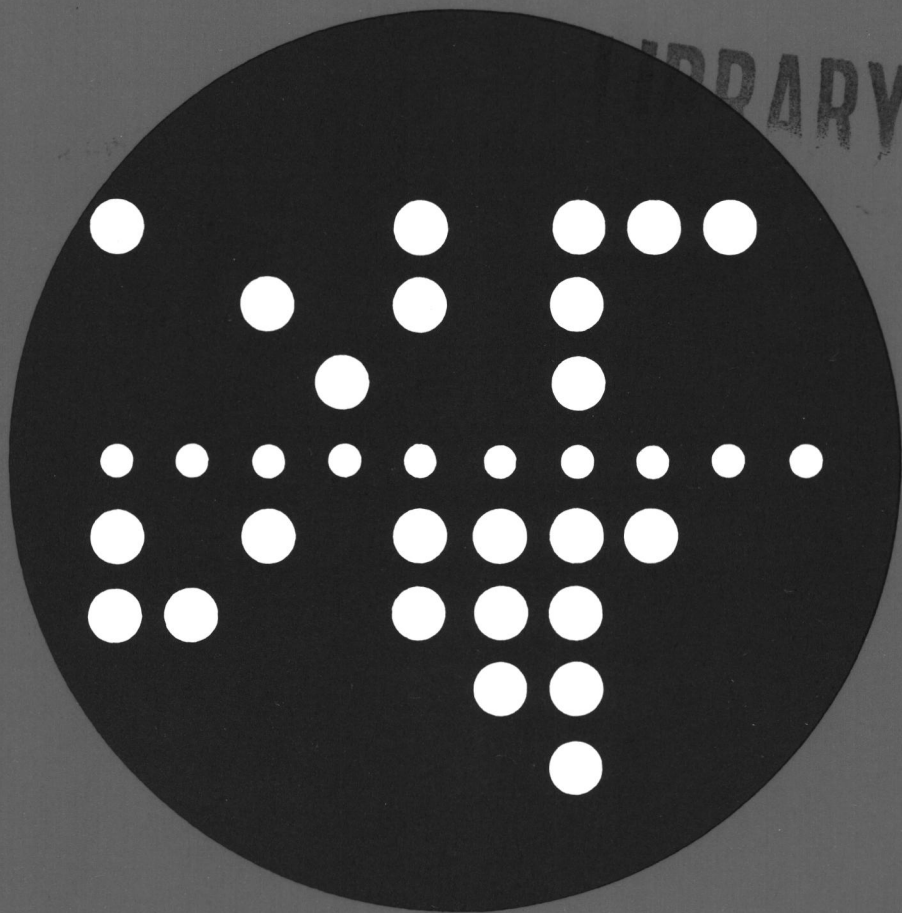


COMPUTING CENTRE NEWSLETTER

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JOINT
RESEARCH
CENTRE

Ispra Establishment

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EDITORIAL NOTE.

The Computing Centre Newsletter is published monthly except for August and December.

It describes developments, modifications and specific topics in relation to the use of the computing installations of the Joint Research Centre, Ispra Establishment.

The aim of the Newsletter is to provide information of importance to the users of the computing installations, in a form which is both interesting and readable.

The Newsletter also includes articles which are of intellectual and educational value in order to keep the users informed of new advances in computer science topics.

The Editorial Board is composed as follows:

J. Pire.	Responsible Editor.
M. Dowell.	Technical Editor.
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H. de Wolde.	

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21020-ISPRA (Varese)

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Neither the Commission of the European Communities nor any person acting on behalf of the Commission is responsible for the use which might be made of the information in this Newsletter.

INTERNAL NETWORK - OVERVIEW

M. Dowell

Since November 1978 a team, consisting of some members of the staff of the Informatics Division, has been engaged in the "Internal Network" project. In this article we present a brief overview of the aims and scope of this project. Subsequent articles will give details of specific facilities of the internal network.

