CHESS
CENTER FOR HYBRID & EMBEDDED SOFTWARE SYSTEMS

COLLEGE OF ENGINEERING, UC BERKELEY

# The *hyper* Hybrid Systems Toolbox Framework

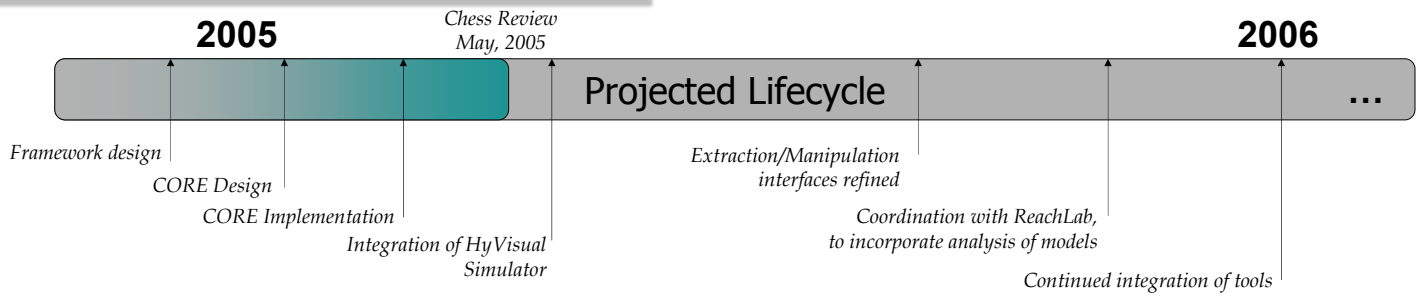
http://chess.eecs.berkeley.edu/hyper

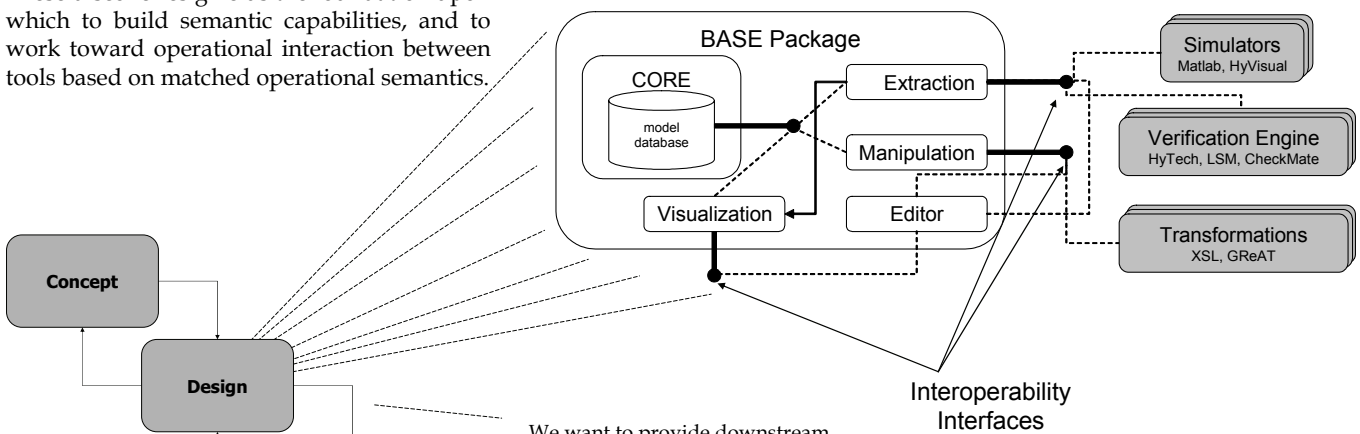
**Jonathan Sprinkle**
**Shankar Sastry**

