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## UNIT 16 INTERACTIVE AND DISTRIBUTIVE SERVICES

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### 16.0 OBJECTIVES

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After reading this Unit, you will be able to:

- describe interactive services and the benefits associated with them;
- explain prominent distributive services with examples; and
- discuss issues involved with the implementation of these services.

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### 16.1 INTRODUCTION

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Interactivity is defined as one to one communication between the two systems. This is the state of a system when the responses actually depend on the inputs received from outside of the system. If we look at the present services available on Web one can easily say that interactivity has been taken care seriously by the developers in the near past. The days of having a system stand-alone and with no interactions are gone. This is the pressure of more involvement of user collaboration causing the implementation of more interactivity. The interactivity further makes the system more user friendly, which subsequently enhances the user satisfaction.

On the other hand, these services provide great chance of collaboration and exchange of information.

## 16.2 DISTRIBUTED SERVICE

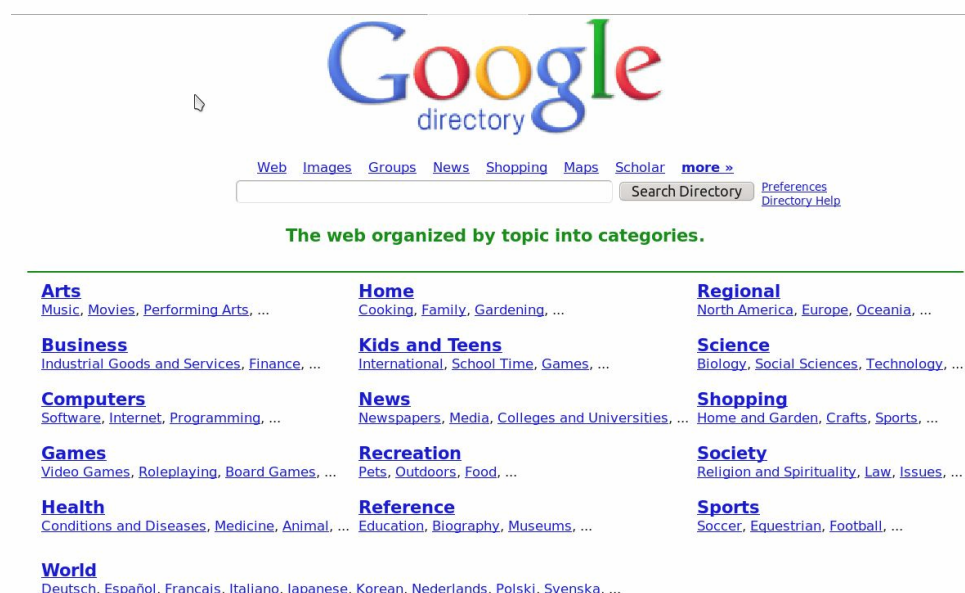
Distributed services are offered through distributed sites. In other words, the machines, which host the services, are placed at different geographical locations. However, these machines interact in a standard manner to offer one or multiple service under one umbrella service. In the subsequent sections we will discuss some of the important distributed services.

### 16.2.1 Web Directory

The Web contains trillions of terabytes of data and the information is not organised properly. There are some search engines available but sometimes getting answers to questions like, “What resources does the World Wide Web have on Algebra?” or “What kind of information is available on Knowledge Management?” get very tough. The web directory serves as an important service for providing answers to the above-mentioned questions. Web directories are nothing but a topical list of Internet resources arranged in a hierarchical way. Unlike search engines where Web is indexed by using robots and web directories are human maintained and created. Often these people are volunteers or sometimes hired. Generally, web directories are meant to be browsed by subject or topics, they can be searched by keywords too. Some of the popular web directories are listed in table 1 and main page screenshots given in the figures following the table from fig. 16.1 to 16.3.

**Table 16.1: Popular Web Directories**

Name	Directory URL	Remarks
BUBL Information Service	<a href="http://bubl.ac.uk/">http://bubl.ac.uk/</a>	From Librarians
Google Web Directory	<a href="http://www.google.com/dirhp">http://www.google.com/dirhp</a>	
Yahoo Directory	<a href="http://dir.yahoo.com/">http://dir.yahoo.com/</a>	World's first web directory
DMOS Open Directory Project	<a href="http://www.dmos.org/">http://www.dmos.org/</a>	Public involvement



**Fig. 16.1: Google Web Directory (<http://www.google.com/dirhp>)**



## BUBL LINK Catalogue of Internet Resources

[Dewey](#) | [Search](#) | [Subject Menus](#) | [Countries](#) | [Types](#) | [BUBL UK](#) | [BUBL Archive](#)

Selected Internet resources covering all academic subject areas

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#)

### 000 Generalities

*Includes:* computing, Internet, libraries, information science

### 100 Philosophy and psychology

*Includes:* ethics, paranormal phenomena

### 200 Religion

*Includes:* bibles, religions of the world

### 300 Social sciences

*Includes:* sociology, politics, economics, law, education

### 400 Language

*Includes:* linguistics, language learning, specific languages

### 500 Science and mathematics

*Includes:* physics, chemistry, earth sciences, biology, zoology

### 600 Technology

*Includes:* medicine, engineering, agriculture, management

### 700 The arts

*Includes:* art, planning, architecture, music, sport

### 800 Literature and rhetoric

*Includes:* literature of specific languages

### 900 Geography and history

*Includes:* travel, genealogy, archaeology

[E-US](#) | [CDLR Projects](#) | [Contacts and Credits](#)

BUBL uses the Dewey Decimal Classification system as the primary organisation structure for its catalogue of Internet resources. The Dewey Decimal Classification is (c) 1996-2007 OCLC Online Computer Library Center. Used with Permission.



BUBL Information Service, [Centre for Digital Library Research](#), Strathclyde University, Glasgow G1 1XH, Scotland  
Tel: 0141 548 4752 Email: [BUBL](#)

Fig. 16.2: BUBL Information Service (<http://bubl.ac.uk/>)

Fig. 16.3: DMOS Open Directory Project (<http://www.dmoz.org/>)

The human element involved in creating and maintaining directories creates both advantages and disadvantages for the user. Some of the advantages are:

- They contain fewer resources and reduces the information avalanche.
- Many directories rate, annotate and categorise the chosen resources.
- Directories increase the probability of retrieving the relevant results.

On the other hand, they have some disadvantages too:

- i) Most of the directories follow their own hierarchical arrangement, which sometimes leads to arbitrary arrangement too.
- ii) Because of human based maintenance the update is not so frequent and sometimes not at all happening.
- iii) The subjectivity of the annotation and rating is often under question.
- iv) It involves a good understanding or guess about the closest topic about the subject to be researched upon. For example if a user digs in some topic in the directory and finds no resource s/he has to guess or look for another topic.

### 16.2.2 Bulletin Board

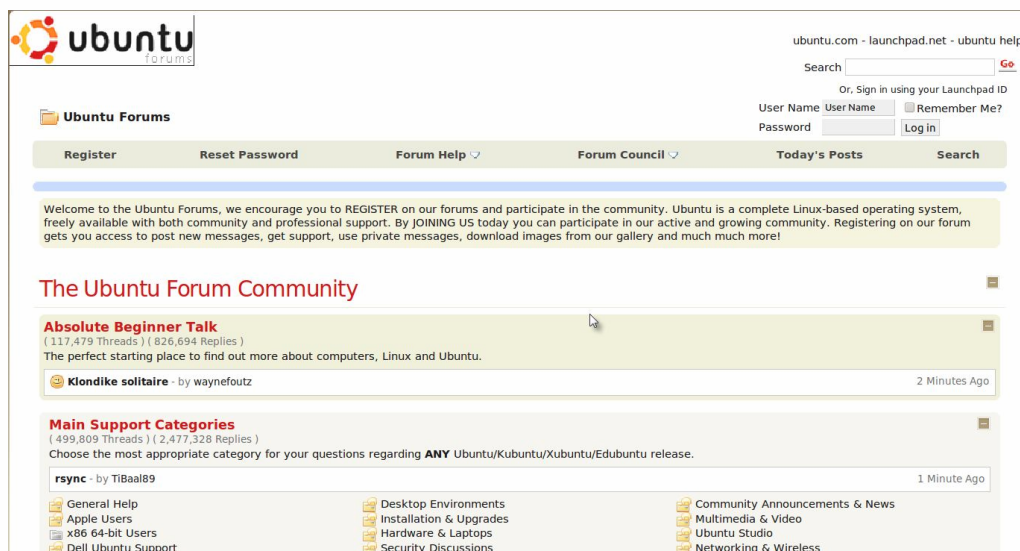
Bulletin or message boards provide a facility for discussion under various topics. They allow individuals to respond to topics or threads in the group, or to begin a new topic or thread by posting a comment or question. The messages posted to a discussion board are permanently visible to everyone who has access to it. Most of the discussion boards implement staged users, the users enter the board as primitive member, in board specific terminology they are known as “newbie” and then by asking questions and posting answers to the question asked by others they get promoted to “starred” members. This is a common phenomenon in many of the Bulletin Boards.

