
PC Logic Chip Sets-- Emerging Technology and Trends

EMERGING TECHNOLOGY AND TRENDS

Impact and Importance of Standards: EISA versus MCA

An alternative to IBM's Micro Channel Architecture (MCA) bus structure was announced by a group of PC competitors on September 13, 1988. Support for the extended industry standard architecture (EISA) bus has been widely endorsed by PC vendors, hardware manufacturers, and software vendors. This announcement has caused a strong reaction in the marketplace, with uncertainty as to which architecture to support. Businesses need to plan for the future and the issue of whether to purchase MCA systems now or wait for EISA systems to become available is an important one.

Background

EISA was started by several PC manufacturers, led by Compaq, that did not want to pay the royalties IBM demanded for using its Micro Channel Architecture. They argued that IBM developed MCA as a strategy to increase market share and to limit the number of PC manufacturers by increasing the barriers to entry for low-cost manufacturers. IBM has denied this, stating that the MCA bus was developed because of its technical superiority and its ability to meet future computing demands. Technically, both EISA and MCA can support the same applications. Although proponents of each group claim advantages in their own design, the real question is: Which bus structure will win, or will they coexist? Dataquest believes that the answer to this question will depend on the third-party, add-in board manufacturers because it is the availability of add-in products that will influence the decision of the systems buyer.

EISA

EISA Delivery Time

No EISA bus machines are currently available. The finished specification has been published and work is under way to design and build the first machines, which Dataquest expects will be introduced in the second half of 1989. EISA's success will depend greatly on the perceived need when an extended bus is required and on the ability of IBM to demonstrate real applications for MCA. Dataquest believes that, perhaps as early as the 1989 Fall Comdex, high-speed graphics cards, communications boards, and improved disk and I/O management products will be introduced. These products will use the MCA bus, as it is the only extended bus architecture at present. This will place the proponents of EISA in a catch-up mode immediately.

PC Logic Chip Sets-- Emerging Technology and Trends

EISA Backward Compatibility

According to its advocates, EISA's main advantage is its backward compatibility. Customers have large investments in LAN cards, communication boards, and peripheral products that can be moved to newly purchased systems. Dataquest does not agree that this issue is strong enough to dissuade businesses from purchasing a different bus architecture for the following reasons:

- Because older systems are passed down intact to areas that were previously devoid of PCs, businesses do not have surplus boards available.
- The new systems probably contain standard features that were options on older systems.
- The third-party board manufacturers have added new features and functions to their products, which makes upgrading attractive.

Although backward compatibility is feasible with EISA, Dataquest believes that, in a business environment, the bus layout will not significantly alter sales—provided support products, third-party boards, and peripherals are competitively priced and readily available. The total system price and the support product availability ultimately will determine which product will sell.

EISA Second Sources

Many companies selecting PCs prefer to have multiple sources for the same product. The number of PC manufacturers supporting the EISA bus make the EISA PC attractive for this reason. Dataquest believes this to be an especially critical area to watch to ensure that the EISA bus is identical from one PC to another. The potential exists for one manufacturer to "improve" on features to leverage market share.

MCA

MCA Delivery Time

IBM has been shipping MCA PCs since April 1987. Dataquest estimates that there was an installed base of 1.8 million MCA-based systems by the end of 1988. Companies anticipating the arrival of new applications do not have to wait for a PC with the MCA bus to be developed. Dataquest believes that third-party manufacturers of application hardware will concentrate their resources on MCA-based PCs initially, simply due to the large marketplace into which they can sell their products. The delay in shipping EISA third-party boards can only boost MCA credibility.

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MCA Backward Compatibility

MCA's disadvantage is that it is not compatible with the nearly 33 million MS-DOS PCs shipped since 1983. Dataquest does not view this as a strong justification for not purchasing the MCA PC.

MCA Second Sources

Several companies have announced plans to ship MCA PCs or they are already shipping them. These companies, which are members of the EISA consortium, have stated that they will satisfy the customer, one way or another. The argument that there is only one vendor for MCA has therefore been eliminated.

