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SUBJECT GATEWAYS: A TOOL TO ACCESS ONLINE INFORMATION RESOURCES

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ABSTRACT

Subject gateways are also known as subject based information gateways, subject based gateways, Subject Index gateways, virtual libraries, clearinghouse, subject trees, pathfinders, quality controlled subject gateways etc. The simplest type of subject gateways are sets of web pages containing lists of links to resources. This chapter throws the light on the definition of the term Subject Gateways, characteristics of subject gateways, objectives, subjects covered by subject gateways and methodology for planning a design for subject gate ways. Also there given a list of some important subject gateways .

KEYWORDS:- *Gateways, Characteristics, Criteria, Planning, Methodology.*

INTRODUCTION:

Subject gateways are those value-added services which select, evaluate, catalogue and classify Internet resources with the aim to help users in the information retrieval, being a very useful resource for the respective user communities. Subject gateways are also known as subject-based information gateways (SBIGs), subject-based gateways, subject index gate ways, virtual libraries, clearing houses, subject trees, pathfinders and other variations thereof

Subject gateways can be defined (DESIRE, 1999-2000) as, quality controlled information services, produced by a public or private organism, that operate through the We, and that work on the localization, selection, and description of Internet based resources, following a methodology and established quality criteria. The aim is to facilitate information search and recovery to their users, generally linked to the academic world.

DEFINITION OF SUBJECT GATEWAYS:

Subject gateways, as a term was popularized in the UK Electronic Libraries Program : e-lib . Gateways are the Internet search tools to help people find resources on the Internet, e.g. electronic journals, software, data sets, e-books, mailing lists, discussion group s and their archives, articles, papers, reports, bibliographies, bibliographical databases, organizational home pages, educational materials, news, resource guides.

According to Lorcan Dempsey, "Subject gateways are internet services which suppo rt systematic resource discovery. They provide links to resources (documents, objects, sites

or services) predominantly accessible via the internet. The service is based on resource description. Browsing access to the resource via a subject structure is an important feature".

The definition given by the I-Mesh Toolkit project is, "A subject gateway is a website that provides searchable and brows able access to online resources focused around a specific subj ect. Subject gateway resource descriptions are usually created manually rather than being ge nerated via an automated process. As the resource entries are generated by hand, they are usu ally superior to those available from a conventional web search engine."

CHARACTERISTICS OF SUBJECT GATEWAYS:

There are a considerable number of Web-based gateways that can be used to locate network-based resources in some particular subject area. Nearly all of these gateways have unique features, additional subject-based services, and different approaches to how information about network-based resources is stored in the resource description database. The following characteristics have been marked as distinctive of a subject gateway face to simple collections of links:

It is an online service which provides links to websites or documents on internet. Most subject gateways allow the end-user to either search or browse the database of resource descriptions. For example, the AstroWeb Astronomy gateway consists of a browsable multi-level menu of sub-areas and resources, as well as a WAIS-based search mechanism. In addition, most gateways allow the user the options of case sensitive searching and

stemming, where resource descriptions containing variations of a term are located (for example, painter begets painted, paints and other terms beginning with paint). For example, see ADAM, the Art, Design, Architecture and Media information gateway.

The selection is done by an intellectual process according to a quality policy within the audience information needs. Some gateways provide extra facilities for enhanced searching. SOSIG, the Social Science Information Gateway, incorporates a thesaurus containing social science terminology. This gives users the option of generating alternative terms/keywords with which to search the resource catalogue. It produces subject descriptions since each item is catalogued in old or minor depth. Some subject gateways have built a considerable number of related services and information sources around their core searchable /brows able gateway. The Business and Economics information gateway for students, teachers and lecturers, contains large amounts of business and economic information, such as company financial data and economic datasets from sources such as the office of National Statistics.

The order or structure follows a scheme or classification that facilitates navigation. Each resource is assigned a series of meta-data. All these operations are of intellectual sort and a human team, usually integrated by specialists in the topic, carries them out by hand (Koch, 2000).

OBJECTIVES OF SUBJECT GATEWAYS:

The main objective of subject gateways is to provide fast and effective access to their users to high quality information through Internet. From the beginning, subject gateways have been linked to the academic world, which nowadays continues to be their principal producer, and they are tools of much utility for students, researchers, educational, and for the public in general interested in accessing general and specialised information.

