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18335

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S Y S T E M A C T

USER'S MANUAL

ACT-Program V 2.0

September 1989



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

SYSTEM ACT

USER'S MANUAL

United Nations Industrial Development Organisation

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PREFACE

Within the last few decades, science and technology developed faster than ever before. The impact on economy and society was correspondingly strong, changing virtually every field of our daily life.

New procedures and technologies were invented, leading to new products or even new economies. Modern materials like carbon fiber composites, computers, high efficiency turbines are examples as well as the ball-point-pen or the zip-fastener.

New industries were created and existing diversified. Not only did the number of different products increase, but in general also the manufacturing processes grew more complex, requiring higher precision, good reliability and higher speed. Better quality, lower production costs, better efficiency and flexibility ask for larger investments and up-to-date know-how. Shortening life-cycles of products and production technologies make the situation even more complicated. Highly specialised knowledge is a necessary basis for correct decisions in the establishing or upgrading of a plant or a national industry.

UNIDO therefore decided to develop a software package that is intended to supply the user with detailed technical informations about the production of electro-mechanical goods. Taking advantage of a standardized matrix representation of data stored in its database it became possible to include in one analysis products as different as an aluminium-can and a locomotive. The method applied was called "Analysis of Complexity in Technology", or short "ACT".

This manual is an introduction into the use of the ACT-package. No special computer experience is needed to operate the program. Familiarity with the basic idea and systematic of the ACT-method are required to take full advantage of this software-package.

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1. INTRODUCTION

1.1 The ACT-Method

The ACT-method is applied to the electro-mechanical industry. Products are analysed in respect to their production, whereby attention is also given to requirements regarding technological infrastructure. Enterprise characteristics necessary for an efficient production of the regarded product are also subject of the method.

An "ACT-record" is assigned to each product. This record consists of three parts:

- i) its unique code,
- ii) a relatively formless description of the product,
- iii) a matrix containing detailed informations in a standardized form.

The code is based on the "International Standard for Industrial Classification" (ISIC), and uniquely identifies a product (i).

Plain text is included into the record to ease the "manual" recognition of a product (ii). Comments include the description of the product and special remarks.

The ACT-matrix is the core of the record (iii). Each element of this matrix is precisely defined, the definitions being the same for all products. This means the matrix has to be a superset of characteristics describing many (ideally all) individual products. Production equipment common in different branches of the electro-mechanical industry is included in this matrix.

The ACT-matrix is two-dimensional. The first dimension is called "ACT-factor", the second "intensity of interaction".

ACT-factors cover a wide range of properties of products and their manufacturing. There are 128 ACT-factors, they are divided into three groups:

- i) factors related to the production unit (enterprise), they belong to group A,
- ii) factors describing the technological infrastructure (group B), and
- iii) factors describing components required in the production (group C).

The intensity of interaction, on the other hand, describes the quality of a given factor. Taking a turning-lathe as an example (it is represented by an ACT-factor), different intensities correspond to a simple lathe, a precision lathe, a numerically controlled lathe or a special lathe. Six intensities are possible per factor.

The "quantity" of interaction is then given by a symbol in the corresponding matrix-element.

Additional information, not addressable as quantity, is expressed in a color assigned to the matrix-element. Colors e.g. indicate unexpected difficulties or quick changes.

A given product therefore does not require all matrix-elements for its description, only a few of them are always containing valid information.

As a consequence of this strict standardisation, very different products become "comparable". The ACT-software retrieves desired information from its database, relying on this homogeneous description (ACT-matrix).

1.2 Potential and Limitations of ACT

The ACT-package is a tool giving detailed information about the production of electro-mechanical goods.

Given an enterprise or national economy having a distinct equipment parc and infrastructure, products that could be manufactured may be found in the database.

The opposite situation is also supported by ACT: the products to be manufactured are given, and the technical and industrial requirements are sought. In this case ACT returns information regarding equipment, infrastructure and some data on enterprises producing the named goods.

The ACT-database includes a large variety of electro-mechanical products, so mostly there will be information available about the requested products.

Advantages of the ACT-method are:

- i) its relatively low cost,
- ii) high speed,
- iii) easy operation,
- iv) the fact that ACT offers detailed information, otherwise obtainable only from experts in specific fields, about many very different fields.

The knowledge of many specialists is entered into a standardized form (ACT-record) and made available to a large community (ACT-user-group).

Of course ACT will never replace the specialist in the solution of problems associated with industrialisation, but in many cases it will give key information rapidly without generating high costs.

1.3 Conventions and Terminology

The ACT-package consists of the ACT-software and the ACT-manuals describing the ACT-method, its applications and its implementation in software.

ACT-matrix refers to the standardized description of products defined in the corresponding ACT-manual.

ACT-factors represent production equipment encountered in the electro-mechanical industry, characteristics of the enterprises and their infrastructure as well as components required in the production.

Intensity of interaction describes the quality of an ACT-factor (e.g. simple or complicated machine, large or small enterprise, etc).

ACT-symbols are possible entries into the ACT-matrix.

Products are goods produced by the electro-mechanical industry.

ACT-records describe a product and consist of a code, a comment and the ACT-matrix.

The ACT-database contains ACT-records. It consists of data-files and index-files.

Data-files contain information required by the ACT-software in a computer-readable form.

Index-files contain information on the storage addresses of data. They enable the program to quickly retrieve required data from the hard disk.

The hard disk is a storage medium in a computer, capable of holding typically 10 to 120 MB (for a PC).

PC, or Personal Computer is a small (in size and cost) computer, equipped with keyboard, display and optional additional I/O-devices.

I/O or Input/Output refers to the user-machine communication using keyboard, display, printer, or other devices.

RAM or Random Access Memory is the memory used by the PC to execute the programs.

MB is used herein for MegaBytes (1048576 bytes), kB for kiloBytes (1024 bytes). One byte is 8 bits.

EGA or Enhanced Graphics Adaptor and VGA or Video Graphics Array are standard video display interfaces.

The term disk refers to a hard disk, a disquette or a virtual disk.

Keyboard keys are given in <> brackets, e.g. <ESC> for the escape-key.

The plus (+) sign separates key combinations that have to be pressed together, e.g. <CTRL>+<up> means <CTRL> is hold down while the up-arrow is pressed.

The asterisk (*) is used as a wildcard, i.e. it substitutes any allowed name or symbol. E.g.: *.FON could mean 14X9.FON, 4X6.FON, etc.

Italics are used to indicate text that has to be substituted by actual names, codes, dates, etc. "CD ACT" has to be entered instead of "CD *Name*" if the name is ACT.

2. INSTALLATION

2.1 Available Versions

Following choices are available for the ACT-software:

- i) language: English or French,
- ii) display: color (EGA) or 4 shade monochrome (for EGA-compatible portable computers),
- iii) help: include help-utility (requires >1MB disk-space), or exclude it (if disk-space is strictly limited),
- iv) overlay: in case the complete ACT-program does not fit into available RAM, it may be split into several portions that are loaded only when required.

Note that not all versions are included in the installation disks. If a version is needed, that is not available on the delivered disks, please contact UNIDO for more details and licencing informations.

2.2 Files on Disks

The ACT-software V 2.0 is supplied on three disks (5 1/4" or 3 1/2"):

- i) the program disk (labeled 1/3), containing:
 - ACTV20.EXE the ACT-program itself, non-overlayered (usually 4 shade monochrome to run on EGA compatible portable computers), it requires minimum 640 kB RAM to run,
 - ACTV20o.EXE and
 - ACTV20o.OVR another version of the ACT-program, this time overlaid, requiring less RAM (512 kB) and using colors,
 - ACTM.BAT a batch file that starts the monochrome version of the ACT-program, while
 - ACTC.BAT starts the color version,
 - *.FON,
 - EGAVGA.BGI and
 - ERROR.MSG are additional files required by the ACT-program.

