





User Manual for EcoSphere software

INTEGRATIVE PROJECT

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GROUP 011 - PROS

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ISEP - SOFTWARE ENGINEERING



Gl	ossary	2
ln	troduction	7
Sy	stem requirements	7
Sy	stem Overview	8
Sy	stem Features	9
	Do Login	9
	Know the Development Team	. 10
	Admin menu (por as imagens quando estiver completo)	. 11
	Feature 1 - Register a skill that a collaborator may have	. 11
	Feature 2 - Register a job that a collaborator may have	. 13
	Feature 3 - Register a collaborator	. 15
	Feature 4 - Add skill to a collaborator	. 17
	Feature 5 - Generate a team proposal automatically	. 19
	Feature 6 - Register Vehicle	. 21
	Feature 7 - Register Vehicle maintenance	. 24
	Feature 8 – Add a green space	. 26
	Feature 9 - Add an entry to the To-do List	. 28
	Feature 10 – Add an entry to the Agenda	. 29
	Feature 11 – Assign a team to an Agenda Entry	. 30
	Feature 12 – Add a vehicle to an agenda entry	. 31
	Feature 13 – Postpone an entry in the agenda	. 32
	Feature 14 – Cancel an entry in the Agenda	. 33
	Feature 15 – List green spaces	. 34
	Feature 16 – Consult tasks assigned to a collaborator	. 36
	Feature 17 – Check emails of a collaborator	. 37
FΑ	.Q's	. 39
Tr	oubleshooting	. 43
Co	ontacts/Support	. 45

Glossary

Terms, Expressions and Acronyms (TEA) must be organized alphabetically.

TEA	Description
Aerator	It refers to an apparatus for aerating water or other fluids, which works
	by introducing air into a bin of wheat or other grain to prevent moisture
	accumulation.
Agenda	It refers to the mechanism for planning the week's work. Each entry in
	the Agenda defines a task that will be carried out by a team in a green
	space at a certain time interval on a specific date.
Algorithms	It refers to step-by-step procedures designed to solve specific problems
	and perform tasks efficiently in the realm of computer science and
	mathematics.
Application	It refers to any application, product, software or program owned or
	controlled by a Company and its Affiliates.
Assembly Point	It refers to a location designated as the place for a group to meet or for
	people to gather in an emergency.
Attribute	It refers to a characteristic or quality that describes a person, entity or
	object.
Backhoe	It refers to a type of heavy machinery used in construction and other
	industries.
Barplot	It refers to a chart or graph that presents categorical data with
	rectangular bars with heights or lengths proportional to their values.
Bench	It refers to a long seat for several people, typically made of wood or
	metal.
Blower	It refers to a device or machine used to create airflow.
Boxplot	It refers to a simple way of representing statistical data on a plot in
	which a rectangle is drawn to represent the second and third quartiles,
	usually with a vertical line inside to indicate the median value.
Branch	It refers to a location, other than the main office, where a business is
	conducted.
Bricklayer	It refers to a location, other than the main office, where a business is
	conducted.
Brush Cutter	It refers to a powered gardening or landscaping tool designed for cutting
	through dense vegetation.
Budget	It refers to a spending plan based on income and expenses.
Budget Manager	It refers to people who handle company finances as part of their role.
Bug	It refers to an unexpected behavior or defect in the software that causes
	it to behave incorrectly or produce incorrect results.
Business	It refers to an economic activity that involves the exchange, purchase,
	sale or production of goods and services with a motive to earn profits
	and satisfy the needs of customers.
Camelcase	It refers to a pattern of writing used in Java normally used to create
	variables. It consists of writing the first word in lower case and then
	writing upper case on the first letter of each word.
Chainsaw	It refers to a portable mechanical saw equipped with a rotating chain of
	sharp teeth attached to a guide bar.

Cistern	It refers to a reservoir or tank designed to store water.	
Clerk	-	
Clerk	It refers to the person responsible for carrying out various business supporting activities on the system.	
Client	It refers to an organization or individual for whom the project is being	
Client	developed. They provide requirements and feedback throughout the	
	project lifecycle.	
CLK		
	It refers to the acronym for Clerk.	
Closed Van	It refers to a vehicle with an enclosed cargo area, typically used for	
C-efficient of Channel	transporting goods or materials.	
Coefficient of Skewness	It refers to a statistical measure used to determine the strength and	
Callahanatan	direction of skewness within a dataset.	
Collaborator	It refers to the employee of the organization who carries out design,	
	construction, and/or maintenance tasks for green areas, depending on	
au n	their skills.	
CLB	It refers to the acronym for Collaborator.	
Comma-separated values	It refers to a text file that has a specific format which allows data to be	
(CSV)	saved in a table structured format.	
Competency	It refers to a skill, knowledge and ability that individuals possess,	
o: o:	defining their proficiency in performing specific tasks.	
Construction Site	It refers to an area where building or infrastructure construction work is	
	being undertaken.	
Deployment	It refers to the process of releasing a software application or system into	
Davis	a production environment for end-users to access.	
Designer	It refers to a person who devises or executes designs, especially one	
Diam.	who creates forms, structures, and patterns.	
Diary	It refers to a planning tool that defines tasks to be carried out by a team in a green space at a certain time interval on a specific date.	
Disc Harrow		
DISC Harrow	It refers to an agricultural implement used to till soil where crops are to be planted.	
Drainage System	It refers to a network of structures, pipes, and channels designed to	
Diamage System	manage and control the flow of water, both surface runoff and	
	groundwater, away from an area.	
Drinking Fountain	It refers to a device designed to provide access to drinking water in	
	public places.	
Document type (DocType)	It refers to a type of document that is used to prove a person's identity.	
Electrician	It refers to a person who installs, operates, maintains, or repairs electric	
Licoti idian	devices or electrical wiring.	
Emergency Plan	It refers to procedures for handling sudden or unexpected situations.	
Emergency Sign	It refers to a safety sign indicating the nearest location of or directions to	
Emergency Sign	emergency related facilities.	
Equipment	It refers to a set of articles or physical resources serving to equip a	
Equipment	person or thing.	
Evacuation	It refers to the act of moving people from a dangerous place to	
Liacadioli	somewhere safe.	
Evacuation Point	It refers to a pre-designated safe location where occupants gather post-	
	evacuation.	
Exercise Machine	It refers to a piece of equipment designed for physical exercise.	
Facility	It refers to any machine used for physical exercise.	
1 defiley	it refers to any machine used for physical exercise.	

Feature	It refers to the specific functionality or capability of the software.	
	Features are often described in user stories.	
Fleet	It refers to a group of vehicles that are owned and managed by a single business.	
Fleet Manager	It refers to a person managing the fleet park, machines, equipment, and	
	vehicles, ensuring their good condition and assigning them to the tasks to be carried out.	
FM	It refers to the acronym for Fleet Manager.	
Garden	It refers to a garden space with or without trees with little or no	
darden	equipment.	
Graph	It refers to a discrete structure that consist of a set of points and a set of	
•	lines joining pairs of points.	
Green Space	It refers to an area for collective use, such as gardens and parks,	
	fundamental for people's quality of life, especially in urban or semi-	
	urban context.	
Green Spaces Manager	It refers to the person responsible for managing the green spaces in	
	charge of the organization.	
Green Spaces User	It refers to a mechanism for planning the week's work. Each entry in the	
	Agenda defines a task that will be carried out by a team in a green space	
	at a certain time interval on a specific date.	
GSM	It refers to the acronym for Green Space Manager.	
GSU	It refers to the acronym for Green Space User.	
HRM	·	
	It refers to the acronym for Human Resources Manager.	
Human Resources	It refers to a person who manages human resources and defines teams	
Manager	based on the needs of ongoing projects and the skills of the employees.	
Industrial Revolution	It refers to the transition from agrarian and manual labor-based	
	economies to industrialized economies characterized by mechanized	
	manufacturing and technological advancements. It began in the late	
	18th century in Britain and later spread to other parts of Europe and the United States.	
Infrastructure	It refers to a structure for climbing that consists of two long pieces	
	joined at short distances by crosspieces on which one may step.	
IntelliJ Idea	It refers to a Java/JVM language dedicated IDE that has many exclusive	
	features compared to other more general IDEs. It will be our IDE of	
	preference.	
Irrigation System	It refers to the artificial application of water to the soil through various	
	systems of tubes, pumps, and sprays.	
JaCoCo plugin	It refers to a Java agent responsible for instrumenting the byte code	
	while running the tests.	
	Wille rulling the tests.	
Javadoc	It refers to a tool that generates Java code documentation in the HTML	
Javadoc	-	
Javadoc JavaFX 11	It refers to a tool that generates Java code documentation in the HTML	
	It refers to a tool that generates Java code documentation in the HTML format from Java source code.	
	It refers to a tool that generates Java code documentation in the HTML format from Java source code. It refers to a software development tool that can run a program with a	
JavaFX 11	It refers to a tool that generates Java code documentation in the HTML format from Java source code. It refers to a software development tool that can run a program with a GUI. It is often used to develop web applications. It refers to a task or piece of work.	
JavaFX 11 Job JUnit 5 framework	It refers to a tool that generates Java code documentation in the HTML format from Java source code. It refers to a software development tool that can run a program with a GUI. It is often used to develop web applications. It refers to a task or piece of work. It refers to a unit testing framework for Java programming language.	
JavaFX 11	It refers to a tool that generates Java code documentation in the HTML format from Java source code. It refers to a software development tool that can run a program with a GUI. It is often used to develop web applications. It refers to a task or piece of work.	