Subject gateways are those value-added services which select, evaluate, catalogue and classify Internet resources with the aim to help users in the information retrieval, being a very useful resource for the respective user communities. Subject gateway can be used to promote the particular subject resource.

The main objectives of subject gateway are as below :

To provide current information about the online subject resources.

To provide access to online and CD-ROM based reference source such as database and catalogue.

To provide quality of information on the web.

To provide links to number of other site or document on the internet.

SUBJECT AREAS COVERED BY SUBJECT GATEWAYS:

Many subject areas are covered by subject gateways, Some subject areas are without a subject gateway, for example, there are no gateways that cover subject areas such as music or religious studies. However, some subject areas are covered by more than one gateway. Looking at engineering, we have EEVL, but in addition, there is EELS, the Swedish-based Engineering Electronic Library, which has also catalogued a large number of engineering resources, and WWEVL, the Wastewater Engineering section of the Virtual Library.

The subject area covered by the largest number of subject gateways is probably that of health and medicine. We have already mentioned OMNI, the main UK gateway to biomedical networked resources. In addition, there are medical/health gateways such as Six Senses , Medical Matrix , Healthweb, Hon and Medweb . This leaves someone looking for quality medical resources with several dilemma's. Which subject gateways should they choose? And out of those chosen, which order should they be visited in? A medical/health gateway that is most suitable for one subtype of resource i.e. it contains a lot of catalogued entries for quality resources of that subtype, may not be so suitable for another subtype; there fore, should a user poll each of a selection of health/medical subject gateways for each individual query in order to get a good level of subject gateway coverage?

The same issues arise for people involved in inter-disciplinary resource discovery. For example, a student could be writing an essay on "The Socio-economic implications of

vaccination programmes". From this title we can see that they would be interested in relevant quality resources that may be located through either a social science, economics or medical subject gateway. However, it would be time consuming to search several gateways in each of these areas. What the student really requires is some mechanism where they can execute a single *cross-search* of several subject gateways in these areas, and have a cumulative listing of the results presented to him/her.

SOME IMPORTANT GATEWAYS:

Following are some examples of different subject gateways with the Gateway links;

Sr. No.	Discipline	Subject Gateways with links
1.	Aerospace and Defence Studies	AERADE
2.	Agricultural Sciences, Forestry, Food, Veterinary	NOVA Gate
3.	Agriculture, Forestry, Environment, Food Science, Horticulture	AGRIGATE
4.	Art, Design, Architecture and Media	ADAM
5.	Arts and Humanities	AHDS
6.	Arab & Computers	Arab Gateway
7.	Biological Sciences	Biogate
8.	Botany	Internet Directory for Botany
9.	Business and Economics	Biz/ed
10.	Chemistry	Links for Chemists
11.	Engineering, Mathematics and Computing	EEVL
12.	Economics	NetEc

13.	Environment & geography	GEsource
14.	Gateway to Educational Materials	GEM
15.	Geography, Geology, the Environment	Geo-Information Gateway
16.	Health and life sciences	BIOME
17.	Historical Studies	History
18.	Humanities	HUMBUL
19.	Language-Learning & Linguistics	iLove Languages
20.	Library and Information Science	BUBL
21.	Mathematics	The Math Forum Internet Mathematics Library
22.	Media and Communication Studies	MCS
23.	Music	Music
24.	Philosophy Studies	Philosophy Around The Web
25.	Physics	PhysicsWeb Resources
26.	Physical Sciences	PSIgate
26.	Preserving Access to Digital Information	PADI
28.	Psychology	Psych Web
29.	Sciences	SciCentral
30.	Social Sciences	SOSIG

PLANNING, DEVELOPMENT AND DESIGNING OF SUBJECT GATEWAYS :

Developing of the gateway is an information consolidation product and its preparation demands certain skill and knowledge e.g. Identification of target users, Planning of the gate way, Study of subject as discussed with Experts, Identification of several information items, available in Internet using various search engines. Selection of information sources, Journal

of Advances in Library and Information Science, Categorization and arrangement of information.

