Successful Online Learning for Sustainable Last Mile Logistics

SUSMILE Serious Game
User Guide

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1   Introduction to the SUSMILE SERIOUS GAME

The SUSMILE's MOOC is focused on sustainable Last Mile Distribution (LMD), and it has two products or Intellectual Outputs (IO):

- IO1: It concerns the e-learning modules with static and adaptive kit of training materials.
- IO2: A Serious Game, aiming to allow learners to experience a simulated environment of a set LMD situations.

This document aims to give detailed information about IO2, the Serious Game.

Serious Game is defined as a game designed for a primary purpose other than pure entertainment. The adjective "serious" is usually prefixed to refer to video games used by industries such as defense, education, scientific exploration, health care, emergency management, urban planning, engineering, politics, and art.

In this context, the SUSMILE Serious Game aims at facilitating the successful implementation, understanding and interpretation of the e-learning training modules.

2   SUSMILE Serious Game Scenarios

SUSMILE serious game will give the users the opportunity to choose two main scenarios, Scenario A related to B2B distribution scheme, and Scenario B, focused on B2C distribution scheme.

3   SUSMILE Serious Game Indicators

The game is based on 3 indicators or parameters:

Table 1 The 3 indicators used in the SUSMILE Serious Game

| Indicator	Description
Customer Satisfaction (*UX*)	Satisfy customers' needs, in respect of their requirements
Cost control (*CC*)	Ensure timely operations within available budget and no penalty
Environmental impact (*EI*)	Measure and control the impact of the distribution activity on the environment

Therefore, each of the decisions made by the player will affect these indicators. And considering that the objective of the SUSMILE project is to promote a sustainable last mile logistics, the environmental indicator will have an important weight.

4   4 Phases in the game

The game is composed by 4 phases:

1) Phase 1 – The decision settings
2) Phase 2 – The operating phase
3) Phase 3 – Simulation
4) Phase 4 – Analytics

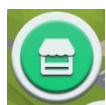## 4.1   Phase 1 – The decision settings
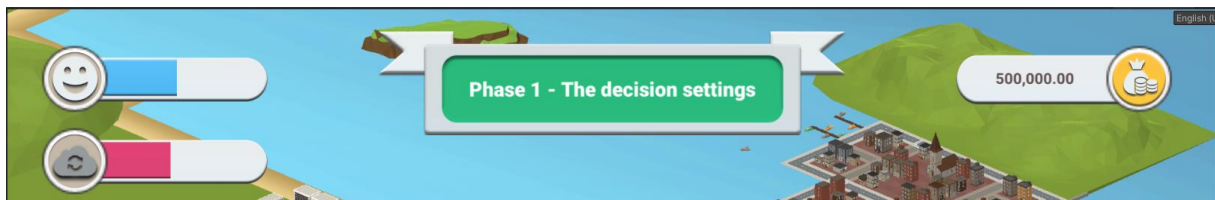
The player starts the game with a given available budget. But according to the number of logistic units that she/he must deliver in the city, the player must take decisions in three main areas before start playing.
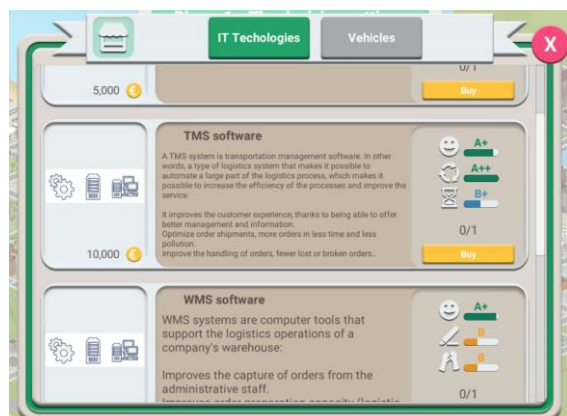

These two main decisions areas are:

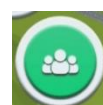- ***IT Technologies and Vehicles*** and,

- ***Human resources***

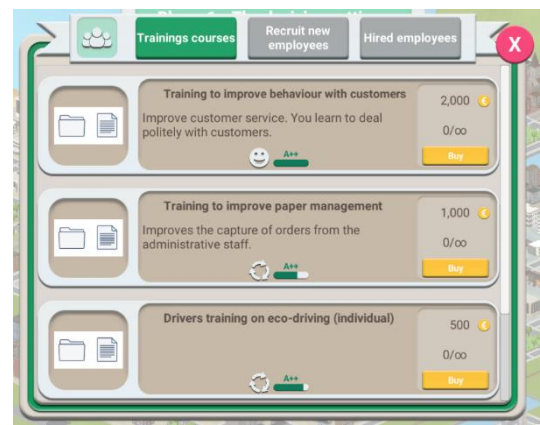| IT Technologies and Vehicles	Human resources
IT Technologies and Vehicles buying option is illustrated in the game as a shop, as the player must buy elements with the available budget.	The human resources options with an icon of people.

