

### Intellectual output 3. Educational support content targeting instructors

#### Learning sheets for HERA activities

## Festive holiday lights

Topic: festive lights, decoration, city and business development

### Introduction

The year-end holidays are synonymous with family time, a time of giving and sharing with those around us. But the year-end holidays are also synonymous of social life. During that time not just families but also friends and communities like to join together and share time and feelings in the open streets, markets, restaurants, etc. Moreover, the tradition of giving presents during these days is magnified making these holidays one of the important shopping seasons of the year.

### Context

During year-end holidays people celebrate, come together with family and friends, travel, and follow traditions. As a result, the year-end holidays are considered as a key event in many cities that is related to both the happiness of their citizens and opportunities for business and city development. To further underscore the festive spirit cities introduce festive lights and decorations in main squares, sites of cultural interest, shopping areas, and more.

This game involves the organization and implementation of festive light decorations in a city. The main task that students must complete is deciding on the decorations that will introduce a festive aura in their city. This includes various types of lights such as colorful light decorations, building decorations, street decorations, tree decorations, automated light changes, fair wheels, and more that will be used on structures, during parades, and other events.

Following is a description of the scenario roles:



Figure 1. The scenario challenges students to develop festive decorations in a city for year-end holidays.

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#### Role 1: The city mayor



Figure 2. The city includes infrastructures such as energy, internet, and phone services that the students may enrich.

The city mayor decides on the services offered by the city to its citizens. The mayor can create public services, such as hospitals, museums, educational organizations, and infrastructures such as roads, internet, and phone networks that increase quality of life in a city.

#### Role 2: The financial planner

The financial planner manages the revenues and expenses of a city in collaboration with the mayor. The financial planner collaborates with the mayor in the creation of the conditions that facilitate the growth of economic activity in the city, including infrastructures such as roads, internet, and phone networks, residences, business spaces, and more.

#### Role 3: Business owners

The business owners own stores, restaurants, or other services in the city and have the option of participating in the festive light decorations of the city. They can build small and larger businesses that generate revenue for themselves and for the city.

#### Role 4: The environmentalist

The environmentalist overlooks energy consumption and resulting emissions from the deployment of festive decorations. The environmentalist can create energy infrastructures, including both traditional ones and based on renewable resources that help contain pollution in the city.

The following image demonstrates the roles and interactions between them.

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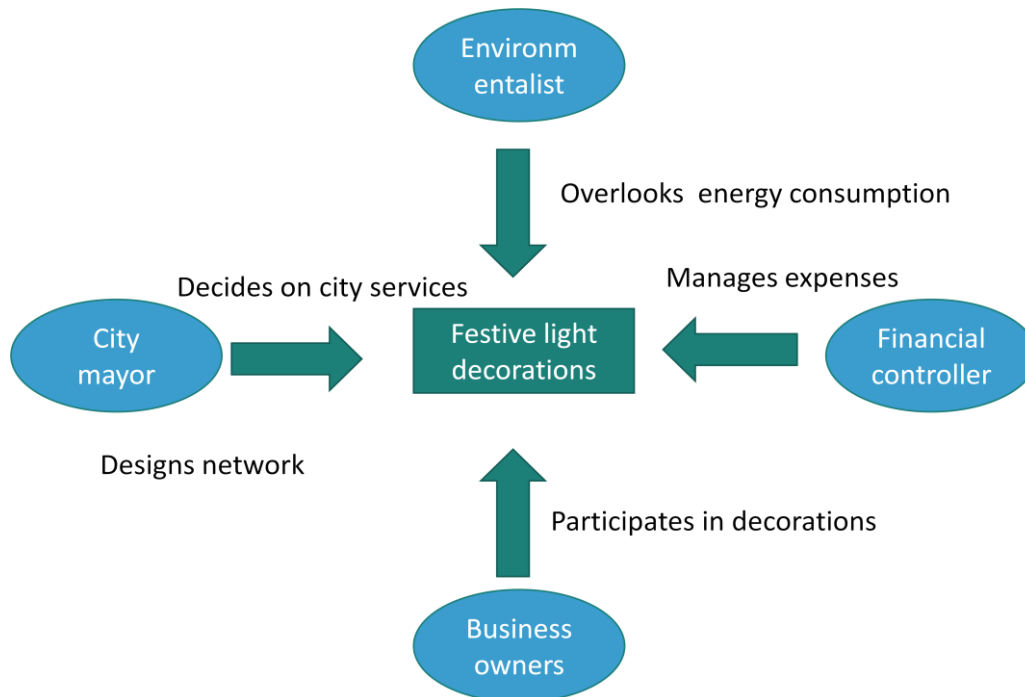


Figure 3. Role actions and interactions.

