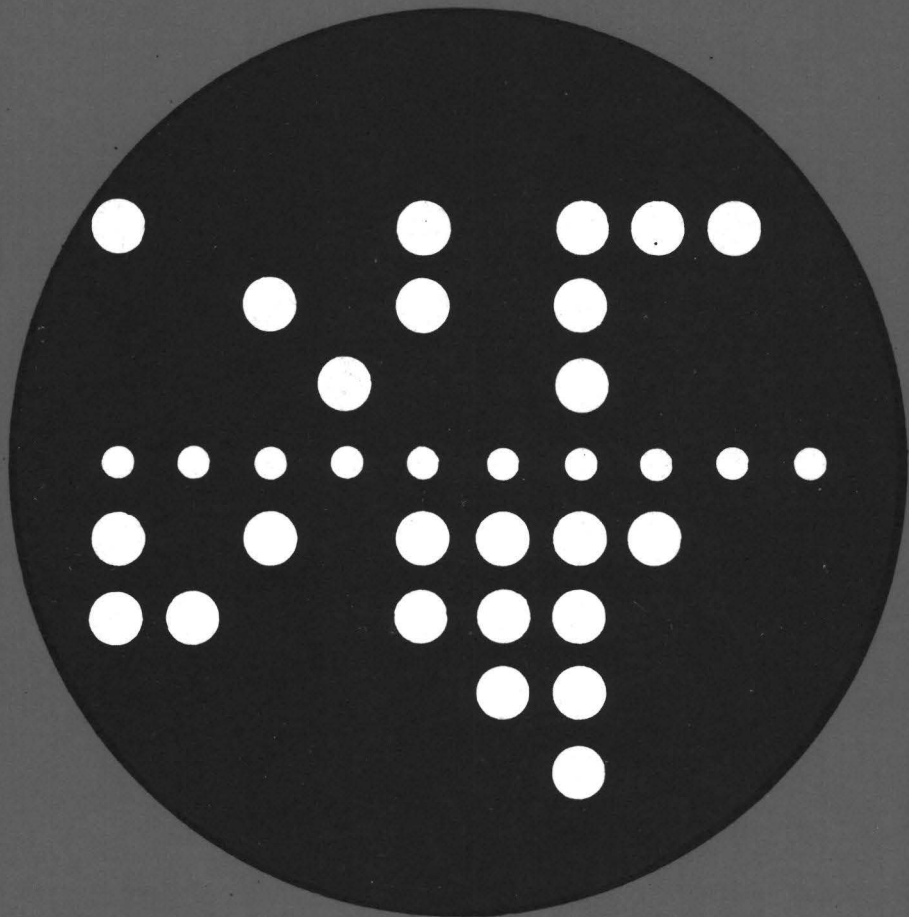


# COMPUTING CENTRE NEWSLETTER

*April 1979 - N° 30*

**LIBRARY**



Commission of the European Communities



**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.
C. Pigni.	Editors.
H. de Wolde.	

Administration and contact address:

Ms. A. Cambon (tel. 730)  
Support to Computing  
Building 36  
J.R.C. Ispra Establishment  
21020-ISPRA (Varese)

LEGAL NOTICE:

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.

Tektronix Software  
H.I. de Wolde

The basic software for the Tektronix terminals which has been installed up to now, consists of the PLOT-10 package. This package is a modular library of subroutines, which may be extended according to the software and hardware options installed.

For the present configurations of Tektronix devices in the Centre, the PLOT-10 package is sufficient and functions well. However, as the Tektronix company is continuously developing more sophisticated hardware, the related developments in software have been difficult to embed in the PLOT-10 framework. In particular, the introduction of refresh tvne screens (series 4020) and colour displays (4027) have required a complete overhaul of the library planning.

As a consequence the Tektronix company has developed a modular library called I.G.L. which is now marketed as a substitute for the PLOT-10 package.

I.G.L. has been designed to serve the existing hardware products and includes sufficient design reserve for the expected developments of the coming years.

According to our information, it will not be very difficult to perform the conversion of existing applications based on PLOT-10 to I.G.L.

The PLOT-10 package will be frozen in its present form and no new extension will be introduced.

As the graphic facilities at the Computing Centre are still at an early stage of development as far as interactive graphics are concerned, it may be necessary to install I.G.L. as soon as possible and to use this library as the formal base for interactive graphics. Of course, PLOT-10 will remain available in its present form, but new applications should be programmed using the I.G.L. prescriptions.