	analytical basis for decision making and help focus attention on what	
	matters most.	
Ladder	It refers to a piece of equipment used for climbing up and down, that	
	consists of two vertical bars or pieces of rope joined to each other by a	
	set of horizontal steps.	
Lake	It refers to a fixed body of water.	
Large-sized park	It refers to multi-function space with diverse garden spaces, and woods,	
	including varied equipment and services.	
Lawnmower	It refers to a machine used for cutting grass.	
Lifting Platform	It refers to a multi-functional machinery used for lifting and loading	
	people or goods vertically.	
Lighting System	It refers to a network of lighting fixtures and controls designed to	
	illuminate indoor or outdoor spaces efficiently and effectively.	
Linear Regression Model	It refers to a model that describes the relationship between a	
	dependent variable, y, and one or more independent variables, X.	
Machine	It refers to a physical system that uses power to apply forces and control	
	movement to perform an action.	
Mean	It refers to a numeric quantity representing the center of a collection of	
	numbers and is intermediate to the extreme values of a set of numbers.	
Median	It refers to the value separating the higher half from the lower half of a	
	data sample, a population, or a probability distribution.	
Medium-sized park	It refers to green space with a few hundred or thousands of square	
	meters with a wooded garden area, including some infrastructures like	
	toilets, drinking fountains, irrigation system, lighting, children's	
	playground.	
Meeting Point	It refers to an area in a large public place where people can arrange to	
	meet.	
Minimal Viable Product	It refers to the initial version of a product with just enough features to	
Mariainal Master Diana	satisfy early customers and provide feedback for future development.	
Municipal Master Plans	It refers to documents that outline a municipality's long-term vision and goals for land use, development, and growth within its jurisdiction.	
Municipality	It refers to a city or town government with a geographical area	
ividincipality	recognized by law and run by a local government.	
MusgoSublime	It refers to the organization dedicated to the planning, construction, and	
	maintenance of green spaces for collective use.	
MVP	It refers to the acronym for Minimal Viable Product.	
Open Box Van	It refers to open body vans with no sides or roof to allow for easy	
- h	loading and versatility.	
Operating Machine	It refers to heavy machinery designed to perform specific tasks.	
Organization	It refers to an entity such as a company, or an institution comprising one	
- g	or more people and having a particular purpose.	
Outliers	It refers to a data point that differs significantly from other observations.	
Park	It refers to an area of natural, semi-natural or planted space set aside for	
	human enjoyment and recreation.	
Picnic Area	It refers to an outdoor recreational space specifically designed for	
	people to gather and enjoy meals, socialize, and relax in a natural	
	setting.	
Pie Chart	It refers to a type of graph in which a circle is divided into sectors that	
Chart	Teres to a type or graph in which a choic is divided lifto sectors that	

	each represent a proportion of the whole.	
Pipe	It refers to a tubular section or hollow cylinder, usually but not	
pc	necessarily of circular cross-section, used mainly to convey substances	
	which can flow — liquids and gases (fluids), slurries, powders and	
	masses of small solids.	
Plant Material	It refers to any plant that is used in the spaces managed by the	
	organization.	
Playground	It refers to a place designed to provide an environment for children that	
	facilitates play, typically outdoors.	
Polynomial Regression	It refers to characterizing fitting a nonlinear relationship between the x	
	value and the conditional mean of y.	
Portal	It refers to a secure online platform or interface that provides	
	employees, customers, partners, or stakeholders with access to specific	
	resources, tools, or information relevant to their roles or relationships	
	with the organization.	
Power Supply	It refers to an electrical device that supplies electric power to an	
	electrical load.	
Quality Assurance	It refers to the process of ensuring that the software meets specified	
	quality standards through testing and validation.	
Rain Water Conduction	It refers to the process by which rainwater moves through various	
	pathways within the park environment.	
Report	It refers to a structured document that provides information about a	
	particular subject, situation, or event.	
Rotating Machine	It refers to a vehicle used in the process of crop rotation.	
Route	It refers to a path or course that is followed to reach a particular	
	destination or to navigate from one point to another.	
Scalable Vector Graphics	It refers to an XML-based vector image format for defining two-	
	dimensional graphics.	
SCRUM	It refers to an agile methodology used to manage teamwork in an	
	iterative and incremental development process.	
SVG	It refers to the acronym for Scalable Vector Graphics.	
Skewness	It refers to a measure of the asymmetry of the probability distribution of	
	a real-valued random variable about its mean.	
Skill	It refers to a specific ability or competency that an individual possesses	
	and can apply within the organization to contribute to its goals and	
	objectives.	
Sprayer	It refers to a device used to spray a liquid.	
Standard Deviation	It refers to open body vans with no sides or roof to allow for easy	
	loading and versatility.	
Statistical Analysis	It refers to collecting and analyzing data to discern patterns and trends.	
Survey	It refers to an activity in which many people are asked a question or a	
	series of questions to gather information about what most people do or	
	think about something.	
Sprint	It refers to a set period during which specific work must be completed	
	and ready for review.	
Task	It refers to a specific action or assignment that needs to be completed to	
	achieve a particular goal or objective.	
Task List	It refers to a prioritized list of items that need to be completed within a	

	specific amount of time.	
Taxpayer Identification	It refers to a form of personal identification that is essential for	
Number	purchasing goods or services, entering into contracts, opening bank accounts, etc.	
TDD	It refers to a software development approach in which tests are written before the code they are testing.	
Team	It refers to a group of individuals who come together to work collaboratively towards a common goal or objective.	
To-do List	It refers to a list of errands and other tasks.	
User Portal	It refers to a platform where parks and garden users can post comments, and report faults and malfunctions of equipment.	
User Story	It refers to the description of a software feature from the end-user's perspective.	
US	It refers to the acronym for User Story.	
Vehicle	It refers to a thing used for transporting people or goods, especially on land.	
Vehicle and Fleet	It refers to a person who manages the fleet park, the machines,	
Manager	equipment and vehicles, ensuring their good condition and assigning them to the tasks to be carried out	
VFM	It refers to the acronym for Vehicle and Fleet Manager.	
Walking Path	It refers to a designated route or trail specifically intended for pedestrians to walk along.	
Water Closet (WC)	It refers to a small room or enclosure with a toilet.	
Water Point	It refers to a location where people can access water.	
Weeder	It refers to a device, as a tool or machine, for removing weeds.	
Wooded Area	It refers to land covered with trees or forest shrubs.	

Introduction

This document provides comprehensive guidance on the EcoSphere Software.

With the intention of a better understanding of the application for the user, this user manual, contains a glossary that explains some of the more complex terms as well as some system features explained to contribute to the better understanding of the application. The user manual specifies the features of the application and has a list of possible situations that might help the user identify and solve various issues that may occur while using the application. Our application pretends to help in the planning, construction and maintenance of green spaces for collective use, including human resources professionals, fleet managers, and staff responsible for maintaining green areas and associated activities.

System requirements

The EcoSphere software requires a system with Java 8 or higher, Graphviz 10.0.1 or higher, a computer with at least a 2GHz CPU (integrated GPU), 4GB RAM or more, and 5GB of free disk space (program installation not included).

System Overview

EcoSphere is a robust solution crafted to streamline and optimize the oversight of natural environments and help MusgoSublime, an organization dedicated to the planning, construction and maintenance of green spaces for collective use in their multiple dimension. Its main goals are centered on fostering efficient organization, upkeep, and improvement of green areas, with a focus on ensuring their well-being and long-term viability.

EcoSphere offers a comprehensive suite of features designed to streamline and enhance green space management:

• Employee Registration and Management

EcoSphere simplifies the registration and management of employee information, allowing users to store and maintain detailed records of their skills and job history. This centralized database enables efficient task and role assignments, optimizing the use of workforce resources.

