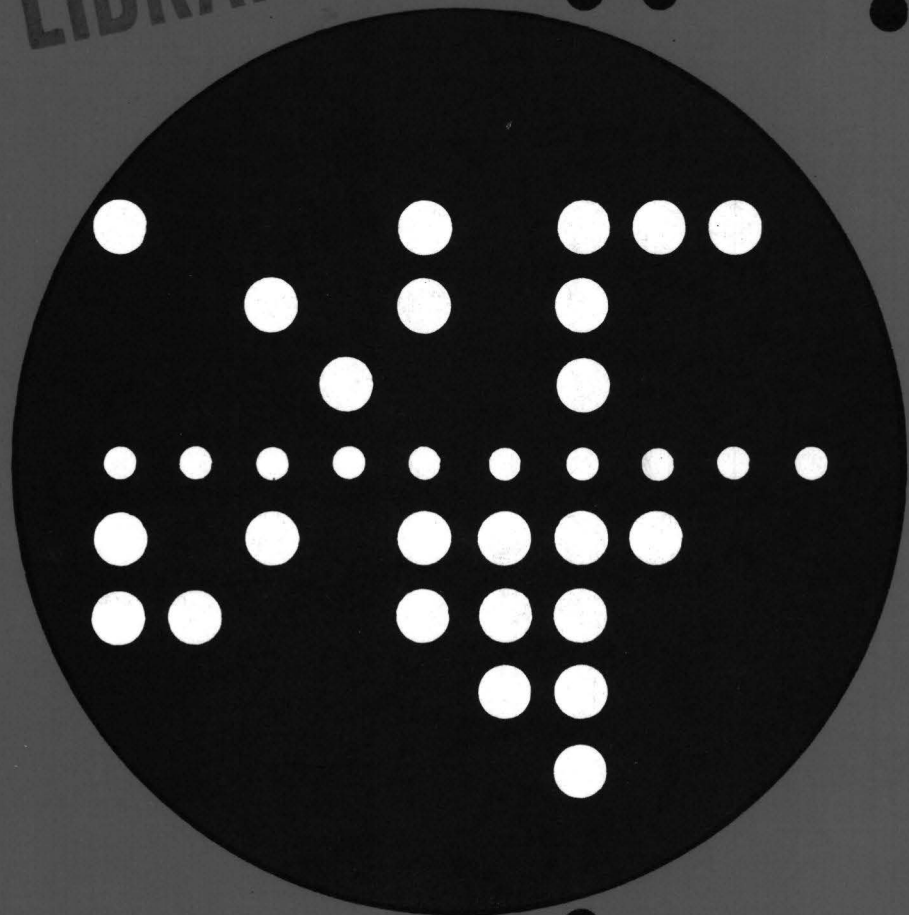


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Computing Centre Newsletter



May 1977 ● No 11

CEE: xv/6



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We regret that, for reasons beyond our control, this issue of the Computing Centre Newsletter has been delayed.

Pour des raisons indépendantes de notre volonté, le présent numéro du Computing Centre Newsletter a dû paraître avec un mois de retard.

### 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.

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### 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
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o General Information	G. Hudry	1873	787
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<b>Editor</b> : Sylvia R. Gabbai
<b>Layout</b> : Paul De Hoe
<b>Graphical and Printing Workshop</b> , JRC Ispra

## **JRC Computing Centre Newsletter One Year !**

**Hans Jørgen Helms**

It is always pleasant to wish a child a happy birthday and it is with pleasure that I accepted the invitation of the editors of the Computing Centre Newsletter to offer my wishes on the occasion of its first anniversary.

My first wishes go to the editors and the technical staff who have managed to issue the Newsletter regularly and by and large on the intended dates and who have cleverly collected articles and information which I trust will be of considerable value to all users of the computing centre and to all who are interested in following the JRC computing activities.

My wishes on this occasion also go to the readers whom I hope have derived benefit from the Newsletter and whom I again encourage to be more active in presenting the editors with contributions to the Newsletters and suggestions for the improvement of this information forum. A newsletter can only survive if there is an interaction with its readers and while this has been the case in the past I hope this type of two-way communication will improve during the second and subsequent years of life of the Newsletter.

