

EARN Document

Title: Proposal for an EARN ASTRA Service
Author(s): S Trumpy
Date: 1989/11/30
Committee: Executive
Document: EXEC156 89 EARN-MIN LISTSERV@UKACRL
Revision: 1Supersedes:
Status: Proposal
Maintainer: S Trumpy
Access: Unrestricted

Proposal for an
EARN ASTRA Service

EARN ASTRA Project Group

Draft n.1

November 1989

PREAMBLE

This document has been prepared during the first meeting of EARN ASTRA Project Group held in Pisa Nov 13th 1989. It is prepared with the intention of defining the characteristics of an EARN ASTRA Service for the dissemination of information available on databases distributed over the network by EARN nodes and of producing a proposal for its activation. The results of the discussion about the definition of policy for aquisition of data and of the procedures for quality control of the data are included. The operations needed to set up the service and to maintain the logical network of ASTRA Servers on EARN are defined and developments needed to allow all EARN Users Community to use the service are suggested. Finally, the document makes the evaluation of resources needed to support all the proposed activities.

1. SUMMARY OF THE PROPOSAL

Activating a new service for the whole EARN Users Community:
EARN ASTRA Service.

Name of the new Service

The name ASTRA is an acronym for Application Software and Technical Reports for Accademia. ASTRA was stated as an IBM study contract between IBM Europe and CNUCE-CNR. We propose to adopt this name without any reference to the previous meaning because ASTRA has gone beyond the original aim of the IBM study contract and is already well known by the Users Community.

Duration of the Service

The proposed timescale for the first phase of the proposed service is two years. The service will start at the end of the IBM Study Contract (January 1990).

Scope of the service

EARN ASTRA Service will allow users of EARN to find documents located in database distributed on its nodes. The user is able to retrieve informations through the ASTRA User Interface(6), which interacts with the ASTRA System(}). This makes transparent to the user of the node x the path to reach the available databases on the other node non-x, which are connected to x through EARN. The service will be allowed free of charge at least until the end of the two years period (end of 1992). At the end of the first phase of the service the objectives will be discussed again by the light of EARN network further developments.

Quality of information provided

During the starting phase of the service, databases will be gathered in order to:

- make available databases of interest for the EARN Users Community;
- achieve the completeness and the interdisciplinarity of the available information.

Special care must be taken in order to

- accept only non commercial public domain databases;
- make a strict scientific quality control before adding a new database.

(E) See to document "ASTRA: A General description" available at NETSERV@ICNUCEVM.

(I) See to document "An Access System for Databases Distributed on Earn" available at NETSERV@ICNUCEVM.

Technical aspects

The following items indicate where developments are required to allow all EARN Users to get information through ASTRA and to enlarge the facilities of the servers in order to interface more types of databases. Developments are required at the following levels:

- User Interface (to make the service available to users located at non-IBM/VM node);
- Host system Interface (to make the service available to other host systems commonly used for managing databases of European Community);
- Server (to design and development server systems under different operating systems, e.g. IBM/MVS, DEC/VMS, UNIX, etc.).

2. DATABASES INSERTED INTO THE EARN ASTRA SERVICE AND THEIR

QUALITY CONTROL

The directory of databases available at EARN ASTRA Service will be called the EARN ASTRA METAdatabase. For each accepted new database, a new entry will be inserted into the EARN ASTRA METAdatabase, which will contain general information about all databases belonging the EARN ASTRA Service. Each document describes the database, its structure, the name of its owner, the name of the person at EARN node who has the responsibility for the quality of data access.

The problems connected to the addition of a new database to the EARN ASTRA METAdatabase are very delicate as they refer to the responsibilities on the data contents and on the data management. The criteria how to accept a new database have been defined as follows.

- The quality of the data content must be assured by a group of experts coming from the specific scientific area.
- An adequate documentation about database contents and its technical aspects must be produced by the owner.
- The maintenance must be guaranteed by the owner.

To establish rapidly a service attractive for academic and research communities, it is our primary intention to make a selection between potential databases. The promotion of databases referring to a wide range of disciplines must be made to encourage the use of the service.

To assure the quality of data contents we propose to set up the EARN ASTRA Scientific Committee of Control with the scope to select databases before their adding to EARN ASTRA METAdatabase. The EARN ASTRA Scientific Committee of Control is an international committee following characteristics.

- The Group will be constituted by 5-7 people who have a deep knowledge of problems concerning the scientific information diffusion. Countries already involved or interested to the ASTRA service will be asked to suggest their representative.
- The Group must work in relationship with ASTRA Operational Group (see below).
- For each new area of interest a referee will be indicated: the Group will get advantage in selecting databases by consulting referee's help to assure the data contents in each specific sector.

