



PROBABILISTIC FRACTURE MECHANICS CODE

Program History and Perspectives



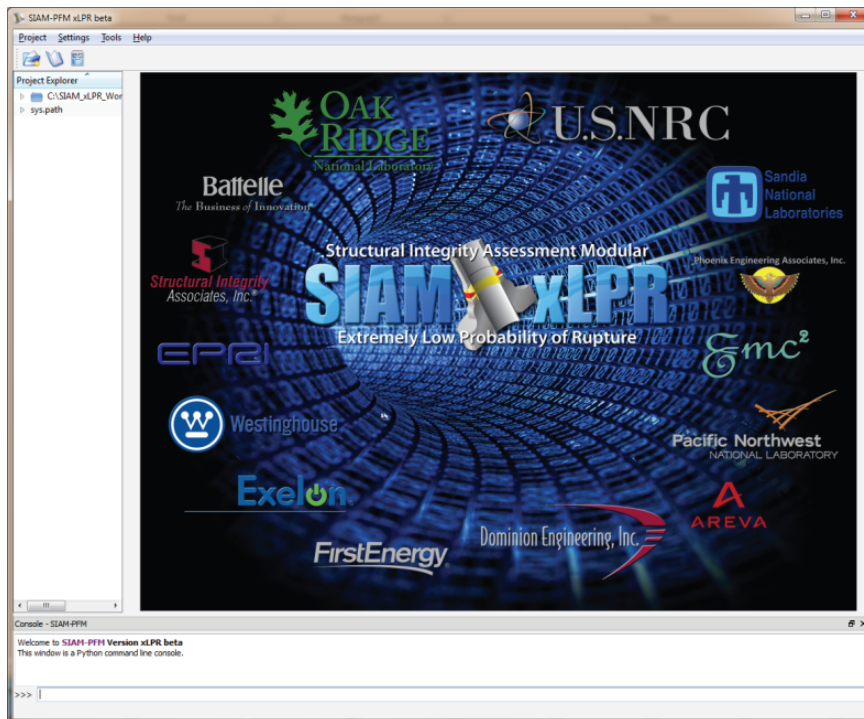
Project Basis & Goals *(circa 2008)*

- Single use codes are inefficient
 - Should be:
 - Modular
 - Adaptable
- Medium-Term Objective
 - Probabilistic fracture mechanics tool for leak-before-break considering:
 - Active degradation mechanisms
 - Mitigating activities
- Long-Term Objective
 - Develop a generic probabilistic fracture mechanics tool for evaluating degradation of pressure boundary components



PROBABILISTIC FRACTURE MECHANICS CODE

Pilot Study



Fully Open Source



GoldSim Commercial Code

Two framework structures developed in xLPR Pilot Study



PROBABILISTIC FRACTURE MECHANICS CODE

Code Development Team Members *(circa 2011)*

Code Development Leads

David Rudland – USNRC
Craig Harrington – EPRI

Computational Group

Patrick Mattie – Sandia National Laboratories

Jesus Farias– EPRI

Cedric Sallaberry – Sandia National Laboratories

Don Kalinich – Sandia National Laboratories

Jon Helton – Sandia National Laboratories

Robert Kurth – Emc2

Dilip Dedhia – Structural Integrity Associates

David Harris– Structural Integrity Associates

Cliff Lange – Structural Integrity Associates

Hilda Klasky – Oak Ridge National Laboratory

Paul Williams – Oak Ridge National Laboratory

Scott Sanborn – PNNL

Inputs Group

Guy DeBoo – Exelon

Gary Stevens – U.S. NRC

Craig Harrington – EPRI

Ashok Nana – AREVA NP Inc.

Nathan Palm – Westinghouse

Program Integration Board

Denny Weakland - Ironwood Consulting

Bruce Bishop – Westinghouse

Rob Tregoning – U.S. NRC

Bob Hardies – U.S. NRC

Ted Sullivan – PNNL

Models Group

Marjorie Erickson – PEAI

Raj Iyengar– U.S. NRC

David Rudland – U.S. NRC

Howard Rathbun – U.S. NRC

Gary Stevens – U.S. NRC

Carol Nove – U.S. NRC

Mark Kirk – U.S. NRC

John Broussard – Dominion Engineering

Glenn White – Dominion Engineering

Chuck Marks – Dominion Engineering

Do-Jun Shim – Emc2

Elizabeth Kurth – Emc2

Bud Brust – Emc2

Sean Yin – Oak Ridge National Laboratory

Richard Bass – Oak Ridge National Laboratory

Cliff Lange – Structural Integrity Associates

Dave Harris – Structural Integrity Associates

Steven Xu – Kinetrics

Doug Scarth – Kinetrics

Russ Cipolla – Aptech

Mike Hill – UC Davis

Steve Fyfitch – AREVA NP Inc.