In the table below, all the options available in Phase 1 of the game are presented:

Table 2 All the options available in Phase 1

1. IT TECHNOLOGIES
1.1 Basic software for capacity calculation
1.2 TMS software
1.3 WMS software
1.4 Customer service software
1.5 GPS on board
2. VEHICLES
2.1 e-Bicycle
2.2 e-Motorcycle
2.3 e-Cargo cycle
2.4 Small Light vehicle - diesel
2.5 Small e-light vehicle
2.6 Big Light vehicle - diesel
2.7 Big Light vehicle - Natural gas
2.8 Big e-Light vehicle
2.9 Straight truck - diesel
2.10 Straight truck - Natural gas
2.11 Straight e-truck
2.12 Semi trailer - diesel
2.13 Semi trailer - Natural gas
2.14 Semi e-trailer
3. HUMAN RESOURCES
3.1 Training to improve behaviour with customers
3.2 Training to improve paper management
3.3 Recruit new driver (salary-year)
3.4 Recruit new logistics operator
3.5 Drivers training on eco-driving (individual)
3.6 Training on data management (individual)
3.7 Transfer employee

Finally, it is important to know the functionality behind the blue button. Pressing it will open the company and game information window (statistics).
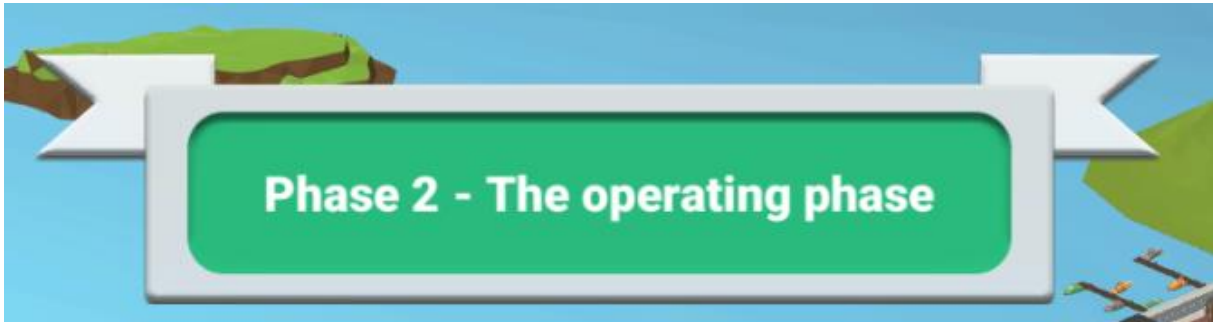
Once the decisions that we deem appropriate have been entered, press the red button to advance to the next phase: **Phase 2 – Operating phase**
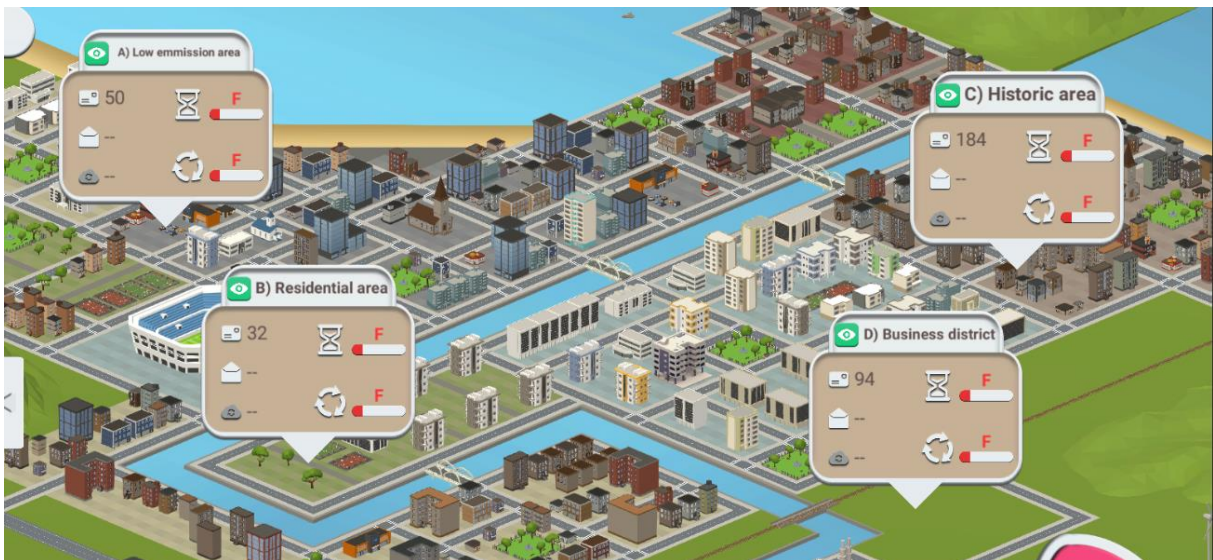
4.2   Phase 2 - Operating phase

