

Agricultural Statistician Network (ASN)

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(Received: November 2005)

SUMMARY

Agricultural Statistician Network provides dynamic working linkages among the statisticians with emphasis on research information exchange, resource sharing and optimizing response time for addressing methodology related problems and foster fellow feelings among the group with cost effective communication media. The website is accessible across the world at the address www.iasri.res.in/asn/ and provides an opportunity to enhance the image of organizations and the statisticians at the international platform. It lays emphasis on providing a unified base on various professional activities of the agricultural statisticians. Individual's research expertise is exposed to the international community thus providing opportunity for global collaboration. System has features like chat, discussion group, notice board, search, online registration and online data management for effective communication. Web site has been designed and developed using standard three-tier architecture. Site has been developed using Active Server Pages (ASP) for server side programming, Hyper Text Markup Language (HTML) and VBScript for client side interface and validation and Microsoft Access for Database management.

Key words: Agricultural Statistician Network, Agricultural Statistics, ASN, Online Information System.

1. INTRODUCTION

With the advancement in internet technologies, online exchange of information has become cost effective and time saving. Considering the large setup of National Agricultural Research System (NARS) spread across length and breadth of the country and the thin presence of statisticians in these organizations, there was a need to network them for optimal output. Indian Agricultural Statistics Research Institute (IASRI) being premier Institute in Agricultural Statistics and Computer Applications has taken the lead in networking statisticians in modest way by using internet technologies. Website with the name Agricultural Statistician's Network (ASN) was developed at IASRI under a sub-project "Institutionalisation of Research Priority Setting, Monitoring & Evaluation and Networking of Social Scientists" of the National Agricultural Technology Project (NATP). This system provides information on professional aspects of statisticians and has online interaction facilities, which

help in sharing of information among fellow colleagues and enhances the scope of statisticians for global collaboration. It also aids the statisticians by providing information in terms of statistical journals published, statistical software, dictionary of statistical terms and information on agricultural statisticians conference, meeting etc. Site has been enriched with features like chat, discussion group, notice board, search, online registration and online data management facility. This paper aims at discussing the design, development and features of ASN.

2. DESIGN AND DEVELOPMENT OF ASN

2.1 Design of ASN

The site has been structured to cater information needs of different types of users. The website has been structured to provide information categorically for the various disciplines in statistics like Agricultural Statistics, Mathematical Statistics, Biometrics, Statistics,

Bio-Statistics and also Computer Application. The structure of the website is depicted in the Fig. 1. ASN contains 13 important channels and two other links for online registration and online data management of experts. Channels have been categorized mainly into three categories - External links, Utilities and

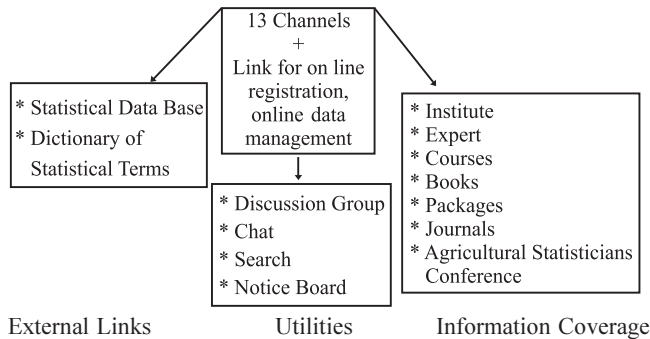


Fig. 1. Structure of the ASN site

Information Coverage. Links under information coverage provides comprehensive information on different entities like experts, books, courses etc and this information is structured discipline wise. Features under utilities facilitate on-line interaction. For providing security, only authenticated users are allowed to utilize the services provided under Utilities. Online registration facility helps the user to quickly become member of the site and online data management facilitates timely updating of the information. Fig. 2 shows home page of the site.

2.2 Technologies used for development of ASN

ASN has been designed and developed using standard three-tier client server architecture (Fig. 3). The partitioning of the application into different tiers enables rapid design and development of the system.

Agricultural Statisticians' Network

Institute/department

Experts

Discussion Group

Chat

Dictionary of Statistical Terms

Courses

Books

Journals

Statistical Packages

Statistical Databases

Notice Board

Search

AS Conference

On Line Registration

Data Management Module

Indian Agricultural Statistics Research Institute (IASRI)

Being a premier research institute of ICAR in the field of agricultural statistics and computer application has taken lead in developing ASN under NATP project "Institutionalization of Research Priority Setting Monitoring and Evaluation and Networking of Social Scientists."

