

ABSTRACT

Software evolution in the video game industry presents unique challenges due to the rapid pace of updates, player-driven development, and the demand for continuous engagement. This study conducts an empirical analysis of software maintenance types in video games using changelog data from the Steam platform. By applying Mining Software Repositories (MSR) techniques and natural language processing, we collected and classified over 31,000 changelog entries across 50 popular multiplayer games. The updates were categorized based on ISO/IEC/IEEE 14764:2022 maintenance types: Corrective, Perfective, Adaptive, and Additive. Our findings reveal that Perfective updates dominate changelogs, followed by Corrective and Additive, while Adaptive updates are notably low. Time series and seasonal decomposition analyses further uncover structured and recurring update patterns, particularly for Perfective and Corrective maintenance. These results highlight the cyclical and reactive nature of game software evolution and suggest that automated changelog analysis can support future research in empirical software engineering for games. This work contributes to a deeper understanding of maintenance strategies in live-service game development and provides a foundation for improving update planning and quality assurance.

Keywords: *video game; mining software repository; changelog analysis*