

# Clareti

SYSTEL

Transforming the way VMS works for you

## A set of standard VMS processes that runs on the complete range of Digital VAX processors, from the smallest desktop computer to the largest cluster

### Introduction

SYSTEL is a software product which provides a secure, efficient and highly productive environment for the development and running of interactive and batch application systems on standalone, networked or clustered DEC VAX processors.

It provides a complete solution to the development and operational requirement of most commercial systems.

The use of SYSTEL enables systems to be developed which can grow with the requirements of the business. New hardware can be added to the existing environment, with no changes to the application software.

SYSTEL is a set of standard VMS processes and runs on the complete range of Digital VAX processors, from the smallest desktop computer to the largest cluster configuration. It is specifically designed and engineered to make optimum use of the various VAX architectures, including the Vaxcluster and the Symmetric Multi-processor.

### WHAT IS SYSTEL?

A Complete Product

In the past, software products have tended to be developed to satisfy a single aspect of commercial computer applications. This has meant that several products have had to be used to fulfil the requirements of a single application. SYSTEL, on the other hand, has been developed to satisfy all the aspects of commercial applications, including such areas as:

- On-line Transaction Processing  
SYSTEL is designed to deal efficiently with large numbers of interactive transactions, where users enter data in response to screen prompts. To this extent, SYSTEL is an ON-line Transaction Processing system.

Unlike many other Transaction Processing Systems, however, SYSTEL provides excellent application development and data management facilities, and does not need to be augmented by other products. This results in a system that offers total integration.

- Centralised Database Management  
SYSTEL can equally be regarded as a Database Management System. It provides a means of organising and managing data according to a set of defined rules, providing users with efficiently stored data that is centrally controlled but can still be accessed flexibly. Preventing unauthorised access to sensitive data is easily accomplished with SYSTEL.

Many such systems are extremely greedy for computer resources, and performance on a system can be poor even with a relatively small number of users. SYSTEL, on the other hand, achieves the same objectives extremely efficiently.

SYSTEL also provides efficient access to the Digital Rdb relational database management system, and also to Software AG's ADABAS database management system.

- Program Development  
SYSTEL contains integral program

generation tools and a Fourth Generation Language (4GL). These provide fast application development, allowing the user to specify WHAT is required rather than HOW the computer should provide it.

SYSTEL generates the appropriate code in line with standards specified by the customer. Easy prototyping and maintenance facilities are also a strength of these tools.

SYSTEL's great advantages over other Program Generators and 4GLs are its attention to access security and data integrity, its efficient and highly integrated system environment and, most importantly, its performance and flexibility.

### Productive Software Development and Maintenance

The primary cost of creating and running computer systems is people. Software development and maintenance require expensive human resources, and it is important that these resources are used as effectively as possible.

SYSTEL provides an application development environment, which dramatically reduces the cost of application production and maintenance. It does this by virtue of two major features: Firstly, the SYSTEL development environment includes a powerful Development Database. This

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is used by developers to define characteristics, which will be used throughout the application. If the data is subsequently modified, changes made centrally are applied through the whole application.

Secondly, application development times are very much reduced by virtue of what the programmer does NOT have to code. For example, he does not need to worry about code for displaying menus, or for implementing access security. The programmer can concentrate on implementing the business requirement - the system software will look after the details.

## Powerful Range of Software Tools

One significant way in which SYSTEL assists in program development is by providing a number of software tools to reduce the coding effort. These tools fit into an integrated high-performance environment and make it simple to generate correct, well-documented definitions of such elements as data items, entire Menu hierarchies and screen Layouts. Amount these tools are the following:

- SYSTEL'S Form Generator: the forms produced by this tool not only defines screen layouts but also provide automatic screen navigation and primary validation of the user's input.

It is a high-level, interactive non-procedural software utility which operates on the WYSIWYG (What You See Is What You Get) principle. Using the Form Generator, a form need only be defined once and can then be used as often as required on any terminal-type supported by SYSTEL.

- The development Database Editor operates at a similar level, and is used to generate the following:-

- data definitions;
- file definitions;
- application menu structures;
- screen forms (by invoking the Form Generator);
- file maintenance transactions;
- table definitions and entries (tables are read-only databases accessed by transactions for validation and look-up).

Like the screen forms produced by the Form Generator, these elements need only be defined once in any SYSTEL system.