As a more general remark I should like to inform readers that a considerable number of updatings and technical improvements are planned for the computing centre both for this year and beyond, some of which have already been described in articles in the Newsletter. Other activities will be described in subsequent issues and readers do well in following the developments closely.

## **Support to Computing**

**H.I. de Wolde, C. Pigni, A. Pollicini**

The Division 1 of Department A, called "Informatics", is functionally a service organization.

To this scope the division is divided in three services:

- 1 – The System Group, headed by Mr. Koenig
- 2 – The Informatics Support, headed by Mr. Gaggero
- 3 – The hardware installations, presently managed by Mr. Pire, next to his duties as division head.

The System Group is computer oriented and the Informatics Support is user oriented.

The common problems for which the user wants information, have to be presented to the "Support to Computing", which is a sub-group of the Informatics Support. This unit, after an appropriate analysis of the problems, may submit them to the "System Group" in case of software troubles.

As the unit "Support to Computing" has been planned for the regular contacts with the users, we feel the need to clarify the situation.

In general the goals of the unit Support to Computing are:

- Educational and informative actions;
- Direct consults to educate the programmers (not to debug their individual programs);
- Supplying of sound practical documentation;
- Installing software application packages;
- Maintaining software tools to facilitate programming;
- Sondage of users needs and appropriate actions.

A detailed analysis of these tasks showed that at least six persons were needed to perform well. However the present staff exist out of four persons, which means a restriction on the scope. For example, it was projected that a continuous series of short practice oriented courses on limited subjects for small audiences should be arranged according to the demonstrated needs. This plan cannot be executed as long as additional man-power is lacking.

The actual tasks under execution are:

- The preparation of the series “Green Books”, being small practice oriented monographs on selected subjects. This activity is in cooperation with the System Group.
- The publishing of the Newsletter, also a joined action;
- The installation and maintenance of software tools in particular:
  - Engineering packages, ICES, GENESYS, BERSAFE, BERDYNE, FLHE;
  - the CTE system, where frequently used programs are preserved in load module form for direct execution;
  - the LIBRARIAN. In the near future this system will be made available for general use;
  - simulation packages;
  - APL;
- Comparative studies on software packages
- Development of graphic software for the new devices
- Direct Support
- The establishing of a technical manuals library.

Clearly there exist no room for the development of programs for individual users. Neither is Direct Support offered for debugging of programs. It is our opinion that this is the task of the software authors. The Direct Support office has to be a place where the programmers may receive information on how to resolve their problems.

This Direct Support will be sustained by the technical manual library. The standard hardware/software descriptions will be available for consulting in-place. Additional practical guides on limited subjects (Green Books) will be edited as special publications of the Newsletter. Presently the next monographs are in preparation:

- Job Control Language
- The Services of the Computer Centre
- LIBRARIAN
- COREA/ETC, an on-line text editor.

It is our experience that most of the complex bugs and problems which are regularly presented are caused by:

- Gross inexperience of the programmers. The responsables of activities tend to charge junior programmers with complicated jobs, with the expectation that the Computing Centre will supply the professional knowledge ad hoc.
- The tendency of applying all described FORTRAN options in place of using a nice clean subset of the language. Especially mixed expressions, complicated COMMON structures and the non standard definitions of integers and real variables must be avoided.

- The testing of too large parts of newly developed programs. Please program in a modular way and debug the individual small parts as independent entities.
- The poor use of the available documentation, for example the Installation Notes.

As far as concerns the programming languages, it has to be noted that Fortran is still the most frequently used scientific programming language and as such the most substandard. The compilers for Assembler and PL/1 are disponible and maintained but the group can offer only limited assistance to the use of these compilers.

The installed simulation and application packages are accessible through the appropriate procedures. However, no assistance can be offered for the use of these packages with the exception of the systems which are currently in use at the service Informatics Support (Namely Engineering Packages and LIBRARIAN).

