The continuous evolution of information technology has significantly affected the way humans interact socially, characteristic examples being communication and entertainment. This trend has also influenced one of the oldest forms of entertainment promoting social interactions, that of playing board and card games in the traditional physical environment. While computer enhanced board games benefit from advanced computational support (performing of mundane tasks, calculating intricate winning conditions, adding sound and dynamic effects to the gameplay, etc.) that certainly improves the gaming experience, this shift to the digital environment comes at the expense of reducing the degree of flexibility that board games typically exhibit in terms of customization (house rules, balancing of the complexity for certain players, balancing of the game duration, etc.).

This thesis provides a holistic board game development framework, the FLEXIBLERULES framework, which enables users to design and modify computer enhanced board games. The core of the framework is a conceptual model, which facilitates the design of board games by replicating the approach used to explain the game structure to a human player. Building on the principles of this model we introduce a domain specific language to implement board games, as well as an architecture that allows for rapid prototyping and play-testing. To increase the level of involvement of end-users with basic programming skills in the design process, an integrated high level development environment is also provided which allows for dealing with the different aspects involved in game design in a visual and straightforward manner.

To assess the expressiveness and usefulness of the framework, we present the main findings emerging from user evaluations that we conducted, based on which we claim that our work can significantly improve the enjoyment that players exhibit when playing computer enhanced board games and can lead to greater user satisfaction, both of which constitute main characteristics for the success and popularity of digital games.

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