

Figure 11: Examples with a planar patch of degree 5 having an array of 20*20 control vertices. 30 constraints along a circular limiting line and 8 constraints on the character line have been defined (a). All vertices outside the limiting line are blocked. The Gaussian curvature map is limited to $[-0,0005; 0,0005]$ obtained with only position constraints on both lines (c), with position and tangency constraints on the limiting line and position constraints on the character line (d), and with a relaxation at the extremities of the character line (b,e).

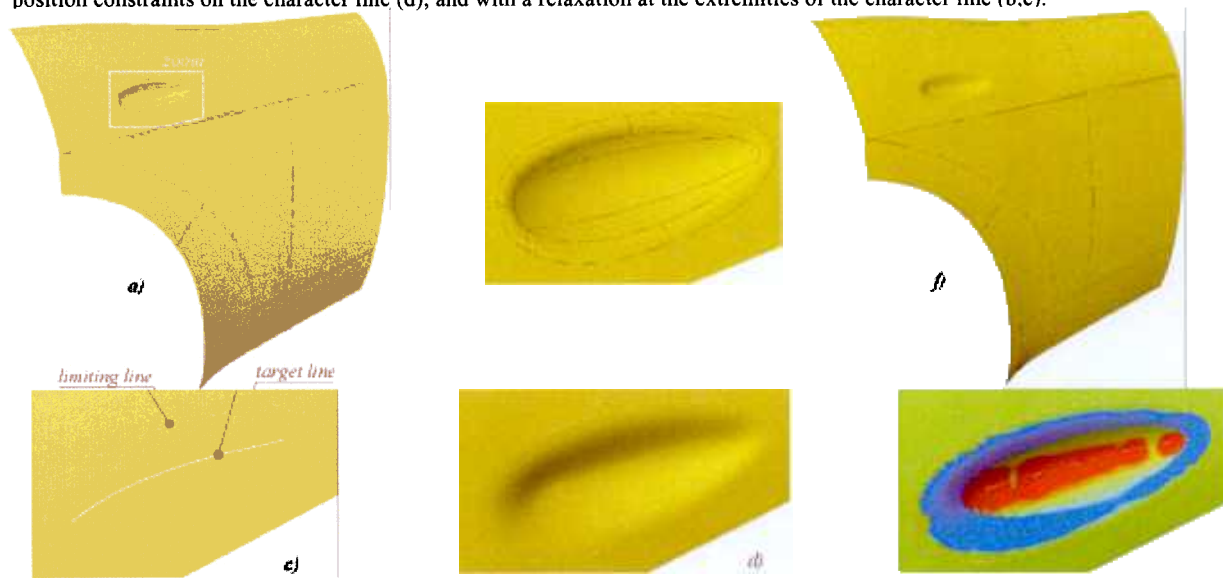


Figure 12: An example showing how to simply obtain a complex shape on a car door (d,f), whereas a classical CAD software decomposes it into several patches (twelve patches used (a,b)). The patch is non planar and of degree 5 with about 20*25 vertices in the deformed area. All nodes outside the limiting line are fixed. The Gaussian curvature map (e) limited to $[-0,00005; 0,00005]$ is obtained by 30 position and tangency constraints on the limiting line, and 15 position constraints on the target line.

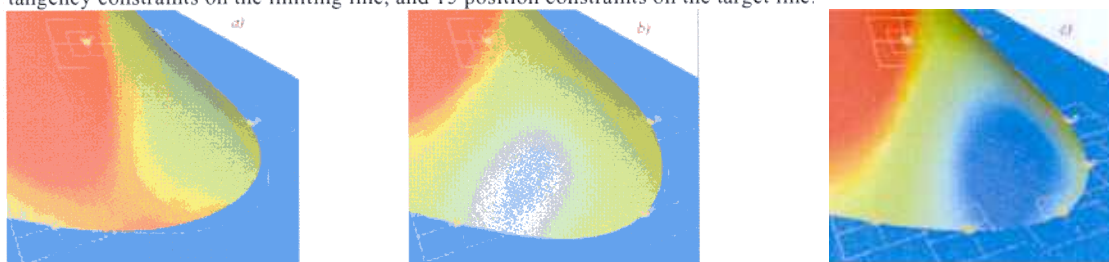


Figure 13: An example showing the behaviour of the auto-adaptive process. After a first distribution of 10 constraints along a limiting line, the accuracy target is not reached (a). The auto-adaptive process adds constraints where the distance "deformed patch/limiting line" is maximum and deforms the surface (b). A further step is necessary (c) in order to obtain the desired accuracy.