3. SERVICE MANAGEMENT STRUCTURE

EARN ASTRA DataBase Definition

A potential EARN ASTRA Database is a database which is managed by a host system interfaced through EARN ASTRA System. Up to now, the following database systems have operating interface:

- STAIRS/CMS: STAIRS is one of the most common IBM Information Retrieval System.
- CDS/ISIS: ISIS is an Information Retrieval System produced and distributed by UNESCO.
- SQL/DS: SQL is an IBM relational IBM/VM Database Management System.

An EARN ASTRA Database is a potential database which has been accepted by the EARN ASTRA Scientific Committee of Control, following the procedure described below.

When a DataBase Administrator wishes to join EARN ASTRA he/she has to contact the ASC (ASTRA Server Coordinator, defined later on) or the EARN Node Administrator of his/her own node, who provides to send him/her the registration form. The form must be filled with general information and technical aspects about the new database and will be sent by EARN to the EARN ASTRA Scientific Committee of Control for approval. For each EARN ASTRA DataBase we define:

- DataBase Producer (DBP)

A person who created the database, and is also the database owner and takes care of the quality of the contents.

- DataBase Administrator (DBA)

A person who maintain the softwarec support for accessing the database and who is responsible for the quality of data access.

Server Management for EARN ASTRA Service

The EARN ASTRA Service will be based on ASTRA System which is a logical network of ASTRA Servers. That is a network of units which are able to recognize the location of distributed databases, to access databases and send them user's request according to a specific format.

In the ASTRA Server Logical Network it is necessary to collect certain information about individual servers and make this information available to the community. Such information consists mainly of the location of Servers on the network, the name of databases located within the Server, the name and the network-address of people involved at the node in the management of the databases and Server.

The request of the installation of an ASTRA Server is standardized as follows:

- for the installation of the Server one has to contact the EARN Node Administrator of his/her own node;
- the EARN Node Administrator communicates officially the request to the ASTRA Master Server Coordinator;
- the ASTRA Master Server Coordinator sends to the EARN Node Administrator the form for the adhesion to the ASTRA Server Logical Network. Each form has to specify the identification of the ASTRA Server Coordinator for the new server.

- the ASTRA Master Server Coordinator and the ASTRA Server Coordinator provide for the installation of the new server.

Organization of Server Management

To provide a qualified and secure Server Management the responsibilities have been allocated through two management levels: at local level and at international level. For each server we define the Astra Server Coordinator who has the responsibility to install and manage the server at EARN node. Between all the servers there is a special one in which the ASTRA Master Server Coordinator for the central control and the maintenance of the whole ASTRA Server Logical Network are located. The tasks of the ASTRA Server Coordinator and those of ASTRA Master Server Coordinator follow.

1. The ASTRA Server Coordinator (ASC)

This is the person at an EARN node who manages an ASTRA Server with responsibility at local level for:

- installing the server software at his/her node;
- maintaining the file <nodeid> ASTRADB, where the information about <nodeid> local databases are collected;
- reporting changes of <nodeid> ASTRADB file to the first Server Management level;
- sending information about his/her databases topics to the first level using the appropriate form (ASTRADB FORM);
- answering network users for questions concerning the EARN ASTRA Service;
- maintaining the ASTRA Server Software at his/her host;
- having a liaison with the EARN Node Administrator at his/her node for all the problems regarding the network.

Resources needed to accomplish the previous tasks

- HW: disk space 500 Kbyte;
- SW: distributed free of charge by the ASTRA Master Server;
- man power: 1 month/year.

2. The ASTRA Master Server Coordinator (AMSC)

This is a task at the central EARN ASTRA System node

intended to supervise and coordinate changes in the whole ASTRA Server Logical Network. The task is performed by a team with responsibility for the management of the logical network at international level. In addition to those of a ASTRA Server Coordinator, the functions are:

- coordination of the whole ASTRA Server Logical Network;
- management of the EARN ASTRA METAdatabase;
- maintaing and distributing the ASTRA Server software and documentation;
- distributing the updated version of the AUI (ASTRA User Interface) to the EARN Node ADministrators;
- maintaing and distributing the ASTRA Server routing table;
- maintaing and distributing the ASTRA database tables;

- maintaing the ASTRASC NAMES file which collects the list of ASTRA Server Coordinators;
- production and distribution of statistics reports.

Resources needed to accomplish all the tasks for ASTRA Master Server Coordinator

- HW: none;
- SW: the ASTRA Software is locally developped;
- man power: 1 year/year.

To coordinate all the activities described before the ASTRA Operational Group (ASTRA-OG) has to be established. The ASTRA-OG is composed by the ASTRA Servers Coordinators (ASTRASC NAMES) and the ASTRA DataBases Administrators (ASTRADBA NAMES).

The ASTRA-OG tasks are:

- evaluation of the service performances and the reliability of the system;
- analisys of the requests of the EARN Node ADministrators and the ASTRA Server Coordinators;
- liaison with the EARN INFO Group for all problems regarding diffusion of the service;
- supporting the EARN ASTRA Scientific Committee of

Control for technical problems concerning EARN ASTRA Service;

- study and definition of the possible technical improvements to be introduced into the system (ASTRA interfaces to other host database systems, different interfaces for the end users, accessibility through other networks, etc..).

