I am here today to talk about the VAX Family of computers manufactured by Digital Equipment Corporation. In particular I want to address four points. The position of VAX within Digital's world, the success that VAX has had in meeting the needs of many environments, the importance that software plays in the VAX family, and, most importantly, probably, the future directions of VAX.

Digital uses several product families to support its many markets and businesses. We offer board level CPU products for inclusion in our OEM's products; devices and components such as terminals and disks as add-ons to current installed systems; as well as the total systems arena, where we offer products ranging from desk top personal computers through the PDP-11 Family to the large mainframe family of DECsystem 10's and 20's.

At the heart of our family offerings, of course, is VAX. Indeed, VAX is a very significant family within Digital. The first member of the VAX family was conceived in 1975 and brought to market in 1977. From 1977 through October 1983 we have shipped over 18,000 VAX systems. This represents almost a 50% share of the supermini business.

The VAX System Family is not limited to any one specific market area, but, in fact, VAX systems are sold by virtually all of our marketing groups. For example, Digital sells VAX systems of all sizes to both local and federal government agencies; to public and private educational institutions for general timesharing and computer science; to manufacturing companies for factory automation as well as distribution, to offices of all types for mail, finance and decision support; to the space program, including parts of the space shuttle development; to all types of engineering and CAD/CAM applications; and to laboratory environments whether it be for data collection or statistical analysis. In fact, I can't think of many areas into which VAX systems haven't been sold.

Now what is this VAX Family? We call it a family because it is based on a single hardware architecture. That is, all the hardware pieces of the system are based on one design specification. That design criteria is maintained as a standard across the implementation of new technologies in succeeding new family products. Also, we have a single operating system, VMS, the Virtual Memory System. This ensures that all family members from VAX on a desk through VAXclusters will be executing precisely the same functionality across the family.

Now, where there are several different family members that need to communicate, we can link these all together with a single network based on DECNET. And since each member has the same hardware architecture, the same operating system, and runs identical versions of the layered products, we can indeed guarantee compatibility from the bottom to the top end of the VAX system family.

To the user this means that applications developed on one member of the VAX family can be transferred to another member and/or communicate across multiple family members without change. This preserves data, programming and training investments. It also allows for a wide range of systems to meet any price and computing style. Key to the success of Digital's VAX Family and the reason why users choose VAX for developing applications packages has been and continues to be Architecture.

If one looks at 1977 to the first VAX in the family that was shipped, we see a 730 with VMS, DECNET and FORTRAN, indeed a success in the market place. Now when we look to 1983, we see that the family members go from VAX 725 to the 732 that can be linked together with Computer Interconnects into Clusters, and we now offer a smaller extension of the VAX family called MICROVAX.

VMS has been extended significantly and we now have new packaging which we call MICROVMS. There is also a special runtime environment VAXELN for realtime applications. And our layered products have grown from that one FORTRAN to well over 100 products. Through all this growth, as Digital has added new hardware members, each has adhered to the VAX Architecture design goals. For example, there is one VMS, that goes from the VAX on a desk all the way up to VAXclusters. There is a single version of languages and tools, and a single version of information management and other layered software products.

In the area of information management the VAX Information Architecture has provided a system of software products that complement and enhance each other, such as, FMS for forms management and RMS for record management both callable from VAX native mode languages. VAX Information Architecture also provides a set of products for VAX system optimization such as Datatrieve for query, reporting and graphics, a Godasyl DBMS and Common Data Dictionary. Again, the consistency provided across the range of information products by the VAX Information Architecture has ensured that they all work together in an integrated way both within a single VAX CPU and across the family of VAX systems.

VAX FAMILY - THE COMPUTING STRATEGY WITH A FUTURE

Theresa Stokes
Another important architectural standard within Digital is the Digital Network Architecture (DNA), which has guided the development of an extensive set of networking products for building both local and wide area networks. In addition to DECnet for connecting DEC to DEC, there is Ethernet for local area networks and connectability to other major networks such as Packet Switching Data Network and SNA all integrated into DNA and supported by DECnet software.

This diagram has been presented many ways. One is the Office "E". In this diagram we have an administrative network that allows project work started at the desk level to be further developed by department resources and then reviewed and archived at the corporate level. The commonality provided by the VAX Family at all levels provides an ideal base for such an environment.

Another way to look at the "E" is from a system viewpoint, where at the bottom of the "E" we have low MIP processors and as we go up through midrange and high performance processors MIP's increase. As programs and applications grow, they are moved to a higher performance processor or distributed over smaller systems.

Digital's decision in 1975 to adhere to a single VAX architecture and a single VMS operating system and a single version of layered products has resulted in a uniquely homogeneous distributed computing environment. Now let us turn our attention to what the VAX Family will be in the future.

As we move into the future, let me reiterate the major premise. That is, the basic product philosophy of consistent architecture will not change. Now the areas that concern us as we look to the future, and especially the short term future up to five years, are the hardware, its technology and where it's going; and the software for entering into new technologies.

Let us first address the hardware. We envision, if we look at the systems "E" again, a major thrust of technology on each bar of the "E". On the low bar of the "E", for example we believe the VAX Family future will be based on the MICROVAX chip. In the midrange the future will be CMOS. And at the very high end, we will be building on the ECL and Trilogy technologies, for example.

As important as hardware connectability was in the past, and it is still important, a new dimension of software portability to future systems has become key. Programs written on VAX over the last 7-8 years, must continue to run whether they be in a cluster environment or whether they move off to larger or smaller processors.

Now as to things that will be taking place. Bit-map display products are rapidly becoming key to future success. The interest in improved and new human interfaces and high-performance graphics will explode. Personal "workstations" encompass many things. We look at terminals to have not only graphics in them but multiple windows as well.

Secondly, we have come from simply specializing in good languages as layered products to something one could call "a productive programming environment." By that I mean surrounding the language with language specific editors, debug packages that are symbolic, tools that allow people to keep track of modules, test packages that are automated, all of this so that programmer productivity will increase significantly.

Thirdly, in the software area, artificial intelligence is coming of age, initially with tools to facilitate development of expert systems. Fourth, relational databases are on the horizon. We are certain there is a place for both the CODASYL (hierarchical) database management structures as well as the newer relational databases.

The enhanced capabilities of the future will continue to allow Digital to serve its many markets in their expanding requirements.