

II - PRESENTATION

Data and documents

Data independence

- ♦ STEP ONE is a **data intergration system**.

This **data** is stored in **Documents** which all have the same unique format :

- whatever the program currently used (File Manager, Editor, Calculator, etc. are specific STEP ONE programs, also called **Actors**),
 - whatever the operating system (DOS, Windows, Windows NT, OS2, UNIX, Macintosh).
- ♦ Data falls into three categories (or types) :
 - image,
 - text,
 - basic vector shapes.

Open-ended

- ♦ **Data exchange interface** : It is possible to work with external data in a dynamic and bidirectonnal way : access to files which have been generated by external applications (Lotus 123, dBase, Excel, Word, etc.), connection to inter-applications links (DDE, Apple Events, etc.). STEP ONE becomes then a data exchange center.
- ♦ **DOS, a special case** : It is possible to control DOS screens as STEP ONE documents (DOS sessions). Text mode applications (e. g. terminal emulation, stock exchange data display) as well as graphic mode applications (e. g. curves editor) can be run in these sessions to generate data which can be used by the actors.

Implementation

Ergonomics

- ♦ There is only a single user interface and it is based on dialog relationship with the actors : the operator selects on the screen the action to be carried out and data to be processed. As the actor never own data, it begins their interpretation (shape recognition), and then carries out the processing.
- ♦ The actors are "static" and/or "dynamic". Any data kept under surveillance by a dynamic actor is by definition updated in real time (examples: dynamic Copy/Paste, automatic calculations, dynamic curves, etc.)
- ♦ There is only one actor per function, whatever the type and source of data.
- ♦ The data can be selected from different documents displayed simultaneously on the screen.
- ♦ STEP ONE documents are composite documents (made up of data of different types from different sources).
- ♦ Data of different types can be overlaid on the same point of a document, while remaining accessible to the various actors (example: text overlaid on an image or a graphic).

- ♦ The operator works in real time on the data (no manual saving).
- ♦ Data is always displayed in actual size : the data format is device independent (screens, printers, etc.)
- ♦ Text data uses the same set of fonts, regardless of operating platform or printer.

Actors and features

STEP_VIEW

Viewing system : main STEP ONE module.

STEP_MAP

File manager used for :

- navigation among the files of all the disks,
- STEP ONE documents display,
- "external" files conversion to STEP ONE format,
- document creation,
- closing STEP ONE documents.

STEP_DRAW

Editor, used for :

- data creation (typing text in document, drawing basic vector shapes).
- data modification (color, characters, size, etc.)
- data handling (shrink/enlarge, shift, duplicate, etc.)

STEP_CALC

Calculator, used to carry out various operations on numeric data (point-by-point and/or surface processing on lines, columns tables etc.).

STEP_PRINT

Printer manager, used to print STEP ONE documents on a laser printer (black and white) or on a color ink-jet printer (see Ch. III - System Requirements).

STEP_FAX

Fax manager, used to send any STEP ONE document to a correspondent who has a fax machine.

STEP_SCAN

Scanner manager, used to get a STEP ONE document from a paper document using a scanner.

STEP_MASTER

Programming actor including basic fonctionnalités, used to drive some tasks by following instructions from a customized program.

These programs are automatically generated by clicking on actions and parameters in a scenario as well as on variable names that will contain the data to be processed.

When the program is running, an interactive dialog asks first to allocate the variables by showing the data to be processed. The programming actor analyses this data then goes on executing the instructions.

The programming actor works under two execution mode : immediate - the actor runs the program then stops - and supervised - the actor runs the program and keeps watching the variable zones ; as soon as they are modified, the program is run again...

Group work

Simultaneous sharing of documents

The same document can be consulted by several operators at once. As a document is edited, it is automatically updated on all screens where displayed.

Real time communication is thus possible between users sharing a unique document; this is also the technique for mail service.

Communication transparency

There is no connection requirement to the user. A document is available to and shared by anyone connected to the network, simply by displaying it on any screen.

Data security / integrity

Security problems raised by the simultaneous sharing of documents is fully assumed by the host network operating system.

Special case of DOS

Programs can be simultaneously shared by several users and controlled using the keyboard.

Specific Developments - Portability

STEP ONE is a real **development platform** (open system). A development kit allows new specific actors to be built (StepWorkers).

STEP ONE takes charge of data display, presentation and input as well as shape recognition and analysis. The programmer concentrates only on his algorithm, the new StepWorker kernel, without worrying about I/O management.

Moreover, the developments are portable : any StepWorker written on a platform can automatically be run on another one (the source code is unique for all environments).

III - SYSTEM REQUIREMENTS

STEP ONE is fully adaptable to an existing hardware setup.

Depending on the machine number and specifications (power, memory), the actors can be installed in a server or in each workstation. You can limit access to a server disk's data or allow total access to all the network disks.

Finally, STEP ONE is a multi-platform portable system which does not only require up-market machines.

