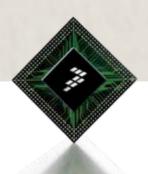
NSF/SRC Design Automation Forum Increased Diversity

October 2006

Bill Read

Design Technology





Increased Diversity in Design

Chip Creation

Module Creation

Component Creation



Architecture Specification

Auto-Assembly & Compilation
Hardware Software Memory
Package Verification Resilency

Module Characterization

Modeling
Analysis
Verification
Compiler
Compiler
Optimizer

Component Characterization

Analog
RF
Photonics
MicroMechanica
BioElectrical
MicroFluidic
Nanotubes

Common Parameters for Diverse Technologies

Function
Timing
Power
Interference
Area/Volume
Yield
Reliability
Verification
Self-Test
Variability



Increased Diversity Challenges

- Modeling of New Technologies
 - Definition of parameters specific to a new technology
 - Model physical interactions among diverse technologies
 - Abstraction of key parameters to Chip/System Design
- Component Characterization
 - Identify common parameters required to integrate new technologies into the module design process
 - Characterize components to all required parameters
 - Modify design process to handle new parameters
- Design of Diverse Technologies
 - Design & verify technologies described differential equations