The second phase is the operating phase.

On the city map, we will see the area's information, inside a poster: *number of orders to deliver and the level of pollution*.

On the left side of the screen, we will see our drivers.

In this phase we will basically have to equip our drivers with the technology and with the vehicles that we have purchased and we will have to assign an area to the drivers.

The **objective of this phase is to deliver all the orders** requested in each area.

Assigning IT & Vehicles

To assign the vehicles and technologies to our drivers, we must click on the image of the driver we want to work with. Within the window that opens, we will click on the green buttons "+" to assign one of the purchased items.
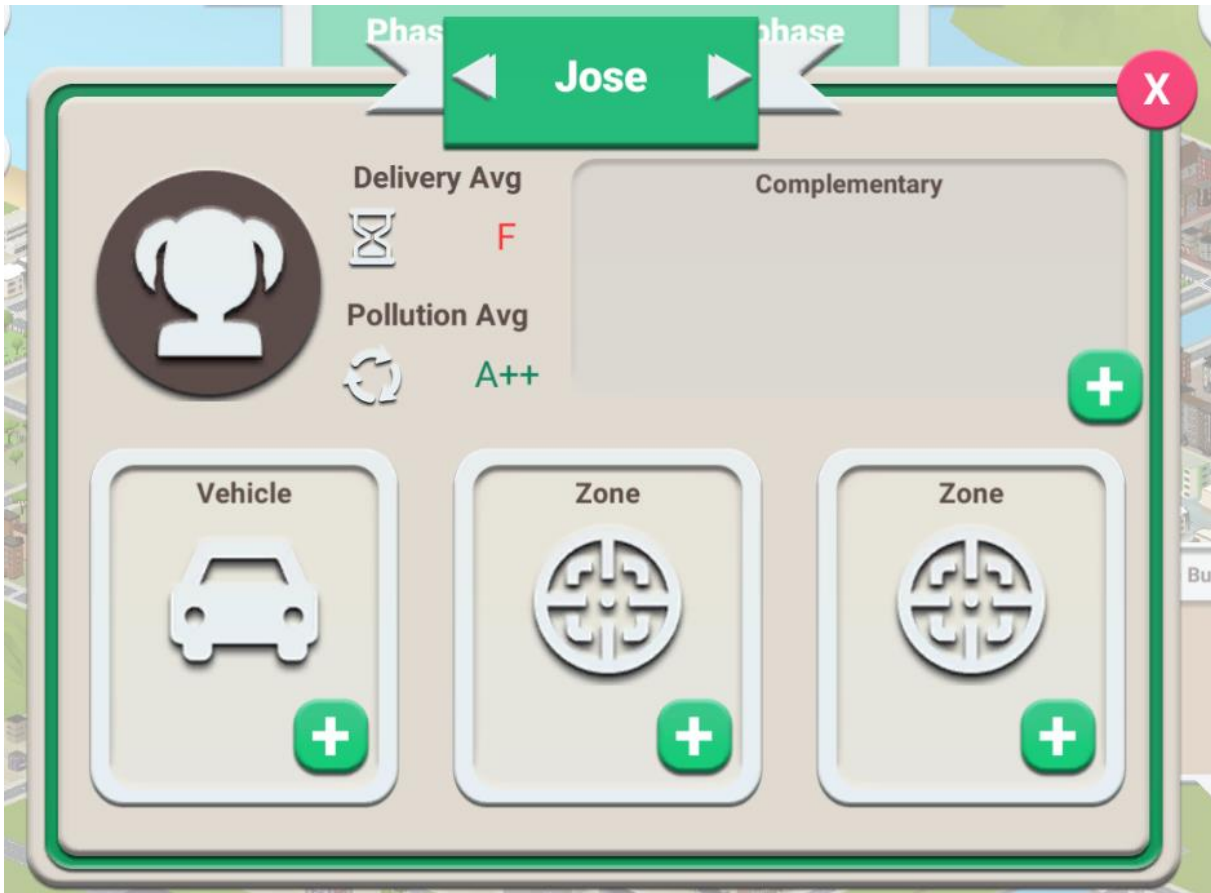

SELECTING A VECHICLE		
Push the ,+' green button	**Select the vechicle**	**Selected vehicle**
		(push red '-' button to remove the selection)

SELECTING A ZONE			
Push the ,+' green button	**Select the zone pressing the green button**	**Assign working time table, pressing the clock button**	**Select the hours, and close the panel pressing the red ,x' button** **(max. 8 hour)**

We can assign only one or two zones.

