

# Workshop

# Friction Damping in Joints

Dartington, Totnes, UK  
27-29 April 2009

Adnan Akay  
Bilkent University, Ankara, Turkey  
Carnegie Mellon University, Pittsburgh, PA, USA

# Modeling Joints

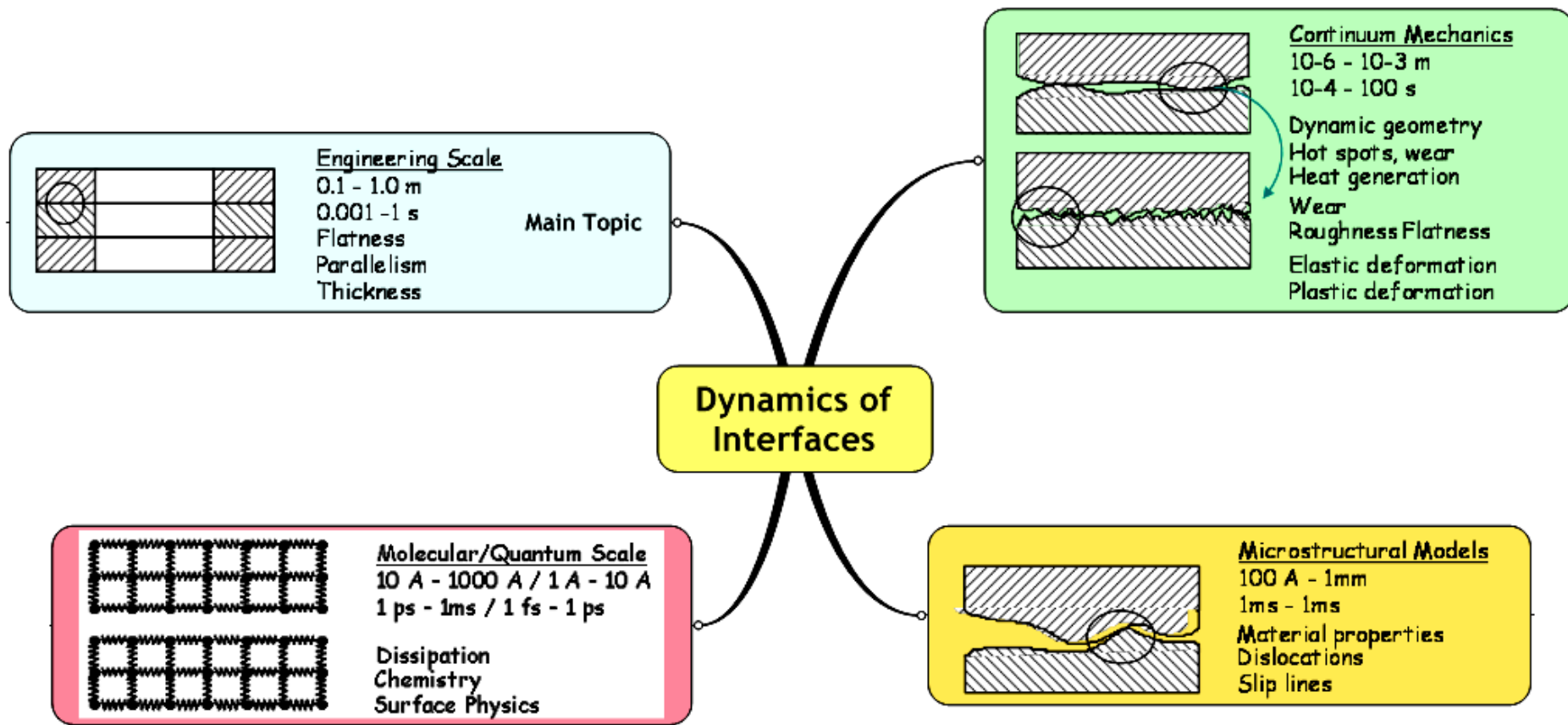
- The Challenges
  - Degree of accuracy of the models
  - Degree of repeatability of the measurements
- The Challenge for the workshop
  - Quantify the desired accuracies

