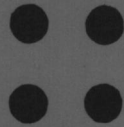


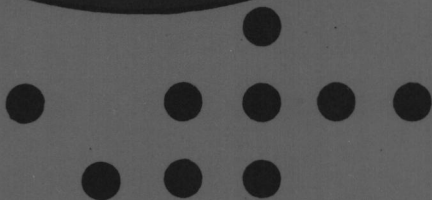
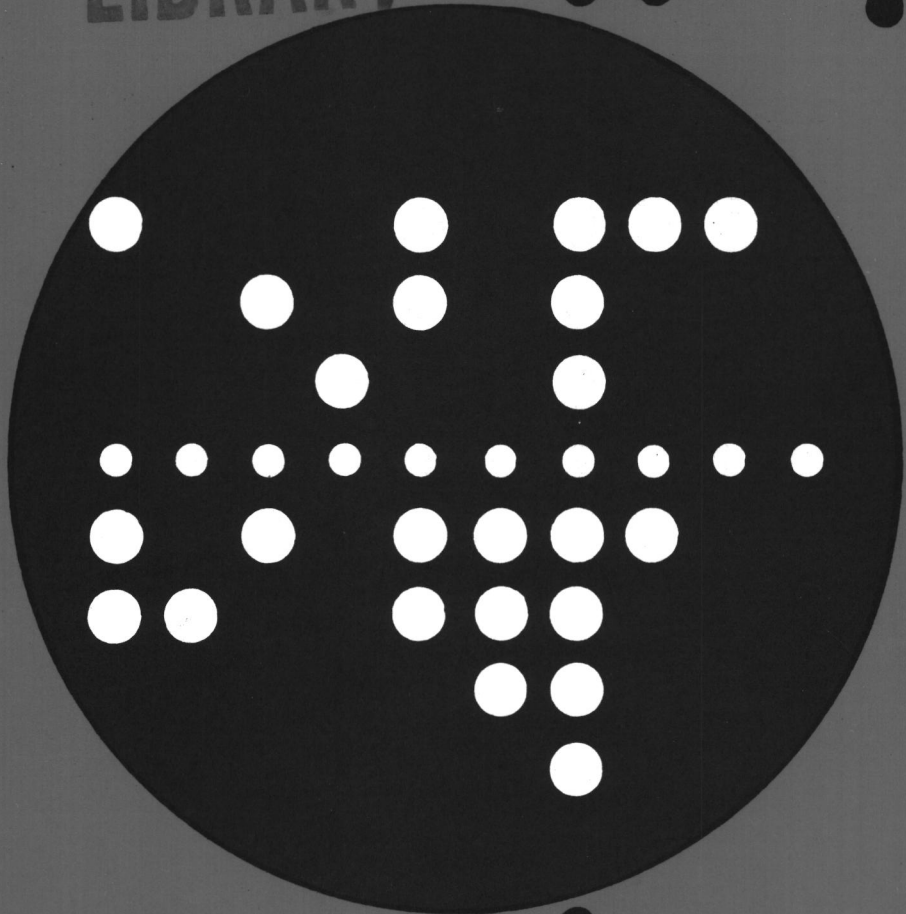
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**Computing Centre Newsletter**



June 1977 ● No 12

CEE: XV/6



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## Note of the Editor

The present Newsletter is published monthly except for August and December.

The Newsletter includes:

- Developments, changes, uses of installations
- Announcements, news and abstracts on initiatives and accomplishments.

The Editor thanks in advance those who want to contribute to the Newsletter by sending articles in English or French to one of the following persons of the Editorial Board.

## Note de la Rédaction

Le présent Bulletin est publié mensuellement excepté durant les mois d'août et décembre.

Le Bulletin traite des:

- Développements, changements et emploi des installations
- Avis, nouvelles et résumés concernant les initiatives et les réalisations.

La Rédaction remercie d'avance ceux qui veulent bien contribuer au Bulletin en envoyant des articles en anglais ou français à l'un des membres du Comité de Rédaction.