• Vehicle Registration and Management

EcoSphere allows users to register and manage vehicles crucial for green space operations. Users can track vehicle details such as model, registration, and maintenance schedules. This feature ensures vehicles are well-maintained, reducing downtime and enhancing operational efficiency.

• Team Proposal Generation

EcoSphere streamlines team formation by generating proposals based on required competencies. It analyzes employee skills and qualifications to propose the best team compositions for specific tasks or projects.

• Task Management

EcoSphere provides robust tools for task management, essential for timely green area maintenance. The To-Do List feature lets managers register and prioritize tasks, while the Agenda feature facilitates scheduling, team assignments, and resource allocation, ensuring organized and effective task execution.

• Green Space Management

EcoSphere enables managers to register and categorize various green spaces, detailing the type (garden, medium-sized park, or large park) and area. This systematic documentation ensures all green spaces are easily accessible for management purposes.

Data Analysis

EcoSphere includes advanced data analysis tools to support informed decision-making in green space management.

This helps analyze water consumption costs for specific green spaces by collecting and evaluating water usage data. This feature aids managers in identifying high-consumption areas and inefficiencies, enabling strategies to optimize water usage and reduce costs. EcoSphere employs linear regression models to predict average monthly water consumption costs for new parks based on their size. Using historical data, this feature aids in budget planning and resource allocation.

It also tracks and analyzes equipment usage within green spaces. It monitors utilization rates, maintenance schedules, and performance metrics, providing insights to inform maintenance, replacement, and utilization decisions.

User Portal Data Collection

EcoSphere collects data from user portals on park usage, gathering information on visitor demographics, usage patterns, and preferences. This data helps managers tailor maintenance and management strategies to meet visitor needs and expectations.

• Optimal Route Determination

EcoSphere calculates optimal routes for pipe installations within green spaces using advanced algorithms. By considering terrain, distance, and water supply requirements, this feature ensures efficient water resource distribution, supporting robust irrigation systems.

Shortest Route to Assembly Points

EcoSphere determines the shortest evacuation routes within parks to designated assembly points. Custom algorithms visualize the shortest paths, ensuring safe and efficient evacuations.

System Features

Do Login

Console:

```
--- LOGIN UI ------
Enter UserId/Email: admin@this.app
Enter Password: admin
```

Illustration 1 - Login (console view)



Illustration 2 - Login (EcoSphere view)

Know the Development Team

Before diving into the main features and functionality of the application, we have the option to introduce the development team, the team of developers who brought this project to life.

Console:

Illustration 3 - Development Team (console view)

JavaFX:

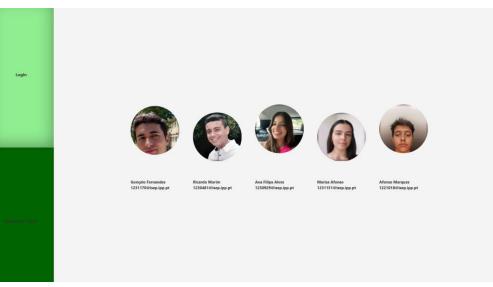


Illustration 4 - Development Team (EcoSphere view)

Admin menu (por as imagens quando estiver completo)

The main menu of our application is designed to be intuitive and easy to navigate. Here, you'll find all the features and functionalities that make our application so powerful.

Console:

Illustration 5 - Admin Menu (console view)

JavaFX:

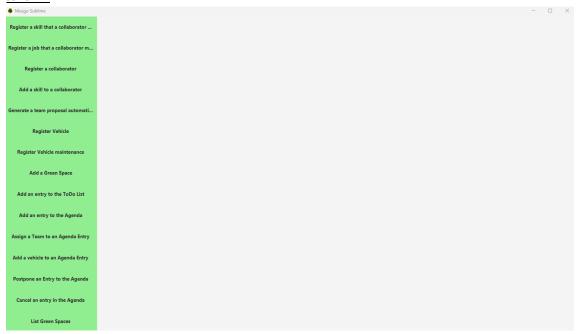


Illustration 6 - Main Menu (EcoSphere view)

Feature 1 - Register a skill that a collaborator may have

This feature enables the Human Resources Manager (HRM) to add skills to the system. These skills can later be added to a collaborator which will enable him to do certain tasks.

Step by Step:

- 1. Log in to EcoSphere as HRM.
- 2. In the menu select the option "register a skill that a collaborator may have".

- 3. Input the required skill name and description.
- 4. Review the entered information for accuracy.
- 5. Confirm the data by selecting the appropriate option.
- 6. Upon confirmation, receive a message indicating the successful addition of the new skill.

Observations:

- When registered the skill it is possible to verify its registration in the provided "skill list" list.
- Please note that this skill can be removed later. If you no longer need or want to use this skill, you can simply delete it from the list.

Console:

Illustration 7 - Register a skill that a collaborator may have (console view)

<u>JavaFX</u>:

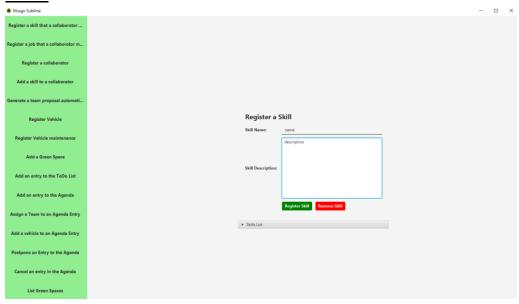


Illustration 8 - Register a skill a collaborator may have (EcoSphere view)

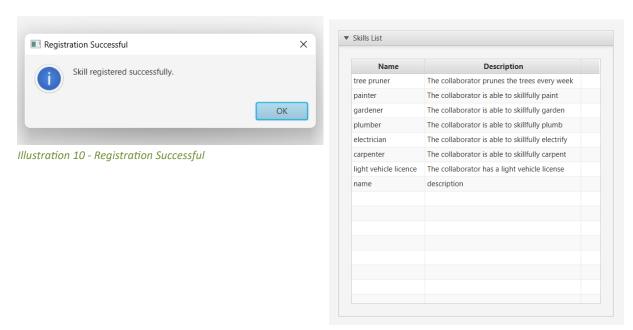


Illustration 9 - Skills List

Feature 2 - Register a job that a collaborator may have

This feature enables the Human Resources Manager (HRM) to add jobs to the system. These jobs can later be added to a collaborator which will enable him to do certain tasks

Step by Step:

- 1. Log in to EcoSphere as HRM.
- 2. In the menu select the option "register a job that a collaborator my have".
- 3. Fill in the job title and description details.
- 4. Review the entered data.
- 5. Confirm the job registration.
- 6. Upon confirmation, receive a success message.

Observations:

- When registered the job it is possible to verify its registration in the provided "job list" list.
- Please note that this job can be removed later. If you no longer need or want to use this skill, you can simply delete it from the list.

Console:

```
Job Name: job

Job Short Description: job description

Do you want to register the job? (S/N)

S

The Job was successfully registered.
Job Name = 'job' - shortDescription = 'job description'
```

Illustration 11 - Register a job that a collaborator may have (console view)

JavaFX:

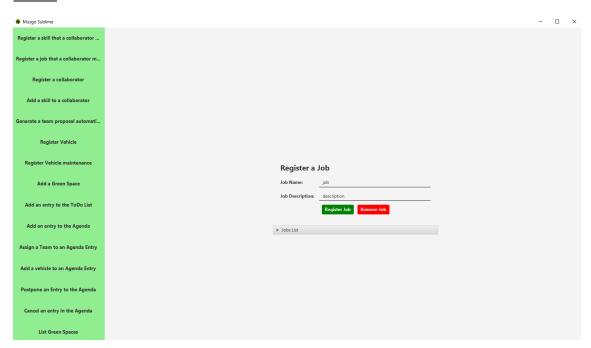


Illustration 12 - Register a job that a collaborator may have (EcoSphere view)

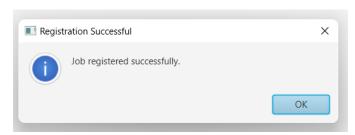


Illustration 13 - Registration Successful

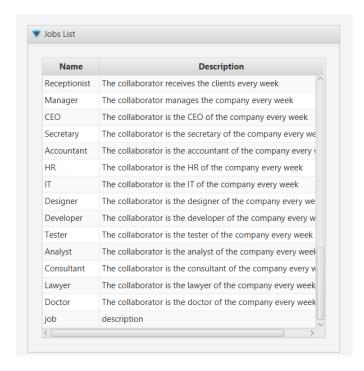


Illustration 14 - Jobs List

Feature 3 - Register a collaborator

This features provides the Human Resources Manager (HRM) the ability to register a collaborator with job-related information and characteristics.

