

OpenSees Software Architecture

Frank McKenna

OpenSees Developers Workshop
Berkeley, CA
August 15, 2006

Sponsored by the National Science Foundation
through the Pacific Earthquake Engineering Research Center
and through NEESit



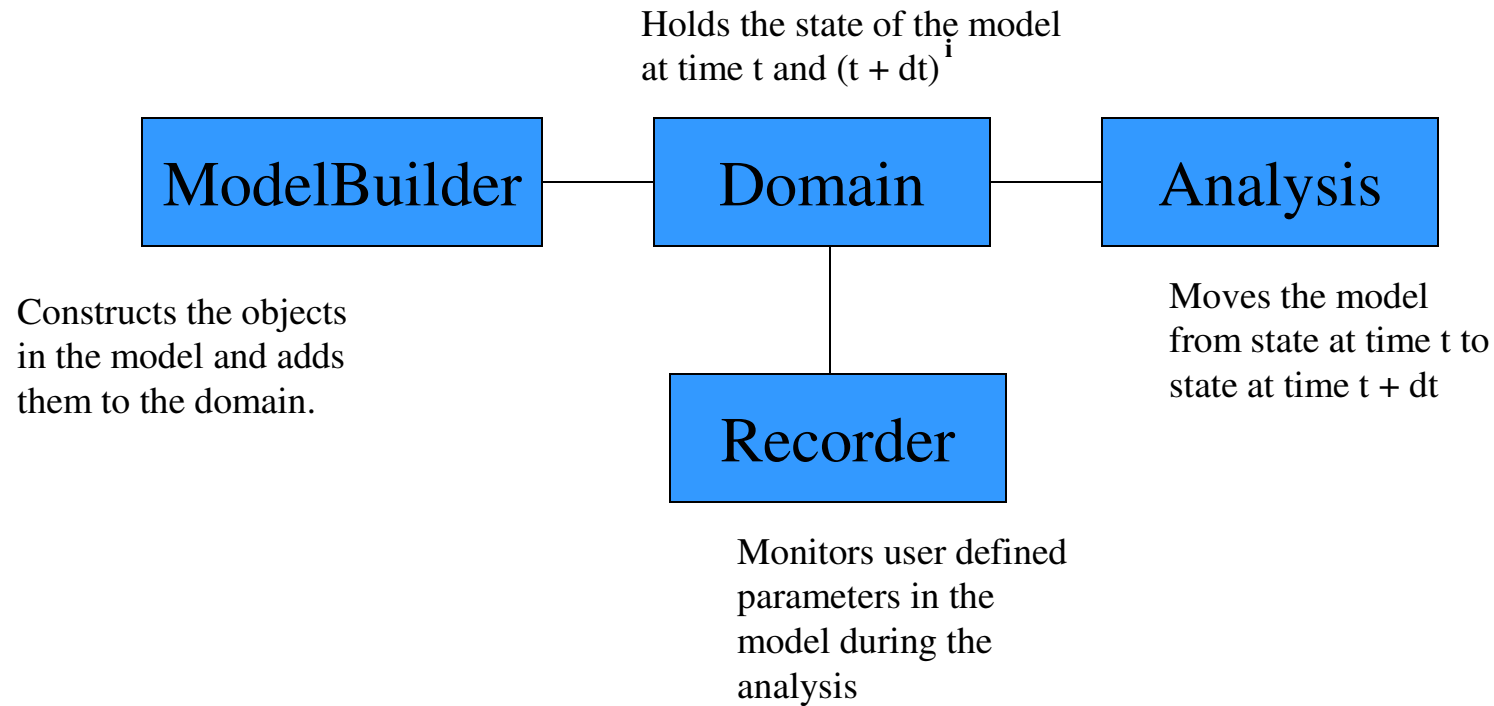
What is OpenSees?

The Open System for Earthquake Engineering Simulation is:

- A software *framework* for developing sequential, parallel and grid-enabled simulation applications in earthquake engineering using finite element methods.
- A communication mechanism within PEER and NEES, and beyond, for exchanging and building upon research accomplishments.
- As open-source software, it has the potential for being a community code for earthquake engineering.