There are millions of bulletin boards available on the Internet. Many news oriented websites, search engines, social networking websites and special interest sites such as people using a particular type of personal computer or sharing an interest or a particular hobby or political issue provide bulletin boards. Some of the major Internet service providers also provide facilities for groups to set up their own bulletin boards and other means of sharing information and communicating among each other. Many libraries provide bulletin boards within their library websites as a means of enabling their users to discuss ideas and share information. Some sites provide bulletin boards for LIS professionals and provide opportunities to share good practices, discuss hot topics or to gain support.

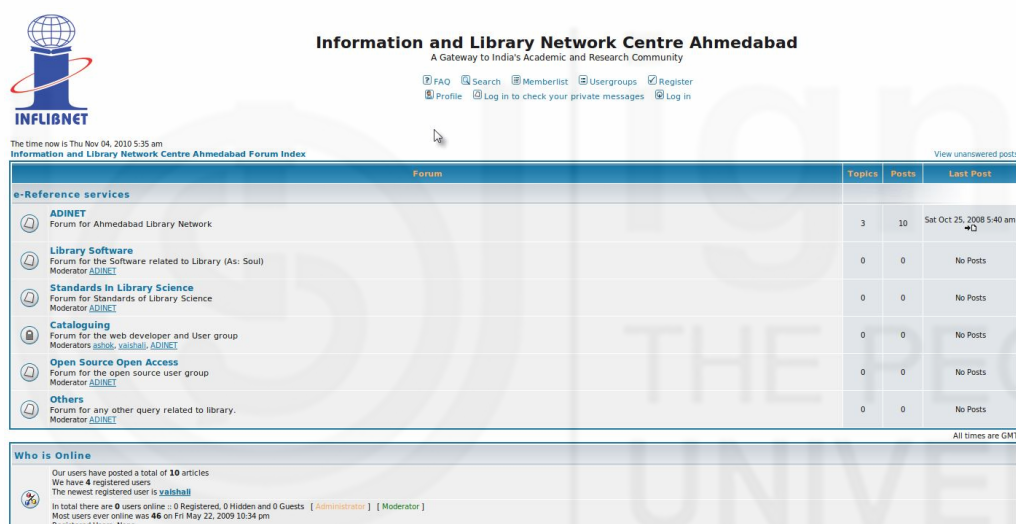
A wide range of software packages are available to enable the use of bulletin boards within websites one such software is PHPBB. Almost all the bulletin boards provide some of the following features:

- They provide a basic search facility, by topic, author and keyword.
- Tools to enable view bulletins in hierarchical format, popularly known as threaded and unthreaded view.
- Facilities to select and save the bulletins.
- Facility to indicate the read and unread messages.

Below are some screenshots of available web bulletin boards:



**Fig.16. 4: Ubuntu Forums: Online bulletin board for Ubuntu users. (<http://ubuntuforums.org/>)**

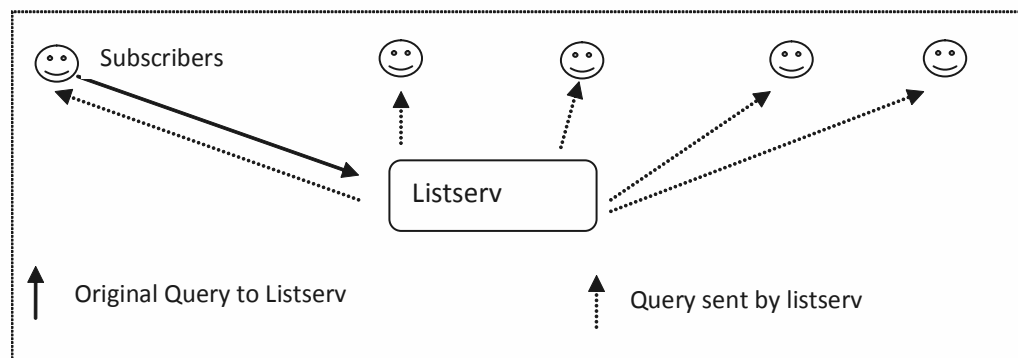


**Fig. 16.5: INFLIBNET Bulletin Board (<http://www.inflibnet.ac.in/forum/>)**

### 16.2.3 Mailing Lists and Discussion Lists

Mailing lists, discussion lists or listservs are services facilitate sending e-mails to a group of individuals with ease. These different names refer to the same process whereby one can send e-mail to a large group of people rather like using CC functionality provided by various mail applications. They are usually fully or partially automated through the use of software such as GNU's Mailman, Listserv, Mailbase etc. This service is hosted on hosting server that provides a reflector address on the same server capable of receiving email. The hosting service also maintains a list of all the different Mailing lists and the people who subscribe to the lists. The software processes incoming messages sent to the reflector address and depending on the content of the messages they are acted upon internally (in case of messages containing commands directed at the software itself) or are distributed to all e-mail addresses subscribed to the mailing list (See fig. 16.6). Joining a mailing list is called "subscribing" and leaving a list is called "unsubscribing".





**Fig. 16.6: Diagram Showing the Operation of a Mailing List/Listserv**

There are thousands of mailing lists available on Internet; these are devoted to a varied range of topics and individuals. The popular open source developments and W3C standards first open a public mailing list to have ideas and to discuss on the standard in hand and after the discussion the changed are made to the standard. The best use of mailing list is for discussion, some libraries use mailing list to alert the users about new arrivals or sending the table of contents of new journal issues. In general mailing lists provide a forum to:

- Get advices on buying new systems.
- Request any factual information from the group.
- Support the group members in solving problems.
- Announce upcoming meetings and conferences.
- Inform about new vacancies.
- Discuss some prevailing issues faced by the profession.
- Information about new websites, productions and publications.

Some mailing lists have the functionality to send mails in two modes viz. digest and mail-as-arrives. The digest mode is good for heavily active lists. Digest is a consolidated mail containing string of mails sent by mailing list. This helps users' who wants to look all the mails in one stretch and does not want to be disturbed regular receipt of mail. Users' can fix the frequency of digest mail once in day or two or the way they want. Otherwise users' receive mails regularly as the mail is shot by mailing list. Some examples are:

- 1) **LIS Forum:** largest mailing list comprising mostly library and information science professional from India. It is operated and maintained by NCSI, Indian Institute of Science, Bangalore. (<http://ncsi.iisc.ernet.in/mailman/listinfo/lis-forum>)

LIS-Forum -- Discussion Forum for Library and Information Professionals in India.	
<b>About LIS-Forum</b>	English (USA)
<p>LIS-Forum is an e-mail based discussion forum for Library and Information professionals in India. It is operated and maintained by NCSI, Indian Institute of Science, Bangalore. It was established in the year 1995 with support from NISSAT, DSIR, Govt. of India.</p> <p>To see the collection of prior postings to the list, visit the <a href="#">LIS-Forum Archives</a>.</p> <p>To search the collection of prior postings to the list, <a href="#">Search LIS-Forum Archives</a>.</p>	
<p><b>Using LIS-Forum</b></p> <p>To post a message to all the list members, send email to <a href="mailto:lis-forum@ncsi.iisc.ernet.in">lis-forum@ncsi.iisc.ernet.in</a>.</p> <p>You can subscribe to the list, or change your existing subscription, in the sections below.</p>	
<p><b>Subscribing to LIS-Forum</b></p> <p>Subscribe to LIS-Forum by filling out the following form. You will be sent email requesting confirmation, to prevent others from gratuitously subscribing you. Once confirmation is received, your request will be held for approval by the list moderator. You will be notified of the moderator's decision by email. This is also a hidden list, which means that the list of members is available only to the list administrator.</p>	
<p>Your email address: <input type="text"/></p> <p>Your name (optional): <input type="text"/></p> <p><small>You may enter a privacy password below. This provides only mild security, but should prevent others from messing with your subscription. <b>Do not use a valuable password</b> as it will occasionally be emailed back to you in cleartext.</small></p> <p><small>If you choose not to enter a password, one will be automatically generated for you, and it will be sent to you once you've confirmed your subscription. You can always request a mail-back of your password when you edit your personal options.</small></p> <p>Pick a password: <input type="password"/></p> <p>Reenter password to confirm: <input type="password"/></p> <p>Which language do you prefer to display your messages? <input type="text" value="English (USA)"/></p> <p>Would you like to receive list mail batched in a daily digest? <input checked="" type="radio"/> No <input type="radio"/> Yes</p> <p><input type="button" value="Subscribe"/></p>	
<p><b>LIS-Forum Subscribers</b></p>	

**Fig. 16.7: Mailing List of NCSI, Indian Institute of Science, Bangalore.**  
(<http://ncsi.iisc.ernet.in/mailman/listinfo/lis-forum>)

- 2) **DLRG:** Digital Library Research Group is a mailing list for helping library professional in solving software and hardware related problems. This is operated and maintained by Documentation Research and Training Centre (DRTC), Bangalore. It mainly covers topics related to digital library, library management systems and other data import and backup.