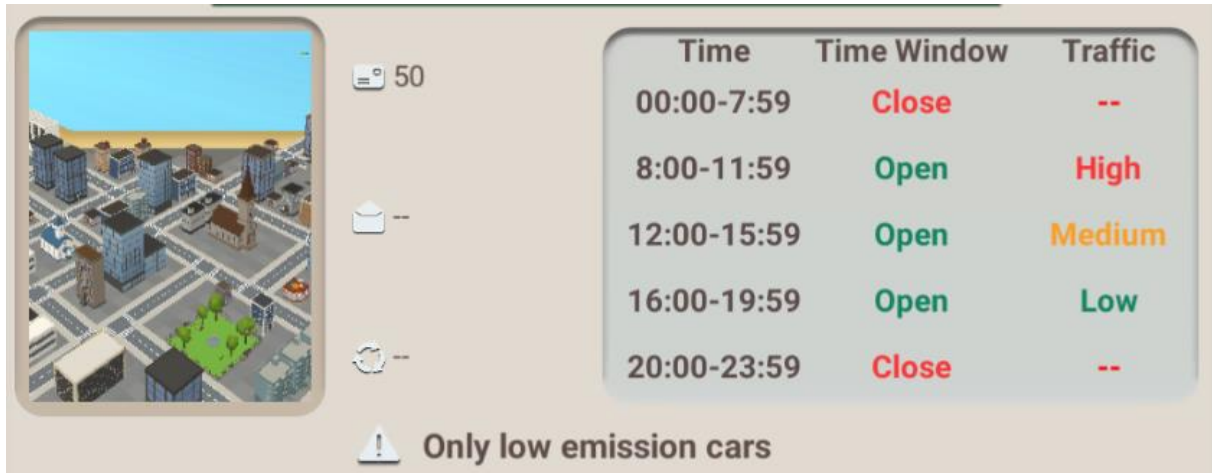Watch out! If you do not assign a schedule, the driver will not do anything.

SELECTING IT TECHNOLOGY		
Push the ,+' green button	**Select the IT**	**Selected IT**
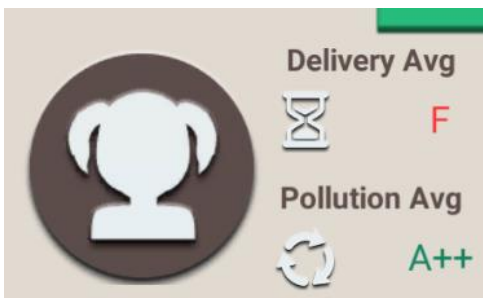
The delivery average capacity and the pollution average capacity will change depending on the equipment assigned to the driver.

Zones window

Pressing the "eye" green button inside the zone's panel, the zone information window will show.
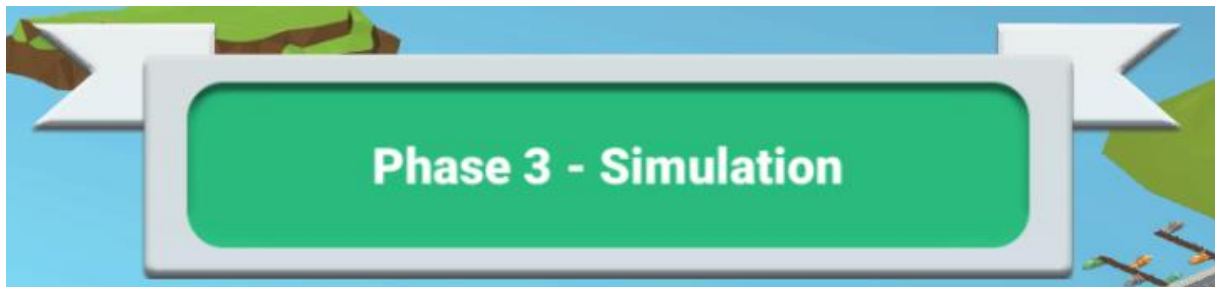