Objectives of the Internal Network

The scope of the internal network project, as described in the Project Note Book: PNB 2.1 -23/2/79, is to develop a computer network within the JRC-Ispra to:

1. connect the variety of terminals in the centre in a standard way,
2. interconnect the computers in the centre in a standard way and thus offer a larger number of services to every user connected to the network,
3. to provide a standard interface to which (in the future) new equipment (both new computer services and terminals) can be attached without problems,
4. connect the internal network with EURONET in order to be able to:
 - provide access to EURONET for the terminals in the centre,
 - be able to offer services to EURONET which run (possibly) on different computer services within the JRC-Ispra.

Note regarding point 1

It is not, however, the plan to connect all terminals in the centre to the internal network. In many cases, where, for example, a user requires a terminal line to TSO and no other services, it will be more appropriate to connect directly to the central system.

Note regarding point 2

At present the only mainframe facilities available from the internal network will be the central IBM 370/165 system.

Note regarding point 4

An advantage of the EURONET connection to the internal network will be that it will be possible to use EURONET from an internal network terminal without making any use of the central IBM 370/165 system.

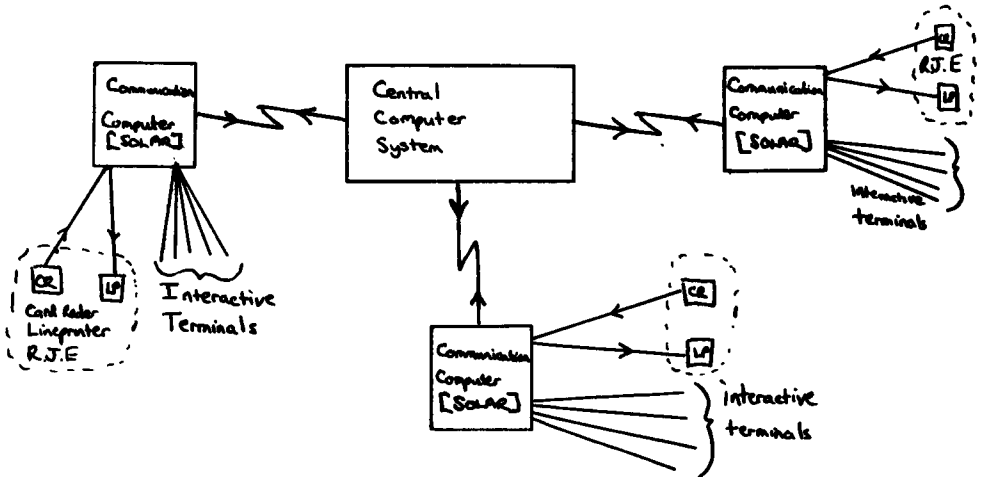
Development Plan

The internal network development plan is divided into two phases:

- phase 1 - in this phase the necessary interfaces will be developed via communication computers to connect the existing terminals in the centre to the existing services;
- phase 2 - in this phase the interconnection of the communication computers will be developed to provide for the interconnection of the computer services and the inter-network connection.

Communication Computers

The SEMS-SOLAR65 computer was chosen for the communications computers. The immediate objective of the project is to provide via the SOLAR systems a method of accessing, from a variety of terminals, the facilities provided by the central computer system. In figure I we show a hypothetical schematic view of this situation.



This will allow localised clusters of interactive and remote job entry terminals to access the facilities on the central system. Also, limited computing facilities will be available for interactive terminal users on the SOLAR systems. Thus, the user will be able to perform many useful functions, some of which are given in the following list:

- Use of TSO } from the same terminal
- Use of IMS }
- Remote job entry of card jobs with output to SOLAR line lineprinter and/or the central lineprinters
- Lineprinter output to the SOLAR printer from a job submitted centrally or from TSO
- Transfer of files to the central system from the local SOLAR machine (and vice-versa)
- File editing of the local SOLAR machine via interactive terminals
- Use of facilities (e.g. BASIC) on the local SOLAR machine via interactive terminals

These, will provide a wide ranging and flexible set of user facilities.

Present Situation

The present situation concerning the development is that:

- The phase I design and initial implementation has been completed
- Pre-release of the various facilities is taking place on "SOLAR-1" which is situated in the central machine room.

