# Higher Groupoids and Higher Generalised Morphisms

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**Abstract**.

Higher groupoids play a crucial role in the active research area of interplay between higher categorical structures and other fields of mathematics. We give the notion of a Good Geometric category, where one can define and study these higher structures with applications to geometry, for example category of smooth manifolds. We define the notion of higher groupoids in Good Geometric categories and organise them into an $(\infty, 1)$ category framework. The morphisms between the higher groupoids are given by bibundles which are Kan fibrations over the interval. Higher morphisms will be modelled by Kan fibrations over the higher simplices. This approach gives a more combinatorial and geometric way of approaching anafunctors and higher generalised morphisms between groupoids. This is of particular interest in higher gauge theory and string theory, where the higher connection on higher bundles will give the notion of parallel transport of strings and surfaces.

## References

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