Pancreatic Ductal Adenocarcinoma (PDAC) is a highly aggressive form of cancer, responsible for nearly half a million deaths annually worldwide. Despite advancements in treatments, PDAC remains difficult to treat with a poor survival rate. Chimeric Antigen Receptor (CAR) T-cell therapy has shown success and applicability in treating B-cell malignancies and blood tumors, which raised hopes for CAR T-cells to be used in solid tumors. However, its application in solid tumors is challenging due to antigen escape, heterogeneity observed and off-target effect. Therefore, in this study we demonstrate the use of Boolean logic to target multiple antigens for enhanced tumor discrimination and limited off-target effects. Mesothelin (MSLN) and Epidermal Growth Factor Receptor (EGFR) were the antigens chosen using the Antigen Explorer database (https://antigen.princeton.edu/). Gene delivery will be achieved using the piggyBac transposon system, an emerging non-viral method, using the pNB328-meso3 CAR plasmid and the pIRII-CAR.EGFR(EGFv1) CAR plasmid to transfect and engineer the T-cells. Furthermore, CAR T-cells were activated using co-stimulation signals that got split into two separately expressed CARs directed against the two selected antigens. In the split-dual CAR system, the first CAR (EGFR) provides the primary activation signal (CD3ζ) and the second CAR (MSLN) delivers the costimulatory CD28 signal. Full T-cell activation only occurs when both antigens are expressed, ultimately reducing the risk of off-tumor toxicity and increasing the specificity for solid tumors. This AND-Gated CAR T-cell approach may present a promising strategy to overcome PDAC heterogeneity and improve the precision of immunotherapy for PDAC.