some of the employees of PayPal, a website for making online transactions. This technology uses Adobe Flash Video technology to display a wide variety of user-generated video content, including movie clips, TV clips, and music videos, as well as amateur content such as video blogging and short original videos. Individuals have uploaded most of the content on YouTube. Many of the media corporate also do offer their content through YouTube. Anyone can watch the video, as they are available in open domain free of cost.

Social Networking

Social networking is a remarkable phenomenon of Web 2.0 implementation. People can connect online with each other. They can search for old friends or form a group of
people with same kind of interest. Such sites are not only used by common man to connect to mass or by celebrities but they have become a tool for advertising firms and products. These social networking sites contain several applications like, image sharing, video sharing, online chatting, emailing, commenting or sending public as well as private messages to an individual. These sites are available over mobile applications in mobile phones so that one can keep connected to people even when he/she is travelling.

- **Facebook**

With all the above mentioned features, Facebook (Fig. 14.11) presently hosts more than 500 million active users and on any given day 50% of the registered users use Facebook. It has become such an important phenomenon for the people using Internet that on average each user has 130 friends or people to which they are connected with. One can share any object with others, which includes pages, groups, events and community pages. It has become a largest sharing platform where around 550 thousand objects are being shared globally. The popularity of Facebook is so much that it is being translated by user community voluntarily using its translation application. Facebook is widely available as an application in mobile phones of various brands. There are more than 200 mobile operators in 60 countries working to deploy and promote Facebook.

![Fig. 14.11: A Facebook Account](image)

Twitter and Orkut are some of the other examples of social networking website. Twitter is very popular among the celebrities. People can follow each other over Twitter.

- **Academia.edu**

This is a social networking site specially designed for the people with academic interests. They can share their ideas with others. It facilitates sharing research interests by hosting published works of their users. He/she can share research papers and articles. It also sends notification to its users if others are searching them. It collects jobs and other academic opportunities for the user as per his/her interests. It is very popular socialising site among the academic and research community.

**Information Mashup**

These are website which uses the content and services from different service provider about different aspects of subject. For example, if someone is looking for Delhi. A
Mashup website would provide information about the map of Delhi, Weather Forecast, News from Delhi, Photographs of important places, mode of transport, administrative set up and so on. The number of the services, which can be included in Information Mashup, is never ending. Mashup is important to make already existing data more useful, pertinently for personal and professional use. These are hybrid services and often look as an advanced version of web portals, which used to host static webpages.

- **Indianrailinfo**

Indianrailinfo (Fig. 14.12) is a mashup of different kind of information about Indian railways. This website collects information from different websites of Indian railways. It is one stop portal for information about arrival/departure of trains from a station, PNR status, seat availability and so on. Indianrailinfo is also connected through Google, Yahoo and Facebook and it can extract user’s information through these websites.

![Indianrailinfo](image)

**Fig. 14.12: Indianrailinfo**

**Self-Check Exercise**

**Note:**

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

5) Name different types of Web 2.0 applications.

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### 14.6 IMPACT OF WEB 2.0 TOOLS OVER WWW AND SEMANTIC WEB

Though there is no clear demarcation between Web 1.0 and Web 2.0 but the product and services offered under the umbrella of later is quite different from the previous. The services are more focused and interoperable in nature. One application or web service
could exploit the data from other. These services are wise enough to correlate the data of users need and services offered by service providers. Semantic web is about developing such kind of services or agents, which are more meaningful from the users’ point of view. Implementation of web ontology can bring in more contexts in the pursuit of information and web-based services from the user’s point of view.

### 14.7 SUMMARY

In the present chapter we learnt how the present Web has evolved from a simple idea of Sir Tim Berners Lee. It has become a platform of many complex services like, blogs, mashups, and social networking websites. The existing technology is still in evolutionary stage and more is expected to come in the form of Semantic Web. In the present chapter we could create understanding about,

- The framework on which Web functions
- The languages which are used to develop web applications
- Various Web 2.0 based services.

### 14.8 ANSWERS TO SELF CHECK EXERCISES

1) Web Browser is an application software to view webpages over Internet. It is used to retrieve, view and transfer information over WWW.

2) Addressing protocols is a standard to identify a web object by its names and addresses. It is known as Uniform Resource Identifiers (URIs). Uniform Resource Locator (URL) is a kind of URI which is used for locating web objects or webpages over WWW. It is a global addressing system, which is translated to IP address in order to locate the server containing information. The first part of the address is known as protocol identifier and it indicates what protocol to use; the second part is called as resource name and it specifies the IP address through the domain name where the resource is located. The protocol identifier and the resource name are separated by a colon and two forward slashes.

3) HTTP provides mechanism to address a website. It is a networking protocol for distributed, collaborative, hypermedia information systems. HTTP is used for data communication over World Wide Web. It supports retrieval, which includes search, front-end update, and annotation. HTTP protocol is based on a request from a client and response from a server. A server hosts webpages and on request delivers it to the client. This kind of request/response format of communication is known as Client – Server Architecture. Every request is treated as a new request and there is no dedicated connection between client and server. This is known as stateless connection. HTTP includes support to SMTP, NNTP, FTP, Gopher, and WAIS protocols. The last two are no more in use for real world web communication. Hence, HTTP allows basic hypermedia access to resources available from diverse applications.

4) Following are the key features of Web 2.0 applications,

- Users’ Participation
- User centric services
- Decentralisation and Interoperability
- Hiding technological complexity
- Modularity
5) Different types of Web 2.0 applications are:

- Collaborative Web Tools – Wikipedia, Drupal, Joomla, Blog, Trac, Bugzilla etc.
- Interactive Web Tools – Gtalk, Yahoo Chat, GoogleDoc, Picasa, Flickr
- Social Networking Tools – Orkut, Facebook, Twitter etc.
- Information Mashup – Google Map, Indiarailinfo, etc.

14.9 KEYWORDS

Blog : A website where entries are displayed in a reverse chronological order. A Blog is used to communicate to the audience and reverse. A blog may use text, images, and links to other blogs, web pages, and other media related.

eLearning : Stands of Electronic learning. E-learning is a method to impart distance education through electronic media which includes, online and offline media.

Flickr : It is a photo sharing website and web services where members can share photographs. The photographs uploaded on the website can be tagged for efficient retrieval.

Folksonomy : Folksonomy is community based labeling or tagging system performed by the Internet community (users). It is an open-ended labeling system for web objects including web pages, photographs, software and so on. This tagging system is intended to make a body of information increasingly easier to search, discover, and navigate over time.

Gopher : A distributed document search and retrieval network protocol designed for the Internet, which is now obsolete.

Intelligent Agents : A piece of software, which has intelligence to draw the inference from the fact.

Learning Management System (LMS) : Piece of software that enables the management and delivery of learning content and resources to students. Normally, these software works in online environment.

Listserv : An email-based mailing list.

Podcasting : Multimedia file distributed over the Internet using syndication feeds (RSS), for playback on mobile devices and personal computers.

RSS : Stands for Really Simple Syndicate. A standard mechanism of offering content, which can be read
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by web browsers as bookmark. It is a simple XML-based system that allows users to subscribe to their favourite websites.

Semantic Web : An idea of more meaningful web where resource discovery will be assisted by intelligent agents.

YouTube : A Web 2.0 based service to share and view video clips.

Web 2.0 : New generation of Web where users can have better control and voice towards using web services and products. The services are more user centric and interactive.

Wiki : An effective tool for collaborative authoring.

14.10 REFERENCES AND FURTHER READING

3. E-mail. (n.d.). Available at Wikipedia: <http://en.wikipedia.org/wiki/E-mail>


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