## Editorial Board / Comité de Rédaction

H. de Wolde, D.G. Ispra  
C. Pigni, C.C. Ispra  
J. Pire, C.C. Ispra

*Consultant:* S.R. Gabbai, D.G. Ispra

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## Computing Centre References

		Room	Tel.
<i>Manager</i>	J. Pire	1816	732
Adjoined	G. Gaggero	1874	787
<i>Computer Room</i>	P. Tomba	1857	797
Adjoined	A. Binda	1857	797
<i>Peripherals</i>	G. Nocera	1825	767
<i>System Group</i>	D. Koenig	1839	742
Adjoined	P.A. Moinil	1841	704
<i>Informatics Support</i>	G. Gaggero	1874	787
○ General Information	G. Hudry	1873	787
○ Program Information Service	G. Gaggero	1874	787
Adjoined	S. Leo Menardi	1884	721
○ Graphics and Support to Users	H.I. de Wolde	1890	753
Adjoined	A. Pollicini	1882	743
Application Packages	A. Inzaghi	1887	755
Programming Languages	C. van den Muyzenberg	1848	781

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Editor	: Sylvia R. Gabbai
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## **Contact with USERS**

Hans J rgen Helms

As I had occasion to emphasize in a previous article in this Newsletter, a close and constructive contact between the Computing Centre and its users is essential for obtaining the maximum benefit from the resources available, and to allow the computing centre to provide the best possible service. The Newsletter is one instrument which allows such contacts, but other initiatives are also necessary.

In this spirit, a USERS GROUP could develop into a forum for a proper exchange of views on the service provided at present, and planned for the future.

Moreover, the USERS GROUP will provide the computing centre with a forum where the background to its decisions can be explained for the users in a more detailed way than is possible in written form.

It is in this context that I consider all initiatives which can lead to better contact between the computing centre and its users as most welcome.

### **Users Group (U.G.)**

J.P. Halleux (Provisional Secretary)

For more than one year now, you receive the Computing Centre Newsletter. It represents one of the efforts done by the Computing Centre (C.C.) towards an optimum communication with the users. An article by Messrs. De Wolde, Pigni and Pollicini ("Support to Computing", C.C. Newsletter No. 11) described the Division Informatique as composed by three services, one of them, the Informatics' Support, being user oriented. A subgroup of this service, the Support to Computing has been planned for the regular contact with the users. This unit is busy with helping the user of computing facilities for all informatic problems he encounters when working with these facilities. More generally it also helps to find adequate methods for solving the problems.

It is more or less a "how to use" and thus certainly is indispensable for ensuring the efficiency of computer use. As confusion should be avoided, it might be useful to repeat that the unit Support to Computing is not intended for doing the job of the users ! .

Of course, not only practical, daily problems are encountered by the user. Often problems are involved in the fundamental aspects of the computer installation; it is clear that the politics of development of the C.C. has a definite impact on the performance of the machines in the frame of the work asked to them. Also, when defining a development policy of the C.C., the management of the C.C. tries to integrate the users' needs. And right here the difficulty begins. How to know the users' needs ? There is no user organization providing for efficient interlocutors. The C.C. has to ask the user individually, or take indirect information or guess the needs from the extrapolation of present works, or use the disparate information received by the Support to Computing and so on.

This represents a lot of work and it cannot be expected that the C.C. spends too much time and competence on it, instead of doing its current job.

Furthermore when the C.C. wants to discuss a general problem with the users or to transfer information to them, they cannot find any ready and recognized representatives of the users. So, in November 1976, Mr. Helms raised the idea of creating such a users' representation (called users' group) and asked a few interested users to prepare a proposition according to the following general guidelines:

- The Users' group should provide for a forum where all major problems related to computers can be discussed.
- It should be composed by representatives chosen amongst the users of computing facilities. The members would be designated by their respective directions or departments.
- People working for the computer centre, though not members of the Users' group, would be invited to attend the meetings to bring scientific support and to propose their solutions to the problems raised.
- It is proposed to limit the number of participants to ensure the efficiency of the group.
- The Users' group itself should decide on its organization and rules.