The graphics support requests a great deal of the available resources. A complete software overhaul is necessary for the newly ordered devices. The general scope is to create a system under which the existent programs are admissible for the high speed Gould plotter and the Benson pen plotter. Additional efforts are performed to make a microfiche/microfilm computer output system available for some tasks (for more information on Graphics see Newsletter No. 8).

Concluding, the next actual work partition has been set up:

- Debugging of programs: please do it yourself, debugging is healthy for your programming abilities.
- Direct Support; how to solve your programming problems: Mr. C. van den Muyzenberg.
- Simulation packages, and other operational research packages: these will be frozen at the actual state; no assistance at the use of these packages.
- Corea System: Mr. A. Pollicini
- Engineering Systems: Mr. A. Inzaghi
- Library of Manuals: Mrs. A. Cambon
- Graphic Applications: Mr. H.I. de Wolde, Mr. A. Pollicini
- Newsletter/Green Books: Mrs. A. Cambon, Mr. C. Pigni, Mr. H. I. de Wolde.

It must be noted that the offered services are not a stringent specification. If a general need for other tasks is shown, some of the mentioned items may be substituted by other obligations, providing these are within the potential of the available manpower. Suggestions towards such modifications will be handled by the Users Group of which Mr. Halleux is the provisional secretary.



## **EASIT : The European Association for Software Access and Information Transfer**

EUROCOPY took last year the initiative to create a European Association to promote the improvement of Services in support to European users of software. Many organizations were contacted (Standardization Organizations, Software Producers, Universities, Program Libraries) to estimate their interest for such association. EUROCOPI's initiative had a successful result; in fact, after some preliminary meetings in Ispra, Edinburgh, Vienna and Bonn, the first EASIT Conference, which was attended by representatives of 32 organizations, has been held at GMD, St. Augustin, Germany last 5-6 April.

The main purposes of EASIT are:

- providing a framework for cooperation between groups or bodies in Europe which are active in the field of software;
- promoting exchange of information and technical expertises;
- developing links with appropriate scientific, professional and governmental organizations.

Some Working Groups have already been established to promote the cooperation and to get improved results. EUROCOPI offered the possibility to stipulate a contract to some experts belonging to these Working Groups: Mr. D. Muxworthy (programming standard), PLU Edingburgh and Mr. P. Wolfangel (program documentation), ALLC Mannheim, could already benefit of Ispra's structures to develop their studies within the Working Groups they are concerned with.

Presently the following Working Groups have been formed:

- WG 1 : Format of magnetic tapes
- WG 2 : Program classification and keyword assignment
- WG 3 : Standards for program documentation
- WG 4 : Standards for programming practice
- WG 5 : Communication between packages
- WG 6 : Social sciences software.

The membership of EASIT is of two types:

- Full membership, which may be granted to organizations which provide services in support to users of software and have a demonstrable interest in the aims of EASIT;
- Associate membership, which may be granted to organizations or individuals who have an interest in the activities of EASIT but do not fulfill the conditions for full membership.

The principal organs of EASIT are the general assembly made up by the delegates of the full member organizations, and the Executive Committee, which has been elected during the first EASIT Conference and is composed by:

Giancarlo GAGGERO (EUROCOPI, Ispra), Chairman  
Stéphane BERNAERT (CACT, Paris), Vice-Chairman  
Werner LANGENHEDER (SIZSOZ, Bonn), Secretary-Treasurer  
David MUXWORTHY (PLU, Edinburgh)  
Paul WOLFANGEL (ALLC, Mannheim)

Further information and membership application forms may be obtained from the Secretary-Treasurer, W. LANGENHEDER, GMD, Postfach 1240, Schloss Birlinghoven, D-5205 St. Augustin, Germany

*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

# **A European Informatics Network**

**A. Endrizzi**

This is supposed to be the first article of a series that will keep the reader informed about the achievements of the EIN project. While describing EIN matters it is worthwhile to investigate also some general concepts about networks. The idea is to activate the interest on computer networks since it is felt that there are many good reasons for proposing such a discussion.