We now feel that we are able to offer the following facilities to users via the SOLAR 1 service:

- a) Job entry service via "self-service" card reader/lineprinters available in the terminal room adjoining the central computer room;
- b) Access to the pre-release internal network interactive terminal system (again in the terminal) room) for a few selected users.

Note. The job entry system is a new service available to all users whilst the interactive terminal is a system under trial which can only be made available to a few users on a test basis.

Detail of the means of accessing these two systems are described in this Newsletter in the two following articles.

An Information Seminar will be organized in the near future to explain to users the facilities of the Internal Network. Details will be circulated in the usual manner.

INTERNAL NETWORK - SOLAR "SELF-SERVICE" SYSTEM

M. Dowell

Introduction

The previous article presented an overview of the objectives, plans and present situation of the internal network project. In particular, mention was made of the possibility of having a cluster of interactive terminals with a remote job entry terminal which would access the central computer system via one of the SOLAR communications computers.

This article describes the facilities available from the remote job entry service on the SOLARS, and in particular the facilities which are now available to users via the "self-service" job entry terminal situated in the terminal room of the Computing Centre. Although this particular job entry station is not physically "remote" from the central computer system it has the same features and facilities as will have all the other SOLAR remote job entry terminals.

Remote job entry facilities are not a new facility for users of the JRC-Computing Centre. For many years there have been RJE terminals (situated both within the JRC and elsewhere) connected to the central mainframe. However, all of these terminals have been terminals, belonging to, and for the specific use of, small groups of users. The new self-service system marks the first of a series of RJE terminals which will be placed within the JRC for the general use of all users.

Remote Job Entry Terminals (RJE's)

This type of terminal allows for the submission of batch jobs and gives the ability to receive output from any batch job, whether submitted from the remote card reader, the central card reader or a TSO session.

In fact remote job entry terminals connected to the central computer system are able to submit jobs to the system (from the RJE card reader) and direct the output of the job to the RJE printer, any other RJE printer or the central lineprinter. Also, jobs which are submitted centrally may direct their printed output to any of the RJE terminal lineprinters. Thus, the system is very flexible, allowing (for example) a large volume of printed output to be directed centrally, whereas a small listing may be sent to the remote lineprinter.

By the same mechanism the output from a job submitted from a TSO terminal session may be directed to an appropriate lineprinter which is, for instance, in the vicinity of the TSO terminal. Those facilities, although flexible and comprehensive, are made available in a manner which makes them simple to use.

SOLAR "Self Service" Job Entry Facilities

A new service to provide user access to a card reader and lineprinter is now available to users. This terminal is situated in the terminal room which is adjacent to the central computer room in the Computing Centre building. It is hoped to provide for users a quick and convenient method of submitting jobs and receiving printed output.

Users will be able to:

- submit their decks of cards (themselves) at the card reader in the terminal room,
- obtain their printed output directly at the lineprinter in their terminal room,
- submit their jobs from TSO terminals in the terminal room and obtain their printed output at the lineprinter in the terminal room.

The new service is available now.

Note. Any card punch output from jobs must be punched centrally.

Because of the anticipated heavy demand on these devices it will be necessary to restrict the volume of input and output for each job (via the "self-service" terminal).

- Users are requested not to submit card decks of > 400 cards via the self service card reader.
- Users are requested not to produce output of > 4000 lines for any job via the self service line printer.

It is envisaged that this new service will decrease the requirement for input of cards in the present manner (ie submitted via the "guichet" to the operations staff) and also decrease the amount of output produced on the central lineprinter.

Users are requested to only use the "guichet" system for the input of large decks (> 400 cards).

Use of the "self-service" system

The use of the "self-service" system requires the acquisition of competence in the following simple tasks:

- i) transformation of the card deck to make it suitable for input from the job entry terminal
- ii) operation of the terminal card reader to input the jobs
- iii) operation of the terminal lineprinter to obtain the output from the job

All of these tasks have been made as simple as possible for the users. In general, the lineprinter will require no intervention except for the tearing off of your particular output. Details of how to use the lineprinter are provided on a notice in the terminal room.