Step by Step:

- 1. Log in to EcoSphere as HRM.
- 2. In the menu select the option "register a collaborator".
- 3. Enter the requested data for the new collaborator, with personal information, assigned job details and essential characteristics.
- 4. Review the entered information.
- 5. Confirm the provided data by selecting the appropriate option on the collaborator registration.
- 6. Upon confirmation, the system will display a success message confirming the creation of the new collaborator.

Observations:

- When registered the collaborator it is possible to verify its registration in the provided "collaborator list" list.
- Please note that this job can be removed later. If you no longer need or want to use this skill, you can simply delete it from the list.

Console:

```
Collaborator Name: João
Collaborator birth date: 1-2-2000
Collaborator admission date: 9-3-2024
Collaborator street name: Rua do Facho
Collaborator city: Esposende
Collaborator zip code: 1234-854
Collaborator phone: 912348948
Collaborator email: joao@musgo.app
Collaborator taxpayer number: 948391934
Collaborator ID type: CC
```

Illustration 15 - Register a collaborator (console view) pt.1

```
Select the job that the collaborator has:

1 - Job Name = 'Gandemen' - shortDescription = 'The collaborator prines the grass every week'

2 - Job Name = 'Felactric' - shortDescription = 'The collaborator paints the walls every week'

3 - Job Name = 'Felectrician' - shortDescription = 'The collaborator electrifies the house every week'

4 - Job Name = 'Plumber' - shortDescription = 'The collaborator carpets the house every week'

5 - Job Name = 'Canpenter' - shortDescription = 'The collaborator carpets the house every week'

6 - Job Name = 'Canpenter' - shortDescription = 'The collaborator carpets the house every week'

7 - Job Name = 'Canpenter' - shortDescription = 'The collaborator cleans the house every week'

8 - Job Name = 'Neiter' - shortDescription = 'The collaborator serves the food every week'

10 - Job Name = 'Neiter' - shortDescription = 'The collaborator serves the food every week'

11 - Job Name = 'Receptionist' - shortDescription = 'The collaborator serves the food every week'

12 - Job Name = 'Receptionist' - shortDescription = 'The collaborator serves the food every week'

13 - Job Name = 'Receptionist' - shortDescription = 'The collaborator is the company every week'

14 - Job Name = 'Receptionist' - shortDescription = 'The collaborator is the Collaborator is the company every week'

15 - Job Name = 'Secretary' - shortDescription = 'The collaborator is the secretary of the company every week'

16 - Job Name = 'Neiter' - shortDescription = 'The collaborator is the IR of the company every week'

17 - Job Name = 'Desciper' - shortDescription = 'The collaborator is the II of the company every week'

18 - Job Name = 'Desciper' - shortDescription = 'The collaborator is the II of the company every week'

19 - Job Name = 'Desciper' - shortDescription = 'The collaborator is the II of the company every week'

20 - Job Name = 'Neiter' - shortDescription = 'The collaborator is the II of the company every week'

21 - Job Name = 'Neiter' - shortDescription = 'The collaborator is the lowest of the company eve
```

Illustration 16 - Register a collaborator (console view) pt.2

```
Do you want to add a skill to the collaborator? (S/N) \ensuremath{\textit{N}}
```

Illustration 17 - Register a collaborator (console view) pt.3

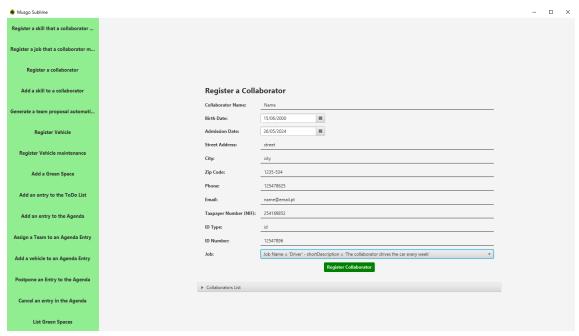


Illustration 18 - Register a collaborator (EcoSphere view)



Illustration 19 - Registration Successful

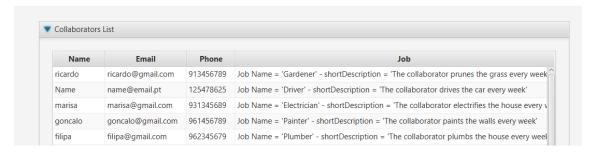


Illustration 20 - Collaborators List

Feature 4 - Add skill to a collaborator

Human Resources Manager (HRM) can assign skills to an employee using this feature. A skill added to a collaborator will enable him to do certain tasks, that he could not do before.

Step by Step:

- 1. Log in to EcoSphere as HRM.
- 2. In the menu select the option "Add skill to a collaborator"
- 3. Select the collaborator to whom skills will be assigned.

- 4. Choose the required skills from the available options.
- 5. Review the selected skills.
- 6. Confirm the skill assignment.

Observations:

- When assigned the skill it is possible to verify its assignment in the provided "added skills" list.
- Please note that this skill can be removed later. If you no longer need or want to use this skill, you can simply delete it from the list.

Console:

```
Select a collaborator:

1 - Name: 'ricardo',
Email: 'ricardo@gmail.com'

2 - Name: 'goncalo',
Email: 'goncalo@gmail.com'

3 - Name: 'marisa',
Email: 'marisa@gmail.com'

4 - Name: 'filipa',
Email: 'filipa@gmail.com'

5 - Name: 'collaborator',
Email: 'coll@gmail.com'

0 - Cancel

Type your option: 1
```

Illustration 21 - Add a skill to a collaborator (console view) pt.1

```
Select a skill:

1 - Skill Name = 'painter' - Skill Description = 'The collaborator is able to skillfully paint'

2 - Skill Name = 'gardener' - Skill Description = 'The collaborator is able to skillfully garden'

3 - Skill Name = 'plumber' - Skill Description = 'The collaborator is able to skillfully plumb'

4 - Skill Name = 'electrician' - Skill Description = 'The collaborator is able to skillfully electrify'

5 - Skill Name = 'carpenter' - Skill Description = 'The collaborator is able to skillfully carpent'

0 - Cancel

Type your option: 3

Do you want to add the skill to the collaborator? (S/N)

S

The skill was successfully added to the collaborator.
```

Illustration 22 - Add a skill to a collaborator (console view) pt.2

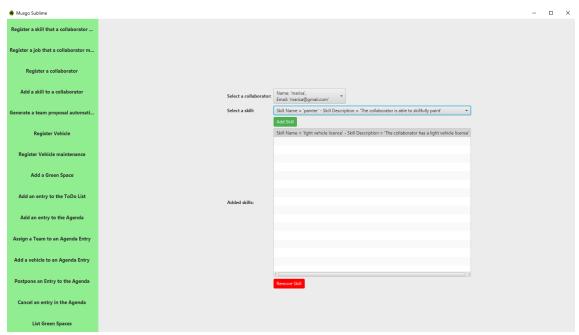


Illustration 23 - Add a skill to a collaborator (EcoSphere view)

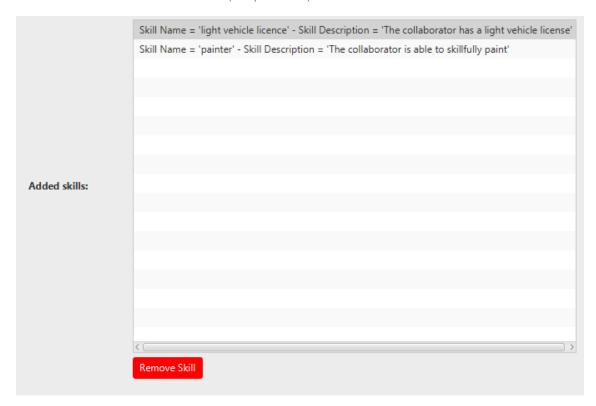


Illustration 24 - List of added skills

Feature 5 - Generate a team proposal automatically

This feature allows Human Resources Manager (HRM) to automatically generate a team proposal. These teams are temporary, each collaborator can only be in one team at a time, and a collaborator can only fit in the team if he has the necessary jobs and skills.

Step by Step:

- 1. Log in to EcoSphere as HRM.
- 2. In the menu select the option "Generate team proposal automatically".
- 3. Specify the minimum and maximum number of team members.
- 4. Select the necessary skills for the team.
- 5. Review the generated team proposal.
- 6. Confirm the generated team.
- 7. Upon confirmation, receive a success message.

