What is Tile Based Rendering (TBR)?

Traditional 3D Rendering, generally pointed as brute rendering, consists mainly in 2 operations:

1°) breaking down the 3D objects into surfaces, called polygons,

2°) fill each surface with the fitting color, called texture.

Brute rendering has been used for years in most 3D chipsets, as 3Dfx, NVIDIA or ATI 3D chipset, and this wayhas proved very efficient up to now, since it is optimal for creating the 3D objects which are displayed.

Brute rendering is not optimal for rendering objects with hidden surfaces, since it calculates and fill with textures even hidden surfaces that are of no use since they are not displayed. As a consequence, the bigger the back-end complexity, the more calculation brute rendering requires, so brute rendering is not optimal for today's 3D games with a significant back end complexity.

Tile Based Rendering is way to render only displayed surfaces. TBR consists in 4 operations:

1°) dividing the screen in small surfaces, called tiles,

2°) in each tile, analyzing the displayed pixels to sort the surfaces they come from,

3°) break down the 3D objects into the displayed surfaces, without processing hidden surfaces,

4°) fill the displayed surfaces with their textures.
As a consequence, Tile Based Rendering can handle a 3D scene with no hidden complexity exactly as fast as a 3D scene with 3 or 4 background levels.