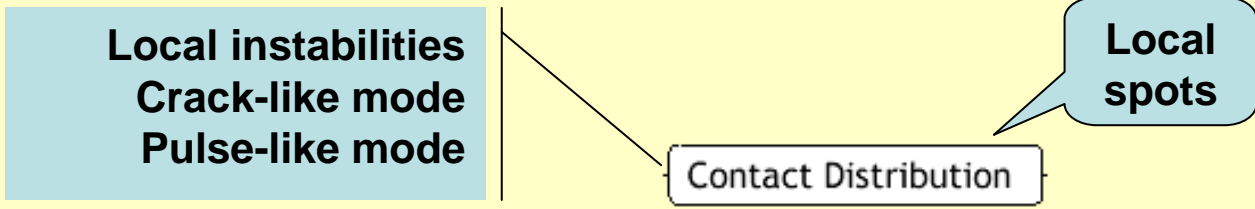
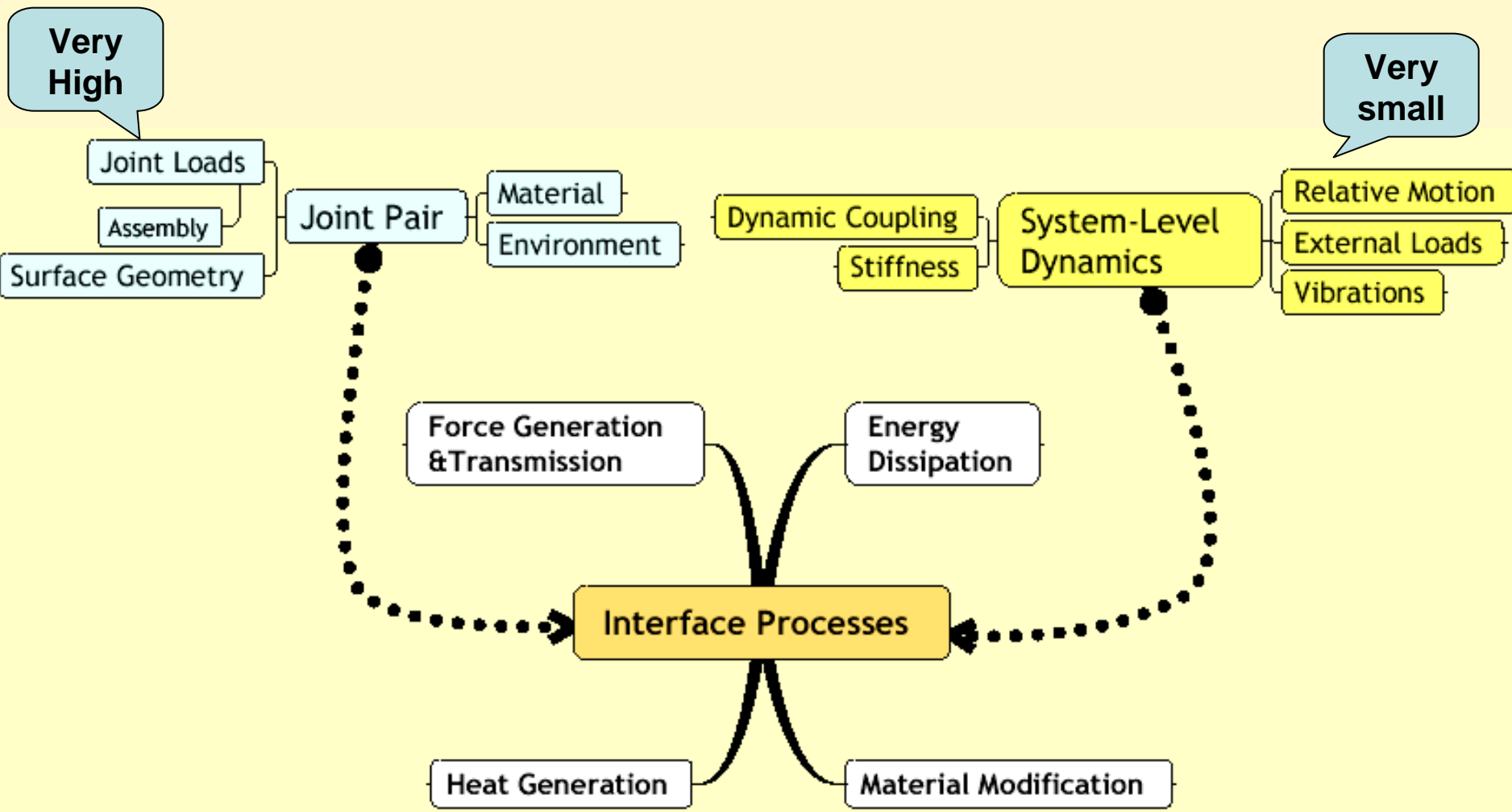
# Previous Studies