The cost of an adequate module package for the existing Tektronix hardware in the Centre will be about \$ 5000. We estimate that installation and testing will take about 2 man-months.

This article explains the main aspects of I.G.L. It contains the information as is supplied by Tektronix in a preliminary publication.

I.G.L. is a package of FORTRAN IV subroutines. These can be called in a user program and will perform such functions as drawing lines, arcs or panels; exacting graphic input from a terminal or tablet; printing text in a variety of sizes and shapes. Transformations, windowing and clipping may be applied.

The modules are organized into five levels: a user will choose the modules he requires from each level.

Level 1	Host dependent I/O	Drivers for IBM, DEC, CDC etc.
Level 2	Device drivers	Drivers for 4010, 4027 etc.
Level 3	Primary command set	Move, draw, TCS- type commands.
Level 4	Emulation of level 5 features	Software emulation of features not in hardware.
Level 5	Advanced feature support	Panel shading Special fonts 3-D transformations Segmentation Curve fitting.

From level 1 users will choose one driver for their computer. From level 2 they will choose drivers for their Tektronix devices. All users will buy level 3. Then, if their application requires it, they will choose advanced features from level 5; and when their Tektronix device(s) do not support these in the hardware, they will add the emulation routines from level 4.

I.G.L. is actually written in MORTRAN, an advanced form of FORTRAN enabling structured programming and macro calls. This makes it very easy to generate on I.G.L. containing calls to only the necessary device drivers, and to update. The output of MORTRAN is ANSI FORTRAN IV, the language of I.G.L.

### Level 3 - Primary Command Set

Contained here are the basic line drawing commands, windowing rotation, scaling text manipulation and graphics input routines. Move, draw and arc are supported, relative and absolute, in a variety of co-ordinate systems: centimetres, inches, Tekpoints, 4051 'screen' co-ordinates etc.

Also in level 3 are capture/replay commands, which save the current picture on a disc file in device-independent format. This can later be re-displayed on any Tektronix peripheral without having to re-run the program.

The modules of level 5 (and 4) are as follows:

Panel Support: The 4027 will fill in an area (panel) with a colour. I.G.L. supports this at level 5. The 4006, 4014 etc. do not do this, but I.G.L. supports them with an emulation routine at level 4 which shades the area with straight parallel lines.

Special Fonts: The 4662 and 4663 (digitalizer-plotters) have a selectable hardware font (down-loadable on the 4663). I.G.L. supports this at level 5 by a succession of moves and draws. Plans are in hand for further special fonts e.g. Gothic script, Russian.

3-D Transformations: The 4081 can do this locally. I.G.L. will support it at level 5. All other devices will be supported at level 4.

Segmentation: The 4014 Option 40 (41) stores pictures and parts (segments) of pictures locally. This will be supported by I.G.L. at level 5. A similar effect for the other devices is produced at level 4 by an emulation routine.

Curve Fitting: Future devices (!) may support local curve fitting, i.e. drawing a smooth curve through a series of given points. This will be supported by I.G.L. Meanwhile, I.G.L. supports this in software at level 4.

## Systems Requirements

I.G.L. requires a host computer with at least 16K words of main storage. If the advanced features from levels 4 and 5 are incorporated, 32K words will be required.

The computer system must include a FORTRAN IV compiler. Generally the implementation routines will be available as an option; otherwise the user must write them.

### Configurations

#### Level 1:

Option	<table border="1"><tr><td>0a IBM TSO full ASCII (4010 series)</td></tr></table>	0a IBM TSO full ASCII (4010 series)	<table border="1"><tr><td>0b IBM TSO English (4020 series)</td></tr></table>	0b IBM TSO English (4020 series)	<table border="1"><tr><td>0j Dec 10/20 TOPS full ASCII</td></tr></table>	0j Dec 10/20 TOPS full ASCII
0a IBM TSO full ASCII (4010 series)						
0b IBM TSO English (4020 series)						
0j Dec 10/20 TOPS full ASCII						

Generally, one driver will be required from level 1.

