The Kohn Sham (KS) potential of Density Functional Theory emerges as the minimizing effective potential in a Rayleigh Ritz energy minimization that does not involve fixing the unknown single electron density. In particular, we take that the exact ground state $\Psi$ of the interacting $N$ electron system is known and we consider the class of effective non-interacting Hamiltonians, $H_v = T + V$, characterized by the local multiplicative potential $V$. The search for the effective local multiplicative potential $V$, such that the expectation value of $H_v$ in terms of $\Psi$ is closest to the actual ground state energy of $H_v$, yields the KS potential as the optimal potential.

Based on the new Rayleigh Ritz minimization above, and using finite order perturbation theory to write $\Psi$ formally, one may construct ab initio expressions for the energy difference whose minimization yields the KS potential. In this way, we generate variationally stable series expansions for the KS potential.