ENTERPRISE

STARLINK INFORMATION BULLETIN

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This is the first of a series of Bulletins intended to keep users and prospective users of 'Starlink' (and anyone else interested) up to date on developments. It is hoped to produce it quarterly. Suggestions and contributions are welcome - in particular let us know if you wish to continue to receive it (there is a form at the end).

If you are wondering about the significance of the name - so are we.

1. INTRODUCTION

Late in 1978, the Science Research Council Panel on Astronomical Image and Data Processing was formed under the chairmanship of Professor M J Disney. It was to advise on the present and future data reduction needs of the United Kingdom astronomical community.

In April 1979 the Panel produced a report* which recommended the purchase of six powerful interactive computer systems equipped with sophisticated image display devices. Each computer would be sited at a different centre (node) and the centres were chosen so that an estimated 80% of astronomical researchers would be based at, or within about 20 miles of, one of the systems. An important feature of the 'Starlink' system (as it became known) was the need to coordinate the development of software which can be very easily distributed round the network from a central node. In this way it was hoped Starlink would be not just an injection of capital into much needed computer hardware for astronomers but an opportunity for the development of compatible software systems throughout United Kingdom astronomy.

Council approved Starlink in June 1979 and following tenders for the various computer equipment, there has been feverish activity. Most of the sites will be offering some form of service from 1st April this year although it will be October before Starlink is formally 'opened'.

* See Section 7

2. MANAGEMENT AND STAFFING

Starlink is responsible to the ASR Board of SRC and is managed from the Computing Division at the Rutherford and Appleton Laboratories at Chilton (near Oxford). The project reports to a Scientific Advisory Group (SAG) which provides a forum for astronomical input and feedback and makes recommendations to the Director General. Individual contacts within Starlink are listed in Section 8, together with their main responsibilities. Local management at each computer centre will be overseen by a Management Committee to be set up by each site manager. Initial enquiries, and all formal correspondence should be addressed to the Head of Starlink at Chilton. Specific enquiries (for example on software) should be directed to the appropriate named individual. Prospective users are strongly encouraged to make informal contact with the site manager(s) of the node(s) they intend to use.

Starlink systems staff are located at Chilton. It is expected that much of the applications work will be implemented either on grants or on a contract basis by astronomers working at nodes or elsewhere.

3. HARDWARE

Starlink will be based on six VAX 11/780 computers, located at Cambridge, University College London, Manchester, the two Royal Observatories and the Rutherford/Appleton Laboratories. (A seventh VAX, forming part of the UCL IPIPS project will also be linked to the network.)

The VAX 11/780, a high performance 32-bit multi-programming computer system is the successor of the DEC PDP11 range. Four of the Starlink systems will each have 2Mbytes main memory and four 176Mbyte disc drives while those at Manchester and Chilton will have 1½Mbytes memory and only two disc drives. Each site also has two 800/1600 bpi tape decks.

Each computer will support two image display systems - the Advanced Raster Graphics System (ARGS), manufactured by Sigma Electronics, in addition to graphics and alphanumeric terminals. There will also be an 11 inch Versatec 200 dot per inch printer/plotter. Other peripherals may be added later.

All the systems will be connected by communications links to Chilton to allow coordination and distribution of software and documentation. It is intended that eventually the systems will be integrated into the SRC network giving access to a large range of powerful computing facilities.

4. PROGRESS IN INSTALLATION

The Rutherford VAX was delivered and working by mid-December and the second machine was delivered to ROE and installed by mid-January. Both systems have been accepted. The third system, has been delivered to RGO and work on the installation began in March. The fourth system has been delivered to Manchester where preparations for its installation are under way. The fifth

and sixth systems have been delivered to Cambridge and UCL where installation is just complete. The ARGS displays are not expected until June, although it is hoped that an initial system can be assembled at Rutherford shortly. Standard terminals, including some rudimentary graphics capability are already available, with higher quality graphics terminals (Sigma GOC's) expected in April.

The systems should all be networked together by June.