Fig. 16.8: Digital Library Research Group of DRTC, Bangalore

## 16.2.4 Resource Sharing

Resource sharing is a partnership where several libraries share one or more of their functions, for example, acquisitions, processing, storage and delivery of services. Each member has something useful to share, is willing to share and a plan exists to accomplish this. Major goal of resource sharing is to augment the local holdings by providing access to collections of other libraries.

One of the major approaches of resource sharing is sharing of library catalogues. For this purpose, libraries use Z39.50 protocol. In this environment, different libraries can be searched with one single interface. This interface can also be used to download the library catalogue entry so that duplication of work can be avoided among the libraries.

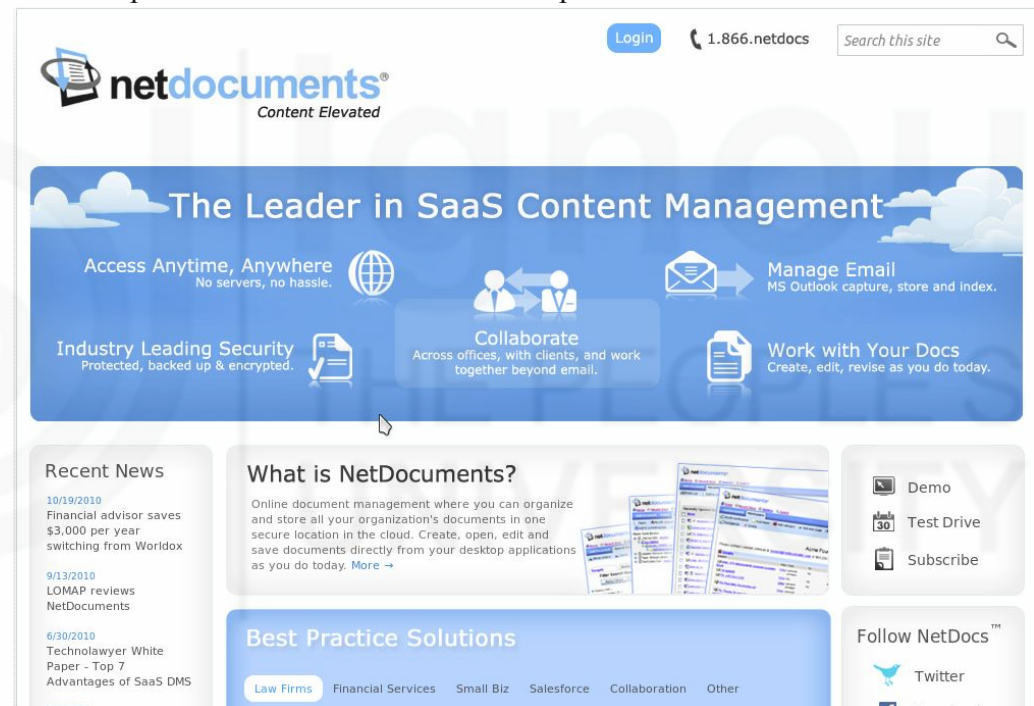
Fig. 16.9: Library of Congress Z39.50 Search

## 16.2.5 Online Document Repositories

Document repository systems are digital libraries containing an organisation's documents. They are commonplace for all the important documents. These systems allow controlling how documents are created, accessed, stored, and even disposed of. These may look similar to a file server but they have many differences such as. It allows creating templates for a particular class of documents for example, one can create a template for user requests wherein the user or staff may feed data wherever required and in the case of standard information the data will be prefilled. This ensures the consistency in data entry and ease in data entry.

Wherever there is sensitivity of information contained in the documents, the repository will need to be secured. For this the technology of encryption and authentication mechanisms is to be used. The online document repositories are popular in corporate world. In big organisations the employees have their username and password to access the system.

Some of the institutions and university libraries are also using document repositories to store and provide access to their research output.



**Fig. 16.10: Netdocuments (<http://www.netdocuments.com/>)**



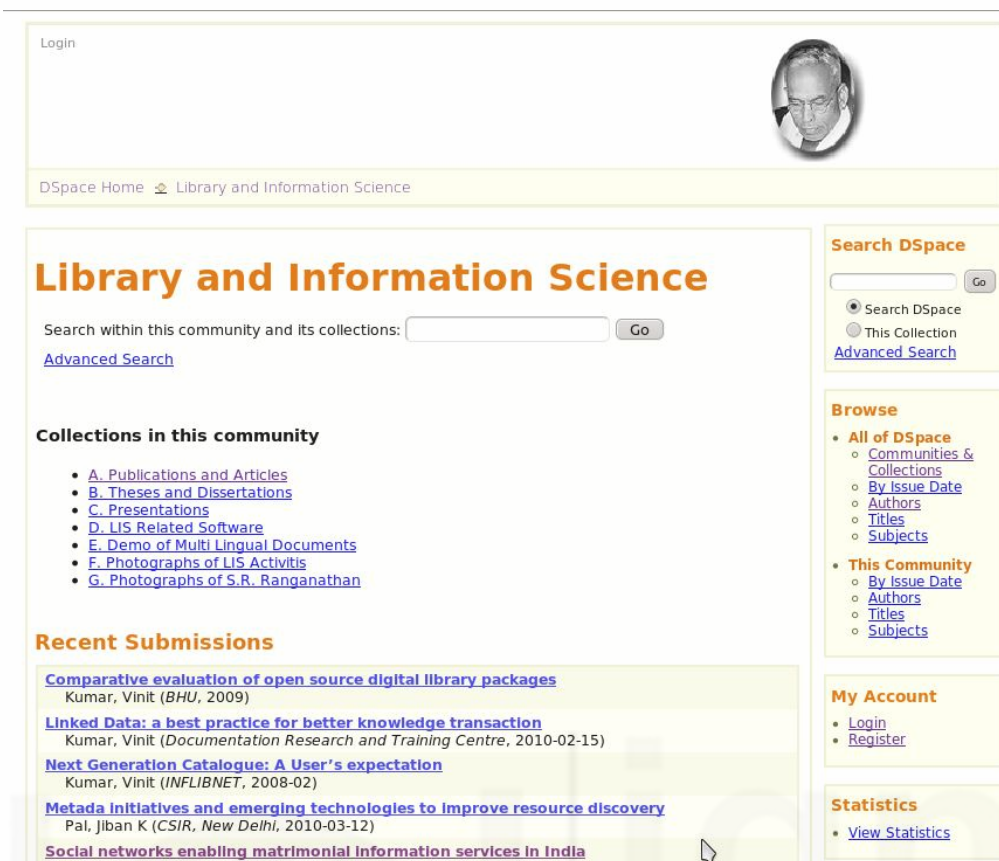


Fig. 16.11: Librarians Digital Library (LDL) (<https://drtc.isibang.ac.in>)

## 16.2.6 Web Portals

Web portals are a gateway to the information services on the Web or other sites on the Web. These act as a convenient location of sites of related interest, as it is seen in subject specific portals like infolibrarian.com or in general portals like yahoo.com. These portals provide other services such as e-mail, news, stock prices, information, databases and entertainment.

