11:00 Conception et vérification de logiciels
pour le temps réel et la communication
*Design and verification of real-time
and communicating software*

Michel Diaz, LAAS-CNRS, Toulouse

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The current global approaches that are used to design present complex systems are based on two different and complementary principles, and the resulting design methodologies respectively lead to the definition of Embedded Systems and Internet Systems.

On one hand, embedded systems, having different strong constraints and real-time requirements, are developed starting from formal techniques, in order to allow the designers to specify the system, build a understandable model, and use it to check and validate as early as possible the design process and the system behavior. On the other hand, Internet systems, highly distributed, fully open, featuring a hierarchy of networks and protocols, with mobile and dynamic characteristics, lead to very sophisticated designs, with a set of different layers, that result in best-effort architectures.

This talk will first discuss these two families of systems, describe the main current design problems, and present some related methodological solutions. It will then discuss what would be the main interests and properties of a next generation of systems that should be able to integrate these two areas. Finally, it will propose some research topics that should be developed in order to design this important and future generation of advanced systems.

Michel Diaz is Director of Research with CNRS, working on the development of formal methodologies, techniques and tools for designing multimedia distributed systems. He was the manager of the EC ESPRIT SEDOS project on the development of formal description techniques. He headed the CNET-CNRS project CESAME on the formal design of high speed multimedia cooperative systems and the French TOPASE project on Distributed Multimedia Professional teaching. He was co-ordinator in the EC programme IST of the European project GCAP on new architecture for active multicast multimedia end-to-end protocols for the internet. In 1989 and 1990, he spent a year as a visiting professor and senior researcher at the University of Delaware at Newark and at the University of California at Berkeley. He was a member of the Advisory Board on the future of the Internet at the EC and of the future of the French national research computer network Renater. He was member of the Board of Directors at LAAS, leading the Research Area "Critical Information Systems", Director of the French Research on "Architecture, Networks, Systems and Parallelism", and he is now in charge for the CNRS of co-ordinating the French research groups of Experts on Communication Networks. He served as Chairman or member of many Program Committees. He is expert for many European and French Research Programmes. He has written more than 200 technical publications, one book, and is the editor or co-editor of 12 North Holland, Springer World Scientific, ARAGO and Hermes books. He is a recipient of the IFIP Silver Core, Senior Member of the IEEE, member of the New York Academy of Sciences and is listed in the Who's Who in Science and Engineering.