Computer networks constitute one of the most promising challenges for research in informatics. The possibility to build networks is going to be seriously considered by quite a number of DP installations in order to add flexibility and access facilities to the existing systems. In addition, some manufacturers and service companies do already provide network systems with certain capabilities. PTT's start to offer new types of data transmission services at national and international scale.

EIN too is expected to provide some services but users should not stress this point too much, for EIN is basically a research network. In this sense the following is rather a presentation of ideas and experiences than the announcement of additional services to our DP system.

Nevertheless, the structure of EIN and the problems we have to cope with, are common to any general purpose network.

## **History**

Mid 71 the COST Group 11 had prepared a proposal for a cooperative venture on an international scale in the field of computer networks. The agreement was first signed by France, Italy, Norway, Portugal, Sweden, Switzerland, United Kingdom, Yougoslavia and Euratom, and later on by FRG and the Netherlands.

Two levels of participation in the project are possible: signatories may receive information only, or may also nominate and operate a center connected to the network. Approximate total cost: 13 MBF each signatory without center, 100 MBF each signatory with center.

## **Purpose of the Project**

The Agreement states that the network will facilitate research at the Nodal Centres into data processing problems and will permit the sharing of resources, and that it will:

- 1) allow the exchange of ideas and the coordination of research programmes;

- 2) allow the comparison of ideas for national networks and promote the agreement of standards;
- 3) be a model for future networks whether for commercial or other purposes, and will reduce the differences between future systems.

The Agreement goes on to say that hardware and software developed should be suitable as a basis for any permanent international network which might be built in future.

### **The Packed Switched Network**

Telephone and telex networks have been based on the concepts of circuit switching in which a path is established through the network for the whole duration of a call. To establish the path and disconnect it at the end of the call, a separate part of the network is used (control and signalling system). Circuit switching presents the following characteristics:

- setting up and releasing a call takes time
- path capacity may not be fully utilized (tarification is proportional to the call duration and distance. It has no relation with the amount of data to be transferred).

An alternative approach has been used in telegraphy. The telegraph message is handled as one unit and no call is set-up to carry it. In effect, the process of setting up the path is carried out by the header at the beginning of the message. The whole message is accepted by a switch and stored before it is retransmitted to the next centre. Message switching presents the following characteristics:

- there are transmission delays which depend on the load of the network,
- there is no overhead or delay for call set-up,
- utilization of transmission channels can be high and no transmission facilities need be occupied during the silent period of conversation,
- the network assumes complete responsibility for delivery.

Packed switched networks adopt the same store and forward principle. The message is split into packets at the sender side and reassembled at the receiver side. The idea allows easier buffer allocation strategy within the subnetwork, a more dynamic mixing of conversations and a reduced delay.

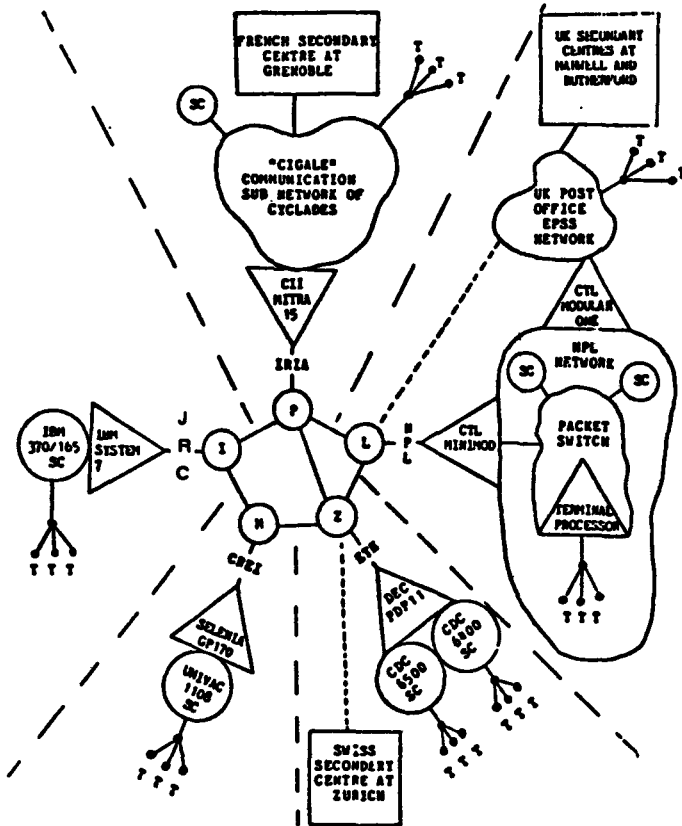
The EIN subnetwork was developed by a consortium of European firms following the design specification of the EIN project team. It is based on techniques proved by earlier networks with the addition of some design peculiarities:

- all relevant international standards have been complied with (ex HDLC as line control procedure)

- modular software
- adaptive routing (dynamic adaptation to line faults and traffic irregularities)
- nodes are capable of entire unattended operation.

### The EIN System

Fig. 1 shows a simplified diagram of EIN including Nodal Centre systems. The centre of the picture shows the EIN subnetworks made of Network



- |  |          |
|--|----------|
| JRC - Joint Research Centre                                  | - Ispra  |
| CREI - Centro Rete Europee di Informatica                    | - Milan  |
| ETH - Eidgenossische Technische Hochschule                   | - Zurich |
| IRIA - Institut de Recherche d'Informatique et d'Automatique | - Paris  |
| NPL - National Physical Laboratory                           | - London |
| SC - Service Computer  |          |

Fig. 1 - Simplified Diagram of EIN Centres' Systems

Switching Centres connected by lines. All around the subnetwork, Nodal Centre systems are shown separated by dotted lines. As can be seen, some of them are conventional multi-access computing systems with mainframes serving terminals while others are complete private networks of distributed computers and terminals.

EIN is heterogeneous type of network made up of a set of subscriber computers (SCs) whose hardware architecture and operating systems (CDC, CII, IBM, CTL, UNIVAC) varies significantly from one site to another. In such a type of network, a priori, no possibility exists for interaction between processes which are not being executed in similar machines. To render this possible, new conventions and new facilities must be defined. This is one of the goals of the EIN research program and its achievement enables SC to SC communication through the means of homogeneous end-to-end protocols. The foundation of the structure is the Transport Station (TS) that is implemented in each virtual subscriber computer willing to make its processes communicate with remote transmission mechanism in the form of lettergrams (independent messages) or liaisons (contexts supporting conversations). A well-defined interface to the TS allows parallel development of higher levels of service like terminal support, file transfer, remote job entry, distributed data bases.

### The Design of the JRC Ispra Connection

Fig. 2 shows the present connection of the JRC Ispra data processing installation to EIN.

The design of this connection was heavily influenced by the fact that no HDLC coupler was available on the market and the existing computers were to be used.

As the IBM 370 does not support HDLC, a System/7 is used to convert the HDLC frames to BSC messages and vice-versa.

The HDLC line adapter was provided by the service of Electronics.