The card reader is simple to operate. Details of how to operate it are provided on a notice in the terminal room.

Card Deck Transformation

Consider a normal job. For example:

```
//      JOB(your job card)
$      TIME 01
$      LINES 2
$      CLASS 2
//     EXEC FTG1CLG
C      VERY SMALL FORTRAN PROGRAM.
        A=2
        STOP
        END
/*
```

Normally this deck would have the green JOB card at the beginning and one of the special blank pink terminator cards at the end.

For transformation of the card deck to enable it to be accepted by the self service card reader perform the following changes;

- 1) Remove the pink terminator card from the card deck.
- 2) Place a card punched /RJOB (in column 1-5) at the front of the deck (N.B. These should be some of those cards available for use in the terminal room).
- 3) Place a card punched /EOJ (in column 1-4) at the end of the deck (N.B. These should be some of those cards available for use in the terminal room).

Thus, the example deck becomes

```
/RJOB
//     JOB(your job card)
$     TIME 01
$     LINES 2
$     CLASS 2
//    EXEC FTG1CLG
C     VERY SMALL FORTRAN PROGRAM
        A=2
        STOP
        END
/*
/EOJ
```

This job may now be submitted via the self service card reader.

Note. PLEASE, PLEASE remember to take off all rubber bands before putting the card deck in the reader.

Directing of Lineprinter Output

The lineprinter output from a job submitted from the self service terminal will, by default, be sent back to the self service lineprinter. This concept, of course, may be extended to other RJE terminals and may be generalized to include the central card reader as simply another terminal device with the central lineprinter as the associated output device. The output from jobs submitted from the central card reader are sent, by default, to the central lineprinter. Also, jobs submitted from a TSO session will have their output sent, by default, to the central lineprinter.

It is, however, possible to route lineprinter output from a job submitted from the self-service card reader to the central lineprinter and also to route lineprinter output from a job submitted from the central card reader (or a TSO session) to the self-service lineprinter. This is done by using the /*ROUTE command.

This command has the general form as follows:

```
COL 1-7      /*ROUTE
COL 10-14    PRINT
COL 16-22    destination either LOCAL    for the central
                                           lineprinter
                                           or     REMOTE9    for the self-service
                                           lineprinter
```

Note 1. All other columns are blank.

Note 2. This command may also be used to route output to other RJE terminals, in which case a different number (other than 9) would be associated with the REMOTE9 parameter. This command may be placed in a deck in any place where a normal job control command may be placed and causes the routing of all the lineprinter output for the job.

Example 1

A job submitted from the self-service card reader with output directed to the central lineprinter.

```
/RJOB
//      JOB(your job card)
$      TIME 01
$      LINES 6
/*ROUTE PRINT LOCAL
//STEP1 EXEC LIHNO,MEMB=INFO
/EOJ
```

Example 2

The same job submitted from the central card reader which directs its output to the self-service lineprinter

```
//      JOB(your job card)
$      TIME 01
$      LINES 2
/*ROUTE PRINT REMOTE9
//STEP1 EXEC LIHNO,MEMB=INFO
```

INTERNAL NETWORK - INTERACTIVE TERMINAL ACCESS

M. Dowell

In this article we give information about the facilities which will be provided for interactive terminals attached to the internal network. At present these facilities are available on a trial basis. It is hoped to make the facilities generally available in the near future. Users who wish to make use of these trial facilities should contact:

Mr. Martyn Dowell
Support to Computing
Room 1886 (Building 36)
telephone - 701

for further details.

Facilities for Interactive Terminal Users

From any terminal it is possible to use any of the following facilities:

- TSO terminal facilities
- Facilities of the SOLAR computer (used in the internal network) via the SOLAR TSF timesharing system

From any IBM 3270-compatible terminal it is possible to use the above facilities plus the IMS terminal facilities.