MARKET PARTICIPANTS

IBM

Dataquest believes that IBM holds the winning hand in this card game. It is in a good position to influence the outcome of the EISA/MCA challenge and can sway the business community to embrace MCA. Our analysis is based on the following factors:

- The delay in introducing EISA gives IBM time to introduce products that can take advantage of MCA and time to establish a user base. The sooner useful MCA applications hit the market, the greater the market share that MCA will capture.
- Although it has stated that the royalty structure will remain in place, IBM always has the option of changing its mind if this becomes beneficial.
- Companies that have a universal cross-licensing agreement in place with IBM may not be required to pay the same royalty fees as companies that do not. This makes it more attractive for those companies to manufacture MCA-based PCs.
- It is being debated whether EISA or MCA, in the current configurations and environment, is technically superior. We believe that the issue is really which architecture will perform better in the future, with an expected requirement being the ability to expand to a 64-bit data path and handle processing speeds above 40 MHz. EISA may have problems with both the physical accommodation of a 64-bit bus and the electrical noise associated with high-speed processors. In addition, IBM has the time and the option to redesign the current MCA to eliminate the debate and to clearly differentiate performance before the first EISA machine is even shipped.
- Most important, although MCA exists now, EISA is, at present, vaporware.

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Compaq

Compaq Computer held an estimated 5.9 percent worldwide market share of all personal computers shipped in 1988. Compaq is also the leader of the EISA consortium, and we believe that it holds enough market share and following to make EISA a viable product. Dataquest believes that Compaq will follow through and introduce EISA regardless of how the rest of the PC industry reacts to extended bus architectures.

EISA Consortium

Dataquest believes that the EISA consortium is very serious. It is well organized and well supported by members. Nevertheless, it faces an uphill battle against MCA with obstacles that IBM will exploit at every opportunity.

The first obstacle is that the EISA standard is being formed by a group of competitors anxious to increase their own market shares in an extremely competitive market. Even with the common interest of EISA, it is hard to believe that any group of competitors with a common goal will stay together. Any fragmentation in the ranks will be noted quickly by IBM.

A second obstacle is that members of the EISA consortium will hedge their bets and develop, or already have developed, MCA PCs, and they will actively market them. This is partially a result of the effort they have already put into cloning MCA systems and partially due to the fear of being caught without an extended architecture product if EISA stalls.

THE WINNERS AND THE LOSERS

The Winners

Dataquest believes that if Apple Computer can capitalize on its stable NuBus platform, it will be a clear winner as a result of the chaos caused by multiple PC bus standards. Certainly, Microsoft will win because it is hardware independent and will sell products to both MCA- and EISA-based PCs.

The Losers

The losers will be the public, which ultimately will pay the price for this confusion, and the PC manufacturers, which must invest limited funds in both standards. Designing two products is costly because of development time, distribution and revision changes, service, and repair.

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Third-Party Add-In Boards: The Deciding Factor

The determination of the winners and the losers may well lie in the hands of the third-party add-in board designers. These vendors also have limited resources to develop and market products. How they allocate these resources will heavily influence the EISA/MCA struggle.

Today, the question is moot. The current MCA-installed base is estimated at 1.8 million units, and it is expected to increase to 4.9 million units by the end of 1990. In order to tap this rapidly expanding market, new add-in boards must be designed because existing ISA boards are not compatible.

On the other hand, EISA bus shipments are expected to be minimal during 1989 because EISA chip sets are not expected to be available until late second quarter of 1989. Specific EISA add-in boards also will be delayed waiting for chips. However, backward ISA compatibility allows board manufacturers to service this market with existing products. Also, many board vendors may further delay EISA product development investments until the size of the EISA-installed base becomes attractive.

But, the use of existing 8- and 16-bit ISA boards will likely impair the performance of 32-bit EISA machines. That, combined with the lack of a sufficient variety of full 32-bit EISA add-in boards, will tend to favor the MCA standard. Ultimately, backward compatibility, touted as one of the main advantages of the EISA architecture, may prove the undoing of this nascent standard.

CONCLUSION

In the near term, Dataquest expects sales of MCA-based PCs to increase as a result of the creditability given to a new bus structure by the PC-clone manufacturers. In Dataquest's opinion, IBM's influence, EISA's late entry, and fragmentation within the EISA ranks will hinder the acceptance of EISA systems. Compaq's strong influence and determination ensure that MCA and EISA systems will coexist in the market, at least in the intermediate term, with MCA products gaining market share as other vendors offer MCA systems. EISA will survive as a bridge, to extend the use of the current installed base of XT and AT machines. In the long term, however, Dataquest believes that EISA will not meet the challenge of future performance and expandability requirements and that this market will become a shrinking niche market, serviced by only a few surviving vendors.

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