#### Level 2:

##### Option

<table border="1"><tr><td>1a 4010/06/ 10/12/13 (ASCII)</td></tr></table>	1a 4010/06/ 10/12/13 (ASCII)	<table border="1"><tr><td>1b 4014/5/6 (ASCII)</td></tr></table>	1b 4014/5/6 (ASCII)	<table border="1"><tr><td>1d 4662 (ASCII)</td></tr></table>	1d 4662 (ASCII)	<table border="1"><tr><td>1e 4662/3 (ASCII)</td></tr></table>	1e 4662/3 (ASCII)	<table border="1"><tr><td>1g 4025 (English)</td></tr></table>	1g 4025 (English)	<table border="1"><tr><td>1h 4027 (English)</td></tr></table>	1h 4027 (English)
1a 4010/06/ 10/12/13 (ASCII)											
1b 4014/5/6 (ASCII)											
1d 4662 (ASCII)											
1e 4662/3 (ASCII)											
1g 4025 (English)											
1h 4027 (English)											

Generally, one driver will be required from level 2 for each Tektronix device.

#### Level 3:

##### Option

2a Primary Command set
------------------------

This will always be required at a new order (Other modules can be ordered separately later).

Level 4:

Option	3c Panel emulation	Special fonts software emulation	3D emulation	Segment emulation
--------	--------------------------	--	-----------------	----------------------

Level 5:

Option	4c Panel Support	Special fonts hardware Support	3D Support	Segment Support
--------	------------------------	--------------------------------------	---------------	--------------------

Modules from levels 4 and 5 will be ordered as required.

Examples,

1. An IBM System with a 4027, requiring panel support.

- Opt 0b (IBM ISO English driver)
- Opt 1h (4027 English driver)
- Opt 2a (Always required)
- Opt 4c (Hardware panel support)

2. An IBM System with a 4006, requiring panel support.

- Opt 0a (IBM ISO ASCII driver)
- Opt 1a (4010 series driver)
- Opt 2a (Always required)
- Opt 3c (Panel emulation)

3. A DEC-20 System with a 4014 and 4663, not requiring advanced features.

- Opt 0j (Dec-20 ASCII driver)
- Opt 1b (4014 driver)
- Opt 1e (4663 driver)
- Opt 2a (Always required)

Field Expansion

Extra modules of IGL can be ordered separately and can generally be field installed.



Available options	4010 C01
Opt 0a	driver for IBM TSO ASCII
Opt 0b	driver for IBM TSO - English
Opt 0j	driver for Dec 10/20 TOPS-ASCII
Opt 1a	4006, 4010, 4012, 4013 driver
Opt 1b	4014, 4015, 4016, (EGM) driver
Opt 1d	4663 plotter
Opt 1e	4662/3 plotter
Opt 1g	4025
Opt 1h	4027
Opt 2a	Primary command Set
Opt 3c	Panel Emulation
Opt 4c	Panel Support.

It is planned to order those parts of the package which will serve the components already installed at the Computing Centre;

Tektronix	4015
Plotter digitalizer	4662
Floppy disk	4921
Hard copy	4631

Other services wishing to make use of additional components may order the related options. Assistance towards the installation on the mainframe will be available.

TSO Courses  
M. Dowell

Several series of TSO courses have been provided by the Computer Centre in collaboration with EFIS in 1978 and 1979. The courses have been given by an external speaker (Mr F.M. Pedrini of E.D.P. Consulting Center, Milan). This article gives information about the scope and content of the courses, statistics of the participation to the present date and an indication of future plans regarding the courses.

#### Summary of the Content of the TSO Courses

The total course program was divided into six levels. Each level was of two days duration (9.00-12.00 hours and 14.00-17.00 hours each day). Therefore, each level was approximately 12 hours in duration.

The course was presented in Italian with accompanying notes in English.

- Level 1 -- An introduction to interactive programming.
- Level 2 -- An introduction to the TSO system.
- Level 3 -- TSO command Language (called "TSO Level I").
- Level 4 -- Interactive Compilation and Execution (called "TSO Level II").
- Level 5 -- Use of the Editor (called "TSO Level III").
- Level 6 -- Economic Interactive Programming.

For each session of the course there has been a maximum participation of 10 persons. The courses have been given in the "Terminal Room" of the E.F.I.S. building. Therefore, it has been possible to provide practical examples of the use of TSO by utilizing the terminals which are installed in this room. The usual distribution has been two people for each terminal which has provided an adequate amount of terminal time for each person.

### Details and Statistics of Course Already Given

In 1978 the following courses were given:

- 1 course of levels 1 to 3
- 1 course of levels 1 to 5
- 2 course of levels 1 to 6

Already in 1979 the following courses have already been given:

- 1 course of levels 1 to 3
- 2 course of levels 1 to 5
- . In total approximately 320 "man-levels" have been presented.
- . Approximately 3800 "man-hours" of education on the subject of TSO have been received by computer users.
- . 94 persons were originally defined (by Head of Division) as candidates for participation in these courses.
- . 57 of the persons have now completed the levels which were requested.

