A consistent treatment of hadronic and nuclear interactions at high energies is developed. A special attention is paid to the correct description of energy-momentum sharing processes in multiple scattering collisions. Also we stress the necessity to consider contributions of so-called enhanced Pomeron diagrams, which provide important screening corrections to the interaction mechanism. The latter ones appear to dominate the interaction process at very high energies and allow to solve many consistency problems of present hadronic interaction models, in particular, the seeming contradiction between the realistic parton structure functions, measured in deep inelastic scattering experiments, and the energy behavior of hadronic cross sections.