



## Game scenarios

In the previous newsletter, we showed the main features of the game and how teachers and students can create and play game scenarios.

A total of 12 scenarios were created during the development of the project:

- The Olympic Games come to our city
- Smart Parking in the City
- Strategic Flood Master Plan
- Covid-19
- Enhancing Arts and Sports
- eCommerce
- Festive Lights
- Circular Economy
- On the Road to a Smart, Sustainable City
- Renewable Energies
- Sustainable City
- Sustainable Mobility

### 3 example scenarios to better understand the HERA game

These scenarios were created to take advantage of the full potential of the game and are focused on delivering a good experience while providing soft skills training for engineering and economics students.

In this newsletter, we are going to show in detail 3 of them to give you a glimpse of what can be done with the HERA game.



# The Olympic Games

The game is situated in the context of a city intended to develop a new Olympic Village to host the upcoming Olympic Games. The players are responsible for building the needed sports facilities, infrastructure and accommodation for the event.



**Olympic games scenario.** This image shows the cell phone coverage layer in an almost complete Olympic Village. This is just one of the essential services needed for the city to work properly.

The new area should also have commercial areas, public services and everything needed to make it functional and enjoyable. This is also an opportunity to improve other aspects of the city that the students may consider if they manage to fit it in the budget, like pollution control, public services coverage, overall happiness, etc.

The solution can be approached in different ways, since they can create a separate village connected to the existing city or they can integrate the new elements in the city taking advantage of some of the existing assets.

Four roles are foreseen that students will play simultaneously, each one with its own objectives to fulfill and its own capabilities. The four roles are:

## Role 1

A private builder, who is responsible for the construction of 5 stadiums, accommodation for 1200 athletes and 800 visitors, and culture offerings in the Olympic village. This role can build and bulldoze housing and culture/sports.

## Role 2

A public builder, who is responsible for the construction of public roads, transportation and public services in the Olympic Village. Any terraforming needed must be done by the public builder. The public builder can also support the pollution control manager with this task. This role can build and bulldoze infrastructure and public services.

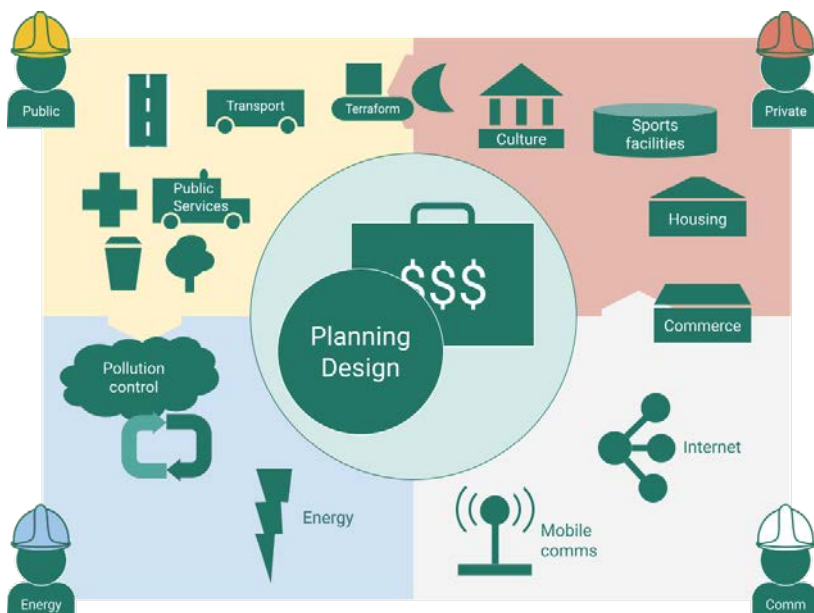
## Role 3

A communications and commerce manager, who is responsible for providing internet and phone coverage to the Olympic Village, fixing any possible problems with those in the city and building new commercial establishments. This role can build and bulldoze commerce and infrastructure.

## Role 4

An energy and pollution manager, who is responsible for providing a clean and affordable energy solution for the new Olympic Village, while keeping pollution in line and reducing it if possible. Pollution control task can be supported by the public builder.

**Roles.** This shows roles and dependencies for the Olympic Games scenario.





# Smart Parking in the City

With technology it is possible to create a smart sensor, internet-based system in the city to optimize the search time for parking and direct cars towards nearest available parking facilities, called smart parking. The parking problem can be diminished and hereby the CO2 emissions. However, the establishment of the smart sensor internet infrastructure comes with a cost as do the establishment of parking facilities.