Once the decisions that we deem appropriate have been entered, press the red button to advance to the next phase: **Phase 3 – Simulation**

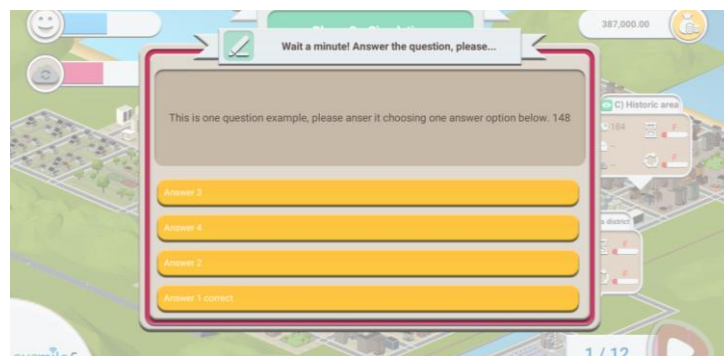## 4.3   Phase 3 – Simulation

The third phase is the simulation phase.

We will not have to make any decisions; we will simply see how time progresses. As time passes, the data on the city posters will be updated.

In this way we will be able to know how many orders have been delivered and if the level of contamination increases or decreases.
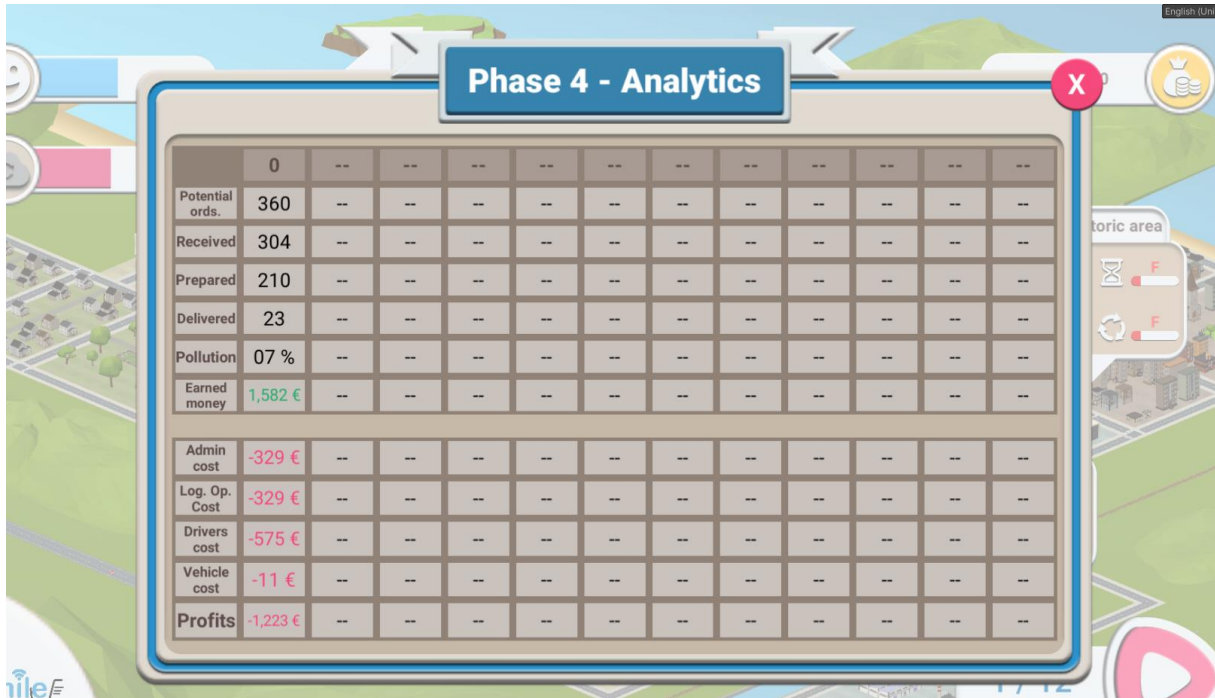

From time to time, some questions will be displayed, and the user must answer them. If the user answers correctly, he or she will earn euros that will be added to his/her budget.

It seems an interesting way to be able to work on the user's knowledge.

4.4   Phase 4 – Analytics of the game

Once the simulation is finished, we will go to phase 4, the analytics phase with the information data that summarizes how the simulation has gone.

Once the analysis window is closed, we will return to the next round's phase 1.

And everything starts again.

This is the main game dynamic: go through the 1, 2, 3 and 4 phases, and comeback to phase 1 of the next round. In the new round, we will have to analyze the new objectives and make decisions again.

In this way, we are simulating the history of our logistics company.