- Transaction Control Language, SYSTEL's own Fourth Generation Language, Greatly simplifies the coding of transactions by providing a simple, flexible and efficient syntax for handling such actions as file access and terminal input and output. TCL also allows you to include in a Transaction Control Program sections of coding in a standard Third Generation Language, such as COBOL or FORTRAN.
- SYSTEL's optional Intelligent Query System allows programmers to develop Report programmes rapidly, as well as allowing end-users to formulate and Execute interactive queries against the SYSTEL database, using point and pick technology.

## Prototyping

The software tools described above can easily be used for prototyping an application. For example, the menu structure and input screens can be generated and modified interactively by a member of the Data Processing staff in conjunction with an end-user from the department commissioning the application.

Files and data items can be set up quickly, along with skeleton transactions, to give a feel of the

application in action. These can be used as the basis for the real system - the prototype is an embryonic system rather than merely a model.

Interactive facilities are available for developing standard transactions very rapidly.

## Consistency in Application Development

SYSTEL not only enables applications to be developed quickly and easily, but also helps ensure that applications are consistent and conform to the 'house style'.

For example, the Centralised data library makes certain that data item characteristics and validation criteria are identical wherever they are used.

SYSTEL also helps to ensure that applications present a consistent appearance to the user. The Form Generator is supplied with a set of defaults, for a consistent style of screen layouts throughout all applications. If these defaults are not suitable for a house style of screen layout, customers may substitute their own defaults.

## Reduced Application Maintenance Time and Cost

Any application is likely to require some degree of maintenance once it has been put into service. With SYSTEL, the features which help reduce the time and effort involved in development also minimise the time spent in maintaining an application.

The SYSTEM development architecture encourages the modular development of application code. Because data item definitions, screen

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layouts and so forth are held in discrete files and applied throughout an application, amendments made to a single definition will be carried through to all occurrences of that item. For example, menus can be modified, and new menus created, without requiring changes to program coding, and validation criteria for data items can be modified independently of programs. Similarly, programs do not need to be amended if the 'cosmetics' of a screen layout are altered. Also, table definitions and entries may be maintained outside the application code, using the screen-based DDE utility.

In addition, SYSTEL provides error-tracing facilities for debugging user transactions.

#### Efficient use of Computer Resources

SYSTEL is an integrated, purpose-built system resulting from a single continuous development activity. Each module of SYSTEL has been carefully designed to fit in closely with all the other modules. Furthermore, SYSTEL has been designed specifically to run in a VAX/VMS environment, using DEC's highly efficient Record Management Services (RMS), and thus takes full advantage of the strengths of the VAX/VMS architecture.

As a result, SYSTEL displays extremely high run-time efficiency, while still providing sophisticated database management and high security.

A number of factors contribute to this efficiency, notably the use of 'Multi-threading'. This enables the same transaction to be used by a number of users, rather than each user having an individual copy.

Another factor is SYSTEL's Centralised control of resources, which optimises the handling of terminals, files, menus, etc. SYSTEL also provides a range of high-performance routines which increase the efficiency of low-level data manipulation such as file-handling.

#### Ensuring the Integrity of the Database

Any data stored on a computer is vulnerable to corruption. Sometimes, even a small inconsistency in a company's database can have serious consequences.

SYSTEL has a number of mechanisms available to help to preserve the integrity of the database, by preventing both inconsistent databases and actual loss of data. These mechanisms have been designed to provide maximum data security with the minimum effect on run-time performance.

For example, a system of 'logical transactions' can be used to carry out a number of database updates simultaneously, and so reduce the time that the database is inconsistent. Further mechanisms can be used in the event of system failures, to restore the database to its latest known consistent state. In the case of non-catastrophic failures, this typically takes place within seconds. Should a more serious failure occur, a somewhat longer recovery procedure is available - database consistency is still assured.

SYSTEL's measures to ensure database integrity can be automated, eliminating the need for operator intervention in recovery.

#### Controlling Access to the Database

A company's data is one of its most valuable assets, so its computer

system must include a security regime, which prevents unauthorised access to information. There are three complementary aspects to the SYSTEL security regime.

The first aspect, the user name security environment, can be invoked when the user is logging into SYSTEL. In addition to supplying a valid user name, the user will, in most installations, also have to enter the appropriate password. Further conditions can be applied to the user name to restrict its use to certain times of day, validity periods or terminal locations.

