

# Choicla: An Intelligent Group Decision Support Environment

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**Abstract.** Group recommendation technologies have been successfully applied in domains such as interactive television, music, and tourist destinations. Existing group recommendation environments are focusing on specific domains and do not offer the possibility of supporting different kinds of decision scenarios. The *Choicla* group decision support environment advances the state of the art by supporting decision scenarios in a domain-independent fashion. In this paper we give a short overview of the *Choicla* group decision support environment.

**Keywords:** Recommender Systems, Group Recommendation, Group Decision Making

## 1 Introduction

Decisions in everyday life often come up in groups, for example, a decision about the destination for the next holidays or a decision about which restaurant to choose for a dinner. The quality of many group decisions is negatively influenced by various factors. So-called anchoring effects [3] are responsible for decisions which are biased by the voting of the first preference-articulating person. Missing explanations can lead to a lower level of trust in recommendations [1]. Knowledge about the preferences of other users in early phases of a decision process as well as limited domain knowledge can lead to sub-optimal decision outcomes ([5]). Decision processes are often not open in the sense that it is impossible to easily integrate new decision alternatives or change the individual preferences within the scope of a decision process - these aspects can lead to low-quality decision outcomes (see [6]). In many cases, the criteria for a decision remain unclear since there is no explanation of the outcome of "the final decision".

One major goal of the *Choicla* environment is to facilitate group decision making and improve the overall quality of decision outcomes. The idea of this environment is to support definitions of different types of decision tasks in a domain-independent fashion while taking into account the above mentioned risk factors. In order to achieve this goal, *Choicla* builds upon different group recommendation algorithms [4] which are used for determining alternative solutions for the participants of a group decision process.

## 2 Choicla Decision Support

Because decision scenarios differ from each other in terms of their process design, a variety of parameters is needed. Some decision scenarios rely on a preselected decision heuristic that defines the criteria for taking the decision, for example, a group decides to use *majority voting* for deciding about the next restaurant or cinema visit. The design of decision tasks (the underlying process) can be interpreted as a configuration problem (see [8]). Configurable parameters in *Choicla* are, for example, the inclusion of explanations, the way of administrating the decision alternatives, the preference visibility and the recommendation support. For a more detailed discussion of all the available parameters in *Choicla* we refer the reader to [7]. The achieved flexibility of making the process design of a decision task configurable is needed due to the heterogeneity of decision problems. This way the *Choicla* components are organized as a kind of a software product line that is open in terms of the implementation (generation) of problem-specific decision applications.

After the design process has been finished, the creator of the decision task as well as all invited participants (after accepting the invitation) can interact with a *Choicla* decision app. A decision app is automatically installed on the home screens of the participants.

*Choicla* also offers a possibility to search for public available decision apps (if someone has created an app before and set it public). This technique makes it possible to reuse a created decision app and thus prevents a creation from scratch every time - especially for frequent decision tasks such as, for example, scheduling decision tasks. This reuse technique has the potential to reduce the entry barrier for using *Choicla* and keep the interaction simple. Of course there is also an option for designing a new decision app from scratch.

To keep the potentially large number of decision tasks manageable, every decision app consists of a variable number of instances. A concrete instance of a decision app can be accessed within the corresponding decision app. This mechanism offers the possibility of an exact documentation of all past decisions and is also a basis for supporting recurring decision tasks.

## 3 Future Work

Our future work will focus on the analysis of further application domains for the *Choicla* technologies. Our vision is to make the creation (design) of domain-independent group decision tasks as simple and straightforward as possible. The resulting decision task should be easy to handle for users and make group decisions in general more efficient. Our focus will also be on the analysis of decision phenomena within the scope of group decision processes. Phenomena such as decoy effects [2], [9] and anchoring effects [3] have been well studied for single-user cases, however, in group-based decision scenarios no studies have been conducted. A further issue for future work is to figure out which group recommendations help to achieve consensus more quickly. Finally, we want to point up that one of our major goals is to make the *Choicla* datasets available to the research community in an anonymized fashion for experimentation purposes.

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