

# The use of modern video game development techniques and methods in retro styled games.

## PROBLEM AND OBJECTIVES

### OVERALL AIM:

The aim of this project is to research and identify gameplay mechanics and patterns that characterise retro-games, as well as modern software engineering methods by means of which those patterns could be implemented.

### THE WORK WILL CONSIST IN:

- 1) Identification of stereotypical gameplay mechanics patterns in retro-games, through a process of game content analysis;
- 2) Research of modern software architecture/design patterns to implement those gameplay mechanics with modern technologies/platforms;
- 3) Implementation of case studies to demonstrate the application of the identified software architecture patterns to implement the identified gameplay mechanics patterns.

## ABSTRACT

Video game development, just as software development in general, has seen many changes throughout history. The underlying methodologies and principles of development evolved to the point where problems which previously seemed difficult or impossible to solve are now a reality. Many video games created three decades ago by large development companies can now be recreated by a small independent team of a few developers. Solo game development is also becoming increasingly more realistic. There have been numerous cases of success among video games created by a single developer in today's gaming industry, despite it being saturated by far larger and more complex titles.

It is no secret that video games have evolved drastically over the years in terms of virtually all aspects. They are, on average, far more complicated, large and realistic than anything found in the 8-16 bit era. And yet, many of the underlying principles and foundations that support those games have already been established long ago and can be found in 2D retro titles from the past. This is why there is substantial educational merit in analysing retro games as it allows for a much simpler approach for up-and-coming developers to learn about common patterns and gameplay mechanics in video games and how they can be implemented in a modern software engineering approach. Thus, this study is set out to investigate stereotypical gameplay mechanics and patterns found in retro video games (with a specific focus on 2D side-scrollers) and research modern software development methods in order to implement those mechanics and patterns in a relevant manner.

## OUTCOMES

### WHO IS IT USEFUL FOR?

This project is primarily aimed at game development students and people interested in retro styled video game development.

The result could be an interesting reference for practitioners. It could also be valuable for game development students, as it could serve as a set of "building blocks" to create games.

### WHAT IS NOVEL ABOUT THIS PROJECT?

There are several guides and books written on 2D game development with specific video game engines in mind, however, not many of them focus on introducing the reader to the notion of stereotypical patterns and mechanics shared in a variety of games that can be reduced to smaller, more abstract "building blocks" for building games. This project aims to put emphasis on this notion and provide technical tips and guidelines for successfully implementing these, so called, abstract "building blocks" in a modern approach. All of this is done in the context of developing a modern retro-styled video game.

### SOFTWARE ARTEFACT PRODUCED:

A retro styled 2D video game created in the Unity engine using C# as the main programming language.

## SOFTWARE CHOICES

