Symmetric spaces have been studied for their role in Lie groups and algebraic groups. They can be defined as the homogeneous spaces $G/K$ where $G$ is a reductive algebraic group and $K$ maximal compact subgroup, which is also the fixed point group of an involution. Generalizations of symmetric spaces arise in many areas and are often called symmetric $k$-varieties. A symmetric $k$-variety is defined as the quotient $G_k/H_k$, where $G$ is an algebraic group defined over a field $k$, $H = G^\theta$ is the fixed point group of a $k$-involution $\theta$ of $G$ and $G_k$ and $H_k$ are the $k$-rational points of $G$ and $H$. For every isomorphy class of $k$-involutions we get an isomorphy class of symmetric $k$-varieties. These have been classified for some algebraic groups of types $A$, $B$, $C$, and $D$. In this talk we discuss some recent results about the classification of $k$-involutions for exceptional groups. (Received September 22, 2012)