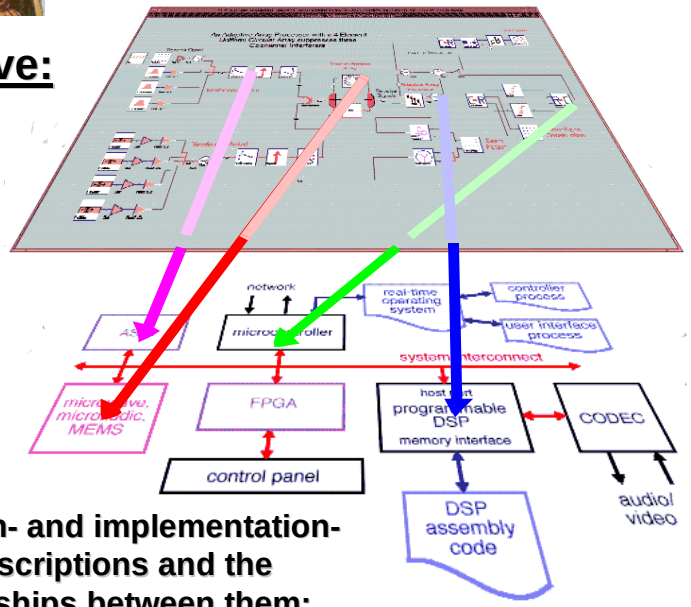
Heterogeneous Modeling and Design - UC Berkeley & AFRL -

DARPA ETO

Objective:



Problem- and implementation-level descriptions and the relationships between them: modeling, synthesis, and design.

Approach:

- Theory and techniques for mixing diverse semantics, e.g. mixed signal, hybrid systems, discrete and continuous events.
- Software architecture for modular, distributed, and heterogeneous design, modeling and visualization tools.
- Theory and software for domain-specific modeling of composite concurrent systems.
- Use of programming language concepts (semantics, type theories, and concurrency theories) for modeling and design of composite systems.

Schedule: December 1996 to December 1999

- Phase 1 (18 months): Infrastructure
  - modular, deployable design tools
  - domain specific modeling techniques
  - heterogeneous interaction semantics
- Phase 2 (18 months): Modeling and Design
  - process-level type system
  - system-level validation techniques
  - system-level design visualization

Accomplishments:

- Demonstration of a client-server, web-based mechanism supporting Ptolemy simulations.
- Construction of a network-integrated, scripted design management environment (Tycho).
- Design of an "information model" and an associated "model-view" software architecture (Tycho).
- Semantics for hierarchical interaction of finite-state controllers with several models of computation.
- Demonstration of a Java-threads-based process networks modeling environment.
- Release on the net of our first Java module, a multipurpose signal plotter.
- Java/Tycho integration.
- A well-attended Ptolemy miniconference.

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