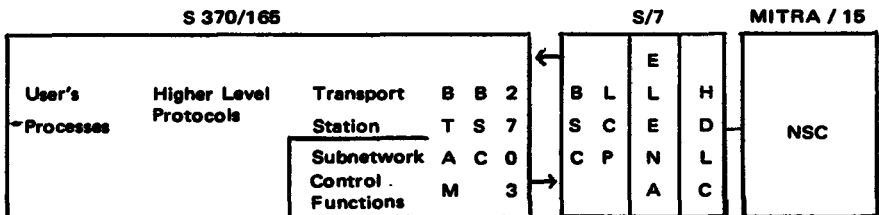


FIG. 2 - The JRC Ispra Connection to EIN

**Next article on implementation strategies**



## Statistics of computing installation utilization

### Report of computing installation exploitation for the month of April:

	YEAR 1977	YEAR 1976
Number of working days _____	18 d	20 d
Work hours from 8.00 to 24.00 for _____	16.00 h	16.00 h
Duration of scheduled maintenance _____	18.99 h	23.69 h
Duration of unexpected maintenance _____	15.67 h	36.75 h
Total maintenance time _____	34.66 h	60.44 h
Total exploitation time _____	253.34 h	259.56 h
CPU time in problem mode _____	119.86 h	111.35 h
<b>Teleprocessing:</b>		
CPU time _____	1.43 h	0.90 h
I/O number _____	198,000	476,000
Equivalent time _____	2.73 h	4.30 h
Elapsed time _____	98.10 h	89.80 h
<b>Batch processing:</b>		
Number of jobs _____	8,286	9,004
Number of cards read _____	2,275,000	2,748,000
Number of cards punched _____	181,000	212,000
Number of lines printed _____	25,637,000	25,613,000
Number of pages printed _____	575,000	579,000

### BATCH PROCESSING DISTRIBUTION BY REQUESTED CORE MEMORY SIZE

	100	200	300	400	600	800	1000	1400	total
Number of jobs	2113	2804	1778	1067	212	32	8	-	8014
Elapsed time (hrs)	42	152	173	151	54	7	0.6	-	580
CPU time (hrs)	2.5	25	38	29	20	1.7	0.1	-	116
Equivalent time (hrs)	13	53	67	68	24	3.2	0.2	-	
Turn around time (hrs)	0.6	1.2	2.3	3.1	3.3	4.7	1.8	-	1.6

### PERCENTAGE OF JOBS FINISHED IN LESS THAN

TIME	15'	30'	1h	2h	4h	8h	1 <sup>D</sup>	2 <sup>D</sup>	3 <sup>D</sup>	6 <sup>D</sup>
% year 1976	39.6	57.0	72.7	85.1	94.5	97.5	98.9	99.0	99.1	100
% year 1977	29.1	46.7	65.5	81.1	92.0	96.9	99.2	99.8	99.9	100



**Utilisation of computer center by the objectives and appropriation accounts for the month of April:**

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

1.20.2	General Services - Administration - Ispra	30.80
1.20.3	General Services - Technical - Ispra	1.15
1.30.4	LMA	0.03
1.90.0	ESSOR	12.72
1.92.0	Support to the Commission	6.00
2.10.1	Reactor Safety	77.52
2.10.2	Plutonium Fuel and Actinide Research	10.94
2.10.3	Nuclear Materials	2.31
2.20.1	Solar Energy	0.53
2.20.2	Hydrogen	0.07
2.20.4	Design Studies on Thermonuclear Fusion	0.16
2.30.0	Environment and Resources	27.83
2.40.0	METRE	2.35
2.50.1	Data Processing	19.73
2.50.3	Safeguards	0.73
<b>TOTAL</b>		<b>192.86</b>
1.94.0	Services to external Users	15.33

**TOTAL** **208.20**

## Portability of FORTRAN Programs

A.A. Pollicini, G. Prinzivalli

Programming is a time consuming activity, therefore it is desirable that software developers be sensitive to those aspects which may facilitate the diffusion of their products. First of all the portability on different computers.

The effectiveness of software transferability depends on the quick adaptation from installation to installation. It is not enough the choice of a widely supported programming language (e.g. FORTRAN) to minimize the adaptation time. Programmers must conform to a standard definition of the language.

A Standard Language is a formal definition of the syntax and semantics of a limited set of instructions, with a series of rules of application. This fixed set is normally extended by each manufacturer to embellish its Processor (Language + Compiler) with more sophisticated features. So different processors are not compatible with each other, but they remain Standard-conforming if they include the Standard as a subset.

### Existing FORTRAN Standards

The most important efforts in FORTRAN standardization were carried out by the American Standard Ass. (later named American National Standard Institute) starting from 1962. The first draft of a STANDARD FORTRAN was published in 1964 (1).

FORTRAN	a standard for the full FORTRAN IV language
Basic FORTRAN	a standard near the power of FORTRAN II, but defined as a subset of the former one.

