

REPRODUCIBILITY & “ART” OF KNEE MODELING

The model

Virtual biomechanical knees
Physics-based (Newton’s laws)
continuum mechanics
rigid body dynamics

What is new inside?

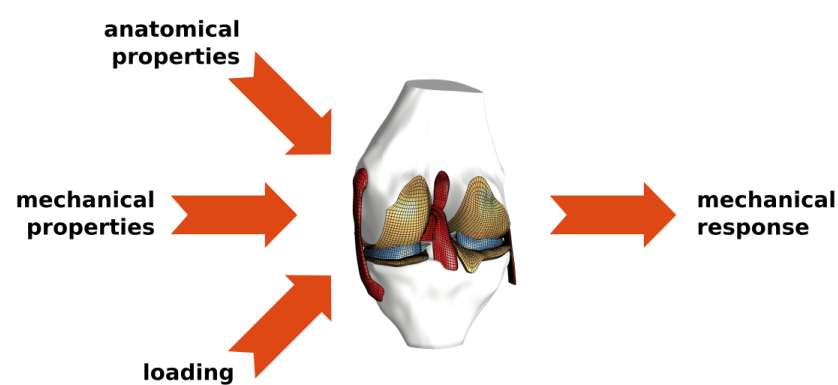
Computational techniques are not new.
Modeler’s interpretation, i.e., their “art”, vary.
What’s new is the overall strategy
to document modeler’s choices, and
to understand their impact on reproducibility.

How will this change current practice?

Emergence of good practices
Demonstration of competing implementations
Documentation and exchange of simulation workflows
Increased credibility in modeling & simulation (M&S)

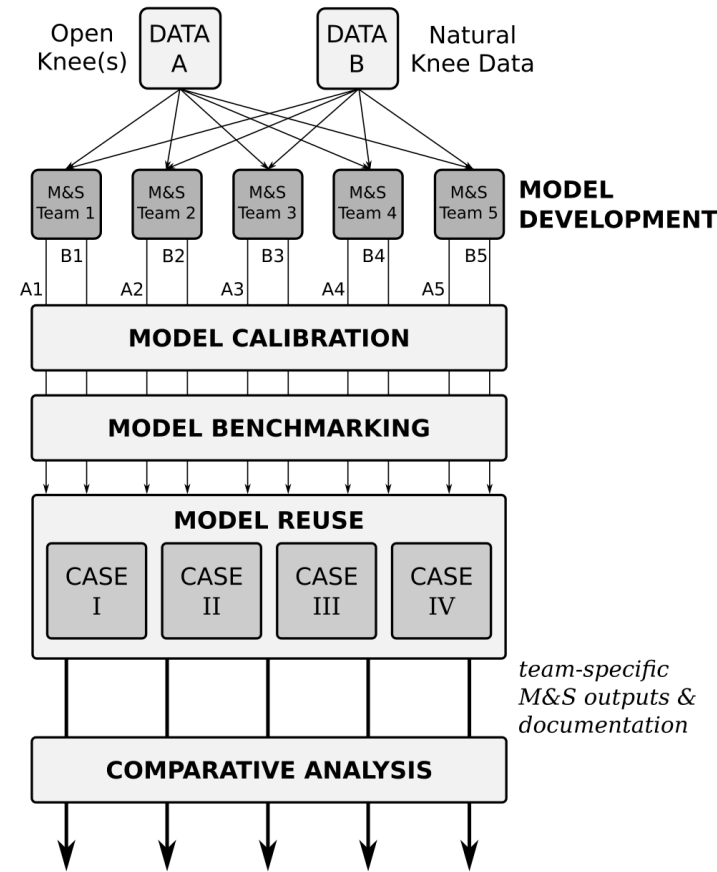
End users

Knee biomechanists who rely on computational models
Broader biomedical M&S community to adopt demonstrated practices
Decision-makers in M&S regulation and policy making



Same data
Same reuse cases

Different
models?
predictions?
conclusions?



Are M&S predictions influenced
by variations in M&S decisions?



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NIBIB - R01EB024573
<https://simtk.org/projects/kneehub>