The Mandate of the institute is

- To undertake basic, applied and adaptive research leading to new developments in Agricultural Statistics and related fields for bridging gaps in the application of Statistical Techniques to the problems of Agricultural Research.
- To assist in the development and strengthening of National Agricultural Statistics System development and strengthening of National Agricultural Statistics System.
- To conduct post-graduate and in-service training courses in Agricultural Statistics and Computer Applications in Agriculture.
- To provide advisory/consultancy services to agricultural scientists, planners, policy makers and others on their statistical and computer requirements.
- To act as a repository of information on Agricultural Statistics for research and dissemination of such information.
- To develop the Institute as an Advance Centre of Excellence for education and training in Agricultural Statistics and Computer Applications.
- To liaise with ICAR Institute, SAUs and State Agricultural/Animal Husbandry/ Veterinary Sciences departments etc. and undertaking sponsored research and training for national and international organisations.

About The Site

Networking of Agricultural Statistician provides dynamic working linkages among the statisticians with emphasis on research information exchange, resource sharing and optimizing response time for addressing methodology related problems and foster fellow feelings among the the group. Website on ASN has been structured to cater different types of information so as to meet the requirement of different users. Information base has been categorised discipline wise to provide information for the disciplines:

- Agricultural Statistics
- Biometrics
- Bio-Statistics
- Computer Application
- Mathematical Statistics
- Statistics

Contact us at : sdsharma@iasri.res.in, pkm@iasri.res.in, rcgoyal@iasri.res.in, alkak@iasri.res.in

Fig. 2. Home Page of ASN

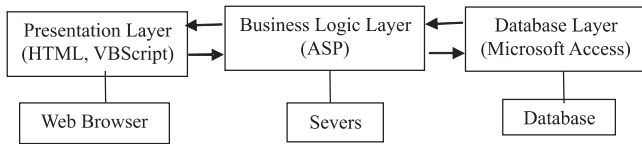


Fig. 3. Standard three-tier client server architecture

The modularity makes it easier to make changes to just one tier without affecting the others. Separating the functions into distinct tiers makes it easier to monitor and optimize the performance of each layer. Layers in the three tier architecture are Presentation Layer (tier 1), Business logic layer (tier 2) and Database layer (tier 3). Presentation Layer of the site interacts with the user and provides the connection point for user sessions and controls the user interface. This layer contains web pages or graphical user interface that is being implemented using HTML, JavaScript and VBScript. It consists of pages that display information to the users. It also consists of forms that are required to present the information to the user and to take the input from the user. Business logic layer of the site contains business

logic and operation that application performs on data. Implementation of this layer is done using Microsoft Active Server Pages (ASP) installed on Internet Information Services (IIS) at Windows 2000 server. ASP has support for other web servers too like Personal Web Server (PWS) at windows 9X. ASP is server side scripting environment used to create dynamic web pages on a base of HTML or XML [Buser *et al.* (1999), Smith 2000]. Advantage of using ASP is that it supports variety of web technologies, including the VBScript and Jscript scripting language, ActiveX Data Object (ADO) for connectivity to Database and server side objects. ADO provides consistent, high performance access to data. ASP/ADO has been used for integrating Data Base Layer with the Business Logic Layer.

2.3 Database Design of ASN

For implementation of data base layer relational database technology is extensively used for developing information system. Relational Data Base Management System (RDBMS) offers the benefits of easy access to

Fig. 4. Input Screen for add/update expert information

all data, complete flexibility in database design, reduced data storage and redundancy, and is easier to maintain Emasei (1994). Database layer for this system is built using Microsoft Access Robinson (1998). The expert entity and its related parameters are stored in 23 different tables. Table 1 in Appendix I gives description of all the database tables and fields in those tables. This gives detailed information on all the parameters on which information is stored for an expert.

2.4 Online Data Management in ASN

System has the feature for online data management that facilitates easy updating of data. User has to be registered member of the site and after authentication user can access and modify its data. System has the feature for online registration too that allows user to easily become member of the site. User after authentication gets access to its data on personal

Awards*	
Year:	2005
Award name:	Letter of Appreciation
Awarding organisation:	ICAR
Purpose :	Outstanding work of PERMISnet Software
<input type="button" value="SAVE"/> <input type="button" value="DELETE"/> <input type="button" value="ADDNEW"/>	