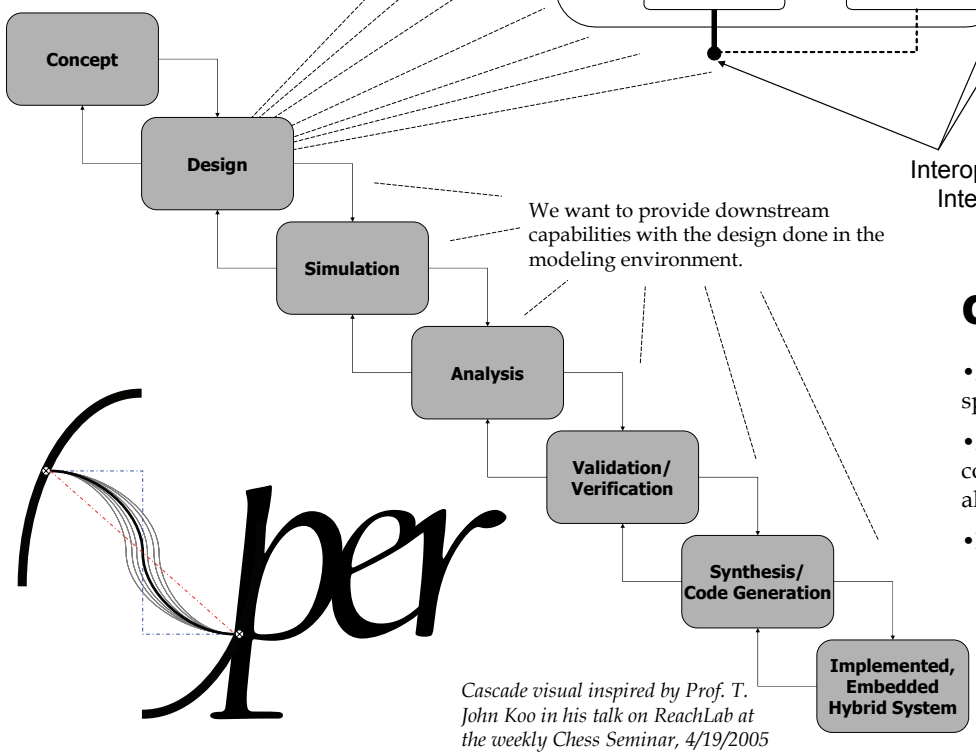
## Overview

Interchange formats are notoriously difficult to finish. *hyper* addresses this problem for hybrid systems, not from the perspective of a tool interchange format, but rather that of tool availability in a toolbox.

These discoveries give us the foundation upon which to build semantic capabilities, and to work toward operational interaction between tools based on matched operational semantics.




## Goals

- A domain-specific, unambiguous way to specify hybrid systems models
- Ability to perform analysis, simulation, controller synthesis, and other algorithms/executions, using proven tools
- Following characteristics
  - High performance simulation
  - High robustness factor
  - High level modeling (with refinement)
  - High number of interacting tools

## Publications:

- J. Sprinkle, A. D. Ames, S. S. Sastry, "On the Partitioning of Syntax and Semantics For Hybrid Systems Tools", *44th IEEE Conference on Decision and Control and European Control Conference ECC 2005 (CDC-ECC'05)*, (submitted), Seville, Spain, Dec. 2005.
- J. Sprinkle, "Generative Components for Hybrid Systems Tools", *J. of Obj. Tech.*, vol. 4, no. 3, pp. 35--40, Apr. 2005.

## Contact Information:

*Project Leadership:*

Dr. Jonathan Sprinkle, UC Berkeley
Prof. S. Shankar Sastry, UC Berkeley

*Affiliated Students & Faculty:*

Aaron D. Ames, UC Berkeley
Haiyang Zheng, UC Berkeley
Alessandro Pinto, UC Berkeley
Alessandro Abate, UC Berkeley
Dr. J. Mikael Eklund, UC Berkeley
Prof. Alberto Sangiovanni-Vincentelli, UC Berkeley
Prof. Edward A. Lee, UC Berkeley

*Collaborators:*

Prof. T. John Koo, Vanderbilt University
Prof. Ian A. Mitchell, University of British Columbia