A truly effective portal must include:

- A single point of access (Single sign on)
- Unified search across all information sources
- Personalisation
- Applications integration
- Collaboration
- System security
- Openness
- Links to help files



Fig. 16.12: Yahoo Web Portal ([www.yahoo.co.in](http://www.yahoo.co.in))

There are subject specific web portals. These portals include documents and resources within the scope of subject. An example, in library science is infolibrarian.com.

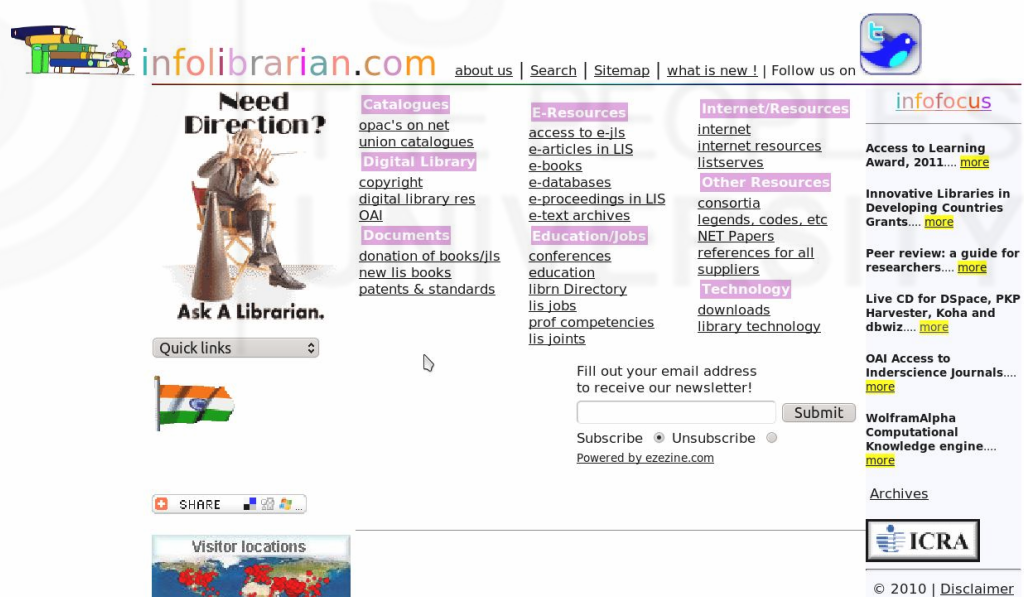


Fig. 16.13: Infolibrarian.com (<http://www.infolibrarian.com/>)

### 16.2.7 E-mail

E-mails are very common and popular method of exchanging information. E-mails are commonly and regularly used for both formal and informal communication. It is also used as a popular means of keeping up-to-date and solving small queries that arise everyday in the workplace.

International Encyclopedia of Information and Library Science defines e-mail as “a method of sending messages, data files, etc. by electronic means from one computer

with network access to another”. The receiving server or machine is usually equipped with a storage area, or mailbox, in which the messages are deposited. The access to mailbox is restricted by password and only the authenticated users having the password can read the mailbox. Users can read their incoming messages on-screen when they choose and, if they wish, print them out or download them on to a disk. In the beginning, the e-mails were delivered, as user to user which required both the users to be online. The present day e-mail servers provide users with the capabilities to store and forward the messages, which mean that the need to be online is not required. Further the users can login to the server and can check the messages at any time. The messages are exchanged between the users through a protocol known as Simple Mail Transfer Protocol (SMTP) with software programmes called Mail Transfer Agents (MTA) such as Exim4, Postfix and Sendmail. The MTAs provide user to retrieve the messages through standard protocols viz. Post Offices Protocol (POP) or Internet Message Access Protocol (IMAP) some corporate organisation have some proprietary standards such as Lotus Notes and MS Exchange server. The messages are written using clients which are desktop based applications such as Thunderbird, MS Outlook, Apple Mail, etc. or web based such as Webmail etc.

Some of the existing services and clients on Internet:

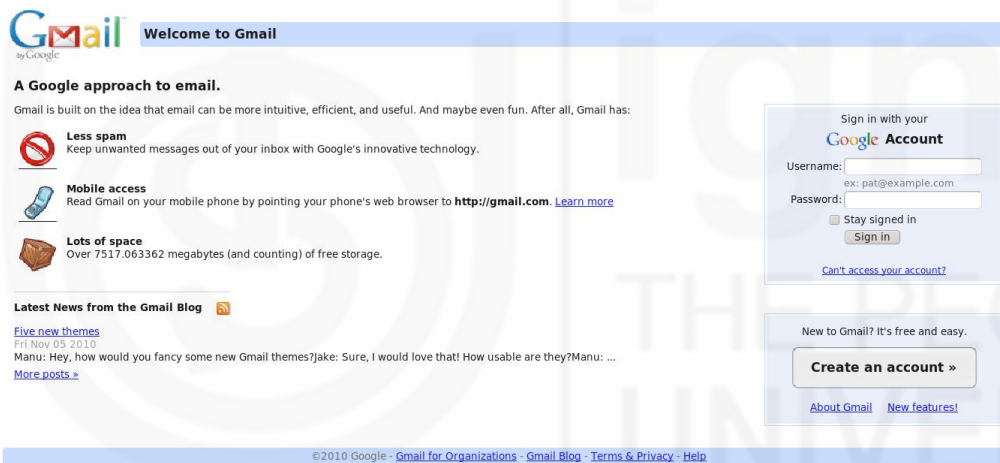
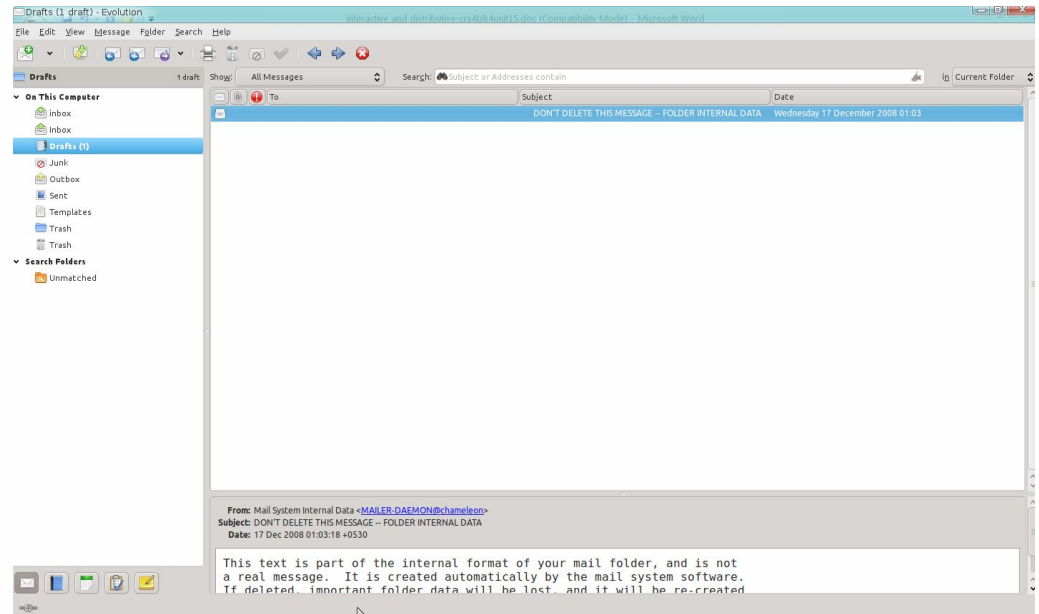


Fig. 16.14: Gmail - Google’s Mail Service: (<http://mail.google.com>)



Fig. 16.15: Organisational Mail Service



**Fig.16.16: Evolution – Default Mail Client in Ubuntu Linux Distribution**

The email services have some advantages and disadvantages too. The advantages are:

- The speed for delivery of messages is quick and almost instantaneous.
- They are reliable and secure efforts are going on to make them more reliable and secure.
- They are environment friendly, as there is no use of papers. Similarly the messages are stored permanently so it is easy to find the old messages.
- The use of graphics such as a picture etc. adds value to the service. Because of its one-to-many nature.
- It can be used as publicity and advertising tools as well.

Some disadvantages are also associated with email service such as:

- Because of its electronic nature and the facility to send attachments there are chances for viruses to get distributed through it.
- There is a big problem of spamming, which is nothing but sending unsolicited emails or advertisements. Checking and deleting these unsolicited emails can unnecessarily consume a lot of time of users.
- As the system is password based and contains lot of private data it gets more prone to security threats.