Fig. 5. Input Screen for add/update award information

Best 10 Publication Details*	
SNo :	34
Publication Details (Std. Ref Method)	1)Alka Arora, Balbir Singh, Shashi Dehiya and Mohd. Samir Farooqi (2005). "Planning and Distribution of Manpower of ICAR using PERMISnet", Indian Journal of Agriculture Statistics, Vol. 59, Pg 141-145.
*Format	2)Paper titled " Rough Set Theory: Approach for Similarity Measure in Cluster Analysis" by Shuchita Upadhyaye, Alka Arora and Rajni Jain has been accepted for the 2006 International
<input type="button" value="UPDATE"/> <input type="button" value="DELETE"/> <input type="button" value="ADDNEW"/>	

Fig. 6. Input Screen for add/update publication information

information as shown in Fig. 4. User can add or update the data on contact information and some of the professional parameters.

Then user can add/update data on other parameters of Award, Abroad, Experience, Publication, Society, Technology, Training, Qualification and Image. Award and Publication information of an expert are shown in Fig. 5 and Fig. 6. Similarly, user can add or update information on other parameters.

3. FEATURES OF ASN

ASN has been hosted at IASRI server and is available at the address <http://www.iasri.res.in/asn>. Site has been designed in three categories viz. Information coverage, External links and Utilities which are described below.

3.1 Utilities

Utilities provide means of on-line interaction and have the advantages over traditional modes of networking and are unique feature of this site. For using these utilities, the user must be a registered member of the site and only after authentication, user will be allowed to use the services.

3.1.1 Discussion Group: It is a powerful utility for the users and expert groups to share their views for the discipline related problems solving and clarifications. The discussion group provides a platform to exchange information among users. In this any member can post their queries related to their discipline, likewise they can get the answer of the same. The member can see the answers of already posted questions or if user is expert in any discipline he/she can give answer to already posted question. For using discussion group user has to first choose any one of the disciplines, on selecting that discipline the user can get the list of questions already posted by other users.

3.1.2 Chat: All the registered users of the site can go for online interaction for sharing of their ideas and solving their problems using online chat. The chat is designed to get instant message from the user and removes the distant barrier. For using this, the user has to enter the name, e-mail and select the discipline for the chat. The discipline acts as a room for chat. User could send private message to any particular user that won't be visible to other users.

3.1.3 Search: It facilitates searching information based on keywords. Unique feature of the search facility is that it provides database search and allows multiple search about experts, institutions, courses, books etc. User just has to enter the keywords and click the "Search" button. The search can be narrowed down by selecting the particular discipline.

3.1.4 Notice Board: Website contains tool for creating awareness among all the registered members and provides facility to create notices. The public web-based notice board is designed to display message relevant for public use like "any institute can display its admission notice".

3.2 Information Coverage

Website provides comprehensive information on under mentioned items:

3.2.1 Institute/Department: This link provides the complete listing of all institutes under ICAR. In the list each institute name has got hyperlink set so as to provide the complete details of the institute. Link provides general information about the institutions like their mailing address, phone, fax, e-mail and other information like mandate of the institution, head of the institution etc. The institute detail page further contains following links:

1. Link to teaching courses available in that Institute
 - Course has further link to course content, eligibility and syllabus of courses running in that Institute.
2. Link to the list of experts concerned with that Institute
 - Discipline wise list of experts is provided that has hyperlink set to each expert, which leads to detailed bio data of that expert.

3.2.2 Expert information: This link displays discipline wise information about the experts, the user can even choose "ALL" for complete listing of the experts. Clicking on the hyperlink set on expert's name leads to providing professional information of statistician. Information coverage includes mailing address, area of specialization, qualifications, research activities, technology developed, training, awards, publication, society memberships, previous employment experience and information about foreign visits etc.

3.2.3 Courses: Information about the courses offered by different institutions for Ph.D., M.Sc. and Bachelor degree programs and other certificate courses under different disciplines of statistics along with their syllabus and duration is available. The institute name is also provided with that and hyperlink takes the user to detailed information about that institute.

3.2.4 Books: Information about books under different disciplines is available in standard reference method.

3.2.5 Statistical packages: It covers utility of the statistical packages with brief descriptions about its cost and availability.

3.2.6 Statistical journals: It provides information on Statistical Journals covering name of the journal, periodicity, editor and place of publication.

3.2.7 AS Conference: It provides information about the National Conference of Agricultural Research Statistician along with its proceedings and announcements.

3.3 External Links

Out of the 13 channels, 2 links are given to the external sites to provide the most updated information.

3.3.1 Dictionary of statistical terms: For Dictionary of statistical terms, a link to another site on the Internet is provided.

