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A simple, straightforward approach to computing—the factor which made the ICL 2903 such a worldwide success with the small computer user—has now been brought to the user of large computers with the introduction of the ICL 2970 and 2980 processors.

With these two new computers, ICL set out to build machines that would not just be exercises in the application of advanced technology but would meet the real needs of the users and would make computing, even at the top end of the scale, easier to understand and easier to use.

Using all the skill, ingenuity and expertise acquired over the years, ICL made an intellectual breakthrough—Virtual Machine Architecture—a development of techniques pioneered by ICL more than a decade ago—that cuts right across conventional thinking. A complex concept, which means that every facility a user needs to gain the most from his 2900 is provided easily and efficiently. It makes the ICL 2900 series very much user's machines.

Recognising the importance of communications in present-day computing, ICL made a communications facility a basic part of the new computers' design and built it to be excellent at this aspect of its application. All facilities needed to implement large and small scale communications systems are an inherent part of the 2900 Series design so this kind of application can be operated on both machines very easily.

Choice

ICL saw that while information should be widely and readily available through communications terminals, the information provided had to be accurate and easy for the layman to find his way through. A comprehensive Data Management system was therefore an essential part of any advanced system.

Before the introduction of these two 2900 Series machines, most users had to choose between Data Management facilities that were too limited in their requirements or were too complex and gave more than was wanted. Now, with Data Management an integral part of the design of the 2900 Series, the user can choose the level which will meet his requirement exactly but also has the facility to grow through the various levels as and when necessary.

As yet another way of making computing more straightforward for the user, both 2900's use high level machine languages which provide powerful and wide ranging facilities but eliminate the need to program in a complex machine-dependent language. They also provide all the tools necessary for the user to write and test his own programs effectively. The sophisticated facilities built into both machines for handling communications, data bases and file security, mean the user does not have to write these sub-systems himself, so projects which were other computers would be considered complex and advanced are moved into the domain of the ordinary 2900 programmer.

This level of sophistication will mean that the 2900 user will be able to get his projects off the ground faster and gain benefits from his system sooner than previously possible.

In fact, the 2900's Virtual Machine Architecture gives every user the impression that he has all the resources of the computer at his disposal at any one time irrespective of what other users of the machine are doing simultaneously. In reality, the 2900s share the resources between users without their being aware of it. This is done while giving each user complete privacy and protection for his data.

Obviously with computers as advanced as the 2900 Series, the user will place great reliance on the machine which will carry an enormous responsibility for the efficient running of his business. A computer on which so much responsibility rests must provide an extremely reliable service and this is an area of design given even more attention than normal by ICL.

Both 2900 series machines use integrated circuits and multi-layer platters—technology pioneered by ICL and thoroughly proven on its most powerful existing computers. At every stage checks have been built in to ensure that no fault escapes detection. The 2900s are highly modular allowing any function, even the process itself to be duplicated so the user can tailor his configuration to give the level of resilience he needs to cope with a fault and allow work to continue even in the face of a partial failure.

Resilience

Software is also protected by resilience in data file systems software and in the user's own programs. This yet another technological breakthrough that has been incorporated in the 2900.

The built-in architecture provides protection that is so effective that the 2900 that not only can one user not interfere with the work of another user on the same machine, but dedicated communication...
ICL expertise makes the software simple

WHEN the user requirements for a new range of computers were established, it was realised that a tough task lay ahead. Many of the users had gained experience of high-level languages in their previous work, and they expected the new system to provide an environment similar to that which was current in the market place. It was necessary for the team to have an intimate and detailed understanding of the user's working environment, to adapt the software to suit their needs. This involved considering the management of the user's input and output, as well as accommodating the user's familiar high-level languages for programming. The team must also address the various features and functions that are required to support the high-level languages without affecting the performance of the computer system. The team needed to have a thorough understanding of the user's requirements to design a software system that would meet their needs.

Modularity

Another technique that will ease the management of individual computer installations is the ability to record all the details of the software database, not just the code itself but the software component that provides the necessary functions. The software component is more or less independent and can be used by other programs without affecting the performance of the computer system.

Reliability

Reliability is one of the key factors that determines the success of any computer system. The 2900-A series of computers is designed to provide high reliability, with a focus on maintaining system availability and minimizing downtime. The system design includes redundant components and fault-tolerant mechanisms to ensure that the system continues to operate even in the event of hardware failures. The team designed the system with a focus on reliability and fault tolerance to ensure that the system can be trusted to perform its intended function in critical applications.

