False vacuum decay happens in physical systems with more than one (metastable) vacua. Calculation of the rate of these decays has been traditionally done using imaginary-time (Euclidean) path integrals [1, 2]. This method has the advantage of simplifying the calculations but, from the mathematical point of view, there are questions about the validity of the use of Wick rotation in getting from real-time path integral to its imaginary-time counterpart. On the other hand, new technologies like Picard-Lefschetz theory and Resurgence theory have been applied to the study of path integrals in the recent years and have improved our understanding of non-perturbative phenomena (e.g. quantum tunneling) in quantum mechanics and quantum field theory [3, 4, 5, 6, 7, 8]. In this talk, I will try to apply these new methods to the study of real-time path integrals in order to get a better understanding of the quantum tunneling and vacuum decay in real time.