There may also be a

READ.ME file, containing documentations, notes and last minute additions to this manual.

ii) The help-database disk (labeled 2/3), containing:

HLP_INFO.DAT the help data, and
HLP_INFO.IDX an index.

iii) The ACT-database and utilities disk (3/3):

ACT_*38.* the ACT-database (international),
ACT_*GR.* a (normally empty) national
ACT-database,
*.GOI example definitions of Groups Of
Interest (i.e. selected products),
SP_GROUP.* a database including all GOIs,
BACKUPDB.EXE an utility to backup the ACT-
database, and
REBUILD.EXE an utility to rebuild a corrupted
ACT-database index.

Please note that the files on the actually supplied disks may differ from those indicated above.

2.3 System Requirements

In order to operate, the ACT-software requires the following hardware:

- i) an IBM PC AT (or fully compatible) computer, equipped with:
 - (a) at least 512 kB RAM,
 - (b) EGA or VGA graphic display controller and corresponding monitor,
 - (c) hard disk (space available must be large enough to hold the ACT-program (about 500 kB), the help-database if installed (1 to 1.5 MB), the ACT-databases (1 MB or more, depending on number of products included; one product takes some 2.5 kB to store), and the definitions of groups of interest (GOI) with their database (0.1 to 5 MB or more),
 - (d) an 1.2 MB 5 1/4" or 1.4 MB 3 1/2" diskette

drive.

The ACT-software may also work on a similarly configured IBM PC XT (or compatible), although at a lower speed (no guarantee).

- ii) An EPSON EX-1000 printer, equipped with the color option.

MS-DOS 3.2 (or later) is required as operating system.

2.4 Installation and Operation

All files from the distribution disks have to be copied onto one directory on the hard disk. The only file not required to run the ACT-software is READ.ME. Only one version of the ACT-program itself is needed (e.g. ACTV200). The small batch files (ACTM.BAT and ACTC.BAT) are also optional.

Be shure to include the following commands into the CONFIG.SYS file in the root directory of the boot disk:

```
BUFFERS = 20
FILES = 20
```

3. USING THE ACT-SOFTWARE

3.1 General Rules

The ACT-software makes extensive use of menus to facilitate its operation.

Each screen informs the user in its top line about the state of the program and gives key information about the situation and parameters.

In the bottom line indications are given regarding possible reactions (i.e. allowed entries).

In general, it is also possible to exit a menu by pressing <ESC>.

If some information regarding the ACT-method and its definitions are required, the help-utility may be activated by pressing <?> (see also chapter 3.3).

3.2 Starting

After selection of the ACT-directory (i.e. the directory containing the ACT-software) as current directory using the DOS-command

CD Name

the ACT-program may be started by typing

ACTC

to start the color version, or

ACTM

to start the monochrome version.

Having started the ACT-program, it asks for the selection of the desired ACT-database.

INFORMATION SYSTEM ACT Applied to the Electro-Mecanical Industry (EMI)

INFORMATION SYSTEM ACT V2.01
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Would you like to work with:

1. The national product database

or with

2. The international product database ?

The dialog-line at the bottom of the page informs you about your possible choices.

Enter the help-utility by pressing <?> to get informations on the ACT-method.
The help-utility is disabled in graphics mode and before selecting database.

Select the database you need by pressing <1> or <2>.

The national product database in general includes data about regional production methods and takes special local conditions into account. The international database contains data about standard production methods.

In case the national database is selected, a short information is given about product grouping, before actually opening it.

INFORMATION SYSTEM ACT Applied to the Electro-Mecanical Industry (EMI)

INFORMATION SYSTEM ACT V2.01
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The products in the national database are grouped as follows
(reference to the International Standard Industrial Classification):

GR1: 381 of ISIC (metallic)
GR2: 382 of ISIC (mecanic)
GR3: 383 of ISIC (electric)
GR4: 384 of ISIC (transport)
GR5: 385 of ISIC (scientific)

Do you want to return to the menu? (See dialog-line below!)

Press <Y> to return to the menu, or <N> to work with the natl. DB

If the international database was selected, the main menu appears immediately.

SYSTEM ACT

INTERNTL 38

INFORMATION SYSTEM ACT V2.01
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M A I N M E N U

1. PRESENTATION OF THE SYSTEM ACT
2. DATABASE MANAGEMENT
3. GROUPS OF INTEREST
4. GRAPHICS & ANALYSIS
- (5. MULTIPURPOSE PRODUCTION)
- (6. MANPOWER REQUIREMENTS)
- (7. ECONOMIC INTERFACE)
8. FINISH

Kernel features; (Expanded version).

Please select item by pressing the corresponding number. (1 to 8).

Note that in the top line the selected database is indicated by "INTERNTL 38". The bottom line asks for the next action (one of the numbers <1> to <8> have to be pressed).

3.3 Help Utility

The help-utility is a "build-in manual" that can be consulted whenever informations about the ACT-method or the active databases are required. Only if graphics is output, the help-utility is blocked, in order not to destroy the graph.

Activation is as simple as pressing the <?> key (note that on the most common keyboards (QWERTY) you actually have to press <SHIFT>+</?> to get the question mark).

In the following, the most important help screens are reprinted, since they effectively summarize the ACT-method and codification.

In the main menu, "1. Presentation of the SYSTEM ACT" also starts the help-utility.

SYSTEM ACT: PRESENTATION

INTERNL 38

INFORMATION SYSTEM ACT V2.01

C

HELP - INFORMATION

HELP-MENUE

1. Definition of ACT-factors
2. Names of ACT-factors
3. Grouping of ACT-factors
4. Symbols
5. Colors
6. ISIC-codes
7. Manuals
8. Complexity formula
9. List of records
 - A. List of groups
 - B. Exit help

Select topic (1 to 9,A,B). ESC: Exit.

Help utility activated.

A window is opened and the help menu appears. Choosing <1> the definitions of the ACT-matrix are given.

SYSTEM ACT: PRESENTATION

INTERNTL 38

```

INFORMATION SYSTEM ACT V2.0!
HELP - INFO: ACT-Factor 001 (P ); Group A1; Int 1
Poids
-----
Le poids P est associé ici à la partie plus lourde du parc de
machines-outils utilisées dans la manufacture du produit. C.à.d.
que P est défini par le groupe de pièces les plus lourdes qui
composent le produit et non par le poids final de celui-ci ou par
les performances des machines plus légères du parc productif.
Mais il ne faut pas prendre en considération une ou deux machines
uniquement ; il faut plutôt sélectionner un groupe de machines
très représentatif des plus lourdes pour classer correctement la
réponse.

Industrie classée comme légère, courante. Exemples : fenêtres,
serrurerie, antennes pour TV, petits meubles métalliques, photo-
copieuses de table, tours d'établi, compresseurs d'air < à 2,5 CV,
etc.

Home, End, -!-, PgUp/Dn, Ctrl PgUp/Dn. ESC: Exit

```

Help utility activated.

The ACT-factor is given by number, symbol and name, as well as the group it belongs to. The intensity of interaction (Int) may be scanned by pressing <right arrow> or <left arrow> (cursor controls).

How to browse the ACT-matrix is indicated in the bottom line of the window. <HOME> and <END> move to the first and last ACT-factor, respectively. <up arrow> and <down arrow> move up/down one display page, while <page up> and <page down> move up/down one factor (the definition of one ACT-table element may require more than one display page). <CTRL>+<page up> and <CTRL>+<page down> move up/down faster, incrementing/decrementing the factor number by 10.

If a reminder on the ACT-symbols is needed, <3> is the correct choice.

SYSTEM ACT: PRESENTATION

INTERNAL 38

INFORMATION SYSTEM ACT V2.01

C

HELP-INFO: Symbols

D 50% of basic value
 Y 100% of basic value
 R 150% of basic value
 W 200% of basic value
 A factors of B1 et B2 integrated in A3

DX, XW, RW, etc. minimum and maximum entries in one matrix element
 OX, OD, etc. minimum=0 and maximum entries in one matrix element
 H* ... H* medium of two or more entries for a factor (* = D,I,R,
 DA, A, RA, WA A with 50%, 100%, 150%, 200% of basic value
 AD, AX, AR, AW A integrated in A3 and D,I,R,W integrated in B1 and B2

Press any key.

