

Mobile Action Games – Ready, Set, Action!

Version 1.0; February 9, 2007

A mobile approach to a classic genre

This article discusses the challenges and possibilities of designing action games for mobile devices. Many of the issues presented relate to overall game design and game mechanics that aim to improve the user experience, rather than details of technical implementation.

The action-game genre is a classic — there have been shooting, reaction-based concepts and platform-jumping games from the first days of the computer game industry. Their long-time presence hasn't made them any less popular, however — action games still attract a lot of game players, and their popularity is reflected in continuing success on the sales charts. Popularity also brings competition, and today's successful action games really need to provide a quality game-playing experience that stands out from the crowd. In a best-case scenario, a new game throws something completely fresh and unique into the mix!

Why do action games remain so popular? It could be that they offer a simple, easy-to-understand experience that provides instant gratification. Ideally, players should be able to pick up an action game and simply start a new session; the basic rules of the game should be easy to learn and remember, with easily grasped controls. Concurrently, the game world is highly visual, and the continuous flow of action creates a captivating feeling of immersion in the game.

Action games fit the mobile use context perfectly. In the mobile world, players can reach for their device in a bus or on a train and start a quick, convenient game-playing session. Within that mobile world, goals should be accomplished quickly, and it's usually best if the game kicks into high gear instantly.

Mobile considerations

When developing action games for the mobile environment, there are special considerations that result from hardware issues. Keypad controls and display properties set certain limitations, as do processing power and memory. The mobile-use context — that is, players are on the move, often with limited time to invest — also imposes issues that should be considered in the game design.

Limited controls and keypad latency

The mobile device keypad is quite small and can be challenging to handle quickly. However, the joystick-like navigation key is a natural choice for control, and very easy for players to learn. Game designers should try to use the navigation key button for the primary action key. For secondary action keys, use * and #.

Alternative navigation controls can be provided with the numeric keys (2 for up, 8 for down, 4 for left, and 6 for right). Alternative controls are useful on devices where the keypad layout makes players prone to press the End key by mistake. Avoid any situation where the player needs to press several buttons at the same time or where control keys are located right next to each other.

Latency (time between key press and actual action) differs among different device models. Game designers should make sure that the latency is acceptable for their target devices.

Display limitations

Mobile displays have limited space, resolution, and color capacities. Typically, action games feature a lot of objects appearing simultaneously on the game area. In the mobile context, the different game objects (enemies, friendly characters, neutral objects) must be instantly recognizable by the player from their color or shape, while still retaining their small size. Also, the color contrast between active objects and the game background must be sufficient — remember that mobile devices are often used outdoors, which can significantly reduce the legibility of the display.

However, making objects harder to recognize and tweaking the contrast between the object and the background can be one element used to increase the level of difficulty in the game.

Device capabilities

A graphic-intensive game quickly uses up the limited resources of a mobile device. Problems with memory capacity and processing power have a direct impact on the user experience of an action game. If a special effect looks great but noticeably slows down the game playing, consider an alternative solution. The key is early optimization and testing on actual target devices.

All objects do not need to move at blazing-fast speeds, even in a fast-paced game. While it is essential that the player control feels responsive, it's not necessary for every little background detail to be animated smoothly or scroll quickly.

User errors

In the mobile-use context, users are prone to making errors due to interruptions while playing. The game should always tolerate a few user errors. For example, the player character should endure a small number of hits before getting killed, instead of experiencing an instant death.

Also, provide quick access to a "pause" game option. The pause option should be readily available, for example, via the right softkey. Indicate the pause mode clearly on the display. Even when the game is manually quit, players should have the option to continue where they left off when starting a next session.

Keeping the player motivated and interested

A game should keep the player motivated and interested during several sessions and over a long period of time. Also, the game should provide enough content in the form of a variety of challenges and rewards. If a player is able to play through the entire game quickly, then there is usually something wrong with the game design or difficulty level. Conversely, a classic problem in action games is when the player is made to repeat the same thing over and over because the level of difficulty is too great. Combining repetition with little variety and a steep difficulty curve adds up to a bad user experience.

The game should have enough content (scenes, opponents, or levels) to last for several game sessions. Increasing the difficulty level (for example, by speeding up the game and making enemies tougher) is common between levels, as the player becomes more familiar with the game controls. The player should also be allowed to skip the basic levels that have been completed in previous game sessions.

When a player has completed the game, s/he should be encouraged to continue playing. A classic way to achieve this is to loop and restart the game with an increased level of difficulty. Another way to create variety and motivation is to allow the player to start the game over with different characters or ships with different skills or qualities. For example, one character may be tough but move slowly, another may be agile but possess less powerful weapons, and so on. Making different characters available as the game progresses and as the player completes levels can also be a motivational factor.

Providing different power-ups that are available for a limited time can add depth and variety to game playing. For example, in Alpha Wing II, the protective shield can be used for only a limited time before it needs to reload, so the player must think strategically about when to use it. The player must carefully plan when to be vulnerable and when to use the shield for protection.



Figure 1: Protective shield in Alpha Wing II prevents players from getting stuck. (Images courtesy of Glu Mobile)

Need for speed

Player immersion is a measure of how deeply the player is engaged with the game world and experience. If the level of immersion is good, then the player is totally focused on the game. Achieving this degree of involvement relies on a skillful combination of interaction and movement on the screen, sound design, intuitive control, and content that keeps the player engaged. In action games, the key is response and movement. Quiet moments or gaps in the action can serve to emphasize key points in game playing.

Selecting the perspective and direction for movement can also be important. Perspective can have a dramatic impact on the illusion of speed and action the game creates. Consider the examples shown in Figure 2.



Figure 2: The scrolling direction limits the maximum game speed. The player's reaction speed limits the game speed in horizontal and vertical directions; in an isometric game this is not a problem.

Action games need to be reactive, but do not always need to be fast. Game designers can also create tension in environments that are slow moving. In some cases, the “slow motion” sense of impending trouble can be more dramatic than a fast and frantic play that leaves no room for the player to take in his or her position. The ability of

the player to have an instant “elastic” response to any input is important. Inertia, anticipation, suspense, and surprise are all tools in the action-game designer's toolbox.

Sound design should support the action taking place on the screen, and game events should provide for a sound effect . The user should be able to switch the sound on/off and control the volume.

As an action-game designer tool, the set of APIs that controls “vibra” or lights in the mobile device has perhaps been underused. These controls have now reached a level of stability and support that allows them to be used to highlight the player's experience. Battery drain and the slight delay that occurs when initiating a motor response (such as the vibra effect) are trade-offs that designers should take into consideration, but these tools can be highly effective if used at the right moment in game playing.

Copyright © 2007 Nokia Corporation. All rights reserved.

Nokia and Forum Nokia are registered trademarks of Nokia Corporation. Other product and company names mentioned herein may be trademarks or trade names of their respective owners.

Disclaimer

The information in this document is provided “as is,” with no warranties whatsoever, including any warranty of merchantability, fitness for any particular purpose, or any warranty otherwise arising out of any proposal, specification, or sample. Furthermore, information provided in this document is preliminary, and may be changed substantially prior to final release. This document is provided for informational purposes only.

Nokia Corporation disclaims all liability, including liability for infringement of any proprietary rights, relating to implementation of information presented in this document. Nokia Corporation does not warrant or represent that such use will not infringe such rights.

Nokia Corporation retains the right to make changes to this specification at any time, without notice.

License

A license is hereby granted to download and print a copy of this specification for personal use only. No other license to any other intellectual property rights is granted herein.