It is pleasing to note that since the instigation of these courses the use of TSO (as measured by the number of LOGON's) has increased by a factor greater than 4. At the same time the number of TSO problems requiring consultancy advice has not increased appreciably. From this we imply that there has been a considerable degree of success achieved by the TSO education programme.

## Future plans

In autumn 1979 it is planned to give a further series of courses which will be more condensed. These courses will be designed to be suitable for two different categories of users:

- i ) people with previous experience of large-scale timesharing system,
- ii) people with some limited experience of TSO at the Centre.

(Note This, of course, does not exclude the participation of people with more limited interactive experience).

These courses will be of 4 days duration and will consist of the following:

- Day 1 : A brief introduction to interactive computing, an introduction to the TSO system and an introduction to the TSO - Editor.
- Day 2 : TSO Command Language and Command Procedures.
- Day 3 : Interactive Compilation and Execution, Librarian, Data Management.
- Day 4 : Use of the TSO - Editor, Summary of Course.

Figure 1 shows in more detail the structure of the course.

SUMMARY OF NEW TSO-COURSE

Figure 1

Day 1		Day 2			Day 3		Day 4		A COURSE SUMMARY AND SOME REFERENCES
INTERACTIVE	TSO	EDIT INTRODUCTION	TSO LEVEL I			TSO LEVEL II		TSO LEVEL III	
	INTRODUCTION		CL CO MNG AUN DGE	CP COR MOC MAE NDU DURE	SUMMARY OF COMMANDS	- SESSION CONTROL COMMANDS		- EDIT COMMAND - COPY - FORMAT - LIST - MERGE	
PROGRAMMING						- DATA MANAGEMENT COMMANDS			
					- LIBRARIAN COMMANDS				
					- LANGUAGE PROCESSING COMMANDS				
					- COMMAND PROCEDURES				
A GENERAL APPLICATION :			PREPARATION PHASE		COMPILOATION PHASE		EXECUTION PHASE		
					SUBMITTING				
MONDAY		TUESDAY			THURSDAY		FRIDAY		

As indicated on the diagram:

Day 2 is equivalent to "TSO level I" of the original course.

Day 3 is equivalent to "TSO level II" of the original course.

Day 4 is equivalent to "TSO level III" of the original course.

Therefore, it may be possible to allow users who have already completed part of the original course to attend the appropriate levels of the condensed course and thus complete their TSO education.

It is hoped that these changes will allow many people, who previously were not able to spare enough time for a twelve day course, to participate in the condensed version.

Two sessions of the course are provisionally planned for the beginning of October 1979 and the end of October 1979 (1st-5th October and 22nd-26th October) . It is hoped that two other such courses will be provided before the end of 1979.

As indicated in figure 1, it is intended to hold the four day course on Monday, Tuesday, Thursday and Friday of the specific week. Thus leaving Wednesday available for rest, contemplation or revision!

Shortly each Head of Division will be circulated informing him of the new courses and giving information of the record of courses already attended by members of the division.

It is suggested that any user who is interested in attending one of the courses should contact his Head of Division to express this interest. (Note As the courses will be of 4 days in duration the approval of the appropriate Head of Division is essential).

Further information regarding the course may be obtained from:

Mr M. Dowell  
Room 1861  
Building A36  
Telephone - 701

Users should note that it is unlikely that there will be sufficient demand to warrant the organization of more courses after the end of 1979.

In our opinion these courses provide an effective and comprehensive introduction to the use of the TSO system. We feel that attempting to learn how to use TSO by reading the manual, "trial and error" or by assistance from a colleague will result in an inferior understanding of the system. Therefore, we strongly recommend to all users who wish to make use of the TSO system that they should attend one of the proposed courses to enable them to use the system in an efficient manner.

Statistics of computing installation utilization.  
 Report of computing installation exploitation  
 for the month of April 1979.

