A boost Killing vector field with its isometry is considered in the 2+1 dimensional anti-de Sitter spacetime. Then we choose two isometric surfaces and identify points that are on the same Killing orbit. An object locally isometric to the anti-de Sitter spacetime but with different global topology is obtained – the BTZ black hole. To prove that this object is really a black hole, a new adjusted coordinate system is introduced and the object's spacetime structure is explored. It is shown that such spacetime has outer and inner regions separated by the horizon (null surfaces). We also show that parameter of the identification is closely related to the black hole's mass. Finally, we discuss limit transitions to other interesting physical objects with which we support setting of the zero energy-mass level. For understanding the geometry better, many three-dimensional pictures of the considered surfaces are included along with conformal diagrams of the BTZ black hole and also its space structure is depicted.