

The State of the Art in Technology Computer-Aided Design

Siegfried Selberherr

Institute for Microelectronics, TU Vienna, AUSTRIA

<http://www.iue.tuwien.ac.at/>

The world wide status of Technology Computer-Aided Design (TCAD) activities will be reviewed. Particular applications developed at the Institute for Microelectronics will be presented. The recent advances in process modeling with particular emphasis on three-dimensional applications will be discussed. Examples include a 0.8 micron BiCMOS Technology and a three-dimensional trench isolation technology. Device modeling progress will be demonstrated with examples of Ultra-Low-Power MOS applications. Single-Electronics, as a potential long term alternative to MOS-Electronics, will be introduced. The capabilities in simulation of interconnect problems will be outlined with particular emphasis on meshing. The special problems associated with mesh generation for three-dimensional problems will be explained. The necessity of easy to use, so called intuitiv, human/machine interfaces for TCAD will be outlined. The advances in the uniform simulation environment VISTA with external simulation tools, like SUPREM, will be presented. The international progress expected in TCAD will be estimated and developments (not so) far away in time will be speculated about.