## Learning goals

Upon completion of the activity students will:

- Understand the connections between environmental, social, and economic aspects of everyday life.
- Have experienced how to achieve cooperation between different parties with different goals and needs.
- Built competence in taking an integrative approach in researching city management and related environmental issues.
- Create conditions necessary for navigating the challenges modern society and environmental changes pose for the public and private sector.

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## Prerequisites

The scenario takes a purposefully high level view of city planning. It has been designed as an introductory activity into the HERA learning game. It is self-contained and does not require specialized knowledge from students. Students simply need to have an understanding of the basic functionality of the HERA game in terms of developing infrastructures and services.



Figure 4. The city further includes small and large housing for inhabitants as well as parks.

## Audience

The scenario is of interest to both engineering and economics students as it combines technical elements, such as infrastructure design, and economic elements, such as increasing the revenue of businesses. It can be deployed among all students, including students at the beginning of their curricula, given its high-level approach to problem-solving.

## Core concepts

- **Sustainability:** Encouraging decision making in terms of environmental protection and the impact of human activities on their surroundings both short- and long-term.
- **Festive lights:** Decorations that introduce a festive aura in a city, installed at major events, such as year-end holidays.
- **Energy consumption:** This is related to all services of a city, but for the purposes of this scenario the focus is on energy consumed by festive light decorations.
- **Environmental impact:** The impact on the environment that results from the energy consumption for festive lights decorations.

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- **City management:** Managing the services, revenues, and expenses of a city.
- **Transversal skills:** Collaboration, critical thinking, analytical thinking, innovative thinking.

### Description of the scenario



Figure 5. The city further includes small and medium business for supporting economic activity.

The overall objective of the activity is to organize the festive lights decoration for a city in a manner that allows citizens to celebrate in an affordable and sustainable way taking into account both environmental and economic indicators.

Depending on their role, students have to decide about what decorations to install, where, and when. Citizens can decide to be

in favor or against the city major festive activities plan. They must decide to what degree they wish to participate in the city celebrations and in which locations. This depends on their wellness level, weather conditions, economic robustness, and other parameters.

The mayor decides on the level of festive decorations to install in the city. He needs to take into consideration the available budget, the environmental impact of energy consumption, weather conditions, and other parameters. The game offers a rich collection of decorations for the mayor to choose from: diverse weather conditions, including cold and warm variations, string lights, beam lights, various building lights as well as a collection of light colors to choose from.

Business owners can decide the degree to which they will invest in festive decorations as part of their business development campaign. They will need to consider a number of variables to facilitate decision making. For example, if they decide to spend a large amount of funds on festive decorations but the city major does not propose an attractive offer they may end up with less profit at the end of the holidays. On the other hand, if the city major decides to implement rich celebrations but they don't invest enough in their business they will miss the opportunity for profiting from the mayor's initiative. Eventually, if they do not have profit they will not be able to pay more taxes and the city budget may

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suffer. From a more practical point of view, students will select from a pool of decorations offered by the game to be installed in their shops, restaurants, or other business.

The financial planner aims to develop the commercial and industrial activity of the city in order to increase city income. This can be achieved by introducing industry and commercial activities, which need to be supported by the necessary infrastructure,

such as roads, internet, phone, and energy services.

Finally, the environmentalist aims at ensuring that pollution produced by energy consumption is within acceptable levels ensuring the wellness of the inhabitants. This can be achieved by replacing existing energy infrastructures by clean alternatives that do not contribute to emissions.



Figure 6. The city also includes farms that generate produce for inhabitants.

### Suggested class activity

1. The teacher presents the problem to the class and introduces the scenario and game.
2. The students and the teacher define the parameters according to which they will evaluate an effective solution such as increase of the city budget as a result of increased business and resulting tax returns, increase on median business income, increase of visitors to the city, environmental impact of raised energy consumption as a result of festive light decorations, and more.
3. The students discuss the restrictions they face, such as budget availability.
4. The teacher forms groups and gives students their roles in the game. Each team member may assume a different role such as mayor, business owner, and citizen. Each team member must achieve their individual objectives within the scope of the scenario.

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5. The students discuss in order to understand the diverse parameters and design a solution that maximizes benefits and minimizes negative aspects such as pollution.
6. The students are encouraged to brainstorm towards reaching a solution. Design thinking techniques could be applied to encourage innovative thinking, sharing of ideas, building on each other's suggestions, and thinking out of the box.
7. From the pool of generated ideas the students will decide which to implement in order to achieve their goal while staying within the limits of their resources.
8. The students play the game according to their roles.
9. The students discuss the game results and their roles; the teacher gives feedback.

## **Assessment methods**

This is an open-ended activity in which no single correct answer exists. Students will use self- and peer-assessment methods to decide the degree to which they have achieved their goal on developing festive decorations that enrich the festive spirit of the city while taking into account the environmental impact.