Automatic fault / horizon contact completion

***Nicolas Euler**, Earth decision Sciences, 11011 Richmond Ave, Suite 350, Houston, TX 77042, phone: 1 713 787 0746, fax: 1 713 787 08 52, euler@earthdecision.com, Isabelle Moretti, Géologie-Géochimie, Institut Français du Pétrole, 1-4 avenue du Bois Préau, Rueil Malmaison, 92852, France, Renaud Gillet, Tech'Advantage, France, and Isabelle Duvinage, Earth decision Sciences, 22 allee de la foret de la reine, nancy, 54500, France.*

The fault / horizon contacts are often badly imaged on the seismic images whereas they are necessary to the completion of 3D structural blocks. Errors on the extrapolation of the horizons near the faults may for instance results in erroneous conclusions on the connectivity of reservoirs and/or migration pathway through faults. Automatic picking on 2 or 3D seismic images are not always useful in these domains due to the lost of coherency of the seismic reflectors near the faults. Therefore, additional information is requested to insure a “good” connection between fault and horizon on 3D geomodeler. A “good” connection means a geometrically acceptable connection, without void or overlap, it also means a geologically acceptable horizon/fault contacts. Offsets have to be coherent as well as layer thickness variations at the proximity of the faults. We will first review the acceptable geometries: fault/horizon angle, drag, usual depocentres position and thickness variations in the hanging walls in case of syntectonic deposits. Then we will present various algorithms developed to allow the geologists to use all the information in the coherent part of the seismic images as well as some a priori to extend the horizons to the faults. The coherency of the offsets of the various horizons on a fault network is one of the a priori our algorithm insures.