Help utility activated.

The meaning of colors is given in <4>.

SYSTEM ACT: PRESENTATION

INTERNAL 38

INFORMATION SYSTEM ACT V2.01

C

HELP-INFO: Colors

red:	(R)	factor difficult to implement
black:	(N)	product could disappear by the year 2000
blue:	(B)	FMS possible
green:	(V)	robotization possible
yellow:	(J)	technologic evolution probable
magenta:	(M)	factors normally in B or C, intergrated in A
cyan:	(C)	imported component or service

Press any key.

Help utility activated.

3.4 Database Management

This module supports the maintainance of the ACT-databases.

SYSTEM ACT: DATABASE MANAGEMENT

INTERMITL 38

INFORMATION SYSTEM ACT V2.01
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PROGRAM 2: DATABASE MANAGEMENT

1. ADD NEW RECORD
2. UPDATE RECORD
3. DELETE RECORD
4. VIEW RECORD
5. PRINT RECORD
6. LIST RECORDS
7. CHANGE CODE OF RECORD
8. FINISH

Each product in the ACT-database is characterised by a "record".

Please make your choice: (1 to 8)

If a new record is to be entered, <1> is pressed and an empty comment form appears.

SYSTEM ACT: INTERNL 38

399 records in use

RECORD:38_._._

DATE: _._._

NAME OF THE PRODUCT:

TECHNICAL REMARKS:

SPECIFIC FACTORS:

057 (E40) =

058 (E41) =

PROSPECTS:

Enter record-code. (Use 0...9, BS)

Obviously the code has to entered, which will be unique for the product record to be input.

Note that the program automatically checks if the entered code already exists. If this is the case, a warning is issued and the entered code is ignored.

SYSTEM ACT: INTERNL 38
RECORD:382.29.11

399 records in use

DATE: __. __. __

NAME OF THE PRODUCT:

TECHNICAL REMARKS:

SPECIFIC FACTORS:

057 (E40) =

058 (E41) =

PROSPECTS:

Record-code already exists! Do you want to retry? (Y or N)

As soon as the coments are entered, the ACT-matrix is input. The procedure of entering the ACT-matrix is the same as for updating an ACT-record (described below).

A short review on the structure of an ACT-product record may be given by discussing the editing of a record (press <2>).

When asking for the entry of the record-code, the ACT-program already knows, that the code begins with "38" in case the international database was selected, and with "GR", if we are working with the national database. Thus the two databases don't get mixed up.

SYSTEM ACT; INTERNL 38

399 records in use

Please enter the code of the file you want to edit:

38_._._

Enter record-code. (Use 0..9, BS.)

The entry of the code is continuously monitored by the program. Wishing to repeat a code-entry, the user simply has to answer <Y> (<O> for French users) to the question

Do you want to reenter the record-code? (Y or N)

asked by the program at the end of the code-entry process.

If a valid code was entered, the comment-page of the record is displayed.

SYSTEM ACT; INTERNL 38
RECORD:382.29.11

382.29.11

DATE: 22.10.84

NAME OF THE PRODUCT:

Cardans pour machines agricoles

Origine fiche: ONUDI/Tunisie

TECHNICAL REMARKS:

Exclus les homocinetiques et les dispositifs de securite torsionnelle. Croix du cardan usinee dans l 'unite A. Entreprise tres specialisee .

SPECIFIC FACTORS:

057 (E40) =

058 (E41) =

PROSPECTS:

Probable changement structure en B13 et B23.

Is this the file you wanted to edit? (Y or N)

After editing date and comments (if required), one proceeds to the ACT-matrix of the record.

SYSTEM ACT; INTERNL 38							382.29.11													
PAC	1	2	3	4	5	6	PAC	1	2	3	4	5	6	PAC	1	2	3	4	5	6
1	-	X	-	-	-	-	23	-	-	-	-	-	-	45	-	-	-	-	X	-
2	-	-	X	-	-	-	24	-	-	-	-	-	-	46	-	-	-	-	-	-
3	-	X	-	-	-	-	25	-	O	X	-	-	-	47	-	-	-	X	-	-
4	-	-	-	-	-	-	26	-	-	-	-	-	-	48	-	-	-	-	-	-
5	-	-	X	-	-	-	27	-	-	-	-	-	-	49	-	-	-	-	-	-
6	-	MX	MX	-	-	-	28	-	-	-	MX	MX	-	50	-	-	-	X	-	-
7	X	-	-	-	-	-	29	-	-	-	-	X	-	51	-	-	-	-	X	-
8	X	-	-	-	-	-	30	-	-	-	-	-	-	52	-	-	-	-	-	-
9	X	-	-	-	-	-	31	-	-	-	O	X	-	53	-	-	-	-	-	-
10	-	-	X	-	-	-	32	-	-	-	-	-	-	54	-	-	-	-	-	-
11	X	-	-	-	-	-	33	-	-	-	-	-	-	55	-	-	-	-	-	-
12	-	X	-	-	-	-	34	-	-	MX	MX	-	MX	56	-	-	-	-	-	-
13	-	X	-	-	-	-	35	-	-	MX	MX	-	MX	57	-	-	-	-	-	-
14	-	-	X	-	-	-	36	-	-	MX	-	MX	-	58	-	-	-	-	-	-
15	-	X	-	-	-	-	37	-	-	-	-	-	-	59	-	-	-	X	-	-
16	X	-	-	-	-	-	38	-	-	-	X	-	-	60	-	-	-	-	-	-
17	-	-	-	-	-	-	39	-	-	MX	-	MX	-	61	-	-	-	-	-	-
18	-	-	-	-	-	-	40	-	-	-	-	X	-	62	-	-	-	-	-	-
19	-	-	-	-	-	-	41	-	-	-	-	-	-	63	-	-	-	-	-	-
20	-	-	-	-	-	-	42	-	-	-	-	-	-	64	-	-	X	-	-	-
21	-	-	-	-	-	-	43	-	-	-	-	-	-	65	-	-	X	-	-	-
22	-	-	-	-	-	-	44	-	-	-	-	-	-	66	-	-	-	-	-	-

F1F2F3F4F5F6F7F8,D,X,R,W,A;N*,O*,D*,X*,RW,A*,*A;↑↓→xt,<Esc>Fin

The bottom line gets more complicated. It reflects the fact, that strict rules have to be followed when filling in the ACT-matrix. All rules that can be controlled by the ACT-program are controlled. This minimizes chances of errors as far as possible, without restricting theoretically allowed entries.

First the cursor is positioned to the desired matrix element. Then the field is colored (if needed) by pressing a function key (the colors activated by each key are given in the bottom line as background colors, in the monochrome versions the color is symbolised by a letter). The last step is the entry of the ACT-symbol(s). X* means X, XD, XA, XW, etc.

Having finished with the ACT-matrix, <ESC> is pressed. Immediately the complexity is calculated and the results are displayed on the screen.

SYSTEM ACT; INTERNL 38				382.29.11
	MIN	MAX	MED	
A1	14.90	14.90	14.90	
A2	7.92	7.92	7.92	
A3	31.99	35.09	33.54	
of B	4.24	4.24	4.24	
A1+A2+A3	54.82	57.91	56.37	
Total A	59.06	62.16	60.61	
B1	1.71	1.71	1.71	
B2	12.90	12.90	12.90	
Total B	14.60	14.60	14.60	
C	8.97	12.11	10.54	
Ic Total	82.63	88.88	85.75	

	N0	N1	N2	N3	N4	N5	N6	>N6
Ic Min				*				
Ic Max				*				
Ic Med				*				

Do you want to save the changes? (Y or N)

This calculation results are in fact stored in the comment part of the record.

Answering <N> to the question whether to save the changes made during the past session, causes the ACT-program to clear the screen to alert the user, that he may be losing data (by not storing it).

At the end the program asks, if another record has to be entered:

Do you want to edit another record? (Y or N)

<N> returns to the menu.

Deleting and viewing is also very simple and follows the rules mentioned above.