Hardware reliability a critical factor in 2900 design

IN ORDER to meet the 2900 system's reliability requirements, the engineers undertook a comprehensive analysis of the system's components and their interrelationships to identify areas for improvement. The team focused on developing a robust design architecture that could withstand the rigors of daily use and minimize the impact of failures on system performance.

Diagnosis

We have also built in facilities that enable us to rapidly diagnose and repair failures. The team designed the system with a focus on ease of diagnosis and repair to minimize downtime and reduce troubleshooting efforts. The system design includes diagnostic tools and features that can quickly identify and isolate hardware failures, allowing for swift and efficient repair.

Independent

We have therefore designed our largest systems under two general categories: the software and the hardware. The software is designed to be highly flexible, with the ability to accommodate a wide variety of user requirements and configurations. The hardware is designed to be highly reliable, with a focus on minimizing downtime and maximizing system availability. These two categories work together to ensure that the system can meet the needs of a wide range of users, from small businesses to large enterprises.
Enhancements to 7500 series will boost communications facilities

ENHANCEMENTS just announced for the 7500 Range of Modular Terminal Systems now make it extremely easy and economical for ICL users to operate 'clusters' of video terminals at sites remote from their mainframe computers. A new low cost 'desk-top' terminal measuring only 15 x 15 x 7 inches — the 7502 — is now available which can be used to connect up to eight video and four hard copy printers to the mainframe via modems and a Post Office line.

For those users who also have remote job entry requirements for bulk data, the 7503 remote job entry terminal announced last year has been enhanced to include facilities for the control of up to 24 video and eight hard copy printers.

Both the 7502 and 7503 are 'intelligent' terminals incorporating their own program controlled processors, so that validation and editing routines can be implemented at the terminal.

Program

Programs are supplied by ICL and are entered on magnetic cassette in the case of the 7503 or through a 'Telesol' facility on the 7502 i.e. the required program is transmitted from the mainframe to the 7502 over the communications line that links the two.

The terminal enhancements are complemented by the introduction of new video which can be added to a system for less than £1,000 per unit. They have separable keyboards and are available with either 960 or 2000 character displays.

Security options are available where it is necessary to prevent unauthorised access to the computer files. The new hard copy printers have an operating speed of 60 characters per second and are based on the quiet and well proven mechanism of the ICL Termprinter.

In order to ensure maximum reliability and continuity of operation for all ICL terminal users, dedicated terminal service centres are to be established throughout the United Kingdom which in due course will provide a four hour emergency service. Similar high grade terminal support will also be provided overseas.

Servicing

Servicing of the 7500 terminals will be aided by software diagnostic routines which utilise the power and flexibility of the integral processor, and it will be possible to test individual videos without affecting the operation of other units connected to the system.

Modular

The new terminal facilities and low cost video will make it beneficial for many more ICL users to operate interactive video terminal systems at locations remote from their mainframe computers. Warehouses, spares depots, regional sales offices, satellite factory installations, local Government departments, and many other decentralised operations can benefit from the instant access to mainframe information and large data files and the instant control of their own operations that can be provided by remote video systems.

Where time means money, and in industry time always means money, the use of interactive video can knock days off the time taken by conventional routines. Any competent accountant will be able to calculate what this means to a business in terms of a direct improvement in the cash flow position and this alone will often justify the installation of remote interactive video systems.

Benefits such as the overall increase in the efficiency of the business and the improved service that can be provided for customers are less easy to quantify, but in the opinion of many managers they are even more important than those for which precise values can be established.

2900 Series

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The 2900 series represents a revolution in computing, designed to meet the challenge of the 1980s. Only by building such an advanced computer could ICL produce a system which would keep ahead of the advanced applications of our existing users and would prove irresistible to competitive users. But, while the 2900 machines are advanced, existing ICL users can easily change to the new machines as existing 1900 and System 4 programs will run unchanged on the 2900s. In addition, ICL provides the most extensive range of conversion aids ever produced to safeguard existing applications and enable the user to gain full advantage from the machine.

Both the hardware and the software of the 2900 series are highly modular in design and this means that ICL can steadily improve its facilities and incorporate new technologies as they become available. So, the 2900 series will change in line with current developments ensuring the user of the best possible cost/performance ratio. The user himself is protected from these changes and is only aware that he is a given stable environment within which he can continue his own developments.

The 2900 series is truly open ended. In many ways it fulfills the final generation of computers and so, for many competitive users and for all existing users, the 2900 series offers a secure future, one which can accept any challenge that the future may hold. The 2900 series is YOUR FUTURE SYSTEM.