In protein interactions, such as protein-ligand binding, protein-protein, proton transport and catalytic activity, electrostatic potentials are one of the important factors that contribute to these interactions. There are several tools used to compare molecules by their electrostatic potentials, one example is PIPSA which using an electrostatic potential similarity analysis is able to detect general changes over the molecule surface. Other tool used to compare electrostatic potentials is PFplus, a tool made to extract positive electrostatic potential patches on protein surfaces. However, both tools are designed to detect general changes, leaving out detailed information about the changes at the atom level.

VisualDEP (Visualization of Differences in Electrostatic Potentials), a webserver developed at the Molecular BioPhysics Lab at Universidad de Concepción, aims to compare at atomic level, electrostatic potentials between two highly similar proteins. This is done by using an Averaged Normalized Difference method, giving as results: an global index value which is indicative of how similar are both electrostatic potential; also two new pdb files containing the differences in electrostatic potentials, one obtained with a normalized difference method and the second obtained without normalization. Also, the changes with higher differences are detected using a density-based algorithm for discovering clusters. These particular changes along with the general changes are shown visually using a Jmol applet. The differences are shown in a color gradient which helps to detect the differences at any level through the molecule. This webserver intends to give detailed information about changes in electrostatic potentials atomically over the proteins, helping in the detection of the effects of changes between both structures.