### 16.2.8 Online Storage and Searching

The electronic systems are very prone to mishandling and chances of getting corrupt due to myriad of reasons such as virus attack, natural disaster, theft, lost or broken, etc. Some online services on Internet provide the capability to store the files for easy retrieval and backup. On top of it they provide features like:

- Access files from any computer and anywhere, which reduces the need to carry them physically or sending them to own e-mail address.
- Some services allow viewing and listening media like pictures and audio files.
- Provide easy way to share the uploaded files among friends, family or the world.
- Remote access to the files, via a desktop client or website.

These services are also encrypted and properly authenticating looking at the sensitivity



of the data. These services are mainly priced, but for small storage space they are free. The clients are seamlessly integrated to the operating system of the user. Some services (like, dropbox.com) dedicate a folder in the users' computer and allow dragging and dropping any file in the folder automatically synchronous to the online server. Similarly, some services provide programs to schedule the time of online syncing. Some of the online file storage services are listed in the following table.

**Table 16.2: Online Storage and Searching Services**

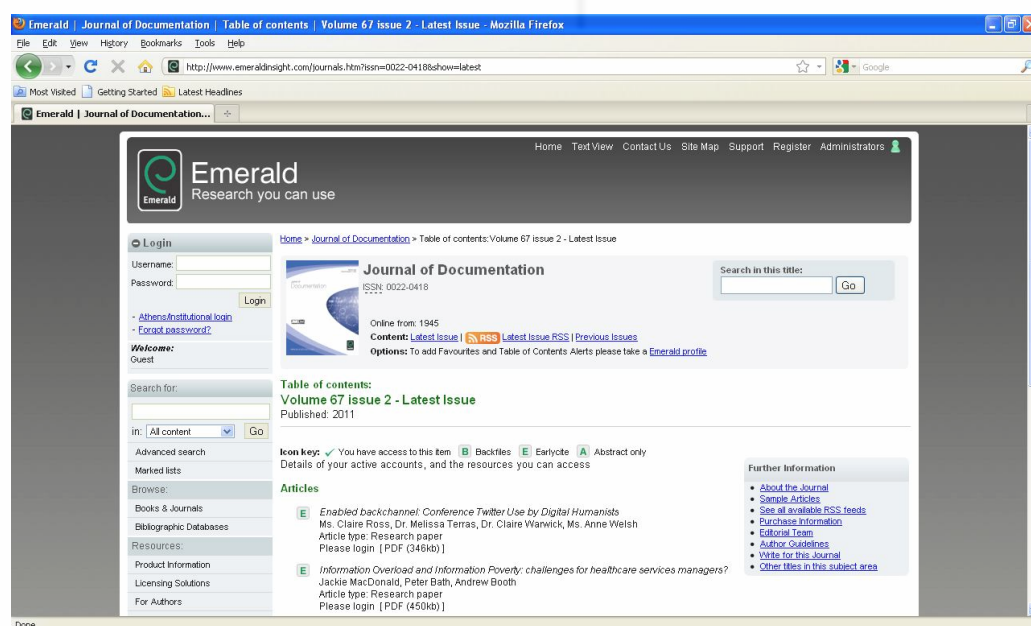
Service Name	URL	Priced/free
Dropbox	www.dropbox.com	Free till 8GB
SugarSync	https://www.sugarsync.com/	30 Day trial
OpenDrive	http://www.opendrive.com/	Free 5GB
Mozy	http://mozy.com/	Free till 2GB
Box.net	http://www.box.net/home	Free till 5GB

Apart from these exclusive storage services we have services like Google Drive (<https://drive.google.com/ý>) and Microsoft SkyDrive (<https://skydrive.live.com/ý>) wherein one can use existing e-mail accounts to use the storage facility. These services are also available on mobile devices like smart phones and tablets.

### 16.2.9 E-publishing

The information produced is disseminated by different model of publishing. New technologies have transformed the process of publishing and distribution of information. Electronic publishing is the process for production of typeset quality documents containing text, graphics, pictures, tables, equations etc. in digitised form. It uses new technology allowing publishers to deliver documents and other contents quickly and efficiently as well.

There are two important modes of e-publishing i.e., online and offline. Online publishing is in the form of online journals, websites, online database, e-books and so on. Offline publishing is done over some storage media like, Compact Disc, DVD and so on. Now-a-days e-books are being published on DVD and CDROM.



**Fig. 16.17: Emerald Online Publishing**



## 16.2.10 Webcasting

Webcasting is a service based on push technology, which means updating the systems by which users of the Internet, or Intranets, can receive news and other information through periodic and unobtrusive transmissions. The webcasting is an easy way to distribute the relevant content to the users. A webcast is a media file distributed over the Internet using streaming media technology to distribute a single content source to many simultaneous listeners/viewers. Webcasting is the Web-enabled broadcasting and integration of dynamic rich media. In simpler terms webcasting is “broadcasting” over the Internet. This involves one-to-many communication type. Webcasting informs users about material relevant or related to their interests before any specific request is made. This is done on the basis of pre-selected topics stored in a user profile. The user profile is further updated on the basis of the received feedback. The websites selected are referred to as channels; the updates received from the channels are supplied in its raw form or sometimes it is sent after processing.

With the use of very cheap and accessible technology it has become very easy to webcast anything such as:

- Meetings
- Special events: Birthday celebrations, festivals etc.
- Collaborative engineering
- Conferences with key partners
- Discussions with supply chain partners
- Sales presentations and demonstrations
- Voting, panel discussions
- Interviews
- Keynote addresses
- Training

There are many instances of webcasting available now-a-days with topics covering technology, computers, news, cooking, tutorials etc. The news webcasting is very popular these days. Webcasting is sometimes referred as “buffering media” too. Some examples of webcasting are:

### 1) YouTube

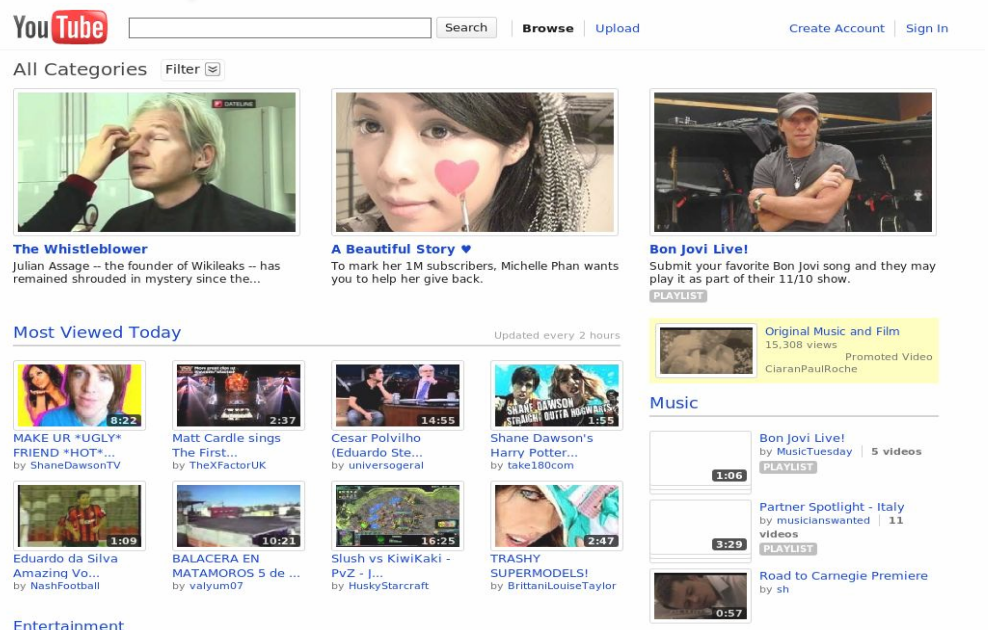


Fig. 16.18: Webcasting through YouTube(<http://www.youtube.com/>)

## 2) BBC World News

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Fig. 16.19: News Casting([http://www.bbc.co.uk/iplayer/console/bbc\\_world\\_service](http://www.bbc.co.uk/iplayer/console/bbc_world_service))

