Recently, we have observed an increasing variety of approaches to computer and system architectures that document the progress made in research in these fields. Apart from radical alternatives (for example, dataflow systems) we find a rich spectrum of evolutionary changes with respect to the classical von Neumann concept of monoprocessor computers.

In this issue we present some approaches for advanced architectures recently developed in West Europe. The size of this issue is too small to present an exhaustive—and detailed—description of the vast array of architectural work in the industrial and academic world. This would be true even if we considered only the European scene. Therefore we shall limit this collection to exemplifying the current state in the European industry through several selected examples. These approaches were developed in industrial research laboratories so that the results of the works were strongly influenced by the requirements of practical application. We plan to complete the overview in a later issue in which we will present some results of academic activities.

The selected articles deal with different subtopics. ICL’s D.J. McLauchlan presents the European strategy for the development of the microelectronics and computer industry. The second article by M. Homwood, D. May, D. Shepherd, and R. Shepherd from Inmos describes the IMS T800 transputer and its use in close connection with programming in the Occam language.

Then, H. Kirmann from Brown Boveri Cie. introduces the problems of fault tolerance in real-time data processing systems and surveys several solutions developed in the European industry. In the following article, W. J. H. J. Bronnenberg, A. J. Nijman, E. A. M. Odijk, and R. A. H. van Twist discuss the system and machine architecture of a decentralized object-oriented machine (DOOM), which was developed at Philips Research Laboratories. Finally, G. Micheletti and C. Salati from Telettra present a distributed system architecture developed for applications in telecommunications.

Several other authors also submitted excellent contributions that could not be included in this limited issue; look for them in later issues of IEEE Micro. We thank all authors and the referees for their cooperative work.
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