Using Geometry and Topology to Define Group Invariants

My goal is to define two (different but similar) invariants, Σ^1 and Ω^1, of infinite groups. Along the way, I will discuss some of the main characters involved such as: Cayley graphs, group actions, and the "sphere at infinity" of $\mathbb{R}^m$. Once these invariants have been defined, we will compute Σ^1 and Ω^1 for some interesting groups. I will finish by discussing the relationship between Σ^1 and Ω^1 and (time permitting) by discussing the higher dimensional analogs Σ^n and Ω^n.