5. SOFTWARE PLANS

(a) Applications

The ultimate value of Starlink to the astronomical community will depend very much on the quality and extent of the applications software that we are able to develop and support. Although effort should become available in due course from Starlink staff to implement applications programs required by astronomers, there is enormous investment already made in existing programs currently running on other computers which many could benefit from. We are very anxious to make full use of this expertise, particularly during the early stages whilst the systems software is under development. If you have software that you want to implement on the VAX, and/or publish on the network for others to use, but did not receive the initial survey request sent out in mid-December, please let us know. If you are developing software, or have a particular requirement, we should also like to know, both as a matter of urgency now and also on a continuing basis as Starlink develops. Full credit for contributed software will be given.

Initially we shall try to implement the more commonly needed image-handling and processing primitives so that data from the AAT, IUE etc can be processed at least as effectively as with existing packages running on other machines (eg SDRSYS). The NAG mathematical library is already available.

(b) Environment

It is intended to implement a Software Environment into which all applications software can be integrated. This will provide a command language enabling the astronomer at an interactive terminal to manipulate data and run data reduction programs by expressing operations in a concise but natural way. It will also specify a set of subroutine interfaces which will give applications programs efficient and easy access to command parameters, images and other bulk data, graphics devices etc. This should allow the build-up of compatible sets of applications software, both new, and converted from current packages.

Clearly the environment will take time to develop: it is hoped to specify the subroutine interfaces by April and implementation will be substantially complete by August. The command language may take longer, but the Operating System of the VAX offers sufficient facilities to get by. In the interim, users are encouraged to mount current packages in an ad hoc way on the VAX, and the network will be available to distribute such software.

6. HOW TO USE THE SYSTEM

Starlink is an expensive SRC resource and its users must be formally accredited, and allocated resources. However, it is recognised that many astronomers could make use of the VAX computers now, even without Starlink software, and would wish to do so without a tedious authorisation process. For this reason initial applicants simply have to complete a form ('Application for Starlink Resources') and send it to the Head of Starlink. Workers on current SRC projects will be accredited without further ado (non grant-holders have to be approved at a higher level but this will be a formality in most cases). Users will then liaise directly with the manager at whichever node(s) they use. The policy is described in note SGP/1/80, available from the Head of Starlink. It formally begins on 1st April, although some VAXs have had users since the beginning of the year!

A full report on usage of Starlink will have to be submitted to the ASR Board of SRC in due course. After the first year, potential users will apply for Starlink time as part of grant applications or allocation of establishment resources and these will be considered by ASR Board Committees in the usual way.

7. DOCUMENTATION

Clearly Starlink will be of little use unless it is well publicized to potential users, and its facilities are well documented to current users. Ultimately it is hoped to produce a Starlink Manual, describing everything about the system, with full documentation kept on the computer itself. It is hoped that the latter will aid the online user, whether totally new or very experienced, who refuses to read manuals.

Various other notes and papers are produced, and if likely to be of general interest these will be referenced in this Bulletin. You can always obtain these from the Chilton site (see 8).

Currently there is:

1. Report of Panel on Astronomical Image and Data Processing.*
2. A Series of User Notes relevant to users of the Chilton node.
3. Draft proposal for Starlink subroutine interfaces.

Coming shortly:

4. Outline of Command Language.
5. Plans for Applications Software.

* This one should be obtained from Mr P Casey, ASR Division, SRC Swindon.

8. CONTACTS

Formal correspondence, general enquiries, requests for papers, application forms etc should be addressed to:

Head of Starlink
Starlink Office
Rutherford and Appleton Laboratories
Chilton, Didcot,
Oxfordshire OX11 0QX

(0235-21900 Extension 372, morning calls preferable)

Individuals who may be contacted directly where appropriate are as follows:

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Dr C J Pavelin	(Project Manager)	Rutherford/Appleton
Mrs L J Claringbold	(Chilton site manager, Secretary Scientific Advisory Group)	Rutherford/Appleton
Mr M D Lawden	(User Interface Software/ documentation)	Rutherford/Appleton
Mr A J H Walter	(Systems Software)	Rutherford/Appleton
Dr R A E Fosbury	(Project Scientist, Applications Software coordinator)	Royal Greenwich Observatory
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Comments on this Bulletin should be made to:

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