

# Chapter 1

## User Experience Evaluation in Entertainment

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**Abstract** Based on an overview on currently used definitions of user experience in human–computer interaction and major concepts from game development like immersion, flow, and playability, this overview describes a set of evaluation methods and their applicability in the various game development phases. Summarizing the contributions in this book, a user experience-centered development process is presented, allowing readers to understand when to use what kind of user experience evaluation methods to achieve a positive user experience.

### 1.1 Introduction

User experience evaluations in games and more general in interactive entertainment systems have been performed from early on in games development. Programmers of the first computing systems started to develop the first versions of digital games and already established a very basic form of user experience evaluation by simply trying to play the game – and trying to understand why it was not fun in the end. The introduction of video games like Tetris showed that small changes in game play or story heavily influence the overall user experience of the game (Novak 2008).

In industry today a variety of methods are deployed to understand the various contributing aspects of the overall gaming experience. The term user experience was only rarely used in the games industry (Federoff 2002), but became extremely prominent in the field of HCI during the last 10 years. Since then the scientific communities of human–computer interaction and game research are starting to learn from each other. On the one hand, user experience evaluation methods from HCI are used during the game development to improve user experience, on the other side HCI was borrowing and investigating aspects of the gaming

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experience like immersion, fun, or flow to better understand the concept of user experience.

This chapter gives an overview on both aspects. First, an overview on definitions of user experience in the area of HCI is given, followed by some basic terms that are currently used in the games industry like immersion, flow, or playability. Then an overview on currently applied methods for the evaluation of user experience in games is given. This overview also includes all of the methods that are proposed, described, discussed, and presented in the following chapters of the book. To allow an easy overview on the currently applied methods for user experience evaluation, the most commonly used methods are presented. To help identify the applicability of the various user experience evaluation methods, the methods are presented following four major development phases: initial stages of game development, early development stages, prototypical stage and later (implementation) stages, and finally alpha and beta phases.

## 1.2 Defining User Experience

How user experience should be defined is currently discussed in the HCI community. User eXperience (UX) still misses a clear definition. As of today, the term user experience can be seen as an umbrella term used to stimulate research in HCI to focus on aspects which are beyond usability and its task-oriented instrumental values (Hassenzahl 2003). User experience does include a look on all the (qualitative) experience a user is making while interacting with a product (McCarthy and Wright 2004), or on experiences made during interacting with a special type of product, e.g., a mobile phone (Roto 2006). The current ISO definition on user experience focuses on a person's perception and the responses resulting from the use or anticipated use of a product, system, or service. From a psychological perspective, these responses are actively generated in a psychological evaluation process, and it has to be decided which concepts can best represent the psychological compartments in games to allow to measure the characteristics of user experience (see Takatalo et al., Chapter 3).

User experience in games has been evaluated using a variety of concepts including immersion, fun, presence, involvement, engagement, flow (see Takatalo et al., Chapter 3), play, and playability – and what makes play fun, including social play (see Isbister, Chapter 2). Given that user experience is understood as the subjective relationship between user and application (McCarthy and Wright 2004), Calvillo-Gómez (Chapter 4) proposes the CEGE approach to allow to differentiate between different subjective experiences. Other evaluation approaches focusing on experiences and attitudes toward video games are the use of semantic differentials (Lemay et al., Chapter 6). From an industry perspective, the tools currently in use to enable the evaluation of user experience are closely connected to the game development phases. E. Brown (Chapter 5) describes tools used in games industry according to the various development phases. During the concept phase, classical user-centered

development methods like (paper) prototyping are used to allow to understand if the game is fun to play or a tech demo is used to allow not only to understand the robustness of the technology but to enable a first evaluation of the fun potential. In the preproduction phase, evaluation methods like heuristics are used; during production, user testing is one of the most successful methodologies to evaluate user experiences. Post-launch user experience evaluations are based on reviews and online forums. McAllister et al. (Chapter 7) provide more insight into current industrial practices to evaluate user experience based on a set of case studies.

