Motivation & Goals

Development of complex models is becoming ubiquitous
- novice and skilled developers
- highly interdisciplinary

Encapsulation in simulation software causes
- opaque model development procedures
- diminished reproducibility

Can we **rely on FEA** based models
- for decision making, and
- in multiscale analysis?

Reporting recommendations may
- be used immediately
- establish transparency
- be a move towards standards for exchange

Definitions & Scope

Model refers to **computational model**, representation of the biological structure for finite element analysis:

discretized geometric representation
constitutive relationships of substructures
interactions between substructures
loading and boundary conditions

Multiscale refers to **interactions between higher spatial scales** of the physiome:

joint/organ biomechanics – tissue mechanics
tissue mechanics – cell biomechanics

Outline

http://www.imagwiki.org/mediawiki/index.php?title=Reporting_in_FEA

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Proposed guidelines
Classified and described in a list of items

Case Study
To illustrate utility of recommendations (understand boundaries of a given model)

Issues in multiscale analysis
Examples provided for potential problems and reporting approaches

Checklist
Comprehensive yet easy to follow fill-in form

Discussion Topics

- Scope and applicability (moving from specific to general)
- Decoupling of reporting of the model and that of the simulation platform
- Visibility
  - by publishing
  - by contacting societies, journals, funding agencies
  - for promotion
  - for adoption
- Extension
  - of multiscale issues
  - for other field modeling modalities
  - to other disciplines