Unfortunately and surprisingly, an unexpected difficulty arised: most of the users showed a great indifference.

Claims are available, but constructive critics are desperately missing!

Nevertheless it was possible to set up a preliminary users' group and a hard work began, of course not from the point of view of actual realizations, because - due to the provisional aspect of the group - it was not possible and would not have been fair to take decisions; it was hard in the attempt to show that it is indeed possible to create an enhanced and profitable state of relations between C.C. and users.

As a result it can be noticed:

- the development of a natural flux of information from the C.C. to the preliminary users' group on all what is going on in the C.C.,
- the existence of good climate for discussion with the C.C.,
- a collaboration continuously offered by the C.C. to the preliminary users' group during the last months.

It is hoped that this will convince all users to join the action and provide for what is missing until now: the final flux from and towards the user himself.

It is clear that for the user there is no advantage in the present situation because the wall between C.C. and users still exists: it has just moved. To get it removed is now a matter that depends exclusively upon the user ! .

So if you are a user and if you are now actively interested in the idea of a users' group, join the next meeting organized by the preliminary group and bring your opinions and your critics to animate a discussion which is hoped to be positive and creative. If the hopes are going to be turned into reality depends as already stated, definitely only upon you : there can be no efficient users' group without users ! .

*The Newsletter is available at:*

**Mrs. A. Cambon**  
Support to Computing  
Bldg. 36 - Tel. 730

*Des exemplaires du Bulletin  
sont disponibles chez:*

**Mme A. Cambon**  
Support to Computing  
Bât. 36 - Tel. 730

## Proposition for the Statut of a Permanent Users' Group (U.G.) Concerning Computing Facilities at JRC Ispra

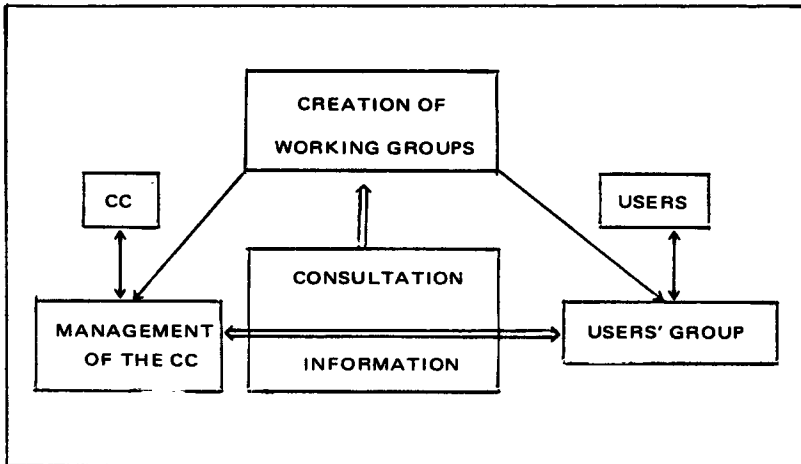
(Elaborated by a Preliminary Group of Users\*)

### Part 1: Objectives

The U.G. is intended to provide for a forum where all major problems related to computers can be discussed. Its first aim is to ensure an optimal computing service by promoting the exchange of ideas between the computer centre (C.C.) and the users of computing facilities.

The U.G. is not a group of specialists in informatics, it is the natural emanation of the users' community. It is thus composed by representatives exclusively chosen amongst the users of computing facilities, only the personnel of the C.C. being excluded.

A very simple organigramme visualizing the link between the C.C. and the U.G. is proposed:



### Part 2: Tasks

In connection with the principal aim of the U.G. (i.e. information and consultation with the C.C.) some definite tasks should be given to the U.G. in order to ensure his usefulness:

1. Collection, elaboration and definition of the Users' needs (with eventual priorities).
2. Checking of the efficiency of computer use.
3. Action on the daily management of the C.C.
4. Elaboration of propositions for the development of computing facilities within the various departments and directions.



