applications available with this technology; why are these things not reality now?

The truth is that, for some of us, some of these applications are a present reality; within the next few years, many of them will be in limited operation throughout the country. Does this mean that we are ready to let this next-generation capability change our lives and our interactions with those people that have traditionally provided us with goods and services? Can we communicate with machines as effectively as we can with other humans?

We are beginning to find some answers in user response to existing forms of videotex technology. The Commodity News Service (CNS) has been established as an information retrieval service for commodity traders, and a similar system is in place for discount brokers; CitiBank is advertising its online banking service; Epcot Center uses videotex to help visitors find their way and retrieve information about exhibits; Dow Jones has an online financial market service (information only); Compuserve and Source exist as rudimentary examples, used more for play and computer information than for serious information management; and there are others. Why then did the show dwell on the form and not the content, or (to borrow a phrase) the medium and not the message?

It seems to me that this is so largely because the purveyors of the technology are not the builders of the applications, and this base of builders is still so small that it is overwhelmed by the purveyors (who still run the show, so to speak).

My hope is that the videotex industry will begin to develop and implement useful applications that will turn this exciting technology into an indispensable tool for the public. This segment of the information-management-and-movement industry offers the most exciting marketing potential available to the industry leader who stands up to point the way, even if that leader ends up being a coalition or industry advisory group such as ours.

It is my perception that videotex can and will chart our next great step toward the goal of Equal Access to Information; it will provide many interactive services that exist now only as the figment of someone's imagination. We may move as quickly into this age of armchair access to the world, traveling through the use of videotex and large screens, doing our shopping and handling our finances at home, as we did to jump from the 64K chip to the 256K chip. It may take some of us some time to readjust.

In what year will you be reading this column on your videotex screen? I hope it will be soon.

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In the next issue: IC design packages for the IBM PC.

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VME-16 (one connector) and VME-32 (two connectors) is a rather difficult story in practice. Configuration problems are also expected because of the different address width and the numerous options.

VME-32 is clearly the cheapest bus as long as no protocol translation takes place (that is, as long as 680XX processors are used), and as long as the processor boards have no dual-ported local memory accessible from the outside. VME is supported by a number of chips from Motorola, Signetics and Mostek.

NuBus and Multibus II. These two buses are so little different that it is unbelievable that the designers could not agree on a common design. Multibus II has a better system approach (interconnect space, reset-not-complete, serial bus), while NuBus is streamlined for a 32-bit design. Both buses lack the capability to make broadcast transfers, which prevents the use of caches on the bus. Multibus II is hampered by the necessity of a Central Service Module which is in principle only needed for initialization and for the clock. It may also have problems because of its two levels of compatibility, 16-bit and 32-bit data. The commercial future of NuBus is uncertain, while Intel is pushing Multibus II and is developing bus controllers for it. Several Multibus II boards have been introduced based on 80286, 32032 and J-11.

FutureBus. FutureBus (P896) has a very consistent 32-bit design but is difficult to manage. It offers the highest theoretical speed but requires a costly technology. In fact, the difference between NIM's FastBus (based on ECL) and P896 is small. The newly designed bus drivers of P896 (and now available from National Semiconductor) are in fact a rediscovery of the virtues of the small voltage switching range of ECL.

Another problem is the lack of support from the industry. Ferranti announced bus controllers for FutureBus and Tektronix is introducing a system based on it, but no other designs are yet reported. Finally, there is no system support in sight for FutureBus.

Outlook

As things stand now, the 32-bit bus market will be dominated by the struggle of VME-32 versus Multibus II. Simple users of 680XX will prefer the VME-32, while Intel, National, and DEC processors will fit better on Multibus II in a sophisticated multiprocessor configuration. But users should not neglect the system aspects; who is going to deliver the software and the development tools to run these multiprocessors? The bus is only the tip of the iceberg.

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