Printing of records is possible in several qualities. The options are

Do you want to print in Near-Letter-Quality? (Y or N)

and

Do you want to print 'de luxe'? (Y or N)

If more than one file has to be printed, the range has to be indicated.

SYSTEM ACT; INTERNTL 38

399 records in use

Please enter first record to be printed:

382.00.00

Please enter the last record to be printed:

382.35. __

Enter record-code. (Use 0..9, BS.)

The record is printed in color and includes all information available about the product in the ACT-database (here reproduced in black/white only).

GR	FAC	SYN	1	2	3	4	5	6	GR	FAC	SYN	1	2	3	4	5	6
A	001	P	-	X	-	-	-	-		065	F48	-	-	X	-	-	-
	002	Q	-	-	X	-	-	-	A	066	F49	-	-	-	-	-	-
	003	R	-	X	-	-	-	-	3	067	E50	-	-	-	-	-	-
	004	t	-	-	-	-	-	-	D	068	E51	-	-	X	-	-	-
	005	vt	-	-	X	-	-	-	I	069	E52	-	X	-	-	-	-
	006	vm	-	-	-	X	-	-	V	070	E53	-	-	X	-	-	-
	007	S	-	X	-	-	-	-		071	E54	-	-	-	-	-	-
	008	H	-	X	-	-	-	-		072	E55	-	-	-	-	-	-
	009	Hd	-	X	-	-	-	-		073	B01	-	-	-	-	-	-
	010	T	-	-	X	-	-	-		074	B02	-	-	-	-	-	-
A	011	Ho	X	-	-	-	-	-		075	B03	-	-	-	-	-	-
	012	CO	-	X	-	-	-	-		076	B04	-	-	-	-	-	-
	013	L	-	X	-	-	-	-		077	B05	-	-	-	-	-	-
	014	Fu	-	-	X	-	-	-		078	B06	-	-	-	-	-	-
	015	Fm	-	X	-	-	-	-	B	079	B07	-	-	-	-	-	-
	016	Fc	X	-	-	-	-	-	1	080	B08	-	HX	-	-	-	-
	017	Ig	-	-	-	-	-	-		081	B09	-	-	-	-	-	-
	018	EC1	-	-	-	-	-	-		082	B10	-	-	-	-	-	-
	019	EC2	-	-	-	-	-	-		083	B11	-	-	-	-	-	-
	020	EC3	-	-	-	-	-	-		084	B12	-	-	-	-	-	-
	021	EC4	-	-	-	-	-	-		085	B13	-	-	-	-	-	-
	022	EC5	-	-	-	-	-	-		086	B14	-	-	-	-	-	-
	023	EC6	-	-	-	-	-	-		087	B15	-	-	-	-	-	-
	024	EC7	-	-	-	-	-	-		088	B16	-	X	-	-	-	-
	025	EC8	-	-	OX	-	-	-		089	B17	-	-	A	-	-	-
	026	EC9	-	-	-	-	-	-		090	B18	-	-	-	-	-	-
	027	EC10	-	-	-	-	-	-		091	B19	-	-	A	X	-	-
	028	EC11	-	-	-	HX	HX	-		092	B20	-	-	-	-	-	-
	029	EC12	-	-	-	X	-	-		093	B21	-	-	-	-	-	-
	030	EC13	-	-	-	-	-	-		094	B22	-	X	-	-	-	-
	031	EC14	-	-	-	OX	-	-		095	B23	-	-	-	-	-	-
	032	EC15	-	-	-	-	-	-		096	B24	-	-	-	-	-	-
	033	EC16	-	-	-	-	-	-		097	B25	-	-	-	-	-	-
	034	EC17	-	-	-	HX	HX	-		098	B26	-	-	-	-	-	-
	035	EC18	-	-	-	HX	HX	-		099	B27	-	-	A	X	-	-
	036	EC19	-	-	-	HX	-	-		100	B28	-	-	-	-	-	-
	037	EC20	-	-	-	-	-	-		101	B29	-	-	-	-	-	-
	038	EC21	-	-	-	X	-	-		102	B30	-	-	-	-	-	-
	039	EC22	-	-	-	HX	-	-		103	B31	-	-	-	-	-	-
	040	EC23	-	-	-	-	-	-		104	B32	-	-	R	-	-	-
	041	EC24	-	-	-	-	-	-		105	B33	-	-	-	-	-	-
	042	EC25	-	-	-	-	-	-		106	B34	-	-	-	-	-	-
	043	EC26	-	-	-	-	-	-		107	C01	-	X	-	-	-	-
	044	EC27	-	-	-	-	-	-		108	C02	-	-	X	-	-	-
	045	EC28	-	-	-	-	-	X		109	C03	-	X	X	-	-	-
	046	EC29	-	-	-	-	-	-		110	C04	-	-	-	-	-	-
	047	EC30	-	-	-	X	-	-		111	C05	-	-	-	-	-	-
	048	EC31	-	-	-	-	-	-		112	C06	-	-	-	-	-	-
	049	EC32	-	-	-	-	-	-		113	C07	-	-	-	-	-	-
	050	EC33	-	-	-	X	-	-		114	C08	-	-	-	-	-	-
	051	EC34	-	-	-	-	-	X		115	C09	-	-	-	-	-	-
	052	EC35	-	-	-	-	-	-		116	C10	-	-	-	-	-	-
	053	EC36	-	-	-	-	-	-		117	C11	-	-	-	-	-	-
	054	EC37	-	-	-	-	-	-		118	C12	-	X	-	-	-	-
	055	EC38	-	-	-	-	-	-		119	C13	-	-	-	-	-	-
	056	EC39	-	-	-	-	-	-		120	C14	-	-	-	-	-	-
	057	EC40	-	-	-	-	-	-		121	C15	-	-	-	-	-	-
	058	EC41	-	-	-	-	-	-		122	C16	-	-	-	-	-	-
	059	EC42	-	-	-	X	-	-		123	C17	-	-	-	-	-	-
	060	EC43	-	-	-	-	-	-		124	C18	-	-	-	-	-	-
	061	EC44	-	-	-	-	-	-		125	C19	-	-	X	X	-	-
	062	EC45	-	-	-	-	-	-		126	C20	-	-	X	-	-	-
	063	EC46	-	-	-	-	-	-		127	C21	-	-	-	-	-	-
	064	EC47	-	-	-	X	-	-		128	C22	-	-	-	-	-	-

SYSTEM ACT	ACT	OWIDO - VIENNA-57
362.29.11		22.10.84

NAME OF THE PRODUCT
Cardan for agricultural equipment

Origin of record: BIR/Intera

TECHNICAL REMARKS:

SPECIFIC FACTEUR 057 (K41)

SPECIFIC FACTEUR 058 (K41)

PROSPECTS:
Probable change to structure to B1 and B2

	MIN.	MAX.	MED.
A1	14 90	14 90	14 90
A2	7 92	7 92	7 92
A3	31 99	35 09	33 54
de B	4 24	4 24	4 24
A1+A2+A3	54 82	57 91	56 37
Total A	59 06	62 16	59 61
B1	1 71	1 71	1 71
B2	12 90	12 90	12 90
Total B	14 60	14 60	14 60
C	8 97	12 11	10 54
Ic Total	82 63	88 88	85 75

	B0	B1	B2	B3	B4	B5	B6	B6
Ic Min								
Ic Max								
Ic Med								

every sample - 100 - super-sample

3.5 Product Selection

The first step in the work with the ACT-software is the selection of products that are of interest. Only a small fraction of the available ACT-records will be of relevance for a specific problem. The selection of these records is made using module <3> of the package.

SYSTEM ACT: GROUPS OF INTEREST

INTERNTL 38

INFORMATION SYSTEM ACT V2.01

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PROGRAM 3: GROUPS OF INTEREST

1. CREATE GROUP OF INTEREST
2. UPDATE GROUP OF INTEREST
3. DELETE GROUP OF INTEREST
4. VIEW GROUP OF INTEREST
5. PRINT GROUP OF INTEREST
6. LIST GROUPS OF INTEREST
7. FINISH

Please make your choice: (1 to 7)

A "group of interest" defines a given situation that is to be analysed using ACT. After its definition, this group is analysed as a whole (see chapter 3.6).