**Part 3: Rules**

1. The U.G. is composed by a maximum of 15 representatives chosen exclusively amongst the users of computing facilities (called "users").
2. The nominative list of the users and the appointing procedure are defined by the Directorate on proposition of the U.G.
3. The objectives and tasks of the U.G. are defined in Parts 1 and 2 of the U.G. Statut.
4. The U.G. designates 4 of its members to form a steering committee (1 secretary and 3 substitutes). Only the secretary or his substitutes can speak and act in name of the users' community.
5. The U.G. itself decides on its internal organization.
6. At least 6 times a year (f.i.. January, February, March, May, June, September, October and November), the U.G. organizes its meeting with the Computer Centre (C.C.). Both the C.C. and the U.G. decide on the "Ordre du Jour" of these meetings.
7. The U.G. may propose to change its Statut. The modifications become effective only if and when approved by the Directorate.
8. Transient disposition: the first U.G. is composed by the members of the Preliminary U.G. (see list of participating persons below\*) . New members for this first U.G. are welcomed any time.

---

**\* Composition of the preliminary group:**

Mrs. Actis Dato	Direction du Site	Mr. Haenen	Dept. A
Mr. Biggio	Dept. B	Mr. Halleux	Dept. B
Mr. Capobianchi	Dept. A	Mr. Knöppel	Dept. C
Mr. Dorpema	Dept. A	Mr. Kolar	Dept. B
Mr. Eder	Dept. B	Mr. Riesch	Dept. B
Mr. Fangmeyer	Dept. A	Mr. Town	Dept. C

## Statistics of computing installation utilization

### Report of computing installation exploitation for the month of May

	YEAR 1977	YEAR 1976
Number of working days _____	18 d	20 d
Work hours from 8.00 to 24.00 for _____	16.00 h	14.00 h
Duration of scheduled maintenance _____	21.08 h	23.45 h
Duration of unexpected maintenance _____	69.76 h	2.75 h
Total maintenance time _____	90.84 h	26.20 h
Total exploitation time _____	199.16 h	274.80 h
CPU time in problem mode _____	104.64 h	120.62 h

#### Conversational Systems

CPU time _____	2.65	1.30
I/O number _____	499,000	581,000
Equivalent time _____	6.15	5.37
Elapsed time _____	211	157.50

#### Batch processing:

Number of jobs _____	6,487	8,332
Number of cards read _____	1,869,000	2,853,000
Number of cards punched _____	140,000	153,000
Number of lines printed _____	20,303,000	23,351,000
Number of pages printed _____	454,000	524,000

#### BATCH PROCESSING DISTRIBUTION BY REQUESTED CORE MEMORY SIZE

	100	200	300	400	600	800	1000	1400	total
Number of jobs	1612	2507	1220	696	131	58	13	-	6237
Elapsed time (hrs)	39	194	135	135	52	17	2.5	-	575
CPU time (hrs)	2	33	23	22	15	6	0.6	-	102
Equivalent time (hrs)	12	59	44	52	21	8	0.9	-	197
Turn around time (hrs)	0.9	2.4	3.1	3.7	4.8	7.1	2.6	-	2.4

#### PERCENTAGE OF JOBS FINISHED IN LESS THAN

TIME	15'	30'	1h	2h	4h	8h	1D	2D	3D	6D
% year 1976	42.2	60.1	75.5	88.0	96.2	98.9	99.3	100		
% year 1977	29.4	46.1	62.8	77.6	87.9	94.2	97.3	99.4	99.5	100

