H-compactifications form an important type of compactifications, carrying the extra property that all automorphisms of a given topological space can be continuously extended over such compactifications.

Van Douwen proved there are only three H-compactifications of the real line and only one of the rationals. Vejnar proved that there are precisely two H-compactifications of higher dimensional Euclidean spaces.

The result we come with in the Chapter 2 is that there is only one H-compactification of the set of all rational sequences, which is precisely the Stone-Čech compactification. For the proof, we use strong zero-dimensionality, strong homogeneity and other properties of the set of all rational sequences and its clopen subsets.

In the Chapter 3, we ask an ambitious question about the set of all H-compactifications of the Hilbert space of all square summable real sequences and propose some ways to tackle this problem, e.g. characterizations of the Stone-Čech compactification or tools used to describe H-compactifications of the real space of dimension 2.

In the final chapter, we analyze the set of all H-compactifications of a space using a category-theoretic approach and study properties of categories of H-compactifications and functors in such categories.