

Computational Mechanics in Science and Engineering – Quo Vadis

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ABSTRACT

Advances in Computational Mechanics offer modeling of a variety of fundamental problems that affect many problems in engineering and science. It is an interdisciplinary field, arising from the intersection of different disciplines: mechanics, applied mathematics, engineering science, computer science, parallel computing and visualization. More specific, Computational Mechanics has applications in Civil and Mechanical Engineering, Environmental Engineering, Biomechanics and Physics, An example is manufacturing where Computational Mechanics can lift the fidelity and sophistication of todays processes to a new level. Further applications are related to medicine where Computational Mechanics provides opportunities for a paradigm shift in medical practice in which modern simulation tools and an engineering approach can help to understand processes and to develop new tools in many areas of biomedicine, especially for patient specific treatment.

The presentation will try to cover some of the aspects mentioned above and to depict different scenarios in which Computational Mechanics is applied today in a succesful way.