Creating and updating of a group of interest may already give important hints on problem areas and eventual solutions.

Let's have a look at the updating of a group of interest (pressing <2>; the procedure for creation of a group, <1>, is basically the same as for the updating).

SYSTEM ACT: GROUPS OF INTEREST

AGRO

UPDATING GROUP OF INTEREST: AGRO

agricultural equipment for nr. X

INITIAL GROUP:

of prod.: 285

382.X0.00.

SELECTION CRITERIA	USE DEL	DELETED	F.INI.GR.	DEL.	# REMAINING PROD.
N (Level of Complexity):	01234567	179		179	106
T (Minimal Size):	123456	133		6	100
P (Weight):	123456	0		0	100
Fc (Evolution Speed):	123456	0		0	100
A1/A2-Factors:	*****	133		0	100
A3 (Production, I=6):	<=2	47		7	93
CIH (Factor 071):		0		0	93
B1 (Semi-finished):	*****	0		0	93
B2 (Subcontractors):	*****	0		0	93
Red (Critical Factors):	<=1	112		5	88
Other Colors:	*****	33		5	83
Individual Products:	*****	38		38	45

The group AGRO now consists of 45 selected products.

Edit comment. (Use DEL, BS, 'S, 'D, +; <ENTER>, !:next item; <ESC>;finish).

Each group of interest has a name, which has to be entered to retrieve (or create) it. The names are automatically introduced into a dedicated database.

Each group has a comment line, aiding its identification. The rest of the form lists criteria for the selection of products.

Pressing <ENTER> or <down arrow> brings us to the specification of the "initial group". This is the preselection of products according to their ISIC-codes (International Standard for Industrial Classification). The codes are simply entered one after the other, typing an <X> for unspecified digits (wildcard). "382.X0.00" represents all codes that start with "382." (the following zeros could be replaced by Xs, but this is optional since the leftmost X has highest priority).

In the following, products are discriminated according to the data in their ACT-matrix.

Products having a complexity of maximally 3, e.g., are selected by "deleting" 4, 5, 6 and 7 in the table by toggling the background color pressing the space bar <SPACE> (in the color version of the ACT-software green means "keep it" and red means "delete it", these colors are the background colors of the words "USE" and "DEL").

Wherever there are asterisks instead of numbers (*****), a window opens to offer more choices. This makes it possible to include, e.g., all factors of groups A1 and A2 into the selection process.

SYSTEM ACT: GROUPS OF INTEREST

AGRO

UPDATING GROUP OF INTEREST: AGRO
 agricultural e

INITIAL GROUP:

382

SELECTION CRITERIA USE DEL
 N (Level of Complexity): 01234567
 T (Minimal Size): 123456
 P (Weight): 123456
 Fc (Evolution Speed): 123456
 A1/A2-Factors: *****
 A3 (Production, I=6): <=2
 CIM (Factor 071):
 B1 (Semi-finished): *****
 B2 (Subcontractors): *****
 Red (Critical Factors): <=1
 Other Colors: *****
 Individual Products: *****

P	123456
Q	123456
R	123456
t	123456
vt	123456
vm	123456
S	123456
M	123456
Hd	123456
T	123456
Hs	123456
CO	123456
L	123456
Fu	123456
Pm	123456
Fc	123456
Iq	123456

prod.: 295

DEL. # REMAINING PROD.

179 106
 6 100
 0 100
 0 100
 7 93
 0 93
 0 93
 5 88
 5 83
 38 45

The group AGRO now consists of 45 selected products.

Toggle flags using <Space>; -:other flags; !,<Enter>:other items; <ES>:exit

If the meaning of the symbols is unclear, the help-utility may be activated and the required information may be retrieved, without effecting the definition of the group of interest (refer to chapter 3.3 for details).

SYSTEM ACT: GROUPS OF INTEREST

AGRO

VIEWING GROUP OF INTEREST: AGRO

HELP - INFORMATION

IN N T P F A A C B B R O I	<p>HELP-MENUE</p> <ol style="list-style-type: none"> 1. Definition of ACT-factors 2. Names of ACT-factors 3. Grouping of ACT-factors 4. Symbols 5. Colors 6. ISIC-codes 7. Manuals 8. Complexity formula 9. List of records <p style="margin-left: 2em;">A. List of groups B. Exit help</p>	D.
--	--	----

Select topic (1 to 9,A,B). ESC: Exit.

The group AGRO now consists of 45 selected products.

Help utility activated.

The selection according to colors is treated differently. The user specifies the number of color entries he or she is prepared to tolerate in the ACT-matrix.

"ALL" allows as many entries as there are, "NONE" deletes all products from the list, that require that color for one or more factors. "<=3" eliminates all records, having the corresponding color present more than three times in the ACT-matrix.

SYSTEM ACT: GROUPS OF INTEREST

AGRO

UPDATING GROUP OF INTEREST: AGRO
agricultural equipment for nr. I

INITIAL GROUP:

of prod.: 285

382.X0.00.

SELECTION CRITERIA	USE DEL	DELETED	F.INI.GR.	DEL.	# REMAINING PROD.
M (Level of Complexity):	01234567	179		179	106
T (Minimal Size):	123456	133		6	100
P (Weight):	123456	0		0	100
Fc (Evolution Speed):	123456	0		0	100
A1/A2-Factors:	*****	133		0	100
A3 (Production, I=6):	=2	47		7	93
CIN (Factor 071):					
B1 (Semi-finished):	*****	Black	ALL	Prod could disappear	
B2 (Subcontractors):	*****	Blue	ALL	FMS applicable	
Red (Critical Factors):	<=1	Green	NONE	Robotizable	
Other Colors:	*****	Yellow	ALL	Evolution probable	
Individual Products:	*****	Violet	ALL	Pac usually not in A	
		Cyan	ALL	Imported	

The group AGRO now consists of 45 sel

Change level using <Space>; !, <Enter>:other items; <ESC>:finish

At the end, the remaining products are listed and may be deleted individually (pressing <SPACE>).

SYSTEM ACT: GROUPS OF INTEREST

AGRO

UPDATING GROUP OF INTEREST: AGRO
agricultural equipment for nr. 1

382.20.26	Remorques de deux roues, avec ressorts
382.20.28	Remorque pour fermes, de 2 et 4 roues.
D 382.20.29	Remorques bennes
D 382.20.30	Remorque citerne, metallique, jusqu'a 5000 litres.
382.20.31	Equipement pour charger la canne a sucre et similaires
382.20.32	Chargeurs hydrauliques (pelles chargeuses), fixees sur tracteur.
D 382.20.33	Transporteurs - convoyeurs a bande.
382.20.34	Elevateur a godets
382.20.35	Transporteurs - elevateurs pneumatiques, puissance < 20 CV.
382.20.36	Auto-vehicules p/ services en agriculture
D 382.20.71	Pulverisateurs manuels, transportables ou sur chariot.
382.20.72	Pulverisateurs traines, capacite max 2500 litres.
382.21.01	Charrues a traction animal.

Individual Products: ***** 38 ■ 38 45 ■

The group AGRO now consists of 45 selected products.

Delete/undelete using <Space>; !!,<Enter>;other items; <ESC>;exit

A group of interest may be viewed, without risking to change anything in it's definition <4>.

It may also be printed, having the option to list just the codes of products in the group, or to include also a short comment about each product <5>.

A listing of existing groups may be obtained using help (on the screen) or selecting <6> (on the printer).

```

*****
*
*                               AGRO
*
*****

```

Equipement for Mr. X

Group created/updated on: 22.7.89

Initial Group:

1- 5: 382.X0.00

The initial Group consists of 285products.