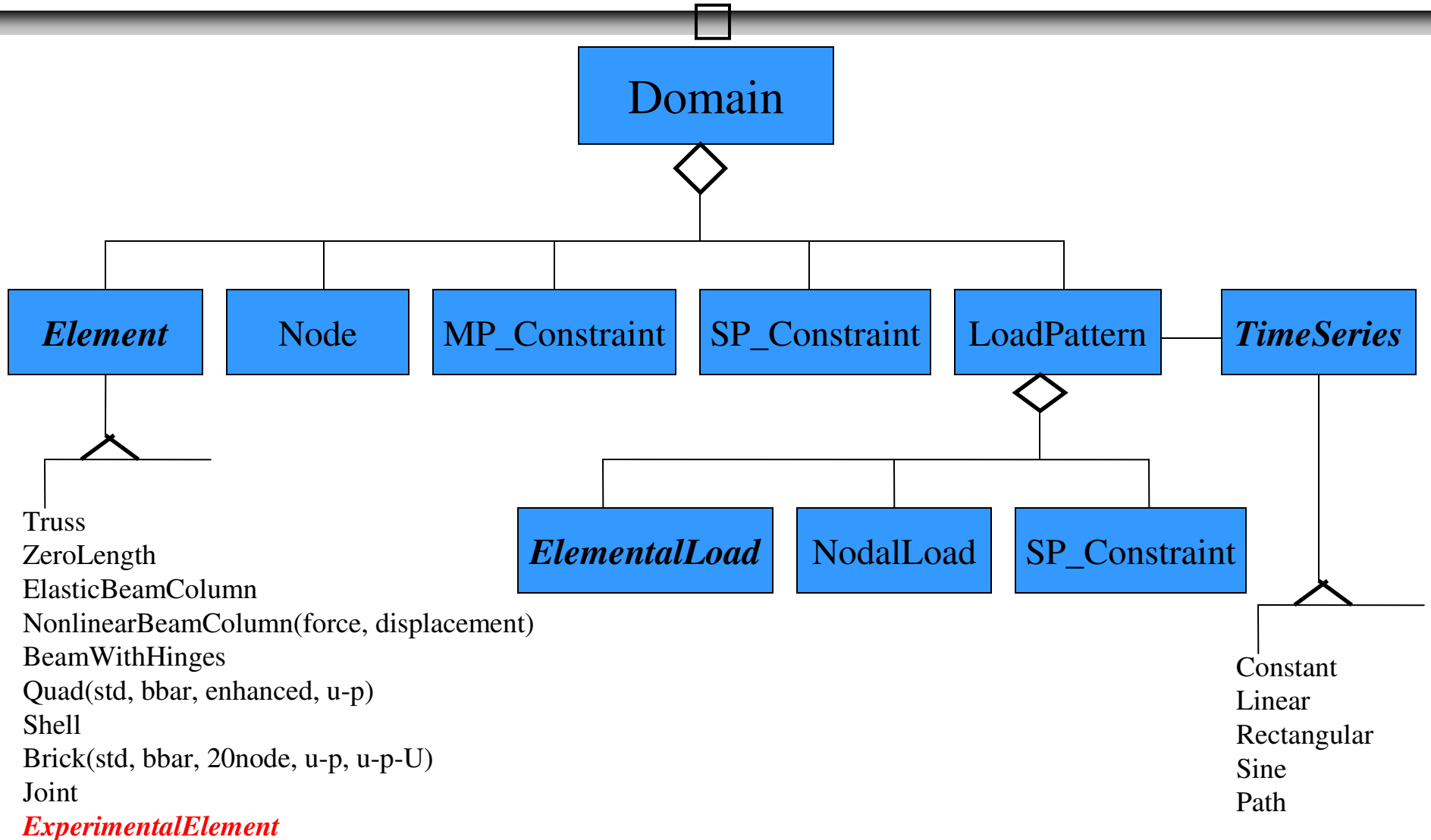
<http://opensees.berkeley.edu/phpBB2/index.cgi>