The second facet of the security environment relates to resources. Once the user has logged into SYSTEL, the security regime controls his access to specific data resources. Users see only those options that they are authorised to choose, and access to specific menu levels, transactions and files can be further restricted by requiring a 'functional password' when the option is selected. Furthermore, time-out periods can be specified for transactions and menu levels, to avoid unattended terminals presenting a security risk.

The System Manager can also enable or disable access to selected parts of the system, ranging from individual transactions to the entire SYSTEL run-time system, while SYSTEL is running.

Finally, SYSTEL provides audit trail facilities by maintaining a disk-based message log file. This contains a full record of all significant events on the system, including successful logins (and unsuccessful attempts), attempted security violations and

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general transaction usage. Events of a specified severity and above can also be logged to a selected printer. The message log makes it simple to establish who was doing what, where and when.

## Catering for All Requirements

One of the principal advantages of SYSTEL is its great flexibility, both within its enclosed environment for standard applications and in the facilities it provides for customers with more 'unusual' requirements. For example, it is possible to substitute translations or modifications of the SYSTEL run-time messages.

Although applications are normally developed using the SYSTEL software tools the generated definitions and sources can be edited directly by programmers, using standard VAX/VMS editors.

Furthermore, SYSTEL menus and transactions can access external software (such as spreadsheets, word-processing packages and graphics packages), and external software can access the SYSTEL database. Performance Software have taken advantage of this flexibility in a joint development with Software AG, to make available a version of SYSTEL which is tightly coupled with ADABAS, the well-accepted high performance Database Management System. Full support for Rdb, the relational database management system from Digital, and its associated data dictionary, CDD+, is also provided.

Non-standard hardware devices are also easily accommodated. For example, one existing SYSTEL application accesses an IBM mainframe database, while another

is connected to a microcomputer controlling a PABX.

## Trouble-Free Expansion

Additional flexibility is provided by the ease with which SYSTEL copes with expansion of the computer system. SYSTEL applications can be used without alteration throughout the whole VAX range of machines, including Symmetric Multiprocessor machines, VAXclusters and MicroVAXes, irrespective of the machine on which they were developed.

The SYSTEL upgrade path is further lengthened (and the cost of upgrading reduced) by the optional Multi-Processor feature. This enables SYSTEL applications to run on multiple-machine configurations, some of which may be geographically remote, and with mixed models if necessary. This can allow several hundred users to access a SYSTEL database. Once again, application code is unaffected.

## A Straightforward End-User Environment

An end-user working with a SYSTEL application will find a consistent and predictable environment.

At all points in the application, the screen layouts will be similar, help and error messages for a given item will be consistent, and so on. These default specifications can be tailored to existing local standards and conventions, to give applications an air of familiarity for the user right from the outset.

What is more, new users can be put into 'training mode' and immediately work with confidence on the live system, without worrying about harming the database. In this mode,

the application will appear to behave normally, but SYSTEL will not actually carry out any of the user's data updates.

## Effective System Management

SYSTEL provides a variety of utilities and transactions to enable System managers to control the system environment.

There are transactions and utilities for defining the SYSTEL environment, both immediately after installation and while making day-to-day amendments. Further, SYSTEL utilities are concerned with the 'housekeeping' side of system management - taking backups of the database for example.

Finally, facilities are provided for management of the SYSTEL system at run-time. For example, one group of transactions displays constantly updated information about the operation and performance of SYSTEL, as an aid to optimising the SYSTEL system. Another group enables the System Manager to control SYSTEL facilities on-line, such as listing or amending the SYSTEL User name File. There are also utilities for such day-to-day activities as message-handling and fault diagnosis.

## SYSTEL - A Proven Product

SYSTEL is in use in a large variety of applications where users have large volumes of data, need access from a large number of terminals, and require high productivity and performance from their systems. It would be true to say that the largest and most effective TP applications implemented on the VAX/VMS range have been implemented using SYSTEL.

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The customer base consists of companies of all sizes, in the United States, the United Kingdom and elsewhere. These companies include well-known multi-nationals, health authorities and local government data processing departments.

## About Gresham

Gresham Computing plc (LSE:GHT) specialises in the provision of real-time financial solutions to banks and corporates, and has a well-deserved reputation for technical excellence, reliability and a strong service culture. Our storage division helps the largest data users to better manage the unrelenting growth of data.

## Further information

For more information on how Clareti System Management can help your company visit

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