Following selection criteria were applied to it:

Selection Criteria	Del T	Del R	Remaining Products
N (Level of Complexity): 01284667	179	179	106
T (Minimal Size): 128466	133	6	100
P (Weight): 123456	0	0	100
Fc (Evolution Speed): 123456	0	0	100
A1/A2-Factors: *****	133	0	100
A3 (Production, I=6): <=2	47	7	93
CIM (Factor 071): NO	0	0	93
B1 (Semi-finished): *****	0	0	93
B2 (Subcontractors): *****	0	0	93
Red (Critical Factors): <=1	112	5	88
Other Colors: *****	33	5	83
Individual Products: *****	51	51	32

From 285 products, 32 were selected.

List of products stored in file AGRO.GOI, DataRef = 3

```

*****
382.20.26 382.20.31 382.20.34 382.20.71 382.21.01 382.21.02 382.21.03 382.21.09 382.22.03 382.22.04
382.22.51 382.22.56 382.22.60 382.24.01 382.25.01 382.26.02 382.27.05 382.27.22 382.28.03 382.28.07
382.29.15 382.29.16 382.30.07 382.36.08 382.37.02 382.37.05 382.38.02 382.40.01 382.40.05 382.40.51
382.42.02 382.71.03
*****

```

3.6 Analysis and Graphics

In the selection process described above, groups of up to 5000 products may be handled (note that the ACT-database may contain much more products, the number being basically limited by the size of the hard disk). This is a far too large number for practical applications, and the selection process is introduced in order to efficiently sort out some tens of products (that are of relevance for a given problematic).

"Graphics & Analysis" has the most extensive menu, having 22 choices generating 30 different graphs.

SYSTEM ACT: GRAPHICS & ANALYSIS

INTERNL 38

INFORMATION SYSTEM ACT V2.01

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PROGRAM 4: GRAPHICS & ANALYSIS

Page 1 of 2:

1. Distribution of products by level of complexity N
 2. Distribution of intensities of interaction of a factor
 3. Distribution of intensities I by level of complexity N
 4. Shares of blocks A, B and C
 5. Shares of A1,A2,A3 in A and B1,B2 in B
 6. Relation internal factors (A) / external factors (B+C)
 7. Table: Distr. of int. I of factors by level of compl. N
 8. Correlation between group A3 and the complexity Ic
 9. Correlation bw. external factors B and complexity Ic
 - A. Correlation between group C and complexity Ic
 - B. Correlation between the use of group A3 and Ic
 - C. Correlation between the use of group B and Ic
- continued (press <Page Down> to get page 2)

Please make your choice: (1 to C, <Page Down>)

SYSTEM ACT: GRAPHICS & ANALYSIS

INTERNL 38

I N F O R M A T I O N S Y S T E M A C T V 2 . 0 1

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PROGRAM 4: GRAPHICS & ANALYSIS

Page 2 of 2:

continued (press <Page Up> to get page 1)

- D. Correlation between the use of group C and Ic
- E. Correlation between groups A1,A2,A(B),A,B1,B2 and Ic
- F. Indirect production equipment
- G. Distribution of intensities by N for several factors
- H. Distr. of intens. by N for sev. groups (same factor)
- I. Degree of nationalization
- J. Problematic factors (red)
- K. Local EMI: unusual factors in A & imports
- L. Outlook 2000
- M. Profile of group
- N. Finish

Please make your choice: (D to N, <Page Up>)

Although the analysis and graphics part of the ACT-software is capable to manage up to 500 products and combine their informations in single plots, the selection process should, in general, end with no more than about 100 products. Too many products result in graphs that are difficult to analyse and thus are of little help.

The interpretation, meaning and use of each individual graph are discussed in detail in the other manuals of the ACT-package, in the following just a few examples are given to illustrate the generation of graphic outputs.

At first the group of products, that is to be analysed, is specified. Normally this will be a "group of interest", but it is also possible to select groups according to ISIC.

SYSTEM ACT: GRAPHICS & ANALYSIS

INTERNL 38

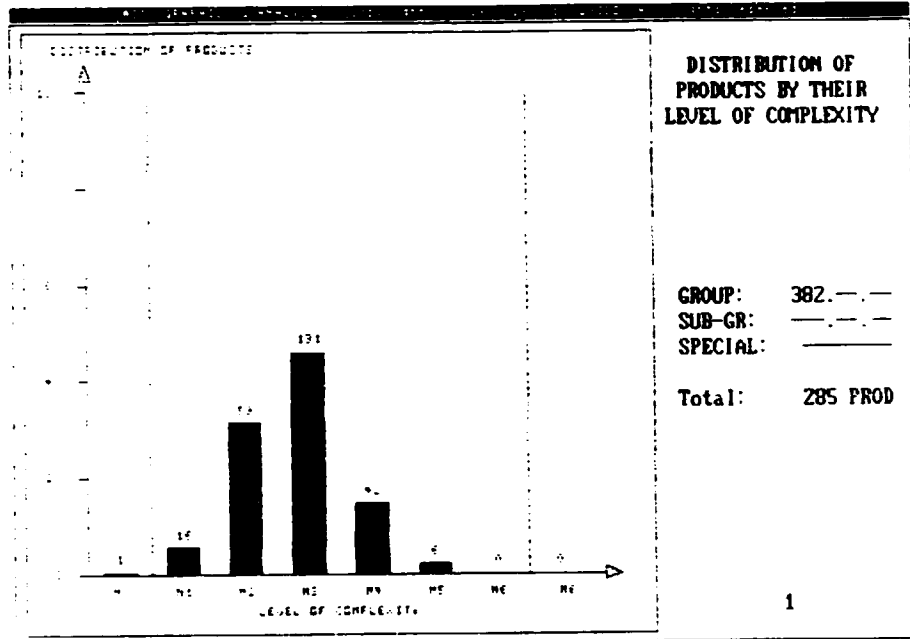
DISTRIBUTION OF PRODUCTS
BY THEIR LEVEL OF COMPLEXITY N

Group of products to be analyzed:

GROUP: 38X.--
SUBGROUP: 38X.XX.
SPECIAL: AGRO

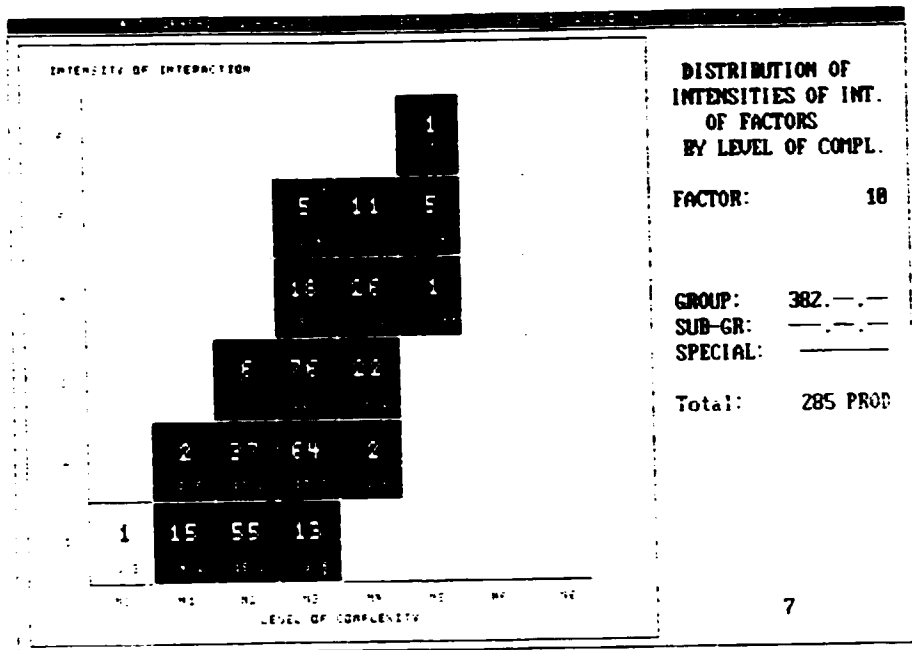
Enter special gr.: Use A..Z, 0..9, !-xit: <ESC>.

Selecting <1> and specifying group "382" (all products in the ACT-database, whose code begins with "382") results in a plot of the distribution of products according to their level of complexity.

