RECOMMENDING AS PERSONALIZED TEACHING
Towards Credible Needs-based eCommerce Recommender Systems

1. INTRODUCTION

Recommender applications are an important technology for online retailers who want to increase their sales by providing potential consumers with personalized product recommendations. Such interactive Business-To-Consumer (B2C) eCommerce systems help to convert browsers into buyers, increase cross sells, and build loyalty (Kobsa et al., 2001). Studies indicate that eCommerce sites that offer personalization convert twice as many visitors into buyers than sites that do not offer personalization (ICONOCAST, 1999, cited in Fink & Kobsa, 2000).

A typical recommender system comprises functionalities for product navigation and decision support. Today, several approaches exist (for an overview see Kobsa et al., 2001) to support a consumer in navigating through the product space of an electronic shop. From a historical perspective the early techniques modeled conventional paper-based catalogues, whereas the second generation of navigation aids introduced advanced search capabilities. Advanced B2C eCommerce systems aim to provide shoppers with an efficient and personalized shopping experience. Today, many of the technologies needed for building such systems are available as commercial software components. These include components for user profile management, rule-based content adaptation, product recommendations based on collaborative-filtering algorithms, and preference-based catalog search. A central question for developers of such advanced eCommerce systems is how to best use and combine these components. One of the design decisions is whether user profiles should be stored over multiple sessions, what functionality for profile management to provide to users, and which parts of the profile to re-use for a returning customer. Ricci and Del Missier (this volume), for example, base catalog queries on information gathered in the current session, and use stored profile information only for sorting the result set. Elsewhere (Stolze & Ströbel, 2001a) we have proposed a framework that allows users to manage and re-use multiple profiles relating to different roles. Here we focus on a different design issue, namely whether (and how) systems recommending technical products can benefit from querying potential
buyers about their high-level needs instead of focusing exclusively on product features.

The potential of needs-based recommendation has been identified by a number of authors. Based on an analysis of interactions between buyers and human shopping assistants in real shops Grenci and Todd (2002) argued that consumers with limited knowledge of a product domain should be approached in a “solutions-driven” manner, which focuses on customers’ needs instead of product features. This analysis is in line with observations made by Ardissono and Goy (2000) who found that people with limited domain knowledge searching for home phones feel well supported if they are presented with qualitative (instead of technical) product information.

However, there is also evidence of limited benefit of needs-based product recommendation of complex technical products. A recent study (Felix et al., 2001) showed that most consumers want to inspect technical features (e.g. the pixel resolution of a digital camera) in detail before they feel confident about their choice. These results are in line with observations reported by Spiekermann and Parachiv (2002), who found that consumers who perceived higher uncertainty preferred to perform a manual inspection of technical features, instead of relying on the (needs-based) recommendations by an automated shopping agent. The needs-based support was perceived by consumers as a service that helps them to obtain a short list of products quickly. It was not perceived as a recommendation that can be trusted without further inspection.

Closer investigation of the needs-based recommendation components in the two studies reveals that both employ the entered customer needs to compute a “match score” for each of the digital cameras in the catalog. Neither system, however, shows the user the numeric score nor how this score was computed from the base data. We believe that it is this lack of transparency that keeps users from perceiving the recommender system as being credible (Fogg, 2002). As a result users prefer the feature-based style of navigation where the relationship between their stated requirements (ranges of acceptable feature values) and the provided product descriptions is obvious.

The reported preference for automatic, needs-based components early on in the decision-making process, but for manual, feature-based exploration later in the process can be interpreted such that users feel insecure about what product features they should look for to accommodate their particular needs. Performing a needs-based session first lets them arrive at a set of products that prototypically show the range of feature values that match the stated needs.

We believe that users regarded the main benefit of the needs-based recommendation component to be that it provided them with contextualized information about what kind of products match their stated needs. However, simply listing examples without explaining why a given product fulfills the stated needs has two main disadvantages. First, customers have to form their own (possibly false) explanations of how their stated needs influenced the evaluation. Second, customers apparently feel that, without an explanation, they have no way to evaluate the appropriateness and credibility of the recommendations. This situation can be changed by providing customers with a comprehensible explanation of how the