Decomposing various aspects of user experience in games, we have to understand that the user experience depends on the individual player experiences (see Desurvire et al. in Chapter 8 for game approachable principles for inexperienced users), that various phases during the game play will provoke different forms of experiences (see Poels et al. in Chapter 9), and that user experience will be influenced by various aspects of the game including the behavior of nonplayer characters (see Lankes et al. in Chapter 10 on investigating aspects of user experience with experiments).

Evaluation of user experience not only depends on the various constructs and factors that contribute to the general experience, but can be heavily influenced by the interaction technique and format of the game. Mueller et al. present evaluation possibilities for exertion games (see Chapter 11), Brown et al. look into the evaluation of game controllers (see Chapter 12), and Köffel et al. present ways on how to evaluate tabletop games (see Chapter 13).

### 1.3 Methods to Evaluate UX in Games

Based on the various definitions and concepts used to evaluate user experience, the following section will present an overview on methods that are currently used to evaluate user experience during the various game development phases. Game development can be structured in a set of development phases. Most of these phases are used in standard software development processes; other phases are special for game development. Following Novak (2008), the following phases are used to structure the overview on methods for evaluating user experience in games:

- **Concept:** This phase is dedicated to the initial game idea and is devoted to producing a first concept document describing the game. The development team in this phase is typically small (e.g., consisting of designer, programmer, artist, and producer).
- **Preproduction phase:** This phase includes the development of art style guides, production plans, and first description of the game design and the technical design document.
- **Prototype:** Goal of this phase is a first working piece of software allowing to demonstrate key characteristics of the game and enabling to understand basic concepts related to the general user experience of the game (“Is the game fun to play?”).

- **Production:** The production phase can range from few weeks development to years of programming. This phase can be structured additionally, following approaches like an increment to completion approach, a cascade approach, or an “iterative – until you drop” approach (Irish 2005).
- **Localization:** An important phase for games that will be delivered to different markets (countries) is the localization phase. In this phase, game play can be adjusted to suit the tastes of the market, to allow language translation and modifications due to local regulatory authorities.
- **Alpha-phase:** This is the phase when a game is playable from start to finish, allowing different evaluation methods to be applied to better understand aspects like fun, playability, and user experience.
- **Beta-phase:** Main goal during this phase is normally to fix bugs. In terms of user experience in this phase, lots of fine-tuning is necessary to improve the overall user experience. The beta-phase includes steps like certification or submission (the hardware manufacturer of the proprietary platform will test the game).
- **Gold:** In this phase, the game is sent to be manufactured.
- **Postproduction:** In this phase, subsequent versions of the game may be released (including patches and updates) and allow to improve the user experience of the game.

Goal of evaluating user experience during the *concept phase* is to understand if the game will be fun to play and what kind of experience the player will have during game play. During the concept phase and other early development phases like the *preproduction and prototype phase*, methods and approaches used are

- Focus groups
- Interviews
- Informal play testing
- Questionnaires

In this book, E. Brown presents methods like (paper) prototyping and tech demos (see Chapter 5), Isbister shows that early (internal) play testing and analysis of existing play patterns can help to understand user experiences in general and especially for social play (see Chapter 2). Methods like semantic differentials (see Chapter 6) and the PIFF questionnaire (Chapter 3) allow to gain a general understanding of the game user experience. Methods like the GAP approach (Chapter 8) investigate user experience for a special user group – the inexperienced gamer.

During the *implementation and testing phases*, the following methods have been successfully used:

- Play testing (including biometrical measurements)
- (Semi-structured) interviews
- Observation
- Video coding
- Quantitative comparisons of gamers’ behaviors

- Questionnaires focusing on users' attitudes, experiences, . . .
- Heuristic evaluation (including heuristics for playability, tabletop)

For new forms of game play including new forms of interaction, Mueller et al. (Chapter 11) describe how to evaluate exertion games in the implementation and testing phase and Köffel et al. (Chapter 13) present how to investigate user experience for tabletop games. Other influencing factors on the overall user experience are described by Poels et al. (Chapter 9) for post-game experiences, Lankes et al. (Chapter 10) for the influence of nonplayer characters on the overall user experience, and Brown et al. (Chapter 12) for evaluation of game controller design.

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