**Utilization of computer center by the objectives and appropriation accounts for the month of May**

**IBM 370/165**  
**equivalent time in hours**

1.20.2	General Services - Administration-Ispra	24.52
1.20.3	General Services - Technical-Ispra	1.76
1.30.4	L.M.A.	0.02
1.90.0	ESSOR	9.45
1.92.0	Support to the Commission	5.13
2.10.1	Reactor Safety	84.43
2.10.2	Plutonium Fuel and Actinide Research	4.18
2.10.3	Nuclear Materials	2.62
2.20.1	Solar Energy	0.59
2.20.2	Hydrogen	0.01
2.20.4	Design Studies on Thermonuclear Fusion	0.44
2.30.0	Environment and Resources	13.85
2.40.0	METRE	3.05
2.50.1	Data Processing	29.98
2.50.3	Safeguards	0.34
	<b>TOTAL</b>	<b>180.37</b>
1.94.0	Services to External Users	13.27
	<b>TOTAL</b>	<b>193.64</b>

**EQUIVALENT TIME TABLE FOR ALL JOBS OF THE GENERAL SERVICES - Monthly and Cumulative Statistics**

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1976	84	82	101	77	57	64	73	54	61	59	36	46
accumulation	84	166	267	344	401	465	538	592	653	712	748	794
Year 1977	44	74	78	32	26							
accumulation	44	118	196	228	254							

**EQUIVALENT TIME TABLE FOR THE JOBS OF ALL THE OBJECTIVES AND GENERAL SERVICES - Monthly and Cumulative Statistics**

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1976	206	237	270	241	229	248	249	223	233	244	159	150
accumulation	206	443	713	954	1183	1431	1680	1903	2136	2380	2539	1689
Year 1977	135	218	312	193	180							
accumulation	135	353	665	858	1038							

**EQUIVALENT TIME TABLE FOR THE JOBS OF THE EXTERNAL USERS - Monthly and Cumulative Statistics**

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1976	18	19	28	16	25	32	14	11	27	31	29	12
accumulation	18	37	65	81	106	138	152	163	190	221	250	262
Year 1977	13	14	18	16	13							
accumulation	13	27	45	61	74							

**EQUIVALENT TIME TABLE FOR ALL JOBS OF ALL USERS - Monthly and Cumulative Statistics**

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1976	233	271	313	280	277	281	260	245	273	287	206	172
accumulation	233	504	817	1097	1374	1655	1915	2160	2433	2720	1926	3098
Year 1977	158	241	314	242	202							
accumulation	158	399	713	955	1157							

## **Project COST 11 – European Informatics Network Implementation Architecture**

### **K. Weaving**

This is the second article in a series describing the work being performed on the project, and will describe the software system and tools currently used and developed on the IBM 370 particularly for EIN.

#### **System Environment**

The EIN software system runs in a user partition in the 370 under HASP and currently occupies 300K of memory. The majority of the system is written in PL/I using the multitasking facilities which allow many tasks to be executed asynchronously. In order to reduce the amount of memory used, the overlay facilities of the linkage editor are used, which causes procedures to be kept on disk and only brought into core when they need to be executed. This obviously incurs some additional overhead due to the time taken in bringing the procedure from disc, so the most frequently used procedures are permanently resident in core. This is only necessary because the EIN system runs in real time where certain actions must be performed within a certain interval of real time (i.e. "elapsed time").

#### **Software Architecture**

The design approach is to implement each protocol as a virtual machine running in a software environment which provides the following facilities:

- intermachine communication
- synchronisation and exclusion
- timeout handling
- store management.

A data base system produced locally forms the basis of the software environment, additional code having been written to give a set of primitives which can be used by any virtual machine without knowing they are dealing with a data base system.

The external attributes of a virtual machine are simply an input queue and an event. A virtual machine can be defined as a process which has no external variables, and is therefore completely self sufficient. It reacts to commands which it takes from its input queue performing a set of predefined actions for each command depending on its current state. The virtual machines communicate only by the exchange of commands using these

input queues. Where large blocks of data are to be exchanged, the data is stored in the data-base, and only the address of the data is included in the command.

The event is usually associated with the input queue, so that when its input queue is empty, the machine will wait on the event. Any other machine putting a command into the input queue will cause the event to be set. The dormant machine will then be woken up to process the command.