## 3) IGNOU Gyan Darshan

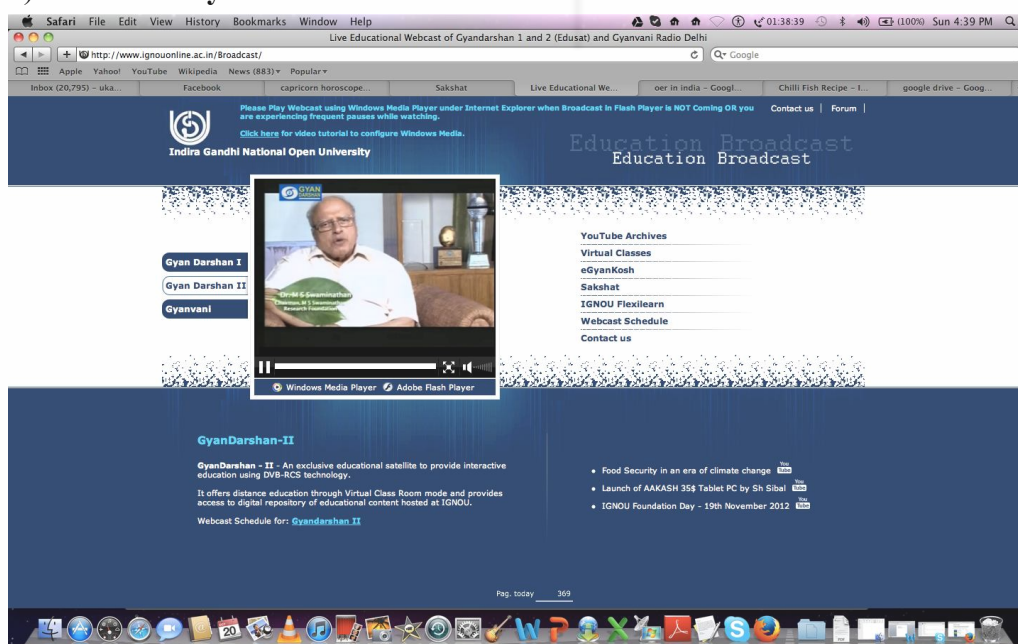


Fig. 16.20: IGNOU Gyan Darshan Channel (<http://www.ignouonline.ac.in/Broadcast/>)

**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 Web Directory?

2) Discuss advantages of Email communication.

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## **16.3 INTERACTIVE DISTRIBUTED SERVICES**

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With the implementation of Web 2.0 technology the services are not only distributed but they are interactive also. They are more users' centric or customer oriented. The implementations of interactive services are manifold. Some of these are discussed in the subsequent sections.

### **16.3.1 Interactive Learning**

Networked technologies such as Internet and World Wide Web are dramatically changing education and training as they enable people to access information and communicate with others across terrestrial boundaries, cultures and on a global scale. Interactive learning as defined by Chartered Institute of Personnel and Development emphasises the importance of connectivity and interactivity states "Learning that is delivered, enabled or mediated by electronic technology, for the explicit purpose of training in organisations. It does not include stand-alone technology-based training such as the use of CD-ROMs in isolation". Use of interactive learning involves text, graphics, audio, video and animation. Apart from this, the programmes are enhanced by providing additional support, e.g. using synchronous and asynchronous communication applications such as e-mail, discussion groups, chat rooms and video conferencing. The learning usually takes place through the use of web-based training programmes, where the learner typically follows a pre-specified learning process that includes opportunities for practice and assessment and feedback activities. It also takes place through blended approaches that involve learners experiencing a mixture of face-to-face and online learning experience.

There are online learning environments both on commercial and open source platforms. Moodle is one example of hosting online e-learning programmes.



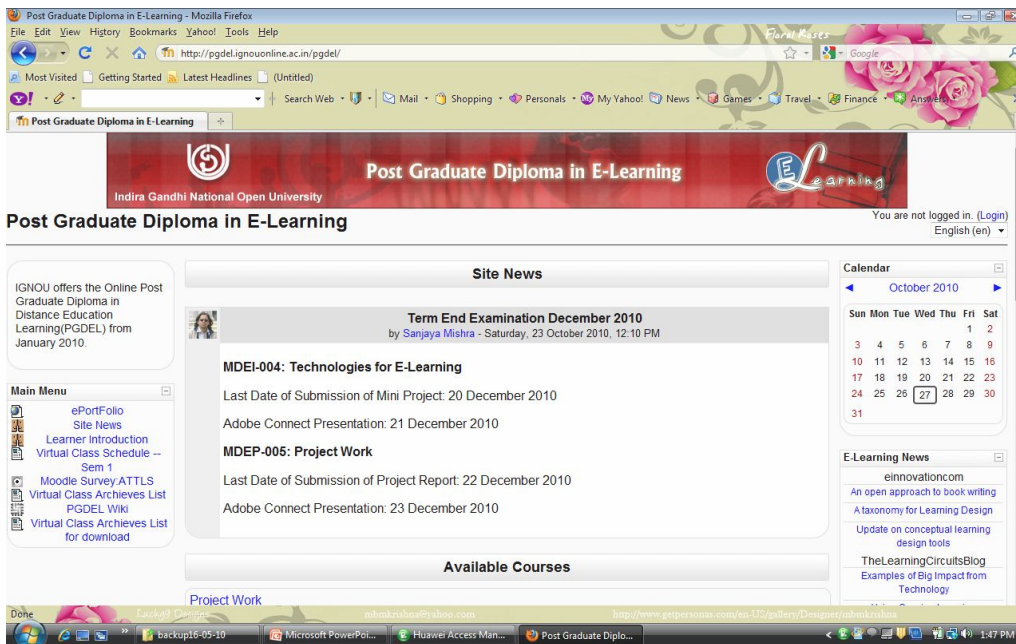


Fig. 16.21: Elearning Programme Using Moodle LMS

### 16.3.2 Interactive Business and Trading

One of the major implementation of existing web technology is seen over online trading and business. With the evolving standards and inter-operability among systems business houses are extending their sale counter over Internet. A user can order the products and make the payments online. An important interactive service over such online shops is use of cart facility where customer can collect the products s/he wants to buy and at the end make the payment. These carts are interactive tools where one can add or remove the product as one does in real stores.

The interactive environment of business has been extended to booking tickets online with selecting the best available option to travel. Online trading of live stocks in share market is another area which has been revolutionised. The live trading of stocks can be done. The trading window displays live prices of stocks every second. Same kind of trading services are also offered by many financial banks online where a client can buy and sell stocks and immediately money is deducted and deposited in the account as the case may be.

27 Sep 2005 11:31:4CI:927.83 (+2.70) 2nc B7.04 (-0.10) Vol 179.145mVal 205.862m 179 316 271 449														
Stocks : Quotation														
Stock	Buy	B-Q	Sell	S-Q	Last	Chg	L-V	Vol	Close	Open	High	Low	B%	
SILVER-WA	0.170	25959	0.175	11545	0.170	+0.100	5	153317	-	0.170	0.180	0.165	62%	14.1
SCICOM	* 0.910	3198	0.915	1968	0.915	+0.020	30	97163	0.895	0.895	0.930	0.890	76%	7.1
PTB	0.325	1152	0.330	69	0.330	-0.065	31	81859	0.395	0.400	0.410	0.325	83%	6.1
TIMECOM	0.620	3146	0.625	1658	0.625	+0.005	700	66730	0.620	0.620	0.630	0.610	56%	0.1
MULPHA-WA	0.085	8400	0.090	560	0.090	+0.010	50	63380	0.080	0.085	0.095	0.085	72%	1.1
BAHVEST	* 0.315	5339	0.320	1510	0.320	-0.010	42	62045	0.330	0.330	0.340	0.315	59%	2.1
INIX	* 0.715	155	0.720	1590	0.720	+0.015	10	41202	0.705	0.710	0.730	0.705	56%	4.1
CAMRES	0.305	29831	0.310	18341	0.310	+0.010	1	41050	0.300	0.305	0.310	0.305	48%	2.1
NEXTNAT	* 0.815	560	0.820	480	0.820	+0.025	100	34050	0.795	0.800	0.825	0.800	76%	1.1
NGIUKKE	0.480	2040	0.485	97	0.485	-0.005	3	32264	0.490	0.490	0.500	0.480	59%	4.1
IRIS	* 0.100	25540	0.105	13211	0.105	-0.005	200	31508	0.110	0.105	0.110	0.105	27%	0.1
TALAM	* 0.395	3044	0.400	2743	0.400	-	5	30052	0.400	0.405	0.410	0.395	50%	0.1
MEDIA	* 1.600	24	1.610	2010	1.600	-	43	28430	1.600	1.600	1.600	1.590	88%	0.1
PBBANK-O1	7.000	7801	7.050	4168	7.050	+0.100	252	27483	6.950	6.950	7.100	6.950	38%	0.1
SUGAR	* 0.665	42	0.670	810	0.665	-0.060	20	26879	0.725	0.720	0.720	0.650	22%	2.1
Best Buy 52279/868,778 Best Sell 39685/714,707 Stock Code 7136WA High Price 0.180														
441,303 25959 0.170 0.175 11545 202,038 Status New Low Price 0.165														
209,715 12710 0.165 0.180 15842 285,156 Trading Board Main Board Open Price 0.170														
217,760 13610 0.160 0.185 12298 227,513 Sector Loans Value 2,665,050														