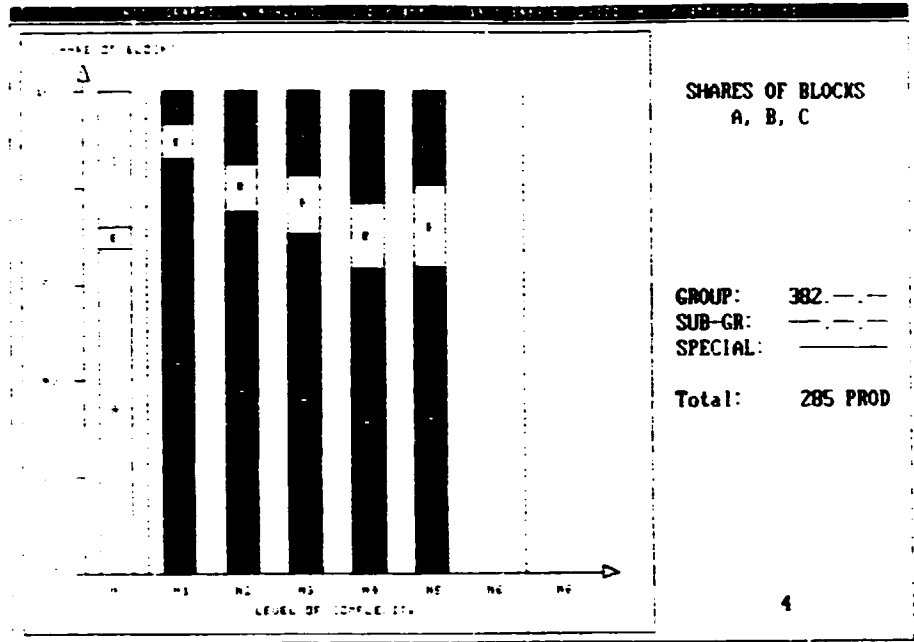


A hardcopy of the plot is made by pressing <F1>.

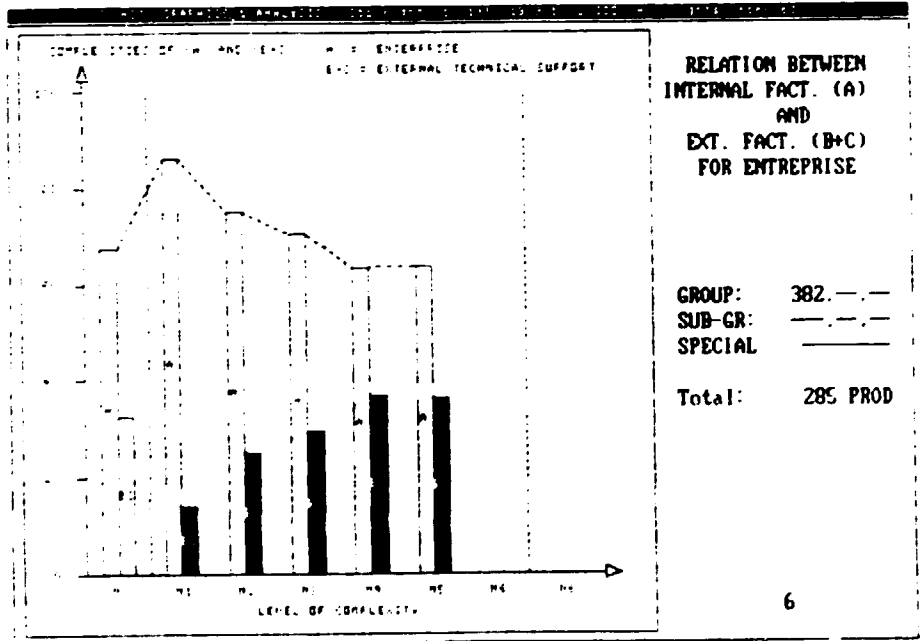
If the requirements for a specific factor are needed, <7> gives detailed information. The use of the factor is plotted as a function of product complexity and intensity of interaction of the factor.



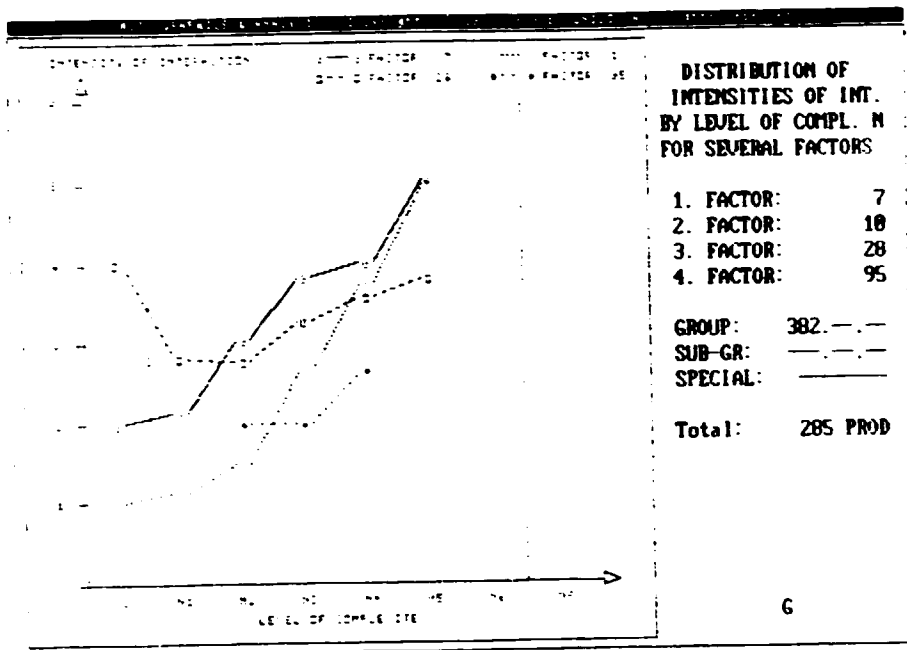
The importance of component supply (C) and subcontracting and semi-fished materials (B) may be estimated using graph <4>.



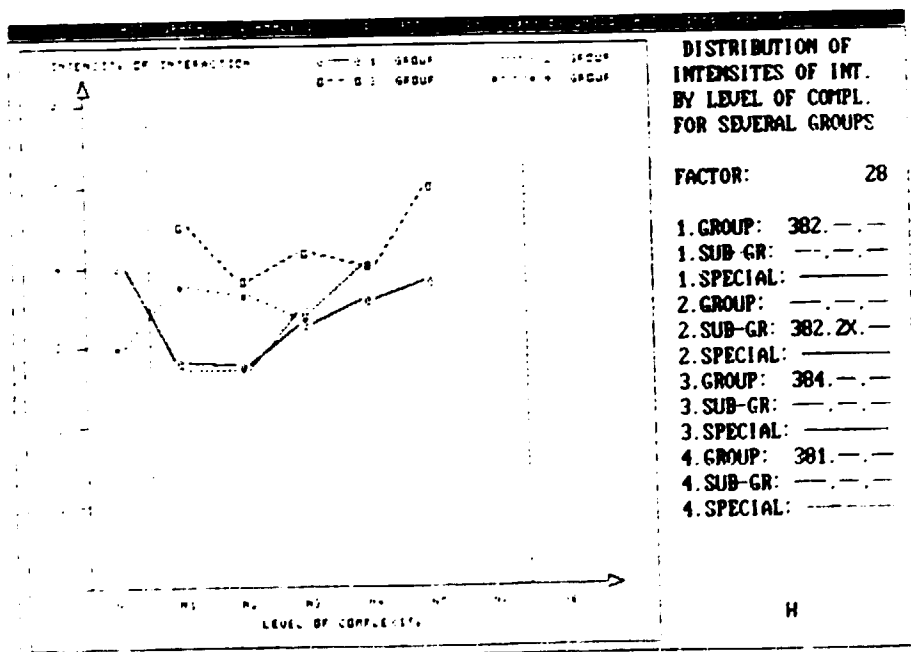
or, in a different presentation, using <6>.