To communicate with a machine, all that need be known about it is its command set and replies (if any).

### Virtual Machines

Three types of virtual machine have been identified within our design.

The first, and simplest is the protocol machine (usually a protocol implementation) which has its queue as its only source of input, and its only output are commands to the input queues of other machines.

The second type is the output machine, which has a queue as its input, but its output goes to an external resource (e.g. a printer). The third type is the input machine which takes its input from an external resource (e.g. a keyboard) and its output is to queues of other machines.

The line control section of the Network Control Program is shown in Fig. 1. As can be seen, this section contains three machines, one of each of the types described above.

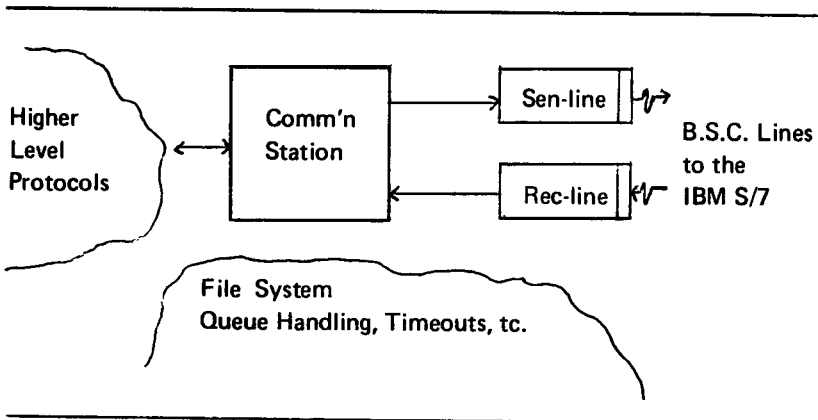


Fig. 1 - Line Processes of the 370

The machine REC-LINE receives the messages from the System/7, stores the message text in the data-base then queues a RECEIVE-PACKET command to the Communication Station. It waits continually on the line and hence has no need for an input queue, being an input machine.

The machine SEN-LINE processes its input queue which can only contain two types of command, TERMINATE and SEND-PACKET. In the case of SEND-PACKET, it constructs the packet from the data whose addresses are given in the commands and sends it down the line. This is an example of an output machine.

The remaining virtual machine type is exemplified by the Communication Station. This is the implementation in the 370 of the HDLC protocol of the subnetwork node.

### **Timeouts**

No real time system can run without using timeouts. In the EIN System we have implemented a timer process in PL/I as a virtual machine, although it is considered as part of the software environment.

When requesting a timeout, a machine specifies the time to elapse, the command to be generated when this time has elapsed, and the machine to which the command is to be queued (this is usually itself, but the possibility exists for it to be another machine) Timeouts cannot be cancelled as such, but the command generated when the timeout has elapsed can be ignored. For example, a timeout is usually set to protect a machine from sitting indefinitely in a particular state. If the machine changes state before the timeout elapses then the action prescribed for the timeout in the new state is "drop it! ".

### **Practical Conclusions**

This type of implementation has allowed us to develop software which is easily modifiable. This arises from the fact that each machine has no relations with the others except the commands which are passed between them. The interface between machines is therefore limited to the set of commands. For this reason also, the system is easily extended by the introduction of new machines having only a few fundamental rules to respect.

### **Note to the Users**

Due to reasons beyond the control of the involved people an information meeting on the time-sharing system TSO which was scheduled for June 20, 1977 could not take place. This meeting is now planned for *tuesday September 27, 09.00 h in the amphitheatre of the CETIS*. All users who intend to use TSO in the future are invited to come. All users presently using the PSQ/FILEDI system are recommended to come.

*D. König*

The Editorial board invites you to answer the questions appearing in the form on page 23 of the No. 11 issue.



Les personnes intéressées et désireuses de recevoir régulièrement "Computing Centre Newsletter" sont priées de remplir le bulletin suivant et de l'envoyer à

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Support to Computing  
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**Adresse** .....

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