3.3.2 Statistical databases: It includes the name of databases, their utility and availability. It also provide links to other sites containing statistical databases like FAO.

3.4 On Line Registration

It provides the flexibility to quickly become member of the site. User has to fill the online registration form and based on the particulars filled, user will be allowed to become member of the site. Only the registered members of the site can use the facility under utilities.

3.5 On Line Data Management

This module facilitates the on line entry and updating of expert information. After authentication, user can perform the action of adding new information and updating existing information.

REFERENCES

- Buser, D., Kaufman, J., Llibre, J.T. and Francis, B. (1999). *Beginning Active Server Pages 3.0*. Wrox Press Ltd.
- Robinson, C. (1998). *Access 97, No Experience Required*. BPB Publications.
- Emasei, N. (1994). *Fundamentals of Database Systems*. 2nd edition, Addison-Wesley.
- Smith, Eric A. (2000). *Active Server Pages Bible*. Wiley Publishing Inc. New Jersey.
- website <http://iasri.res.in/asn>.

APPENDIX I

Table 1. Description of database tables and fields

S. No.	Table Name	Fields	Description
1.	Abroad	Sr No, Expert_Id, Purpose, Year, Name_of_Org, Duration	Abroad visit of expert
2.	Award	SrNo, Expert_Id, Awarding_Org, Name_of_Award, Year, Amount	Award received by the expert
3.	Answer	Answer_id, Answer, Question_id, Discipline_id, Answer_date, UserName, UserEmail	Answers from the discussion group
4.	Course	Course_Code, Course_Name, Instt_Code, Degree_Type, Discipline_Id, Duration Univ_Course_Code	Names of various courses available in the Institute
5.	Data_Base	Instt_Code, Name, Utility, Contact_Person, Email	Statistical databases developed at Institute
6.	Designation	Designation_Id, Designation	Designation of experts
7.	Discipline	SrNo, Discipline_Name	Disciplines
8.	Expert_Detail	Expert_ID, Instt_Code, Discipline_ID, Title, First_Name, Last_Name, Designation_ID, Sex Date_Birth, Address_Official, Address_Residence, Address_Mailing, State_Id, RState_Id, MState_Id, Pincode, Specialization, Guide_PhD, Guide_MSc, Research_Area, Email_Off, Telephone/Fax_Off, Email_Res, Telephone/Fax_Res, Email_Mailing, Books, Img_url Telephone/Fax_Mailing, Research_Papers, Tech_Bulletins, Popular_Articles, Research-Project_Reports	Expert details
9.	Expert_Employer	Sr No, Expert_id, EmployerName, Post_Held_From, To, Pay_Scale	Previous employment information about expert
10.	Instt_List	Instt_Code, Instt_Acronym, Instt_Name, Instt_Type, Instt_Address, City, State_id, Pincode, Phone, Fax, Email, URL, Title, Head_FirstName, LastName, Sub_Instt, Main_Instt, Profile	Institute's information
11.	Journal	SrNo, Journal_Name, Address, Type_Journal, E_maill, URL, Editor_Name, Place_of_pub, Periodicity	Journals information
12.	Notice	SrNo, Subject, Message, UserName, UserEmail, Date, Time, Expiry_Date	Notice Board information
13.	Professional Recognition	Sr_No, Expert_Id, Professional_Recognition	Professional recognition of the expert
14.	Package	Sr No, Name, Utility, Url, Email, Type	Statistical packages developed by the institute and others
15.	Pubauthor	f_name, m_name, l_name, auth_pos, SrNo, pub_code	Co-author's of the publication
16.	Publication	Expert_id, SrNo, pub_title, pub_type, bk_jn_mg_nm, pub_yr, publisher, issue_vol, page_no, auth_cauth	Expert publications
17.	Qualification	Sr No, Expert_Id, Degree, University/Institute, Year, Percentage/GPA, Subjects	Qualification of expert
18.	Question	Question_id, Question, Discipline_id, Question_date, UserName, UserEmail	Questions from the discussion group
19.	Society	SrNo, Expert_Id, Society_Name, Membership_type	Society membership of expert
20.	State	State_Id, State_Name	State names
21.	Technology Developed	SrNo, Expert_id, Tech_Title, Utility, Contact_person, Amount	Technology developed by the expert
22.	Training	Sr No, Expert_Id, Year, Place, Duration, Subject/Course	Training attended by expert
23.	Userpasswd	SrNo, instt_id, Expert_Id, user_name, user_passwd, mailid	Contains username and password for registered members of the site