4. DEVELOPMENTS NEEDED TO IMPROVE THE SERVICE

We must distinguish between two different levels of thecnical improvements.

- End user level:

The actual ASTRA User Interface, available only in IBM/VM environement seems to be well tested and accepted by the users. Just some changes, like cosmetics, should be required.

The IBM/MVS and VAX/VMS operating systems Astra User Interface is absolutely needed and to be developed using the same scheme used for the IBM/VM operating system. The idea is suggested to develope a unique AUI using C language able to run on the three operating systems. A macro service program will be implemented to inteface the different environements by using the same software.

Resources needed to develop User Interfaces

- IBM Enviroment
 - HW: negligible;
 - SW: negligible;
 - man power: 2 months.
- DEC Enviroment
 - HW: negligible;
 - SW: negligible;
 - man power: 2 months.

- Host System Interface level:

The actual intefaced host systems allow users to access databases available under STAIRS/CMS, CDS/ISIS, SQL/DS at EARN IBM/VM nodes. Intefaces have to be developped

for different host systems: any host database interface will require its own macro service program, for those host database systems running in different environments. The most important at present are:

- STAIRS/CMS and STAIRS/CICS/MVS
- CDS/ISIS-VM and CDS/ISIS/CICS/MVS and the announced CDS/ISIS/VAX/VMS
- SQL/DS and DB2.

For host database systems different from the above mentioned an exhaustive recognition will be done to select the new host database system interfaces to be implemented.

Resources needed to develop Host System Interfaces mentioned in the above list

- IBM Environment
 - HW: negligible;
 - SW: negligible;
 - man power: 12 months.

- DEC Environment
 - HW: negligible;
 - SW: negligible;
 - man power: 12 months.

- Server level:

The ASTRA Server Software is available on IBM/VM environment and it is completely written in REXX language. The software performs the following functions:

- Database access for databases available under STAIR/CMS, CDS/ISIS, SQL/DS.
- User subscription maintaining a User Registration file.
- Distribution of the user requests on the ASTRA Server Logical Network according to the database routing tables.

- Software and table maintenance from remote site.
- Automatic file distribution.

Interfaces to make available servers at EARN non-IBM/VM nodes have to be developed. We intend to start this kind of activity with the IBM/MVS and DEC/VMS operating system. The server software will be the same for the three operating systems IBM/VM, IBM/MVS and DEC/VMS. A general macro service program will be developed using C language to perform the same operations in the different environments; then the REXX IBM/VM server software will be completely obsolete.

Resources needed to develop Server Software

- IBM Environment
 - HW: negligible;
 - SW: negligible;
 - man power: 10 months.
- DEC Environment
 - HW: negligible;
 - SW: negligible;
 - man power: 10 months.

TOTAL RESOURCES EVALUATION AND POSSIBLE FUNDING SOURCES

Any resources needed for organize and manage and promote a database constitution service are not considered in this proposal, since its purpose is to evaluate the resources for running the service already produced and documented databases. Since we are convinced that the ASTRA Project will constitute an incentive to develop information services we encourage possible financial resources providers to invest in database development as well as the national research Organizations; such resources are not taken care in this estimate.

The summary of the resources needed to manage and develop the EARN ASTRA Service follows.

1. Management

- Resources needed to accomplish the tasks of the ASTRA Server Coordinator;
- Resources needed to accomplish all the tasks for ASTRA Master Server Coordinator.

2. Developments

- Resources needed to develop User Interfaces;
- Resources needed to develop Host System Interfaces;
- Resources needed to develop Server Software.

The man/power needed at local level for server management is supposed to be provided by voluntary effort (1 man/month/year/site). The resources needed to set up the EARN ASTRA Service and manage it for two years with minimum set of developments indicated is:

- man/power: 1 year per year to allocate at central level (ASTRA Server Master Coordinator);
- 20K ECU per year for travel of the committees (ASTRA-OG and EARN EARN ASTRA Scientific Committee of Control).

The financemnt for ASTRA service management should be provided at EARN central founds.

To complete all suggested developments funding for supporting the activity will be asked to the following sources.

1. Computer System providers:

- IBM

We envisage to request funding to IBM for:

- development of software tools for IBM enviroment (man power: 1 year for two years);
- management of IBM databases (man power: 1 year for two years; some G bytes of disk space plus control units);.

- DEC

We envisage to request funding to DEC for:

- development of software tools for DEC environment (man power: 1 year for two years).

2. COSINE

EARN will participate in the negotiation with COSINE and propose development of EARN ASTRA Service in OSI environment.

3. Other possible sources of funding

- CEC (various projects for research results diffusion and technology transfer);
- UNESCO;
- ESA;
- National Research Council (Italy: CNR, France: CNRS, ...);
- subscribing organizations having an interest on diffusion of public domain information and documentation on their activity.