Console:

```
To Choose the team requirements in one line choose the following format:

Maximum Team Size; Minimum Team size; «Required Skill Name» ... «Required
```

Illustration 25 - Generate a team proposal (console view)

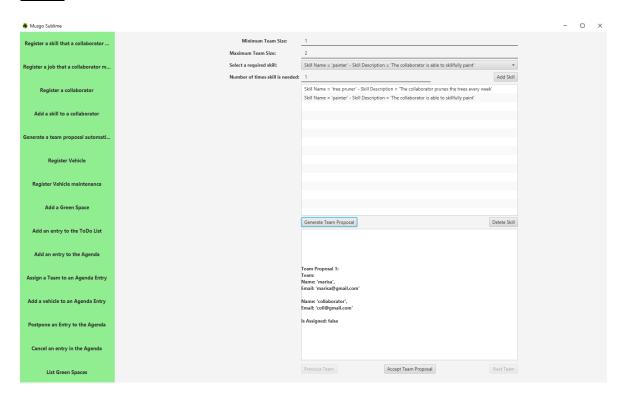


Illustration 26 - Generate a team proposal (EcoSphere view)

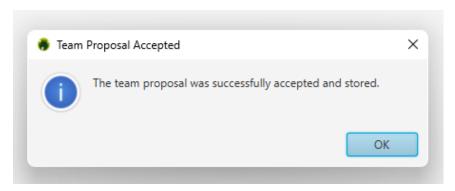


Illustration 27 - Team Proposal Accepted

Feature 6 - Register Vehicle

This feature allows the Fleet Manager (FM) to register a new vehicle and its characteristics in the system.

Step by Step:

- 1. Log in to EcoSphere as FM
- 2. In the menu select the option "Register a Vehicle".

- 3. Fill in the form with the necessary vehicle information.
- 4. Confirm the entered data.
- 5. Register the vehicle.

Observations:

- When registered the vehicle it is possible to verify its assignment in the provided "Vehicle's list" list.
- Please note that the registered vehicle can be removed later. If you no longer need or want to use the vehicle, you can simply delete it from the list.

Console:

```
Type your option: 3
-----Register a vehicle.-----
                                            Type:
                                             1 - Sedan
Plate: 25-df-24
                                              3 - Truck
Brand:
                                             4 - Add a new type
 1 - BMW
                                             0 - Cancel
  2 - Mercedes
 3 - Audi
                                            Type your option: 2
 4 - Toyota
 5 - Honda
                                            Tare Weight: 1200
  6 - Ford
  7 - Chevrolet
                                            Gross Weight: 1200
 8 - Hyundai
 9 - Nissan
                                            Current KM: 152360
 10 - Volkswagen
                                            Register Date: 06-06-2024
  11 - Add a new brand
  0 - Cancel
                                            Acquisition Date: 06-06-2024
Type your option: 1
                                            Checkup Interval KM: 1235
Model:
                                            KM Last Maintenance: 12300
                                            Do you want to register the vehicle? (S/N)
  5 - Add a new model
  0 - Cancel
                                            The vehicle was successfully registered.
```

Illustration 29 - Register a Vehicle (console view) pt.1

Illustration 28 - Register a Vehicle (console view) pt.2

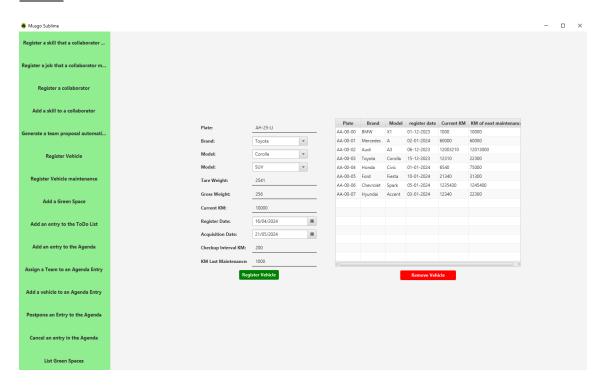


Illustration 30 - Register a Vehicle (EcoSphere view)



Illustration 31 - Vehicle List

Feature 7 - Register Vehicle maintenance

This feature enables the Fleet Manager (FM) to register a vehicle's check-up based on a list of vehicles's needing maintenance.

Step by Step:

- 1. Log in to EcoSphere as FM.
- 2. In the menu select the option "Register Vehicle maintenance".
- 3. Choose the vehicle for check-up registration from the provided list.
- 4. Input the date of the maintenance and the current kilometers.
- 5. Review the entered information.
- 6. Confirm the check-up registration.

Console:

```
Displaying vehicles needing maintenance.

Choose one to register its maintenance:

1 - Mercedes A (AA-00-01)

2 - Other car

0 - Cancel

Type your option: 1

Enter the maintenance date (dd-mm-yyyy): 06-06-2024

Enter the vehicle's current KM at that day: 1234560

Do you want to register the maintenance? (S/N)

S

The vehicle's maintenance was successfully registered.
```

Illustration 32 - Register a vehicle's maintenance (console view)

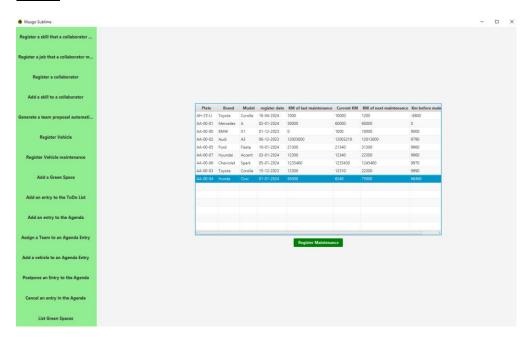


Illustration 33 - Register a vehicle's maintenance (EcoSphere view)

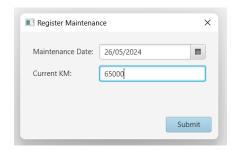


Illustration 34 - Register Maintenance

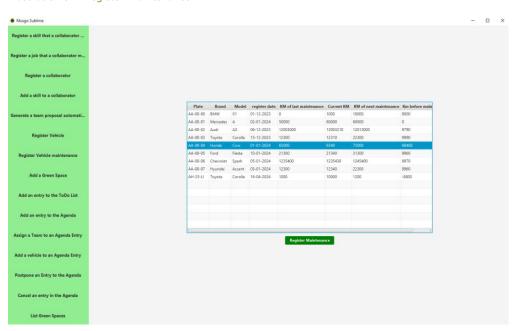


Illustration 35 - Maintenance registered

Feature 8 – Add a green space

This functionality enables the Green Space Manager (GSM) to register a green space (garden, medium-sized park, or large-sized park) along with its area, name and address.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Add a Green Space".
- 3. Enter the required green space information such as name, type (garden, medium-sized park, large-sized park), address, and area.
- 4. After confirmation, the green space information will be displayed in the list of green spaces.

Observations:

- When added the green space it is possible to verify its assignment in the provided "Green Space list" list.
- Please note that the added green space can be removed later. If you no longer need or want to use the green space, you can simply delete it from the list.

Console:

```
Name: park

Street: street

Zip Code: 4510-265

City: ciry
Area: 1254
1. GARDEN
2. MEDIUM_SIZED_PARK
3. LARGE_SIZED_PARK
Select a type: 1

Do you want to register the green space? (S/N)
S
The green space was successfully registered.
Park Name = Cidade - Address = Rua da Cidade 1234-456 Porto - Area = 10000.0 - Type = LARGE_SIZED_PARK
Park Name = Parque - Address = Rua do Covelo 1211-443 Porto - Area = 5000.0 - Type = MEDIUM_SIZED_PARK
Park Name = Covelo - Address = Rua do Covelo 1211-443 Porto - Area = 5000.0 - Type = MEDIUM_SIZED_PARK
Park Name = park - Address = street 4510-265 ciry - Area = 1254.0 - Type = GARDEN
```

Illustration 36 - Register Green Space (console view)

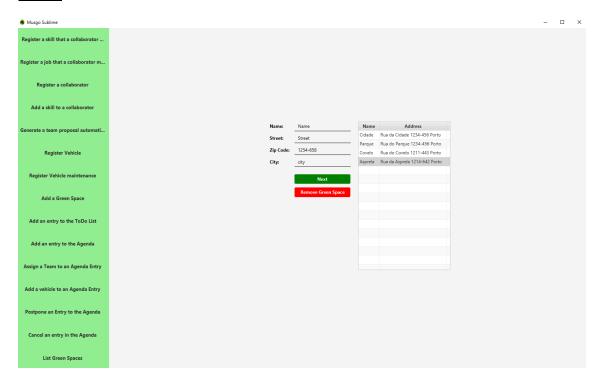


Illustration 37 - Register a green space (EcoSphere view) pt.1

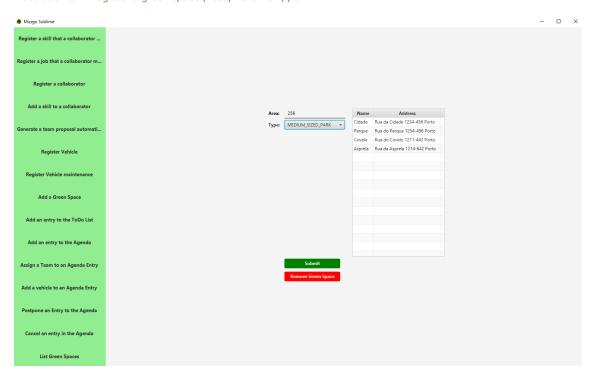


Illustration 38 - Register a green space (EcoSphere view) pt.2



Illustration 39 - Green Space List

Feature 9 - Add an entry to the To-do List

This functionality allows the Green Space Manager (GSM) to add a new task to the To-Do List.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Add an entry to the To-do List".
- 3. Enter the required details such as title, description, urgency (High, Medium, Low), select a green space, and expected duration.
- 4. After confirmation, receive a success message.