There are following Phases of developing a subject gateway :-

Phase 1:

- Pre-project

-Outline planning of project

-Securing funding for project

-Producing outline project timetable and plan

Phase 2:

-Project planning and set-up

-Drawing up detailed timetable and plan

-Hiring staff and developing skills

-Developing policy documents (scope and selection criteria)

-Technical planning-

Phase 3:

-Technical implementation

-Technical set up and system testing

-Training of non-technical staff in system usage

Phase 4:

-Catalogue development and Collection management

STEPS OF PLANNING

Hardware and Software Issues:

-System requirements

-Network connectivity

-Hardware configuration (memory, CPU speed, disk space)

-Operating system software

- Subject gateway database and associated software
- Use reliable hardware
- Use reliable software
- Data security
- Server security
- Web server software

Methodology for Gateway Design :

The various stages have been followed for the development of website or gateway. These are as follows,

- Collection Resources (Offline/Online)
- Criteria for the evaluation of web resources
- Programming
- Designing the site
- Web publishing

Collection of resources:

- Tools used for the collection data for the purpose of linking
- Online data collection
- Search engine
- Mata search engine
- Online directory
- Web site related to library and information science
- Reference and information service on the on web
- Online abstracting and indexing service
- Offline data collection

Criteria for the evaluation of web resources:

Criteria for evaluating web resources may cover : Information Coverage ,Subject Matter, Acceptable Resources, Geographical Coverage, Language, Access Issues, Resources descriptions.

Following are some criteria on which evaluation process is based:-

a. Content Criteria Validity:

- Do the resources fulfill the stated purpose?
- Does the resource have a scope statement?
- Is there any information missing?
- Does the information appear to be well researched?

- Are references given?
- Is there a bibliography?
- Are the sources of the information stated?
- Has the format been derived from another format e.g. print? (e.g. Is it an electronic version of a printed book/newspaper?)
- Is there any mention of the resource being available in another format?
- Is there a request for payment?
- Is the information genuine i.e. what it appears to be?
- URL - Does the URL support the claim of authorship?
- Email addresses: are emails for a publisher, the author, referees, sources, etc. given?
- Contact details: are addresses and phone numbers given that support claims of authorship,
- Sponsorship?
- Does the resource point to other sources, which could be contacted for confirmation?
- Is the content of the resource verifiable - can you cross check the information? Does the information claim to be unbiased.

b. Content Criteria Authority:

- Authorship is the major criterion used in evaluating information.
- The authority of resource can be decided on the basis of these filters,
- Is the origin of the document documented?

- Is the information attributed to an author or editors?
- Has the material been disseminated by a trade publisher?
- Do you know the educational background of the author?
- Do you know the occupational background of the author?
- Is URL a university server?
- Is the author is a well-known and well-regarded name?

c. Content Criteria Accuracy:

- The criteria for evaluating accuracy includes,
- For a research document, the data that was gathered and an explanation of the research method(s) used to gather and interpret it are included.
- The methodology outlined in the document is appropriate to the topic and allows the study to be duplicated for purposes of verification.
- The document relies on other sources that are listed in a bibliography or includes links to the documents themselves.
- The document names individuals and/or sources that provided non- published data used in the preparation of the study.
- The background information that was used can be verified for accuracy.

d. Content Criteria Currency:

Currency refers to the timeliness of information. In printed documents, the date of publication is the first indicator of currency. For some types of information, currency is not an issue, rather authorship or place in the historical record is more important. For many other types of data, however, currency is extremely important, as is the regularity with which the data is updated.

- The document includes a publication date or a "last updated & quot; date.
- The document includes a date of copyright.
- If no date is given in an electronic document, the directory can be viewed in which it r esides to read the date of latest modification.

e. Content Criteria Uniqueness:

- Comprehensiveness
- Composition and Organization
- Is the information well composed? Does the text follow basic rules of grammar, spelli ng and literary composition?
- Does it include jargon?
- Is the information within a resource phrased unambiguously?
- Is the information clearly organized?

- Is there a good structure?
- Is the information within a resource arranged logically and consistently?
- Is the information broken down into logical parts?
- Is the resource well laid out?
- Is the resource organized by the needs of the user?
- Is the information broken down into digestible parts?
- Is the content clearly described?
- Are the headings clear and descriptive?
- Is there evidence of internal standardization .

f. Form Criteria:

- Ease of Navigation
- Provision of User Support
- Use of Recognized Standards
- Appropriate use of Technology
- Aesthetics
- Process Criteria
- Information Integrity
- Site Integrity
- System Integrity

g. Process Criteria:

System integrity: System integrity refers to the permanent accessibility of the site over time. This is usually the work of system administrator. System integrity of any resource is evaluated on the following basis:

- Is the technical performance of the resource acceptable?
- Is the system stable?
- Are adequate measures taken to maintain the integrity of the system?
- Use Metadata format (Dublin Core currently involves 15 core elements)

Title
Author or Creator
Subject and Keywords
Description
Publisher
Other Contributor
Date
Resource Type
Format
Resource Identifier
Source
Language
Relation
Coverage
Rights Management

Programming, Designing and Coding:

After the evaluation of resources the web pages of gateway was designed with the help of various programming language e.g. HTML, PHP, ASP, Java Script, CSS, DHTLM. Designing the site. This phase deals with the over-all planning, designing of site layout, coding and testing of the web site. There are several ways to design the site layout.

