

Knowing Your Customers: Ontological Gathering and Analysis Techniques

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Abstract

This research presents a methodology to analyze customer needs and direct the gathering of customer needs that both span the need space and are independent. An ontological categorization, the fundamental research contribution of this work, is created to support both aims of the overall methodology. Providing designers with a customer need ontology that allows the categorization and further analysis of their customer needs set for a product gives insight on the types of needs that may be missing, how to go about collecting those needs, as well as when to gain further insight on needs in certain categories. This ontology can also be used to assess customer need gathering and analysis techniques, providing a map to the types of needs that techniques are geared to produce. This work begins by examining the state of the art in customer need analysis and categorization, highlighting the opportunities that currently exist to formalize customer needs activities in the early phase of design. The ontology constructed for this research is introduced as a method to guide designers as they examine and categorize customer needs. The creation, iteration, and inter-rater reliability of this ontology is presented. The validation of the ontology is presented in two separate studies. The first study examines differences between customer needs lists at two distinct points in a design effort. The differences found in this study correspond with the expected differences between the groups, providing validation of the ontology's ability to span the need space. The second study presents the analysis of three need gathering techniques which provides further validation around the concept of guiding designers to needs independence. The research in this dissertation constructs a customer need ontology, validates the ontology, and presents a methodology with three approaches using the ontology to guide designers to new insight into customer needs.

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