

Ethical Finite Element Analysis

The following questions are provided to help one perform ethical finite element analysis. They are necessary, but not sufficient, for proper development and implementation of finite element modeling in design, engineering, and scientific study. One could use the following as a check-list to ensure that common modeling mistakes are avoided.

If you answer “yes” to all of the following, you **are** well on your way to ethical finite element analysis.

1. Are your assumptions justified? If not, are they properly investigated with a parametric analysis?
2. Is your mesh converged?
3. Have you provided the necessary documentation such that your approach can be reasonably reproduced?
4. Is your model properly verified and validated?
5. Are your results clearly presented?
6. Are your conclusions clearly backed by your results?
7. Did you perform all analysis within your level of expertise?

If you answer “yes” to any of the following, you are **not** performing ethical finite element analysis.

1. Did you modify any of your inputs, assumptions, or interpretations to seek confirmation of a prior hypothesis or desired outcome?
2. Do any of your conclusions require data that are not provided in your study or others?
3. Did you withhold any findings that do not support your desired conclusions?
4. Were you influenced by factors that are not relevant to the use of the system or part you are modeling?