In 1966 the two Standards were approved by the ANSI Subcommittee X3J3. They are known as ANS FORTRAN (2) and ANS Basic FORTRAN (3) and they are still valid.

In the same period a committee of the European Computer Manufacturers Association attended to FORTRAN standardization and issued the ECMA Standard on FORTRAN (1965) (4) that is respectively a superset of ANS Basic FORTRAN and a subset of ANS FORTRAN.

Finally, an ISO recommendation for FORTRAN, edited in 1972 (5), describes three levels of the Language, which correspond substantially to ANS FORTRAN, ECMA FORTRAN, and ANS Basic FORTRAN.

In conclusion, the ANS FORTRAN 1966 is the commonly referred Standard being the most original work on this topic and corresponding to the higher Standard level for the FORTRAN Language.

### **IBM Extensions to ANS FORTRAN**

As can be read at page 9 of the IBM Manual (6), the IBM System 360 and 370 FORTRAN IV Language is compatible with ANS FORTRAN X3.9-1966.

IBM extensions to ANS FORTRAN are demarcated, in the body of the Manual, by shading of the text on grey colour. So it should be very easy for an IBM FORTRAN programmer, to adhere to ANS FORTRAN, also if the text of the ANS FORTRAN is not available.

FORTRAN programmers aiming at writing portable programs, must avoid the following features of IBM FORTRAN which are not standard:

- I **Concerning the Character Set:**
  - 1) Use of characters \$ ' & elsewhere than in Comments
- II **Concerning the Constants:**
  - 1) Use of hexadecimal constants
  - 2) Use of apostrophes to enclose a string of characters representing a literal constant
- III **Concerning Symbolic Names:**
  - 1) Use of a NAMELIST name
- IV **Concerning Arrays:**
  - 1) Use of a number greater than 3 (and up to 7) of subscript quantities in a subscript
  - 2) Use of subscripts involving arithmetic expressions more complex than the form:  
$$\langle \text{integer constant} \rangle * \langle \text{integer variable} \rangle \pm \langle \text{integer constants} \rangle$$
  - 3) Transmission of variables providing adjustable dimension via COMMON
- V **Concerning Arithmetic Expressions:**
  - 1) Use of integer quantities two bytes long and of complex quantities 16 bytes long
  - 2) Use of every mixed type expression except for the REAL (4) to REAL(8) conversions and the REAL(4 and 8) to COMPLEX (8) ones.

**VI Concerning Control Statements:**

- 1) Use of a value outside the range  $1 \leq i \leq n$  in the form  
GO TO ( $x_1, \dots, x_n$ ),  $i$   
of the computed GO TO statement
- 2) Use of Hollerith constants or of decimal digits in a PAUSE statement and of decimal digits in a STOP statement (ANS Standard admits octal digits)

**VII Concerning Input-Output:**

- 1) Use of NAMELIST lists
- 2) Use of the format codes aZw and Tr, and extension of G code to INTEGER and LOGICAL variables
- 3) Use of PRINT and PUNCH statements and of the READ statement in the form READ b,list
- 4) Use of ERR and END options in READ statements
- 5) Use of all Direct-Access I/O statements that is  
DEFINE FILE Statement  
READ and WRITE statements with apostrophe  
FIND statement

**VIII Concerning Data Initialization:**

- 1) Use of array names in a DATA list
- 2) Initialization in type statements

**IX Concerning Specification Statements:**

- 1) Use of LOGICAL\*1,INTEGER\*2,COMPLEX\*16 data types
- 2) Use of notation with asterisk in type specification, that is:  
INTEGER\*4 to mean INTEGER data type  
LOGICAL\*4 to mean LOGICAL data type  
REAL\*4 to mean REAL data type  
REAL\*8 to mean DOUBLE PRECISION data type  
COMPLEX\*8 to mean COMPLEX data type
- 3) Use of IMPLICIT and NAMELIST statements

**X Concerning Subprograms:**

- 1) Use of the form RETURN i in a SUBROUTINE
- 2) Use in a SUBROUTINE statement of dummy arguments of the form:  
/<name>/ to transfer the argument by location instead of by value  
\* to specify a return point
- 3) Use, in a CALL statement, of actual arguments of the form  
&<integer constant> to mean the statement label of a return point
- 4) Use of literal constants as actual argument in function reference
- 5) Use of ENTRY statement

## Programming Practice Achieving Portability

- A FORTRAN program which has to be transferred on different installations must be portable and adaptable (7). Portability is achieved by strictly adhering to ANS FORTRAN and by observing some common rules of good programming practice.