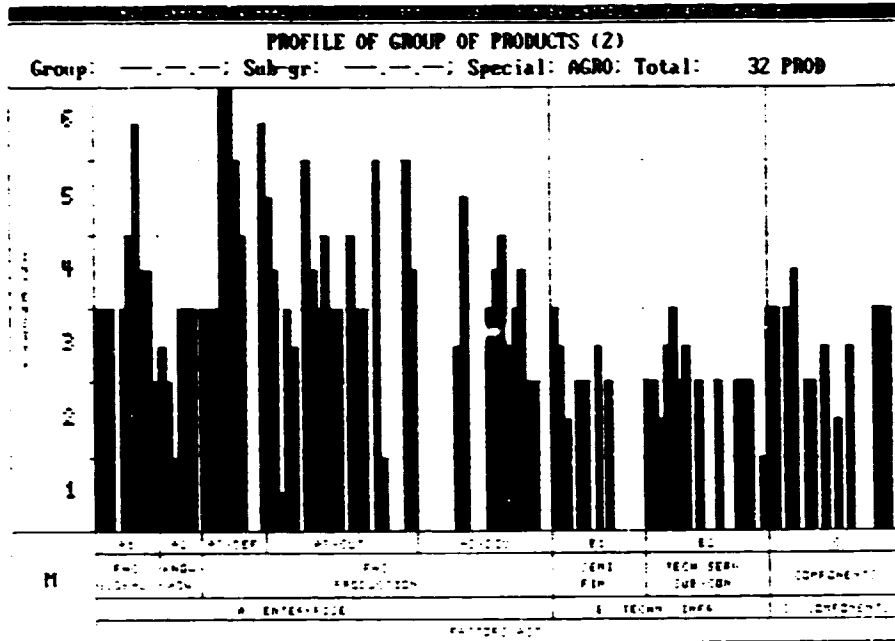
The relation between product complexity and interaction intensity of factors may be studied <G>.



Very practical information may be retrieved. As the following plot shows, factor 28 is required in quality range (=intensity of interaction) 3 to 4 in several product groups, facilitating the decision for investment into new equipment (a machine of quality 3 or 4 could be used in many application fields) <H>.



A "profile" of a product group informs on the maximum qualities of individual production equipment or enterprise and infrastructure characteristics that are to be expected for a product group <M>.



001: 3.0;	002: 3.0;	003: 3.0;	004: 2.0;	005: 3.0;	006: 4.0;
007: 5.5;	008: 3.5;	009: 3.5;	010: 2.0;	011: 2.5;	012: 2.0;
013: 1.0;	014: 3.0;	015: 3.0;	016: 3.0;	017: 3.0;	018: 3.0;
019: 3.0;	020: 3.0;	021: 6.0;	022: 6.0;	023: 5.0;	024: 4.0;
025: 3.0;	026: 3.0;	027: 5.5;	028: 4.5;	029: 3.5;	030: 0.5;
031: 3.0;	032: 2.5;	033: 3.0;	034: 5.0;	035: 3.5;	036: 3.0;
037: 4.0;	038: 3.0;	039: 3.0;	040: 3.0;	041: 4.0;	042: 3.0;
043: 3.0;	044: 3.0;	045: 5.0;	046: 1.0;	047: 3.0;	048: 3.0;
049: 3.0;	050: 5.0;	051: 3.5;	052: 3.0;	053: 4.0;	054: 3.0;
055: 3.0;	056: 3.0;	057: 3.0;	058: 2.5;	059: 4.5;	060: 3.0;
061: 3.0;	062: 3.0;	063: 3.0;	064: 3.5;	065: 4.0;	066: 2.5;
067: 3.0;	068: 3.5;	069: 2.0;	070: 2.0;	071: 3.0;	072: 3.0;
073: 3.0;	074: 2.5;	075: 1.5;	076: 3.0;	077: 2.0;	078: 2.0;
079: 3.0;	080: 2.5;	081: 3.0;	082: 2.0;	083: 3.0;	084: 3.0;
085: 3.0;	086: 3.0;	087: 3.0;	088: 2.0;	089: 2.0;	090: 1.5;
091: 2.5;	092: 3.0;	093: 2.0;	094: 2.5;	095: 3.0;	096: 2.0;
097: 3.0;	098: 3.0;	099: 2.0;	100: 3.0;	101: 3.0;	102: 2.0;
103: 2.0;	104: 2.0;	105: 3.0;	106: 1.0;	107: 3.0;	108: 3.0;
109: 3.0;	110: 3.0;	111: 3.5;	112: 2.0;	113: 2.0;	114: 2.0;
115: 2.5;	116: 2.5;	117: 3.0;	118: 1.5;	119: 3.0;	120: 2.5;
121: 3.0;	122: 3.0;	123: 3.0;	124: 3.0;	125: 3.0;	126: 3.0;
127: 3.0;	128: 3.0;				

3.7 Expanded Version

Program options, that are not available in the distributed version(s) of the ACT-software, but will be available in an "expanded" edition, are correspondingly indicated in the main menu. A short message is output instead of the program part.

SYSTEM ACT: MULTIPURPOSE PRODUCTION

INTERNL 38

INFORMATION SYSTEM ACT V2.01

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PROGRAM 5: MULTIPURPOSE PRODUCTION

SORRY, THIS FEATURE NOT AVAILABLE

IN THE UNEXPANDED ACT-PROGRAM PACKAGE

Press any key to return to main menu.

Please press any key to return to main menu.

4. UTILITY PROGRAMS

4.1 Back-up Database

A back-up of the ACT-database may be done using the DOS BACKUP and RESTORE commands.

A second possibility is the use of BACKUPDB.EXE. This program does not simply copy the ACT-database files onto diskettes. It stores the ACT-data only and rebuilds the index at installation time. Records that were deleted are not stored on diskettes.

After typing BACKUPDB and selecting the database, the menu appears.

BACK-UP/INSTALL DATABASE ACT

INTERNTL 38

BACK-UP/INSTALL ACT-DATABASE
Information System ACT
UNIDO - VIENNA - PROGRAM IMPACT - EDITION 1987

1. Make back-up of ACT-data on diskettes
2. Install ACT-data on system
3. Finish

Please select operation (1...3)
***** BACK-UP DATABASE ACT INTERNTL 38 *****

Selecting <1> starts the back-up session.

BACK-UP/INSTALL DATABASE ACT

INTERNL 38

BACK-UP/INSTALL ACT-DATABASE
Information System ACT
UNIDO - VIENNA - PROGRAM IMPACT - EDITION 1987

Please enter comment on back-up to be made:

Note: only undeleted ACT-records will be backed-up.

Please enter comment. (Use DEL, BS, ^S, ^D, <, >; finish with <ENTER>)

A comment should be entered, that will aid in the identification of the back-up in future. Note that the date is automatically stored, together with some other important information.

The back-up is made on disk A: or B:.

To install an ACT-database, <2> is selected. Before actually starting to install, the user has to confirm, that he really wants to continue. An existing ACT-database is deleted (i.e. lost) during the installation of a new ACT-database.

BACK-UP/INSTALL DATABASE ACT

INTERNL 38

BACK - UP / INSTALL ACT - DATABASE
Information System ACT
UNIDO - VIENNA - PROGRAM IMPACT - EDITION 1987

The ACT-database will be installed on the current disk.
If an ACT-database already exists, it will be deleted.
A new index will be build.

Do you want to continue?

Minutes are printed during back-up and install.

4.2 Rebuild Index

Should a fatal power-failure occur during write operations the disk-drive may become uncontrollable and write random data onto the disk. This problem is extremely improbable and may happen with all kinds of software.

If the hard-disk crashes (it happens...), the only way to recover is to install the software used once more on the new disk. This of course is only possible, if back-ups are regularly made (e.g. using the DOS command BACKUP).

In case, that only the index file of the ACT-database is damaged, it may be reconstructed using REBUILD.EXE.

A second application of REBUILD is given in cases, where somehow garbage was introduced into the database.

A side effect of REBUILD is, that it orders the ACT-records according to their code-numbers.

Also REBUILD produces minutes on the printer.