WINNER

2005 R&D 100 Awards Winner
CartaBlanca: A High-Efficiency, Object-Oriented, General-Purpose Computer Simulation Environment

CartaBlanca brings the tremendous efficiency of the Java programming language to the world of scientific computing. CartaBlanca is a state-of-the-art, object-oriented simulation software package poised to offer next-generation modeling and simulation capabilities to scientists in a number of disciplines. Written in the "developer friendly" Java language, it enables computer code developers to simulate complex nonlinear effects such as airflow through a turbo booster, blast effects on buildings, or heat transfer along a semiconductor. Because it is a Java-based software package, the code is much easier to use, manipulate, and modify than codes based on programming languages such as FORTRAN or C++. CartaBlanca takes advantage of the improved execution speed offered by the HotSpotTM compiler and opens up the field of physical modeling to a much broader set of programmers. CartaBlanca is modular and allows for rapid software application or simulation code prototyping; strong, extensive compiler checking; plug-and-play module insertion for modeling physical systems; solutions with consistent results; and integrated unit and regression testing.

Applications
- Aerospace engineering
- Animation and special effects
- Computational fluid dynamics
- Fluid/solid interactions
- Automotive design
- Weapon/target interactions
- Pharmaceutical processing
- Homeland defense