The following methods have been used for the design web site which is divided into two parts,

- Server side technology
- Client/user side technology
- Server side technology
- Creation of Database using MS Access and ASP. But in Beta version using PHP and MySQL

ISSUES AND DEVELOPMENTS:

The implementation of cross-searching is clouded by various issues and the developme nt of other resource discovery (associated) technologies. Gateways wishing to offer a unified service should consider these:

Duplicate results:

If a system was set up that allowed several gateways in the same subject area to be cross-searched, then inevitably there would be some duplication of results, as some resources would be catalogued by more than one gateway.

Differing collection development policies:

Due to differing collection development policies the problem of there being no global standard or unified way of either:-deciding whether a resource is of sufficient relevance and quality to be catalogued by a subject gateway (resource selection criteria), or-describing how resource descriptions should be written (cataloguing rules),means that the combined results of a cross-search will contain links to resources of a differing minimum "quality", as well as resource descriptions that are inconsistent in how they are written.

Hybrid service cross-searching:

Web-based gateways where people can search or browse a catalogue of resource descriptions are not the only tools that are of use to people seeking information in a particular subject area. Services and resources such as library OPACS are also of use.

Ideally, searches should be unified across a range of resources, with duplicates "weeded out" of a homo-genised set of search results, as it is most likely that people will be

more attracted to searching across a range of media in one go, through one unified interface, than through a range of different interfaces.

Cross-browsing and RDF:

While cross-searching has been described and demonstrated through this paper and associated work, the problem of cross-*browsing* a selection of subject gateways has not been addressed. Many gateway users prefer to browse, rather than search. Though browsing usually takes longer than searching, it can be more thorough, as it is not dependent on the use rs terms matching keywords in resource descriptions (even when a thesaurus is used, it is possible for resources to be "missed" if they are not described in great detail).

As a "quick fix", a group of gateways may create a higher level menu that points to the various browsable menus amongst the gateways. However, this would not be a truly hierarchical menu system, as some gateways maintain browsable resource menus in the same atomic (or lowest level) subject area. One method of enabling cross-browsing is by the use of RDF.The World Wide Web Consortium has recently published a preliminary draft specification for the Resource Description Framework (RDF) . RDF is intended to provide a common framework for the exchange of machine-understandable information on the Web.

Multilingual issues:

With the growth of the Web outside the English speaking regions of the world, the nee d has arisen to provide better handling of multilingual issues within metadata. Subject gateways are beginning to want to generate metadata for resources in local languages and/or in multiple languages to make it as easier for their users to use as possible. This means a number of things. Firstly the cataloguers have to be able to enter information in the appropriate character sets and end users have to be able to enter local characters into the web based forms. Many widely deployed browsers still only implement US-ASCII entry in web forms, but newer browsers will allow the use of Uni Code characters.

A similar character set issue needs to be address for the indexing information, and , whilst WHOIS++ was limited to ISO-8859-1 characters, the newer CIP v3 draft proposals mandate the use of Unicode. However, whilst allowing users and cataloguers to make use of multiple languages and character sets, it does run the danger of increasing "false positives", where the same word means different things in different languages. To overcome this, the end user would need to specify the language(s) being used when making a search, and the CIP index data would need to have some form of tagging specifying which language an index term was in.

Also, for practical reasons, if a service wishes to take part in a multinational in dexing mesh it would be well advised to include an English version of at least the major sections of metadata (description, keywords and title) as English is the de facto international

language of business and science and so would make the resource available to the widest population on the Net.

CONCLUSION :

Subject gateways are quality services which have proliferated in Internet, even in specific areas of knowledge. Subject gateways is nothing but the facility that allows easier access to networked-based resources in a definite subject area. The simplest type of subject gateways are sets of web pages containing lists of links to resources. Subject gateways have a short period of existence. All of them are in continuous evolution and improvement. They are very useful services, so it is essential that we make them known to our users and we favor their use in the search of information.

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