Main Abstractions in OpenSees

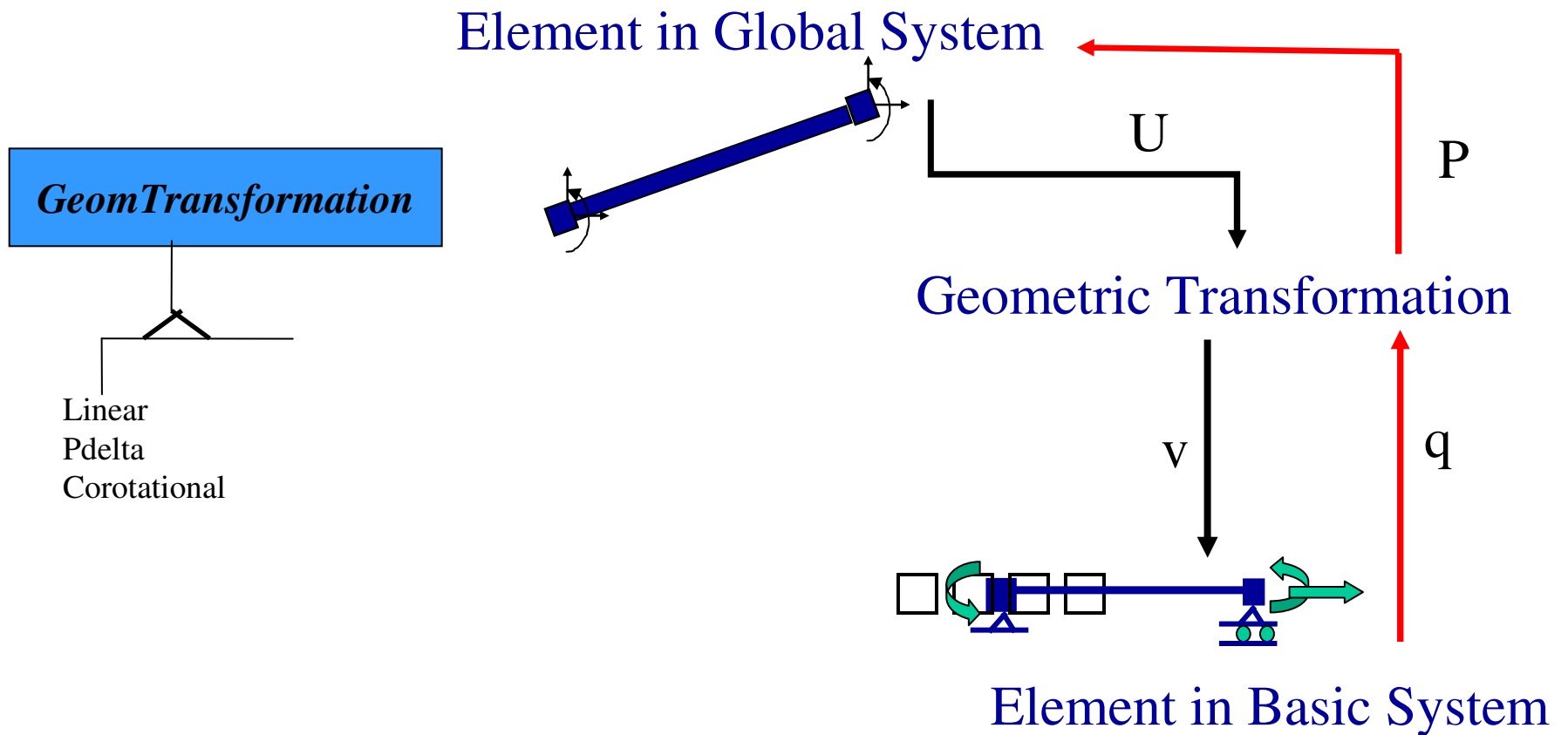


What is in a Domain?

