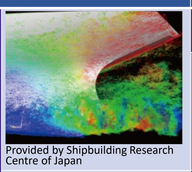
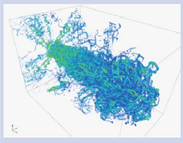
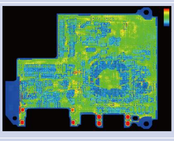
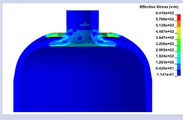
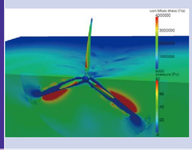
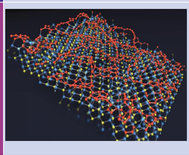
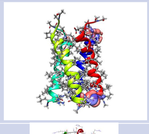
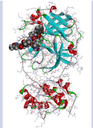
東京大学生産技術研究所
Institute of Industrial Science, The University of Tokyo

Center for Research on Innovative Simulation Software

Research and Developments of HPC Simulation Technology and Industrial Application of the Technology

Simulation Software

Including biotechnology, nanotechnology and environment / disaster prevention on the premise of utilizing state-of-the-art supercomputers.
We are researching and developing software that fundamentally transforms the methodology of manufacturing in a broad sense.

	Software	Features for R&D Work	
Manufacturing	 Provided by Shipbuilding Research Centre of Japan	**FrontFlow/blue** ● FrontFlow/blue ● FrontFlow/blue-ACOUSTICS	Thermo-Fluid Analysis Solvers for Large-Scale Assembly Large-scale simulation using hundreds billion grids High-accuracy prediction of turbulent flow phenomena through semi-direct calculation of turbulence
		**FrontFlow/violet** ● FrontFlow/violet Cartesian (FFV-C) ● FrontFlow/violet Hierarchical Cartesian (FFV-HC)	High-Performance Parallel Thermal Fluid Simulator for Practical Complex-Fluid Analysis Incompressible thermal fluid-flow simulator that covers situation from industrial design to natural strictures in the field of biological research Unique approach for the grid generation process, thereby enabling the formation of over 30 billion grids and reduction in the time cost of the entire simulation process
		**FrontISTR** ● FrontISTR ● HEC-MW	Structural Analysis Solvers for Large-Scale Assembly Large-scale coupled calculations using hierarchical data structures High-speed processing through multi-grid iterative solving MPC function supporting iterative solvers Nonlinear, contact analysis function
		**FrontCOMP** Carbon-Fiber-Reinforced Plastic Tanks ● FrontCOMP_FW ● FrontCOMP_FW_multi ● FrontCOMP_FW_shell ● FrontCOMP_tank ● FrontCOMP_tank_multi ● FrontCOMP_wind_multi Forming Carbon-Fiber-Reinforced Plastic Material ● FrontCOMP_cure ● FrontCOMP_TP	Composite Material Strength, Reliability Evaluation Simulator Mesoscopic modeling of fiber bundle structure Residual strain evaluation after resin cure process Legitimate damage law setting from simple material test for versatile strength evaluation
		**REVOCAP** ● REVOCAP_Coupler ● REVOCAP_PrePost ● REVOCAP_Refiner	Large-Scale Assembly, Structural Correspondence, Multi Dynamics Simulator Refiner-supporting multi-dynamics coupler Pre-post processing with preprocessing of about 100-million DOF passed to the refiner Refiner supporting large-scale parallel calculations
Nano Device		**PHASE** ● PHASE/0 ● PHASE-Viewer ● ASCOT	Quantum Function Analysis, Nano Device Simulator High-accuracy electron correlation analysis Advanced function analysis by Wannier functions supporting advanced pseudo-potentials Electron-dynamics-analysis by the MD method and thermodynamic-integration method with high-accuracy
Life Science		**ProteinDF** ● ProteinDF ● QCLO	All-electron canonical molecular orbitals calculation, Bio, Nano Molecule Simulator High-accuracy property analysis of protein Large-scale electron simulation for a complex
		**ABINIT-MP** ● ABINIT-MP ● BioStation Viewer	Bio Molecule Interaction Simulator Precise interaction analysis based on FMO method Ultra-large-scale calculations by using vector and scalar parallel computers on a scale of several thousand processors

The most recent versions can be downloaded from
http://www.ciss.iis.u-tokyo.ac.jp