

ABSTRACT

The Electromagnetic (EM) community has developed a number of high-performance computational codes, which, coupled with the recent explosion in the availability of inexpensive PC-based computing power, should allow a wider range of users to address a broader class of EM problems than ever before. However, this improvement has been slowed because current codes are difficult to use, have distinctly different learning curves, and have disjoint problem domains. Thus, effective use of EM codes is now hampered by two major obstacles; a “User Visualization Limit” (OVL), defined as the limit on a user’s ability to visualize and manipulate the complex three-dimensional geometries associated with non-trivial EM problems, and a code-centric versus problem-centric environment. An interdisciplinary approach, combining EM and CIS disciplines, is proposed to address these issues. A novel user-oriented, problem-centric approach is described and implementation examples are presented. It is anticipated that this work will produce a robust visual workbench that will provide a common framework for EM codes, allowing them to be employ4ed in a cooperative manner to solve problems that cannot be addressed in the traditional manner with individual codes.