Fig.16.22: Online Stock Trading Screen

(Source: <http://www.aaasec.com.my/stocksen/quicktour3.asp>)

### 16.3.3 Remote Computing and File Transfer

Remote computing is a regular phenomenon in networked environment. It is used to share expensive hardware and software among a group of people. For example, if one has to perform certain set of analysis on a certain set of data. S/he can transfer the file using File Transfer Protocol (FTP) from present machine to remote machine where such analysis facility is available. Thereafter, whole processing can be done on remote machine using the resources from the remote machine. In such cases, the local machine acts as a dumb terminal.

With the increased use of Internet and implementation of new technologies, the form of remote computing has changed to Cloud Computing. In cloud computing the term cloud represents the use of Internet. The resources in cloud computing are distributed and often the user of computing facility is also not aware fully of location or the machine which is offering service. The cloud computing may use more than one resource distributed at different locations far apart.

Cloud computing is a way to reduce the cost on expensive computing exercises. It offers a sustainable environment for users to use and share their costly devices with others. One of the major implementation of cloud computing is Beowulf cluster. These are set of inexpensive computers, which are collectively used to process data as high-performance parallel computing device. These are shared machines working parallel over network.

### 16.3.4 Interactive Communication

Interactive communication is an important factor for the innovation and collaboration in present ideas hunting world. There are some prominent and powerful tools available to help to do so such as Microsoft Exchange (<http://www.microsoft.com/exchange>) server. It is a server based system and provides users with collaboration tools similar to Microsoft Outlook e-mail, calendaring application. Exchange provides shared calendars, shared address books, e-mail and other collaboration tools. The MS Exchange user typically accesses an Exchange account via a web interface or the Exchange desktop application.

There are tools, which are used for interactive real-time chat either through text or for conferencing. The participants can interact in real time to share their views and provide feedback or answer immediately. We will now discuss some of the live chatting and web conferencing tools.

Some of the tools for live chat are as follows:

- 1) Microsoft NetMeeting (<http://www.microsoft.com/windows/netmeeting>): It provides real-time chat, file transfer, interactive whiteboard and file sharing. NetMeeting also provides face-to-face video conferencing using webcam or other source and real-time audio communication.
- 2) Windows Messenger: Messenger allows for sending instant messages to other Windows users, audio, video, communication, file exchange, text based chat, and integration with 'remote assistance' to allow remote login to the local PC by a technical support service. Messenger is provided with most versions of Microsoft Windows.
- 3) ICQ (<http://web.icq.com>) This application provides similar functionality to Windows Messenger and may also be used via a web browser interface at the ICQ website. ICQ is a worldwide chat system, and should be used with care in any serious context.



Tele/video conferencing is the need of the day particularly on the business and trade. Facility of conducting online tele/video conferencing reduces the burden (financial and physical stress) for the business houses. This has come up as a major solution where long distance travel is required. It has become an interactive medium to communicate real time face to face. People traveling at far off place can keep in touch with their family and friends. Normally, computer-to-computer communication is free however service for calling a telephone is paid which is very nominal. This has revolutionised the global communication scenario.

The conferencing can be done one to one basis or among a group of nodes simultaneously. Some popular services are listed in Table 16.3.

**Table 16.3: Conferencing Tools**

Application Name	Features	URL
Pidgin	Same as Window Messenger	<a href="http://www.pidgin.im/">http://www.pidgin.im/</a>
Skype	Similar features as NetMeeting, but more popular	<a href="http://www.skype.com/intl/en-us/home">http://www.skype.com/intl/en-us/home</a>
Google+ Hangouts	Online chatting-audio, video and text chatting	<a href="http://www.google.com/hangouts/">http://www.google.com/hangouts/</a>
Yahoo Messenger	Online chatting-audio, video and text chatting	<a href="http://messenger.yahoo.com">http://messenger.yahoo.com</a>

### 16.3.5 Interactive Search Agent and Document Delivery

Though it is in a very nascent stage but there are services, which are of interactive nature. Interactive search agents are normally domain specific. One of the implementation of domain specific search agents is seen in travel booking where a single search result yields many options. The user can choose which ever suits them and further refine the search and book for their travel.

Similarly, Google and Yahoo have launched a search service to make search more interactive and user oriented. The search interface helps users to find most suitable search term in order to form their search query. While typing the search term in the box all the related search terms are also displayed in anticipation to help user to find the search query.

The search engines provide facility to preview the searched pages within the search result page so that users can gaze the importance of web page towards their search and save their valuable time. Google has launched personalised searching alerts for any new addition by email. The service is known as Google Alert. Search engines do provide option to search within the blog, webpages, or statistics and so on.

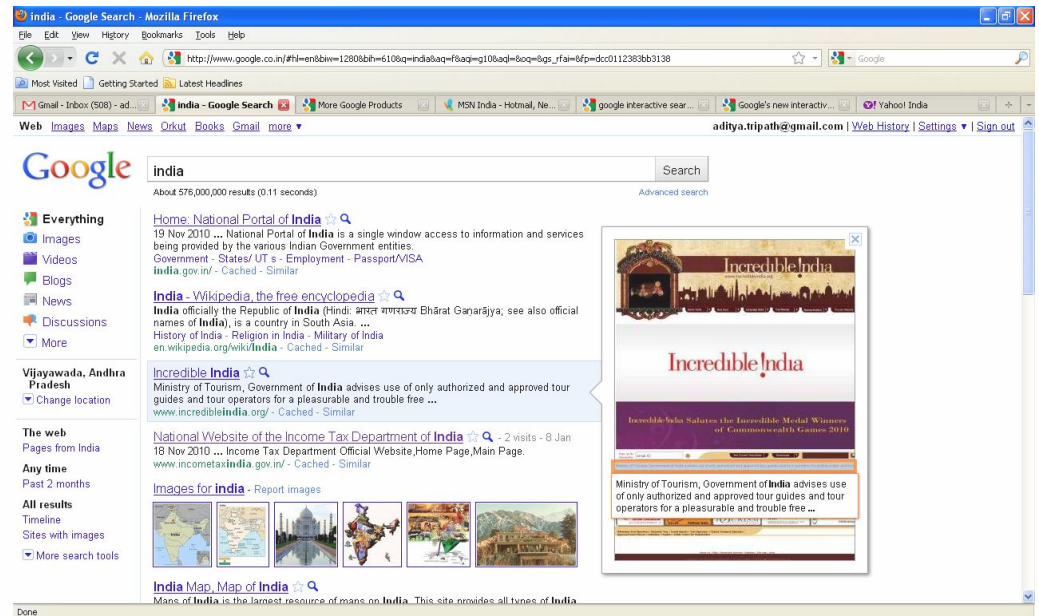


Fig. 16.23: Interactive Web Searching by Google

### 16.3.6 Interactive Bookmarking

People keep working online and come across several resources. These resources are bookmarked for any future use. The online bookmarking services provide method to bookmark resources online and use wherever required. One of the examples of such bookmarking is Google Bookmarks. The bookmarks can be categorised online and labeled.