Observations:

- When added the new entry it is possible to verify its assignment in the provided "To-do List" list on the "Add an entry to the Agenda" in the menu.
- Please note that the added entry can be removed later. If you no longer need or want to use the entry, you can simply delete it from the list.

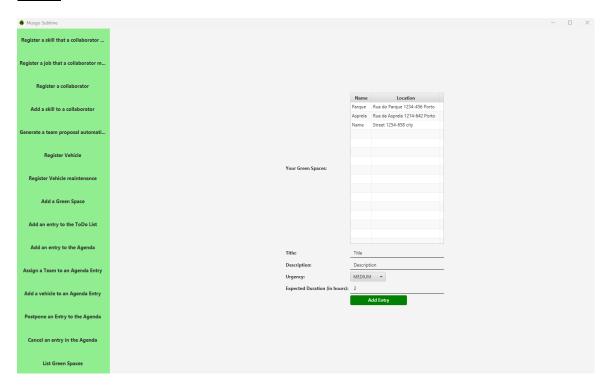


Illustration 40 - Add an Entry to the To-do List (EcoSphere view)

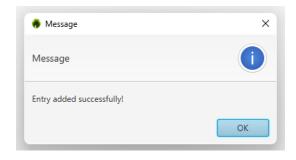


Illustration 41 - Success Message

Feature 10 - Add an entry to the Agenda

This functionality allows the Green Space Manager (GSM) to add a new entry to the agenda.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Add an entry to the Agenda".
- 3. Select an entry from the to-do list and enter the remaining details such as starting date and other optional information such as end date and expected duration in hours.
- 4. After confirmation, receive a success message.

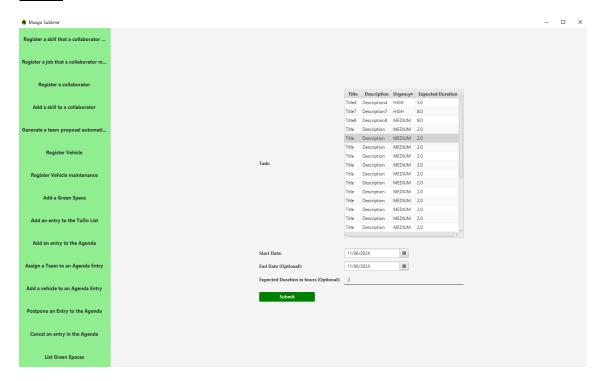


Illustration 42 - Add an entry to the Agenda (EcoSphere view)

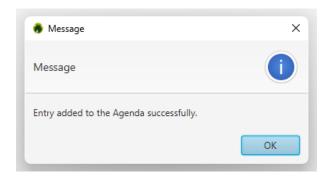


Illustration 43 - Success Message

Feature 11 - Assign a team to an Agenda Entry

This functionality enables the Green Space Manager (GSM) to assign a team to an agenda entry.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Assign a team to an Agenda Entry".
- 3. Choose an entry from the entry list.
- 4. Choose a team from the list of available teams.
- 5. Add team
- 6. After confirmation, the agenda will be updated with the new information.

Observations:

• Please note that the assigned entry can be removed later. If you no longer need or want to use the entry, you can simply delete it from the agenda.

JavaFX:

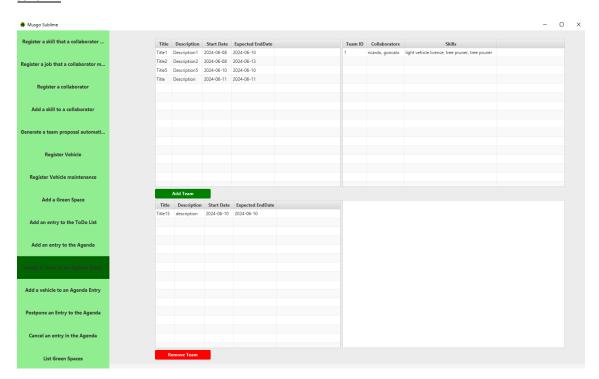


Illustration 44 -Assign a team to an Agenda Entry (EcoSphere view)

Feature 12 – Add a vehicle to an agenda entry

This functionality allows the Green Space Manager (GSM) to assign one or more vehicles to an agenda entry.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Add a vehicle to an Agenda Entry".
- 3. Select an entry.
- 4. Choose one or more vehicles from the list of available vehicles.
- 5. After confirmation, the agenda will be updated with the new information.

Observations:

• Please note that the added vehicles can be removed later. If you no longer need or want to use the vehicles, you can simply delete it from the list.

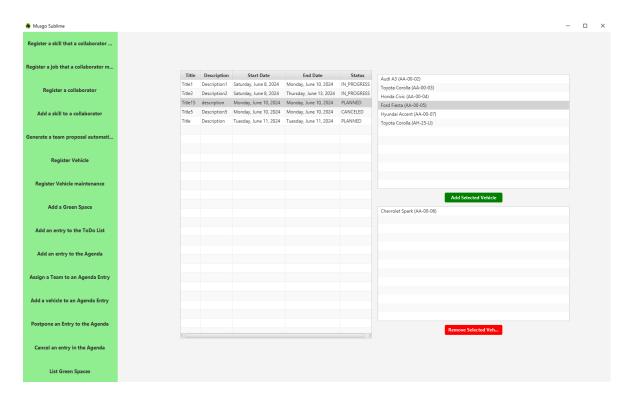


Illustration 45 - Add a vehicle to an agenda entry (EcoSphere view)

Feature 13 - Postpone an entry in the agenda

This functionality allows the Green Space Manager (GSM) to postpone an agenda entry to a future date.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Postpone an entry in the Agenda".
- 3. Select an entry and choose a new date.
- 4. Postpone the entry to the new date.
- 5. After confirmation, receive a success message.
- 6. The agenda will be updated with the new information.

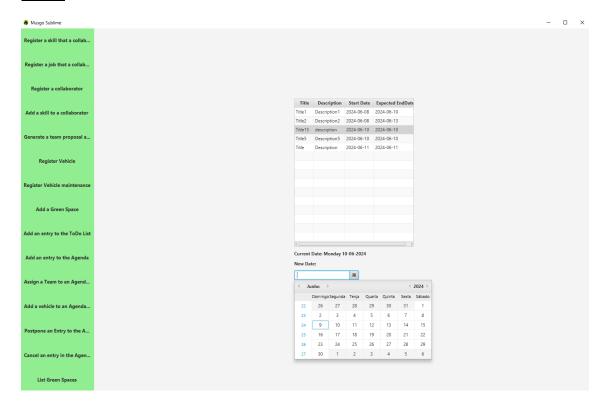


Illustration 46 - Postpone an entry in the Agenda (EcoSphere view)

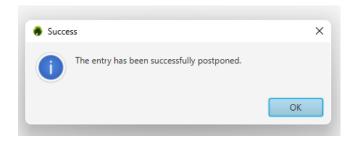


Illustration 47 - Success message

Feature 14 - Cancel an entry in the Agenda

This functionality allows the Green Space Manager (GSM) to cancel an agenda entry.

Step by step:

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "Cancel an entry in the Agenda".
- 3. Select an entry and choose the option to cancel it.
- 4. After confirmation, receive a success message.
- 5. The agenda will be updated with the new information.