Logical architecture

Actors distribution

- ♦ STEP ONE operates with a Client/Server model - the actors can be installed in one machine and used from one or several others.
Powerful and fast machines will be able to support several actors, whereas more modest machines will only support the viewing system.
- ♦ An actor is available through several identical platforms (same operating system, same hardware).
- ♦ An actor is available through several different platforms (different operating system, and/or hardware).

Data distribution

- ♦ Data can be stored :
 - in the disks of the workstations,
 - or - in the disks of the network file servers.

Physical architecture

Operating systems working with STEP ONE

In local or network version :

- ♦ Dos, Windows, OS/2, DeskView (IBM PC and compatibles, PS/2)
- ♦ Windows NT
- ♦ System 7 (Apple Macintosh)
- ♦ UNIX, XWindows (RS 6000 workstations, SUN workstations)
- ♦ bridge to AS 400

Basic configuration

- ♦ The system runs on machines with the following specifications :
 - Hard disk is optional (the system fits on a floppy disk)
 - Minimum of 300 Kb RAM
 - Mouse

IV - COMPARISONS

Data and documents

STEP ONE

The actors work as well on STEP ONE data as on external data.

Unique file format, whatever platform.

Instantaneous handling of external files, whatever the original software, without needing to have it or to run it.

COMPETITORS

The programs always own their data and cannot directly work with external data.

Each software produces a specific file format.

You can only display them if you have an equivalent utility (e.g. Lotus Magellan) or you need to have the software and run it.

Implementation

STEP ONE

User interface is based on actors and unique whichever actor is used.

The size and location of an actor scenario can be modified.

Immediate access to an actor features and parameters.

Any parameter manually given by the operator is written in a document that works as a memory (it can be reused later).

Each feature is carried out by a specific actor. All the actors work together and you can switch from one to another.

The actors work on all types of data (geometric shapes, text, bitmap image) and coming from any source.

The actors are delivered with basic functionalities and are directly operational.

Work in genuine real size (a printed document fits with its display on the screen).

Unique set of fonts for all platforms and all printers.

Design of composite documents using data displayed on the screen, whatever origin.

COMPETITORS

User interface is based on pop-up menus, specific to each software.

Pop-up menus usually placed at top of screen (fixed size and location).

Necessity to pull down menu to get to its commands.

Any parameter manually given by the operator is input in a dialog box. An input zone has no memory (it must be input again).

There is often, at least, one software per field of application and you have to quit one before using another.

Each software has its own toolbox, available for some types of data only (DTP, image processing, spread-sheets, etc.).

Equivalent programs can only drive some tasks and have to be programmed.

The size of a document on the screen does not always fit with the original.

Distinction between screen fonts and printer fonts.

Design of composite documents only if the softwares can communicate each other (DDE, OLE, "publish/subscribe", etc.).

There is a synergy between the different elements of a composite document - e. g. a calculation sets numerical data and the associated graph is immediately and dynamically updated.

The modification of a composite document is independent of the data origin.
All the actors are available at any time.

The connection procedure is transparent and definitive.

Dynamic copying (between documents) can be performed on any part of a source document, however elementary it is (character, dash, etc.).

Dynamic copy is done by copying a zone, independently of the programs used to create data.

Once created, composite documents are fixed - they are a juxtaposition of several parts coming from other softwares. There is no synergy between these parts.

To modify a composite document, you have to run one of the original softwares, to work in this environment and to go back to the composite page make-up software.

The connection procedure is assumed by the user.

Dynamic copying (between documents) is performed by blocks of data of the source document (paragraph, table, graph, etc.).

The program which created the data is thus the server and must be restarted to activate dynamic copy.

Group Work

STEP ONE

Real time and automatic saving of the documents.

Genuine real time work with simultaneous sharing of all documents displayed (no connection procedure).

Modifications are immediately repercutated (automatic updating).

Data security is ensured by the host network operating system.

COMPETITORS

Manual or programmed saving.

Necessity of specific programming on specific files, with establishment of connection procedure.

Deferred time updating during saving.

Data security is generally specific to each software.

Configuration

STEP ONE

As STEP ONE functions are spread through the whole network, each user has available more power and more memory space than he really has - only 300 Kb are necessary to run STEP_VIEW, as the actors can be installed on other more powerful workstations.

COMPETITORS

Each workstation must support the whole system, which obliges users to have up-market workstations. It is impossible to share the functions among several workstations and a low-grade machine will be penalized.

Note : STEP ONE is an innovative system, and at present only the basic functions have been developed. They are shortly to be further strengthened, but even so, STEP ONE is a complete and operational system.

V - DIAGRAMS AND ILLUSTRATIONS

- ❖ **The STEP ONE environment** : screen layout during a work session.
- ❖ **Design of a composite page** : detailed process.
- ❖ **Group work** : example of document sharing..
- ❖ **Synthesis** : summary of central concepts.