Adaptability is achieved by specifying variables for I/O units, so that they may be easily changed and by isolating and demarcating by comments, the machine-dependent features of the program (if any), so that they may be easily located and replaced by others, equivalent to them at all, on a different system.

Some guidelines useful to programmers developing portable FORTRAN programs are collected below.

### Guidelines for portable programming

- 1) Avoid multiple-entry subprograms
- 2) Use A1 Format for I/O of characters
- 3) Use Hollerith fields (nH<string>) in FORMAT statements
- 4) Do not modify in a subprogram the value of variable providing adjustable dimension, which have been received as argument.
- 5) Be careful on the type of operands in arithmetic expressions. Mixed-mode calculation is dangerous since different computers may treat it in different ways
- 6) Avoid ambiguous computations. For example the expression  
$$I = 2**3**4$$
could give different answers on different processors.

### Guidelines for good programming practice

- 1) Build the program in a modular way, segmenting the body into small subprograms.
- 2) Carefully choose appropriate names for the subprograms so that the name gives the reader some ideas on what the subprogram does.
- 3) Carefully document each subprogram with meaningful comments.
- 4) Test separately each subprogram before integration in the program.
- 5) Choose meaningful mnemonic variable names.
- 6) Place all Input and Output in separate subroutines.

### A Practical Experience

Conforming to all above mentioned restrictions, two test programs were written. Although relatively small, these programs included some critical topics concerning portability as:

- character string manipulation
- alternative occurrence of Input-Output access to a data set
- simulation of list-structures

- performance of hashing technique
- arithmetic operations at character level

After testing on the IBM 370/165 of the Ispra Computing Centre, these programs ran correctly on the following installations:

CDC 6600	UNIVERSITY OF BOLOGNA
CDC CYBER 76	UNIVERSITY OF BOLOGNA
CII 10070(SIRIS 7)	E.E.C. LUXEMBOURG
HONEYWELL 6030	UNIVERSITY OF PAVIA
IBM 370/165	M.B.B. MUENCHEN
SIEMENS 4004/BS2000	M.B.B. MUENCHEN
UNIVAC 1106	UNIVERSITY OF MILANO

The transfer of these programs only involved a different initialization of some variables, grouped in a BLOCK DATA subprogram and concerning both: the computer architecture (characters per word, bits per character), as well as the installations conventions (primary input/output units, logical unit range). (8)

It was a good result !

However, this experience has shown the lack of flexibility of a strictly standard-conforming application. This fact explains the criticism of many programmers towards the existing FORTRAN Standard as a too limited set of features.

### **FORTRAN Standard Development**

Nowadays, the X3J3 Committee Members are working at a general revision of ANS FORTRAN; their efforts aim to enlarge the application range of the Standard.

A general examination of what they suggest on FORTRAN is already possible. Indeed a first draft was published in 1976 to stimulate public comments by users and manufacturers (9).

A second one has appeared, early in 1977 (10) and includes some changes solicited by public comments to the former issue. These publications are not "official" documents, nevertheless they provide an overview of the most important innovations of the proposed new Standard for FORTRAN Language.

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### **Note of the Editors**

One year has passed since the first edition of the Computing Centre Newsletter. The Editors take this opportunity to thank those who contributed to this publication.

To complete the balance of this first year, we kindly ask our readers to fill the enclosed questionnaire. This will help us to ameliorate the diffusion and improve the quality of the articles.

We thank you in advance for your kind cooperation.

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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**  
**Bât. 36, Tel. 730**

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