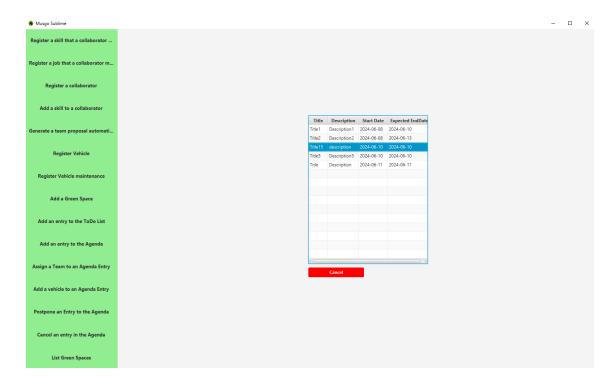


Illustration 48 - Cancel an entry in the Agenda (EcoSphere)

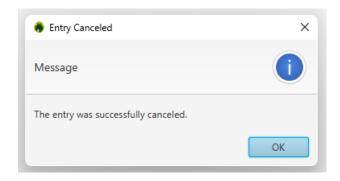


Illustration 49 - Success Message

Feature 15 – List green spaces

This functionality allows the Green Space Manager (GSM) to view all green spaces they manage.

Step by step

- 1. Log in to EcoSphere as GSM.
- 2. In the menu select the option "List Green Spaces".
- 3. Select the type of algorithm you want the list to be displayed.
- 4. The system will automatically display the updated list of green spaces managed by the logged-in GSM along with their information.

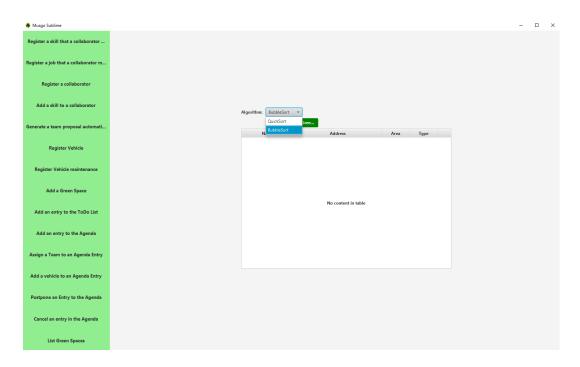


Illustration 50 - List green spaces (EcoSphere view)

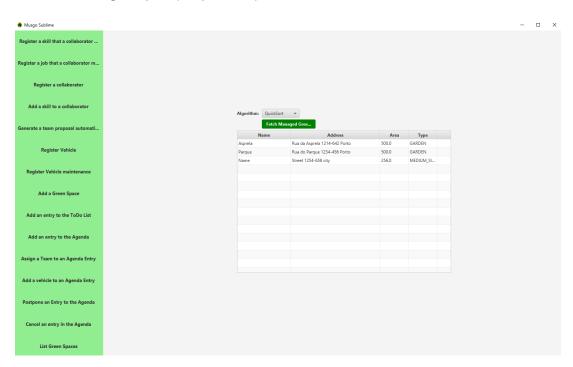


Illustration 51 - QuickSort algorithm

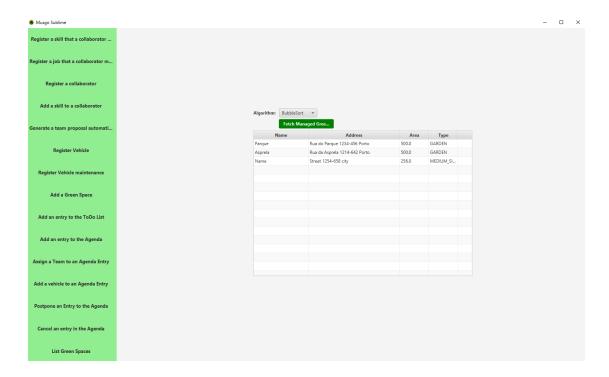


Illustration 52 - BubbleSort algorithm

Feature 16 – Consult tasks assigned to a collaborator

This functionality enables a Collaborator to view the tasks assigned to them within a specific date range and filter their tasks by the status.

Step by step:

- 1. Log in to EcoSphere as a collaborator.
- 2. In the menu select the option "Check assigned tasks".
- 3. Select the date range and status to filter the tasks.
- 4. The system will automatically display the updated list of entries (tasks) assigned to the logged-in collaborator along with their information.

<u>JavaFX:</u>

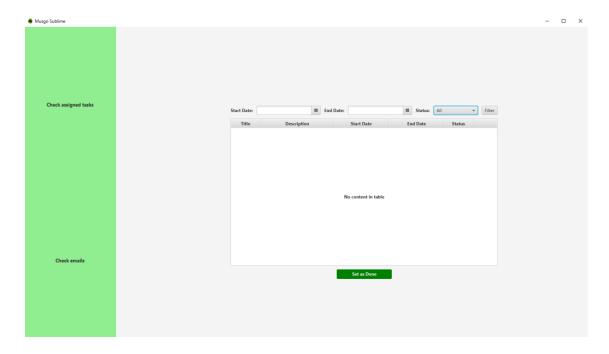


Illustration 53 - Check assigned tasks (EcoSphere view) pt.1

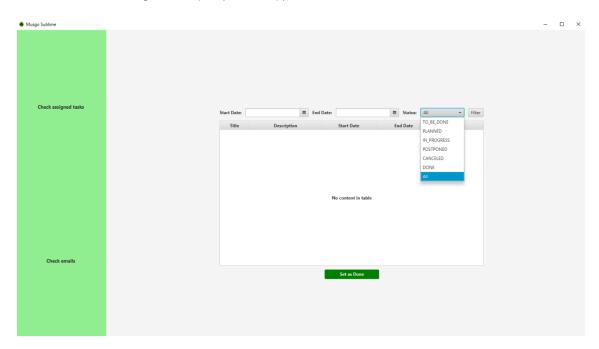


Illustration 54 - Check assigned tasks (EcoSphere view) pt.2

Feature 17 - Check emails of a collaborator

Below, you'll find a list of all email addresses associated with your organization. This list includes the email addresses of all team members and collaborators who have registered for our application.

Step by step:

- 1. Log in to EcoSphere as a collaborator.
- 2. In the menu select the option "Check emails".
- 3. The system will automatically display the list of emails of the logged-in collaborator along with their information.

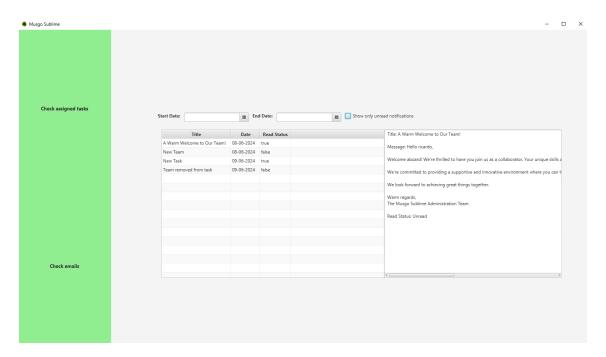


Illustration 55 - Check emails (EcoSphere view) pt.1

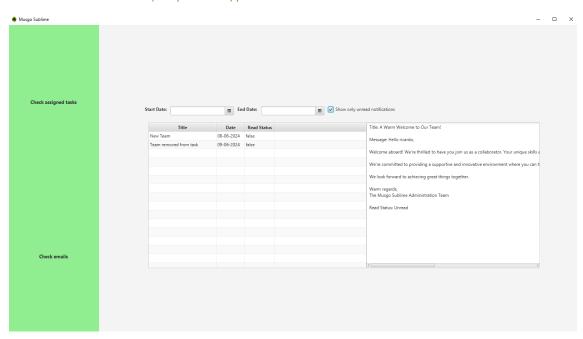


Illustration 56 - Check emails (EcoSphere view) pt.2

FAQ's

This Frequently Asked Questions (FAQ) section aims to address common inquiries and provide straightforward answers to help users navigate the platform smoothly. Whether you're new to the application or seeking clarification on specific features, this FAQ section offers concise solutions to your queries. Explore the questions below to find the information you need to enhance your experience with the platform.

Question: What is EcoSphere software and what does it do?

Answer: EcoSphere software is a comprehensive management tool for urban green spaces, encompassing a wide range of functionalities to simplify and streamline the administration, maintenance, and resource management of parks, gardens, and public areas. It aims to promote sustainability, functionality, and aesthetic appeal in these green spaces.

Question: Who is EcoSphere software aimed at?

Answer: EcoSphere is designed for various user groups involved in urban green space management, including Human Resources Managers (HRM), Vehicle and Equipment Fleet Managers (VFM), Green Space Managers (GSM), and Collaborators (CLB).

Question: Can I use EcoSphere software on my mobile device?

Answer: Currently, EcoSphere is primarily designed for desktop use.

Question: Can I use EcoSphere software to manage tasks offline?

Answer: Currently, EcoSphere does not require an internet connection for full functionality.

Question: How should the CSV for the pipe routes be formatted?

