

# A Proposal of a Smart Mobility Framework for Serious Games

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## Abstract

*This paper has two main issues: smart cities and serious games. In this proposal we focus on smart mobility. Our aim is to build a multi-agent based framework to leverage the development of serious games in the context of smart mobility.*

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## 1. Introduction

Nowadays, the term *Smart City* has become a buzzword. This term brings together different concepts around the running of a city. A *Smart City* is defined and analysed along the following interrelated dimensions [Eur]: *Smart Governance, Smart Economy, Smart People, Smart Mobility, Smart Living* and *Smart Environment*. *Smart Mobility* refers to the required infrastructures for public and private transport, traffic control, clean energy, energy saving and the necessary technological systems that enable a wise communication and configuration of the whole related ecosystem.

Our proposal is focused on *Smart Mobility*, it is another step in the context of the *Smart City Jaén* project [Jae]. Our aim is to build a framework to leverage the development of serious games regarding smart mobility. In the context of smart mobility, among many others possibilities, serious games can be useful to design and train the public transport disposition, to place new facilities, to arrange the traffic, to simulate the whole mobility, or even to test some algorithms in comparison with a real behavior.

## 2. Antecedents

The Smart City Jaén project is an agreement of collaboration between the university and the local government. During the last years, several initiatives has been carried out within this project [Jae], such as, a patent to recharge electric vehicles, panels and an free app to improve the information provided to the user of a given bus line, and many others. This cooperation has favored the inclusion of Jaén in the Spanish Network of Intelligent Cities (RECI).

In addition, a prototype of a serious game to comprehend the public transport of Jaén in an enjoyable way has been developed [Bus]. By using real historical data of the bus system, the game basically consists of achieving an optimal trip across the city according to one of the following criteria: cost, time or distance. Apart from advertising the public transport, this prototype encourages its correct use and favors a positive perception of the system.

## 3. The proposed smart mobility framework for serious games

The proposed framework is based on agents. A multi-agent approach provides the use of autonomous behavior and a communication standard among others important features. Most of the technological solutions to simulate smart mobility are also based on agents [KEBB12].

The architecture of the framework is being designed with the following characteristics:

- Adapt to different cities.
- Use real data provided by the city itself or to simulate them.
- Include and test different agents and IA algorithms.

In conclusion, the framework should provide a layer and a set of interconnected components to ease the gamification of different mobility aspects.

## Acknowledgments

This project is financed by the *Advanced Studies Center in Information and Communication Technologies*, University of Jaén.

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