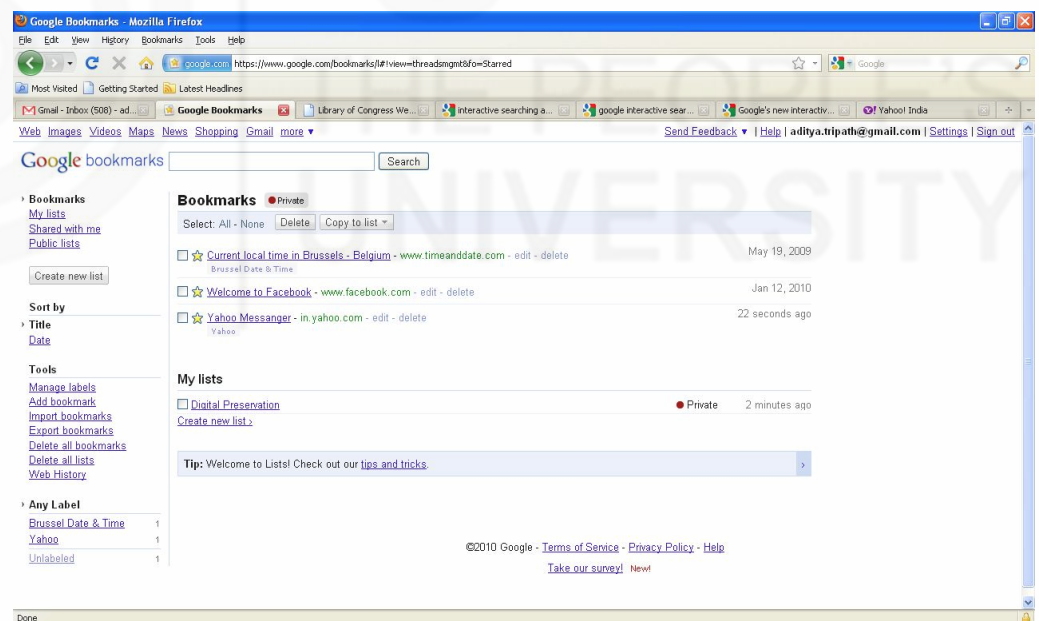


Fig. 16.24: Google Bookmark

### 16.3.7 Interactive Translation Service

There are several websites, which provide online translation service. However, the machine translation is not a matured technology but there are several implementations to it particularly in the web environment.

The tools like, Yahoo Babel Fish translates online given text and webpage. Google presents language tools for translation. It supports Indic language translation.

**Fig. 16.25: Google Translation****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) What do you understand by Interactive Web service?

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**16.4 SECURITY AND PRIVACY ISSUES**

Security is always an important issue in the design of any interactive and distributive service. Internet security means to prevent any unauthorised access to networked resources and services. Typical methods for ensuring security include:

- 1) **User authentication:** Integrating the service with a user records database (such as Active Directory) and an authentication system, such as LDAP (Lightweight Directory Access Protocol) should allow for use of the normal network username and password to access the services, restricting access to individuals without and institutional network account.
- 2) **IP:** The IP is a unique numerical network address on every computer. Access to the implemented services may also be limited using IP restriction, i.e., limiting the access to a range of known computers, probably located within an organisation or distributed over location.. For distributed locations the IPs of the machines should be known to the system running the IP restrictions.
- 3) **User roles:** The provision of having access control lists (ACLs) to define the roles of the registered users provides good level of security and reduces the chances of abuse. Some roles such 'system administrator' to manage the hardware and software at the highest level can be created. Similarly, service specific roles like 'moderator' etc. can be created for moderation of chats and discussions. Use of roles is an important security consideration, because higher level roles provide access to complex features, which if used improperly could damage the system or result in data loss (e.g. removal of user accounts).

Similarly there are privacy issues in communicating over a network, since all

communications can be intercepted and recorded without participants being aware. The distributive services and social network present nowadays on web are more concerned with the privacy of the users. There are reports that the user information available in some of the services were mishandled and reached in the hands of marketing companies. These companies use the users data to propagate their products and to do business analysis etc. This further is breach of privacy of the user, as the offers offered by these companies will bug the users personal life. The Encyclopedia for Library and information Science defines privacy as “The quality of protection for aspects of the life, and information about the life, of an individual or a group, from the intervention or knowledge of others”. The handling of privacy is under the eyes of media also, so utmost care should be taken. Such as:

- 1) **Privacy policy:** Every service asking users about their personal details should draft a privacy policy. Respect for the privacy of certain aspects of information is a counterbalance to the principle of freedom of information.
- 2) **Encryption:** Since all the communication in interactive and distributive technologies is transferred over a network these can be intercepted and recorded without the knowledge of the persons involved. Encryption technologies especially the public key encryption system should be used to keep the communications coded and readable only by the intended participants.
- 3) **Moderation policy:** When a system provides the interaction platform it may happen that some users may abuse the platform, especially in the case of discussion forums and chats. This is very important issue as the improper handling will not only refrain the fair users it will also make the environment nasty as well. To limit the abuse some moderation policy should be framed and implemented with some moderators. The steps to disallow the anonymous postings, banning of such kind of users etc. can be framed in the moderation policy. Similarly for chat, the sessions may usually be recorded providing a text record of all messages.

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## 16.5 SUMMARY

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In the present Unit we studied that Web has become a medium to deliver different types of services. The mode of many of the old services has changed to be more interactive and user oriented. Most of these services available are free and users can use them in the format they desire and as per their requirement.

We also learnt about different types of distributed services like bulletin board, forums, web portals, web casting and so on in this Unit.

The easy access to plethora of interactive web services has brought up several issues like data privacy and encryption, which has been discussed as well.

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## 16.6 ANSWERS TO SELF-CHECK EXERCISES

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- 1) Web directory is a topical list of Internet resources arranged in a hierarchical way. It is organised Web site listings created by human reviewers and act as a search tool created by human. It is quite different from search engine and does not display lists of web pages based on keywords; instead, it lists web sites by category and subcategory. The categorisation is usually based on the whole web site rather than one page or a set of keywords, and sites are often limited to inclusion in only a few categories.

- 2) Following are the advantages of E-mail
- The speed for delivery of messages is quick and almost instantaneous.
  - They are reliable and secure and now efforts are on to make them more reliable and secure.
  - They are environment friendly, as there is no use of papers. Similarly the messages are stored permanently so it is easy to find the old messages.
  - The use of graphics such as a picture etc. adds value to the service. Because of its one-to-many nature.
  - It can be used as publicity and advertising tools as well.
- 3) An interactive web service is online service given by a service provider or agent. In an interactive service user can provide input or feedback to the service provider. He can also modulate the mode of delivery of service or interface of service environment if he is permitted to do so.

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## 16.7 KEYWORDS

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<b>Bookmark</b>	: A <i>bookmark</i> is a locally stored Uniform Resource Identifier (URI).
<b>Database</b>	: A <i>database</i> is an application that stores and organises data for fast retrieval of information.
<b>Digest</b>	: A style or format of distribution of electronic mailing lists in which multiple messages are placed together and distributed as a single unit.
<b>E-publishing</b>	: Publishing of e-books and electronic articles over web to establish digital libraries or build organisational repositories.
<b>Encryption</b>	: Coding of data for secured transmission.
<b>Forum</b>	: An online group where visitors may read and post topics of common interest.
<b>Mailing Lists</b>	: A mailing list is an electronic discussion forum that anyone can subscribe to. When someone sends an e-mail message to the mailing list, a copy of that message is broadcast to everyone who is subscribed to that mailing list.
<b>MIME</b>	: <b>It stands for <i>Multipurpose Internet Mail Extensions</i>.</b> It is a standard for formatting non-ASCII messages so that they can be communicated over the Internet.
<b>Network</b>	: A group of two or more computer systems linked together.
<b>Online document repositories</b>	: Document repository systems are digital libraries containing an organisation's documents.



<b>Internet Tools and Services</b>	<b>Personalisation</b>	: User-specific tailoring of information.
	<b>Portal</b>	: These web sites serve as a single platform to access content and applications on a topic. It is also known as a “gateway,” a “research guide,” a “virtual library” or a “Web directory.”
	<b>Query</b>	: A request for information from a database.
	<b>Remote Access</b>	: In web parlance, it is defined as access to a computer or a network from a remote distance.
	<b>Repository</b>	: A place where multiple databases or files are located for distribution over a network.
	<b>SMTP</b>	: Simple Mail Transfer Protocol is a set of standards to define the process of exchange e-mails between two servers.
	<b>Thread</b>	: A posting (message) on a discussion group or a mailing list and all of the responses to it builds a <i>thread</i> . To “follow a thread” is to read a series of messages sharing a common subject.
	<b>Thunderbird</b>	: Free, open source, cross-platform e-mail and news client based on Mozilla code.
	<b>Web Directory</b>	: A search tool created by editors or trained researchers who categorise or classify Web sites by subject.
	<b>Webcasting</b>	: A web-enabled broadcasting of information to the users.

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