Answer: The CSV file must contain the following organization on each line: "Water Point X; Water Point Y; Distance". For example: "A; B; 13".

Question: How should the CSV for the cost matrix be formatted?

Answer: The CSV file must contain the costs associated with the distances between points. The points are represented by the position of the costs in the matrix. For example, the value found in the first row and second column represents the cost associated with traveling from A to B. In

cases where there is no connection between the points or if we are at the same point, the
value should be 0. Therefore, the matrix must be symmetric, and the main diagonal must
consist of zeros.

0;3;9

3;0;0

9;0;0

Question: How should the CSV for the points names be formatted?

Answer: The CSV file must contain the following organization:

PointA; PointB; AP; PointD; AP1; ...

Question: What should the zip code fields look like?

Answer: All postal codes must be in the following format: "1234-123".

Question: What should the plate ID look like?

Answer: The plate ID should consist of 6 alphanumeric characters: 00-AA-00

Question: What is the format of the citizen card?

Answer: The Citizen Card number consists of 9 digits, followed by 2 letters and 1 digit:

00000000 0ZZ0

Question: What format does a passport number follow?

Answer: A Passport number should be 6 to 9 alphanumeric characters.

Question: What is the ID type?

Answer: It is the type of document that the employee possesses. It can be a citizen card,

residence certificate, passport, voter number, etc.

Question: How can I create a new collaborator profile in EcoSphere?

Answer: Navigate to the "Collaborators" section and click on the option to create a new collaborator. Provide the collaborator's personal information.

Question: Can an Other Type document number contain special characters?

Answer: No, an Other Type document number should contain only alphanumeric characters.

Question: How can I create a new job in EcoSphere?

Answer: Navigate to the "Collaborators" section and select the "Jobs" tab, then click on add new job option. Choose the job title you want. Upon confirmation, the job will be stored and saved in the list.

Question: How can I assign skills to collaborators in EcoSphere?

Answer: Navigate to the "Collaborators" section and select a collaborator profile. Click on the "Assign Skills" tab and choose the skill title you want to assign. Upon confirmation, the collaborator will be associated with the selected skill.

Question: How can I register a new green space in EcoSphere?

Answer: Navigate to the "Spaces" section and click on the option to add a new green space. Provide details such as the name, type (garden, medium-sized park, or large-sized park), address, and area of the green space. This information will be stored for future reference and management purposes.

Question: How can I view a list of all the green spaces I manage in EcoSphere?

Answer: Navigate to the "Spaces" section to access a comprehensive list of green spaces assigned to you. Each entry will include details like name, type, address, and area.

Question: How can I view the tasks assigned to me in EcoSphere?

Answer: Navigate to the "Tasks" section and select the "Agenda" tab. Here, you'll find a comprehensive list of tasks assigned to you, along with relevant details like task title, description, urgency level, and due date.

Question: How do I mark a task as completed in EcoSphere?

Answer: From the "Tasks" section and "Agenda" tab, locate the completed task and click "Completed". This will reflect your progress and ensure task completion is accurately recorded.

Question: How can I register a new vehicle in EcoSphere?

Answer: Navigate to the "Vehicles" section and select the "Vehicle" tab. Click on the option to register a new vehicle and enter details like VIN, vehicle plate, weight specifications, current mileage, acquisition date, and maintenance frequency. The system validates the VIN for uniqueness, and upon confirmation, the new vehicle information is saved to the list.

Question: How can I schedule a vehicle maintenance check-up in EcoSphere?

Answer: Navigate to the "Vehicles" section and select the "Vehicle" tab. Choose the vehicle you want to schedule maintenance for and click on the option to register maintenance. Enter the desired check-up date and any additional notes.

Question: Where can I view a list of vehicles that require maintenance check-ups?

Answer: The "Vehicles" section offers a dedicated "Maintenance" tab. This tab automatically displays a list of vehicles due for their next check-up, ensuring timely maintenance scheduling and optimal vehicle performance.

Question: How do I add a new task to the To-Do List in EcoSphere?

Answer: Navigate to the "Tasks" section and select the "To-Do" tab. Click on the option to add a new entry and provide details such as title, description, urgency (high, medium, low), and the specific green space the task pertains to. Additionally, specify the expected duration for task completion.

Question: How can I schedule a task on the Agenda in EcoSphere?

Answer: Navigate to the "Tasks" section and select the "Agenda" tab. Choose the specific task you want to schedule from your To-Do List and enter the starting date. You can also track the progress status of tasks within the Agenda.

Question: How can I postpone a task in EcoSphere?

Answer: Navigate to the "Tasks" section and select the "Agenda" tab. Choose the task you want to postpone and click on the "Postpone" option. Select a new due date and any additional notes.

Question: How do I assign a team to a specific task on the agenda?

Answer: Within the "Tasks" section and "Agenda" tab, you can assign a team to a specific task. EcoSphere allows you to select a pre-generated team that best suits the required skills for the job.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
If you cannot access your	Incorrect credentials (email or	Verify that your email and
account	password)	password are correct. Contact the
		administrator to make sure your
		account is activated.
If you cannot access	Insufficient permissions (user is	Verify that you are logged in as an
Collaborator Section	not an HRM)	HRM.
If you cannot access Tasks	Insufficient permissions (user is	Verify that you are logged in as a
Section	not a GSM or CLB)	GSM or CLB.
If you cannot access	Insufficient permissions (user is	Verify that you are logged in as a
Vehicles Section	not a VFM)	VFM.
If you cannot access Spaces	Insufficient permissions (user is	Verify that you are logged in as a
Section	not a GSM)	GSM.
If you cannot access Team	Insufficient permissions (user is	Verify that you are logged in as an
Section	not an HRM)	HRM.
If you cannot register a new	Required field not filled out	Ensure all required fields are filled
collaborator		out before confirmation.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Collaborator already registered	Collaborator already registered
If you cannot register a new	Required field not filled out	Ensure all required fields are filled
skill		out before confirmation.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Skill already registered	Check that there isn't already a skill
		with the same name.
If you cannot register a new	Required field not filled out	Ensure all required fields are filled
vehicle		out before confirmation.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Vehicle already registered	Check that there isn't already a

		vehicle with the same VIN or Plate.
If you cannot register a new	No vehicle selected in vehicle	Select a vehicle in the vehicle list
maintenance	list	before clicking on the option to
	sc	add maintenance.
	Required field not filled out	Ensure all required fields are filled
	Required field flot filled out	out before confirmation.
	Poguired field filled with invalid	
	Required field filled with invalid	Ensure all required fields are valid before confirmation.
	inputs	
	Maintenance already registered	Check that there isn't already a
		maintenance entry for the same
		vehicle at the same time.
If you cannot register a new	Required field not filled out	Ensure all required fields are filled
green space		out before confirmation.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Green space already registered	Check that there isn't already a
		green space with the same
		attributes.
If you cannot register an	Required field not filled out	Ensure all required fields are filled
entry in the To-Do List		out before confirmation.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Entry already registered	Check that there isn't already an
	, , ,	entry with the same details.
If you cannot register an	No entry selected in To-Do list	Select an entry in the To-Do list
entry in the agenda	,	before clicking the option to add a
, 0		new entry.
	Required field not filled out	Ensure all required fields are filled
		out before confirmation.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Entry already registered	Check that there isn't already an
	Littly already registered	entry with the same details.
If you cannot see the option	No collaborator selected in	Select a collaborator in the
to assign skill	collaborator list	collaborator list to see the option
to assign skin	Collaborator list	•
If you connet ession a skill	Doguired field not filled out	to assign skill.
If you cannot assign a skill to a collaborator	Required field not filled out	Ensure all required fields are filled out before confirmation.
to a collaborator	Described field filled with invelid	
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
	Skill already assigned	Check that the skill is not already
		assigned to the collaborator.
If you cannot assign a	No vehicle selected	Select a vehicle in the vehicle list
vehicle to an entry in		before clicking the option to assign
agenda		a vehicle.
If you cannot assign a team	No entry selected in agenda	Select an entry in the agenda
to an entry in agenda		before clicking the option to assign
		a team.

If you cannot postpone an	No entry selected in agenda	Select an entry in the agenda
entry in agenda		before clicking the option to
		postpone entry.
	Required field filled with invalid	Ensure all required fields are valid
	inputs	before confirmation.
If you cannot complete an	No entry selected in agenda	Select an entry in the agenda
entry in agenda		before clicking the option to
		complete entry.

Contacts/Support

As this software is still a proof of concept, it is currently undergoing numerous improvements and is not yet finalized. If you encounter any issues or bugs, please feel free to reach out to us. Your feedback is invaluable, and we are dedicated to enhancing the software. For assistance, you can contact our team at the following email addresses:

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