The smart sensor internet infrastructure must be built to fit the roads and parking facilities and therefore, there must be internet coverage in the city for the smart parking system to work. The parking facilities need to be established in a city where there are probably not many spots for the smart parkings. Therefore, a negotiation needs to take place among the stakeholders in relation to whether it is best to tear down existing buildings to build smart parking spaces or to live with the traffic. Additionally, some inhabitants of the city do not favor the idea of having cars in the city center and will therefore will possibly argue against the idea of smart parking.

Following are some suggestions for roles that students may undertake:

**Role 1** The maire of the city. This role can give permission to build internet infrastructure, establish smart parking lots, build building and tear down existing buildings. Also, the maire is a person in the city that needs to make all inhabitants happy. The maire therefore, must keep an eye on creating happiness for inhabitants and car owners, but also to lower pollution, and keeping the city's money at a good, sound level. The maire must work to establish compromises amongst the other roles of the scenario game. The maire has many interests: to increase happiness in the city, to increase the revenue of the city, and to reduce air pollution in the city.

**Role 2** The internet service provider. This role has an interest in building as much internet infrastructure in the city as possible and best so that the city is with 100% coverage. The internet service provider can build ISP buildings to ensure the internet infrastructure but at the



**A view of the Smart Parking in the City scenario. Parks, museums and sports facilities increase happiness in the city.**

same time this role needs permission by the maire of the city, and needs money to establish the ISP buildings. The internet service provider additionally needs to talk with the parking contractor to figure out where to prioritize the ISP buildings and internet coverage first. The internet service provider has an interest in establishing internet in the city but also to increase the revenue of the role.

**Role 3** The parking contractor. This role has a commercial interest in establishing smart parking lots. The parking contractor can only establish smart parking lots with a permission from the maire to tear down or establish the smart parking facilities. Additionally, this role needs to agree with the internet service provider where the internet must have best coverage to support the smart parking. The parking contractor can tear down existing buildings, and establish a smart parking facility in agreement with the internet service provider. The parking contractor has an interest in establishing smart parking in the city and in that way reduce traffic in the city center (which is a special traffic focused area in the game), but also this role wants to increase the revenue.

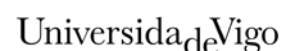
**Role 4** The lobbyist. This role is both an inhabitant of the city as well as an lobbyist that has a saying in the city administration. The lobbyist does not like cars in the city center has an overall goal to reduce pollution as well as traffic in the city center. The lobbyist will not be fond of tearing down buildings to establish more parking in the city center and will work against that and for more public transport. The lobbyist works to create impact on the maire to give fewer or less admissions to tear down buildings and approve the smart parking (which will not prevent cars in the city center). The lobbyist has a goal to be happy, and to have less pollution in the city center and less traffic.

# Strategic Flood Master Plan

It is widely recognized that dealing with large amounts of water and avoiding floods is impossible and too expensive through enlarging the sewage system or building dams and concrete channels for redirecting the natural flow paths of the water. There are several uncertainties in climate projections, but the overall pattern indicates the growing risks for extreme events. Extreme weather events cannot be managed by conventional pipe systems and their occurrence becomes more difficult to predict. Eliminating all flooding is not a realistic objective; however, the consequences may be reduced and the risks lowered for property damage and public health. Government policy has a strong role to play in increasing the amount and pace of eco-innovation in urban water delivery that is critical to the improved management of urban water. Strict environmental and economic regulations, constantly growing cities, and the general need for adaptation to climate change put pressure on utilities to find new ways to optimize the water and sewer systems. Integrated urban water management is the key element to reduce adverse impacts on surface waters and minimize future investment costs. Cities can contribute to water resources management and ecosystems and biodiversity conservation, through their design and making their infrastructure more ecological with the help of nature-based solutions.

Get the game at  
<http://heraproject.eu>

## Partners



**Strategic Flood Master Plan scenario.** With elevated areas and a river across the map, this scenario is one of a kind.

The following roles may be used for exposing students to the scenario:

**Role 1** Flood prevention designer. This individual is responsible for designing the city fortifications against flooding. This may include implementing projects that alter the landscape to allow water to flow through the city without causing damage.

**Role 2** Financial controller. This individual will manage the overall budget of the city in relation to flood protection and other services and decides on the allocation of resources based on the suggestions of the flood prevention designer.

**Role 3** Fresh and waste water manager. This individual is responsible for designing solutions that ensure that water has the desired quality and is free of contaminants. In addition, she designs solutions for waste water management.

**Role 4** City inhabitants. They are interested in safety against flooding, the availability of freshwater, and quality of life.



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