The next generation of neutrino oscillation experiments will require precise neutrino cross section predictions and rigorous theoretical uncertainty estimates. I will describe a program to utilize ab-initio nuclear theory and fundamental inputs from lattice QCD to develop cross section predictions and realistic systematic uncertainties. This approach takes advantage of constraints from modern neutrino scattering data as well as precision electron scattering. Event generator development to provide exclusive simulations for experiments is the last ingredient of the program.