Conclusion

As this case study has shown, the architecture of the 4115B was an evolutionary step rather than a revolutionary product design. The main reason for this was the constraints placed on the architecture by the product-family environment in which it was developed. Nevertheless, dramatic performance improvements were made, and the requirements of interactivity were met by the addition of a microcoded picture processor and the appropriate partitioning of work among firmware, microcode, and hardware. Brute force was not necessary for high performance.

References


Douglas J. Doornink is a senior electronic engineer in the Graphic Systems Products Division within the Information Display Group of Tektronix, Inc. He was the hardware project leader for the Tektronix 4115B graphics terminal. Prior to that he was on the design teams of the Tektronix 4112, 4027, 4025, 4024, and 4081 computer graphics products. He is currently involved in defining architectures for high-performance graphics terminals.

Doornink received a BSEE degree from the University of Washington and an MSEE degree from Stanford University. He is a member of the NCGA.

John C. Dalrymple is a senior electronic engineer in the Graphic Systems Products Division, a part of the Information Display Group of Tektronix, Inc. He led the team that developed the microprogrammed picture processor used in the Tektronix 4115B graphics terminal. Currently, he is working on the definition of architectures for high-performance graphics terminals.

Dalrymple received the MS degree in electrical and computer engineering from Oregon State University in 1981. He is a member of the IEEE, the IEEE Computer Society, ACM, and Siggraph.

Both authors' address is Tektronix, Inc., MS 63-205, PO Box 1000, Wilsonville, OR 97070.