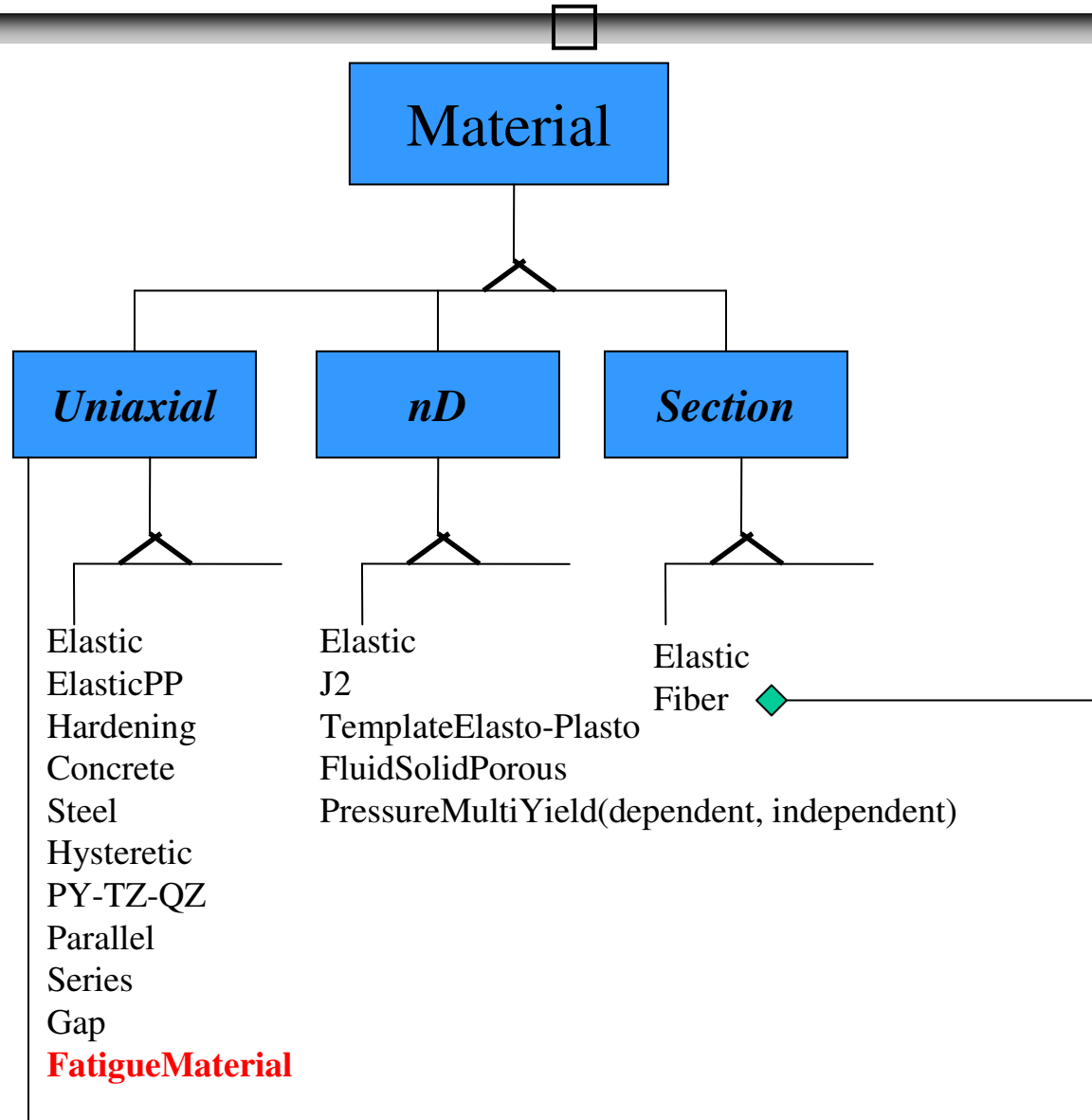
An Aggregation



Some Other Classes associated with Elements:



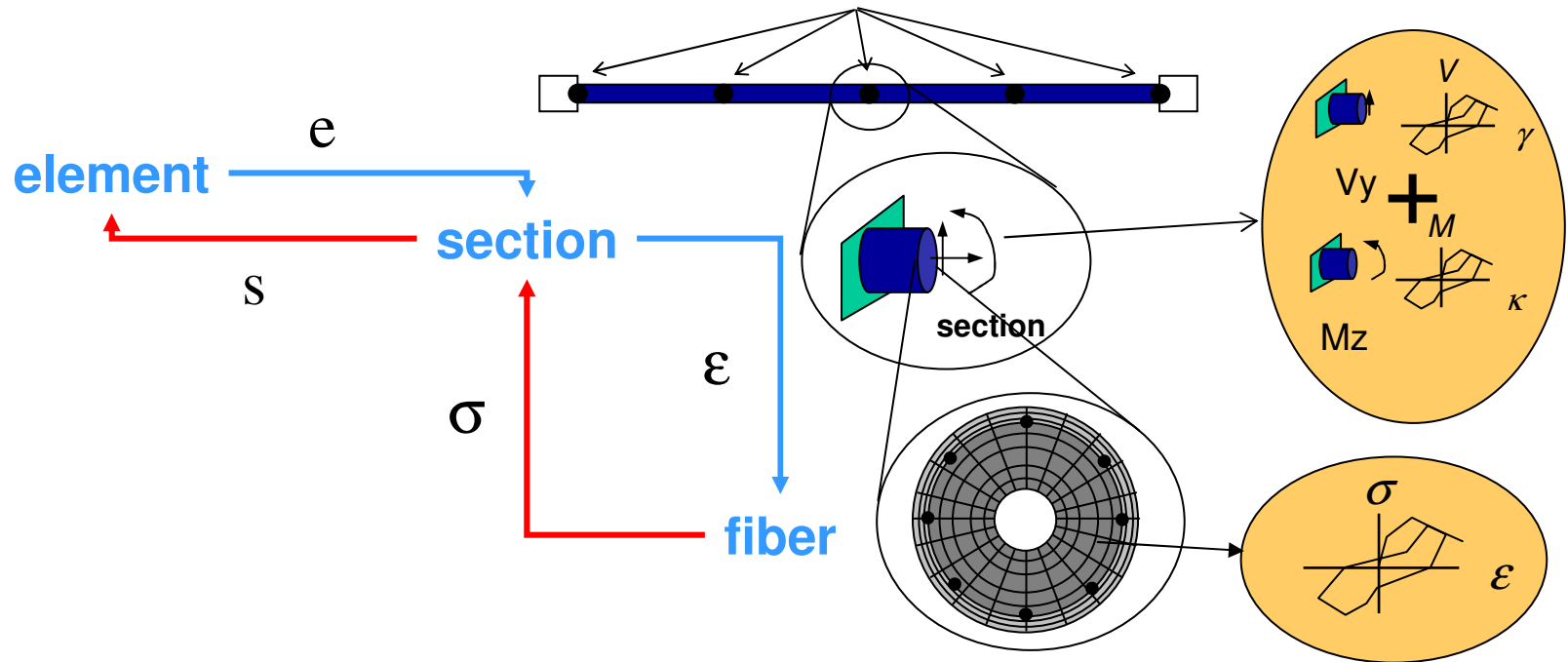
And some more:



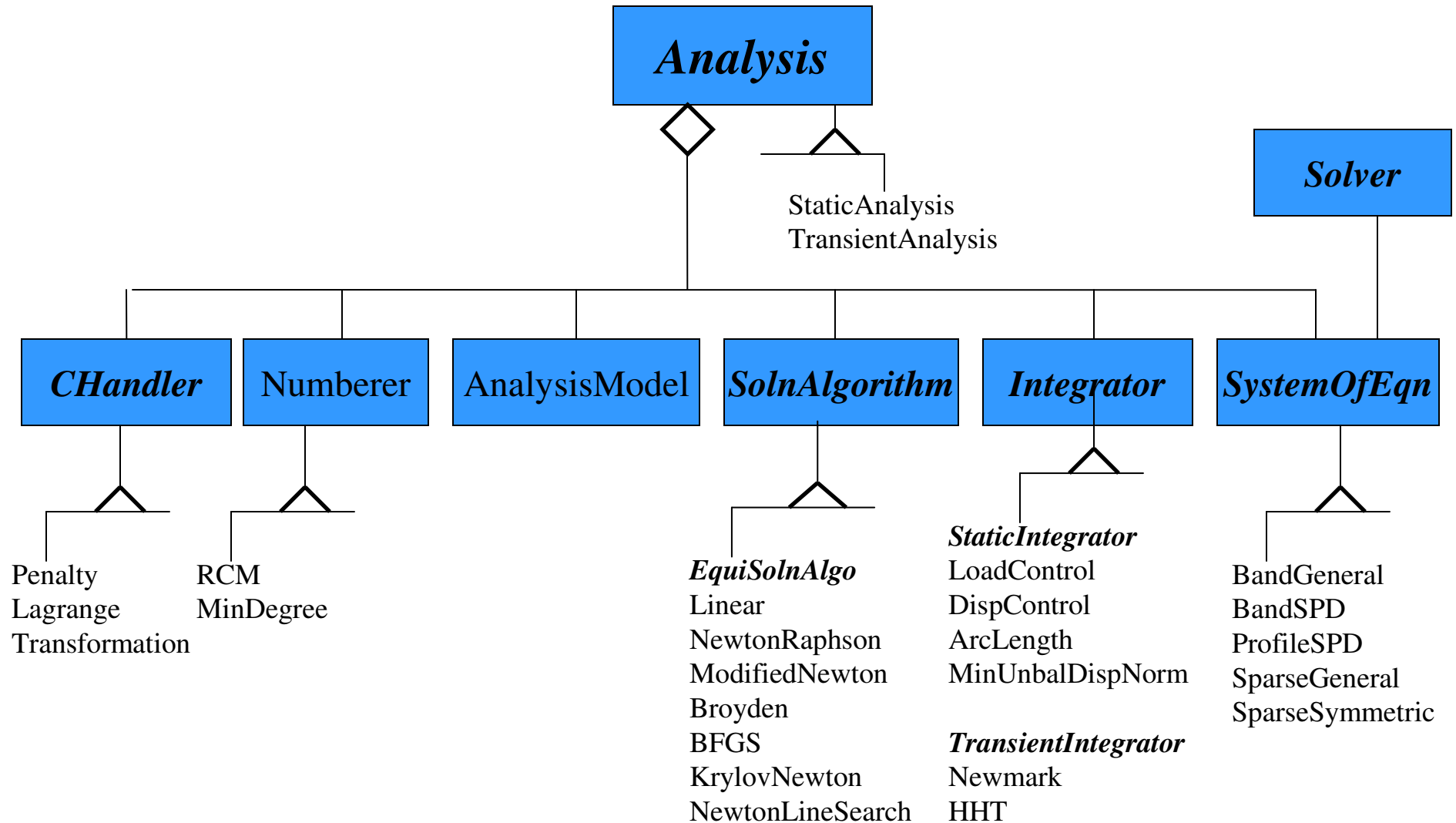
Fiber Based Beam-Column Modeling



Element in Basic System

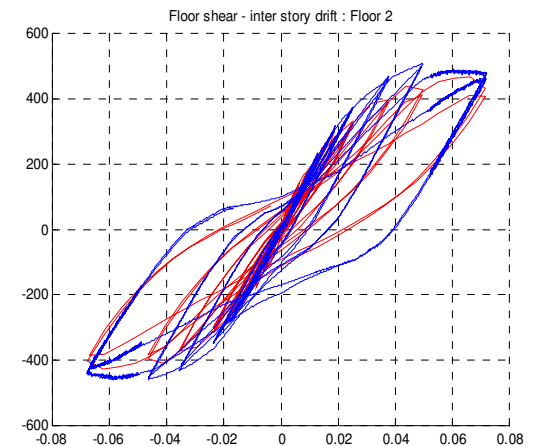
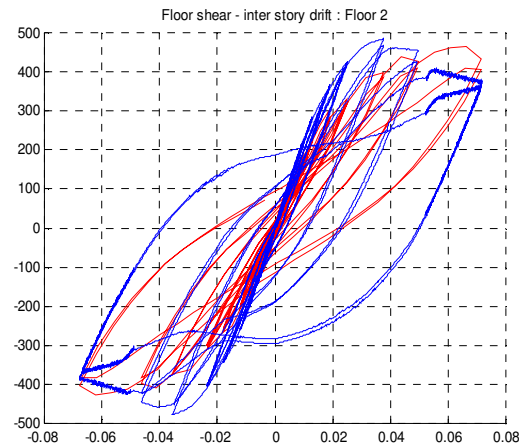
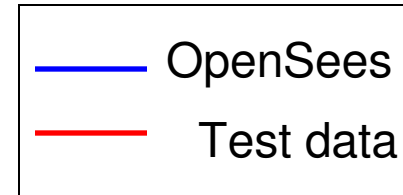


What is an Analysis



Remembering Why We do Finite Element Analysis

NCREE frame tested at the Taiwan facility



Centerline model and model with joint comparison