Use of TSO and IMS Facilities

It is possible via any IBM-3270-type terminal connected to the internal network to access TSO and IMS in a way which is the same as from any normal TSO or IMS terminal. From all other terminals it is possible to use TSO facilities.

Use of the TSF Timesharing Facilities

The timesharing system of the SOLAR computer is named TSF. It is possible to use this system via any internal network interactive terminal. These are many features available, the following is a brief description of some of them:

- It is possible to use TSF for normal programming work using a small available set of computer languages (in particular there is a BASIC system available).
- It is possible to use TSF for the preparation/editing of files which may then be submitted as jobs to the IBM system.

- By a similar mechanism files may be transferred to datasets on the IBM system.
- Other facilities exist to enable the user to obtain and inspect the output of a job which has been previously submitted.
- A mechanism exists to copy IBM datasets to files on the TSP system.

It is expected that as a result of future internal network development and implementation these facilities will become available to all interactive terminal users.

Full documentation of these facilities will be available.

Statistics of computing installation utilization.
 Report of computing installation exploitation
 for the month of March 1980.

	YEAR 1979	YEAR 1980
<u>General</u>		
Number of working days	22 d	21 d
Work hours from 8.00 to 24.00 for	16.00h	16.00h
Duration of scheduled maintenance	20.17h	22.34h
Duration of unexpected maintenance	19.83h	24.17h
Total maintenance time	40.00h	46.51h
Total exploitation time	312.00h	334.49h *
CPU time in problem mode	179.72h	203.80h

Batch Processing

Number of jobs	8976	7921
Number of cards input	1818000	1225000
Number of lines printed	30359000	25072000
Number of cards punched	136000	151000
CPU time	161.27h	179.27h
Number of I/O (Disk)	23633000	24340000
Number of I/O (Magnetic tape)	4325000	4207000

T.S.O

Number of LOGON's	3114	3703
Number of messages sent by terminals	179000	253000
Number of messages received by terminals	848000	1437000
CPU time	17.58h	21.60h
Number of I/O (Disk)	2821000	3224000
Connect time	1758.70h	2661.18h

IMS

Total time service is available	144.68h	111.69h
CPU time	1.35h	2.93h
Number of I/O (Disk)	382000	576000

This figure includes 45.00h of overtime.

Utilisation of computer centre by objectives and appropriation
accounts for the month of March 1980.

	IBM 370/165 equivalent time in hours
1.20.2 General Services - Administration - Ispra	54,06
1.20.3 General Services - Technical - Ispra	0,59
1.30.3 Central Workshop	2,16
1.30.4 L.M.A.	-
1.90.0 ESSOR	27,76
1.92.0 Support to the Commission	6,46
2.10.1 Reactor Safety	217,44
2.10.2 Plutonium Fuel and Actinide Research	1,85
2.10.3 Nuclear Materials	45,97
2.20.1 Solar Energy	0,02
2.20.2 Hydrogen	-
2.20.4 Design Studies on Thermonuclear Fusion	20,79
2.30.0 Environment and Resources	13,00
2.40.0 METRE	2,98
2.50.1 Informatics	25,88
2.50.2 Training	-
2.50.3 Safeguards	7,42
TOTAL	426,38
1.94.0 Services to External Users	26,64
TOTAL	453,02

BATCH PROCESSING DISTRIBUTED BY REQUESTED CORE MEMORY SIZE

	100	200	300	400	600	800	1000	1200	1400	>1400
No. of jobs	2362	2069	1533	1104	333	34	27	79	3	-
Elapsed time	75	214	155	232	137	13	10	65	1	-
CPU time	3.4	31.0	22.7	32.3	44.1	5.7	4.3	34.0	0.4	-
"Equip" time	22	79	55	87	58	6	5	36	0.4	-
"Turn" time	1.4	2.5	5.4	4.1	8.4	16.3	13.0	14.1	3.6	-
I/O (disk)	1921	6476	4527	7189	1930	104	131	340	40	-
I/O (tape)	1652	878	121	1421	51	6	18	16	1	-

NOTE.

All times are in hours.

"Equip" means equivalent.