## Sponsors Have Different Needs & Approaches

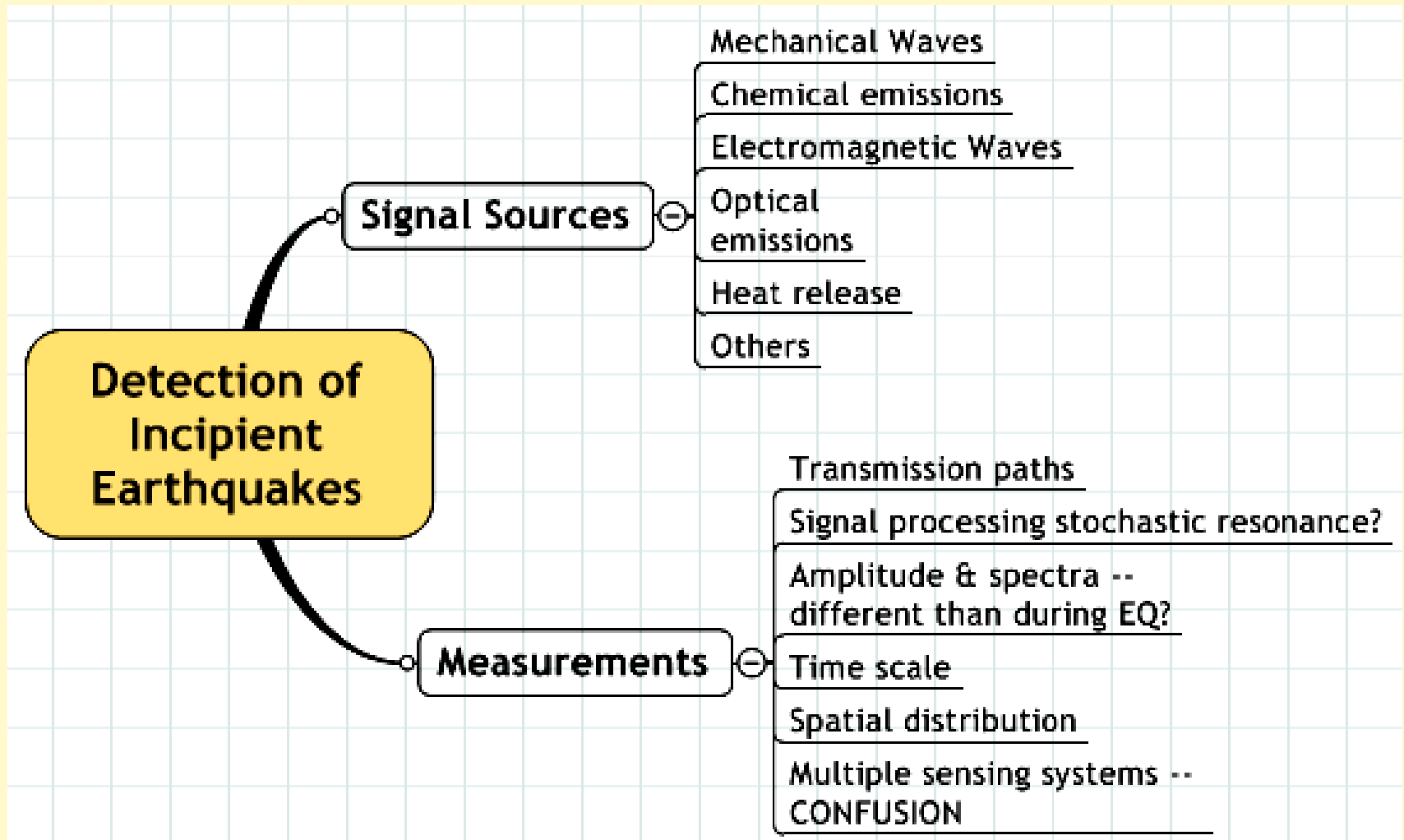
- NSF
  - Research Needs in Tribology (c. 1980)
  - Research Needs in Acoustics & Noise Control (c.1980)
  - Friction and System Dynamics (1994)
  - Friction and System Dynamics (1997)
  - Friction & Turbulence – Analogies and Contrasts (2008, 2009)
- NSF-Sandia
  - Modeling of Joints (2006)\*
- ONR
  - Structural Acoustics (~1980s)
- AFOSR
  - Joint Damping (~ 1990s)\*
- NATO ASI
  - 1991

# DYNAMIC EFFECTS DEVELOP AT ALL LENGTH AND TIME SCALES





# An Extreme Joint - Tectonic Plates



# G. H. HEILMEIER'S "CATECHISM" FOR EVALUATING A RESEARCH PROJECT

- What are you trying to do? (Articulate your objectives using absolutely no jargon.)
- How is it done today and what are the limits of current practice?
- What is new in your approach and why do you think it will be successful?
- Who cares? If it is successful, what difference will it make?
- What are the risk and the payoffs?
- How much will it cost? How long will it take?
- What are the midterm and "final" exams to check for success?