Ashok Nana – AREVA NP Inc.

Rick Olson – Battelle

Andrew Cox – Battelle

Lee Fredette – Battelle

Bruce Young – Battelle

Craig Harrington – EPRI

Patrick Heasler – PNNL

Bruce Bishop – Westinghouse

Mark Dennis - EPRI

George Connolly - EPRI



PEAI



Exelon®



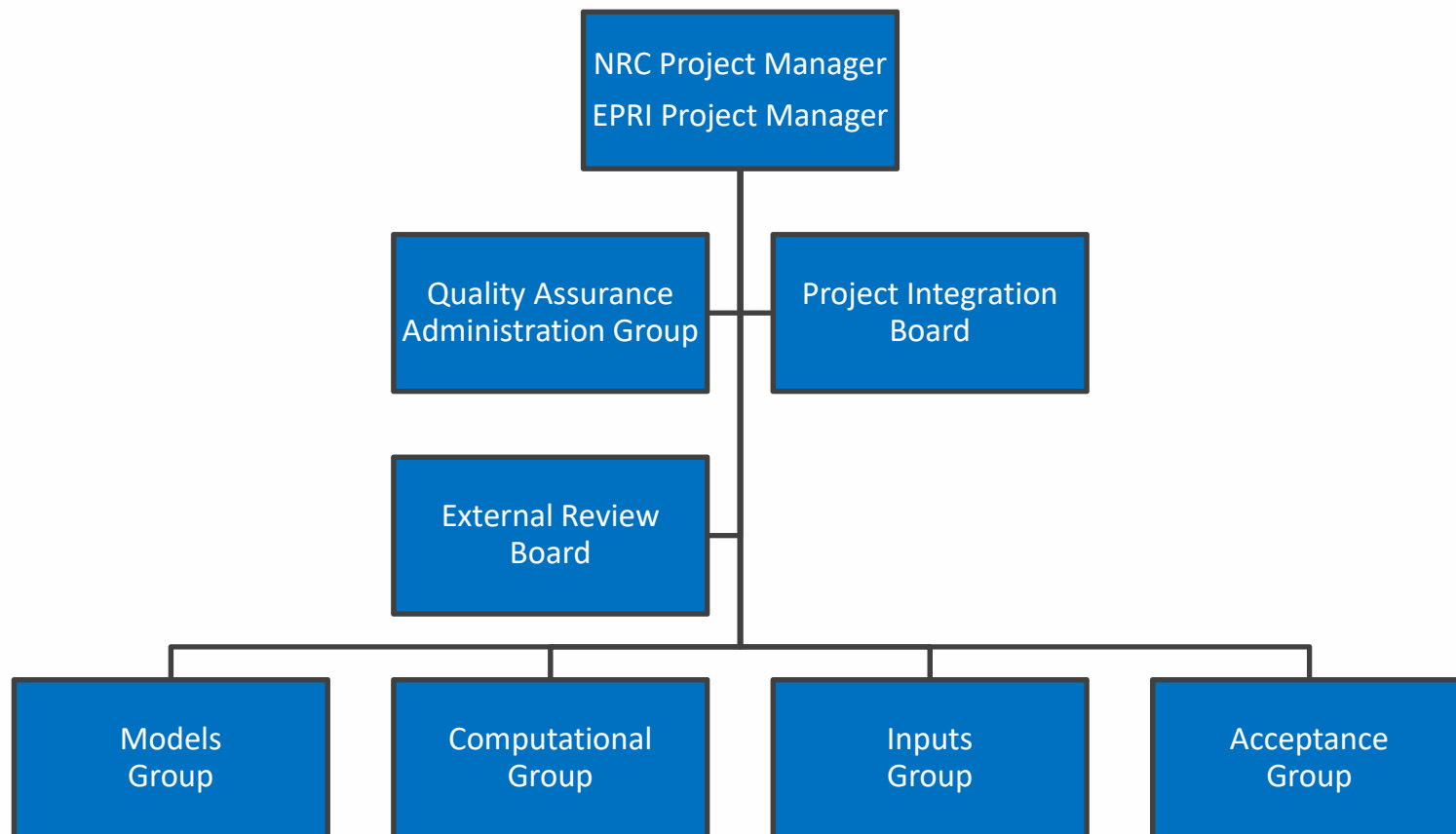
E_{mc}²





PROBABILISTIC FRACTURE MECHANICS CODE

xLPR V2.0 Developmental Organization

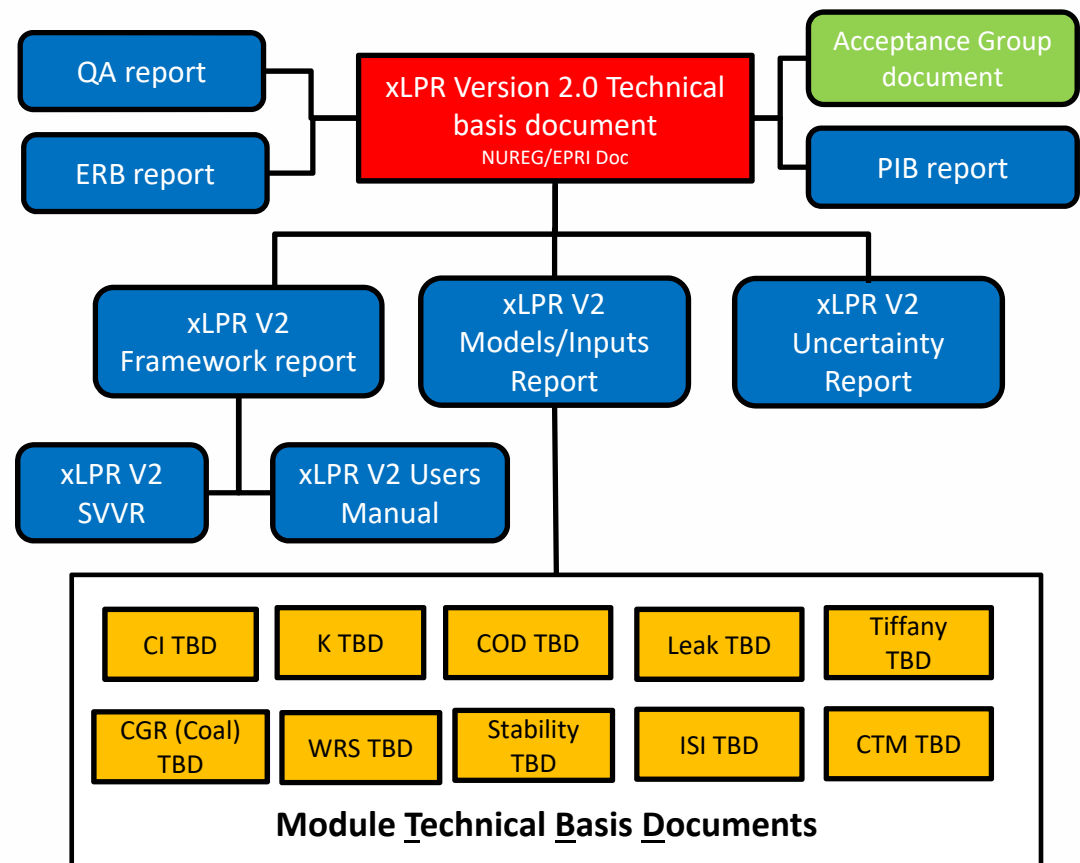




PROBABILISTIC FRACTURE MECHANICS CODE

xLPR V2.0 Developmental Documentation

- Support both current and future use of the code
 - Technical basis for modules, inputs, and framework
 - Code logic and structure
 - Quality assurance
 - Guidance for users
 - External review findings and recommendations
 - Regulatory applications
- ~120 formal xLPR documents
 - ~80 are quality assurance documents





EPRI and NRC Staff Perspectives



PROBABILISTIC FRACTURE MECHANICS CODE

Meeting Agenda

Introduction and Opening Remarks

Program History and Perspectives

xLPR Version 2 Code Overview and Features

Code Demonstration

Code Applications

Process for Requesting a Copy of the Code

Future Training Series

Questions and Answers

Closing Remarks