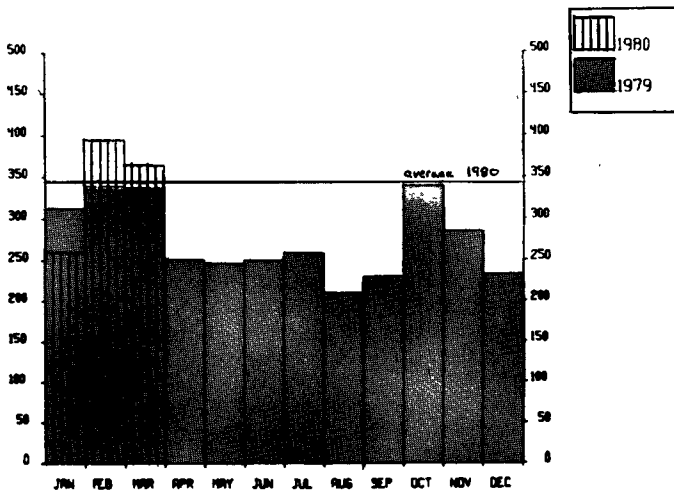
"Turn" means turn around.

All I/O transfers are measured in 1000's.

PERCENTAGE OF JOBS FINISHED IN LESS THAN

TIME	15mn	30mn	1hr	2hrs	4hrs	8hrs	1day	2day	3day	6day
%year 1979	23	36	49	64	80	94	99.8	100	100	100
%year 1980	26	39	51	64	79	92	99.3	100	100	100

HISTOGRAM OF TOTAL EQUIVALENT TIME(HRS)



Projected total for 1980 = 4082 hours (using average).
 Total for 1979 was = 3292 hours.

REFERENCES TO THE PERSONNEL/FUNCTIONS OF THE COMPUTING CENTRE,

<u>Manager of The Computing Centre</u>		J.Pire		
Responsible for User Registration	Ms. G.Rambs			
<u>Operations Sector</u>				
Responsible for the Computer Room	A.Binda-Rossetti			
Substituted in case of absence by:				
Responsible for Peripherals	G.Nocera,			
<u>Systems Group</u>				
Responsible for the group	D.König			
Substituted in case of absence by:	P.A.Moinil			
Responsible for TSO Registration	C.Daolio			
<u>Informatics Support Sector</u>			Room	Tele.
Responsible for the Sector	(f.f.) H.de Wolde	1883	1259	
Secretary	Mrs. G.Hudry	1873	787	
Responsible for User Support	H.de Wolde	1883	1259	
General Inf./Support Library	Mrs. A.Cambon	1871	730	
<u>Advisory Service/List of Consultants(See Note 1)</u>		1870	730	
A.Inzaghi		A.A.Pollicini		
	H.I. de Wolde			
R.Meelhuysen		M.Dowell		

NOTE 1. The advisory service is available in the same room as the Computing Support Library(room 1870). Exact details of the advisory service times for a specific week can be found at the head of any output listing(for that week).

Any informatics problem may be raised. However, the service is not designed to help users with problems which are their sole responsibility. For example, debugging of the logic of programs and requests for information which can easily be retrieved from available documentation.

If necessary, other competent personnel from the informatics division may be contacted by the consultant but not directly by the users

The users should only contact the person who is the consultant for that specific day and only during the specified hours. Outside the specified hours general information may be requested from Mrs. A. Cambon in the Computing Support Library.

HOW TO OBTAIN COMPUTING CENTRE DOCUMENTATION.

Persons interested in receiving copies of the Computing Centre "green books" or in receiving regularly the "Computing Centre Newsletter" are requested to complete the appropriate part of the following form and send it to :-

Ms. A. Cambon
Support To Computing
Building 36
Tel. 730.

Indicate with a (✓) which options are required.

Please add my name to Newsletter mailing list ()

Please send me copies of the following "green books":

JRC-TSO Primer ()

GRAPHIT ()

Towards a New Programming Style ()

LIBRARIAN ()

NAME

ADDRESS

.....

.....

TELEPHONE