	YEAR 1978	YEAR 1979
<u>General</u>		
Number of working days	19 d	18 d
Work hours from 8.00 to 24.00 for	16.00h	16.00h
Duration of scheduled maintenance	25.75h	18.00h
Duration of unexpected maintenance	28.83h	4.00h
Total maintenance time	54.58h	22.00h
Total exploitation time	254.92h	266.00h
CPU time in problem mode	136.97h	122.35h

Batch Processing

Number of jobs	8532	6817
Number of cards input	1958000	1363000
Number of lines printed	28294000	21895000
Number of cards punched	115000	108000
CPU time	134.17h	107.22h
Number of I/O (Disk)	20741000	19761000
Number of I/O (Magnetic tape)	4387000	3303000

T.S.O

Number of LOGON's	653	2663
Number of messages sent by terminals	31800	139600
Number of messages received by terminals	157000	684000
CPU time	1.76h	13.25h
Number of I/O (Disk)	460000	2031000
Connect time	286.29h	1781.47h

IMS

Total time service is available	326.00h	259.00h
CPU time	1.04h	1.88h
Number of I/O (Disk)	65523	405000



Utilisation of computer centre by objectives and appropriation accounts for the month of April 1979.

IBM 370/165  
equivalent time in hours

1.20.2	General Services - Administration - Ispra	37.25
1.20.3	General Services - Technical - Ispra	1.24
1.30.3	Central Workshop	4.49
1.30.4	L.M.A.	-
1.90.0	ESSOR	5.29
1.92.0	Support to the Commission	3.21
2.10.1	Reactor Safety	138.03
2.10.2	Plutonium Fuel and Actinide Research	0.09
2.10.3	Nuclear Materials	5.71
2.20.1	Solar Energy	0.20
2.20.2	Hydrogen	2.37
2.20.4	Design Studies on Thermonuclear Fusion	4.29
2.30.0	Environment and Resources	12.25
2.40.0	METRE	3.87
2.50.1	Informatics	24.05
2.50.2	Training	-
2.50.3	Safeguards	5.21
	TOTAL	247.55
1.94.0	Services to External Users	11.50
	TOTAL	259.05

BATCH PROCESSING DISTRIBUTED BY REQUESTED CORE MEMORY SIZE

	100	200	300	400	600	800	1000	1200	1400	>1400
No. of jobs	1761	2263	1105	923	285	60	8	69	2	-
Elapsed time	53	159	129	197	56	35	2	19	0.0	-
CPU time	2.4	18.2	19.7	34.2	14.5	11.1	0.4	6.7	0.0	-
"Equiv" time	16	50	53	75	26	17	1	12	-	-
"Turn" time	0.6	1.9	2.6	3.2	4.8	5.4	4.0	3.7	-	-
I/O (disk)	1391	4222	4627	5476	1580	875	75	713	-	-
I/O (tape)	1187	892	173	944	38	23	1	9	-	-

NOTE.

All times are in hours.

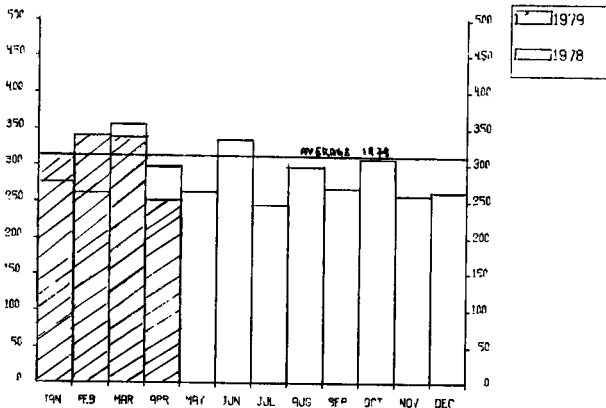
"Equiv" means equivalent.

"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 1978	27	42	59	74	88	97	98	100	100	100
%year 1979	28	42	58	73	88	97	98	100	100	100

HISTOGRAM OF TOTAL EQUIVALENT TIME (HRS)



Projected total for 1979 = 3714 hours (using average).

Total for 1978 = 3424 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	P.Tomba		
Substituted in case of absence by:	A.Binda-Rossetti		
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	G.Gaggero	1874	787
Secretary	Mrs. G.Hudry	1873	787
Responsible for User Support	H.de Wolde	1883	1259
General Inf./Support Library	Mrs. A.Cambon (See Note 2)	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(see note 2) in the Computing Support Library.

NOTE 2. Mrs. Cambon is at present replaced by Mrs. C La Cognata.

HOW TO BECOME A REGULAR READER OF THE NEWSLETTER.

Persons interested in receiving regularly the "Computing Centre Newsletter" are requested to fill in the following form and send it to :-

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

---

NAME .....

ADDRESS .....

.....

.....

TELEPHONE .....