

## Template for Evidence(s)

### UI GreenMetric Questionnaire

University : IFSULDEMINAS  
 Country : BRAZIL  
 Web Address : <https://www.ifsuldeminas.edu.br/index.php>

#### [5] Transportation (TR)

#### [5.15] Number of initiatives to decrease private vehicles on campus



Figure 1: Poços de Caldas Campus – Electric Mobility System Implementation Project.

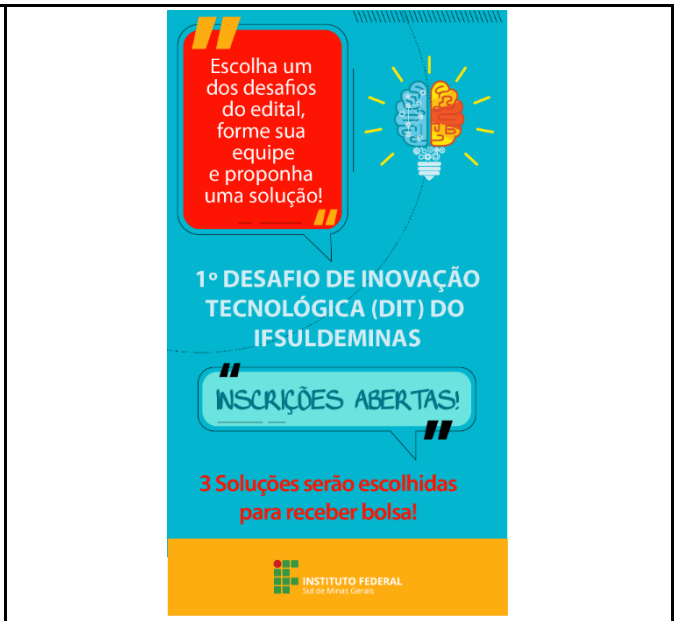


Figure 2: IFSULDEMINAS 1st Technological Innovation Challenge. Available at: <https://portal.ifsuldeminas.edu.br/index.php/ultimas-noticias-ifsuldeminas/80-noticias-da-pppi/3102-inovacao-tecnologica-certificacao>



Figure 3: Poços de Caldas Campus – Automation of parking management using Arduino technologies.



Figure 4: Muzambinho Campus – Gratified Carpool application.



Figure 5: Machado Campus IFCarona Solidária – Hitchhike application.

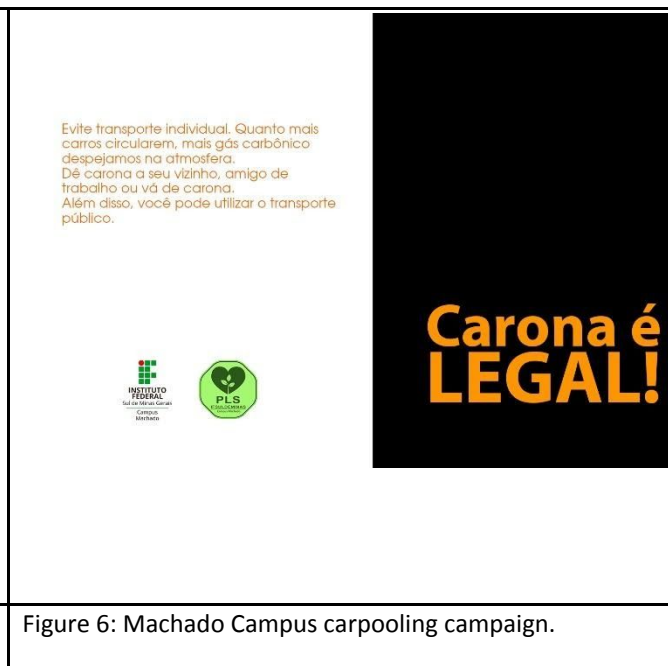


Figure 6: Machado Campus carpooling campaign.

## Description

### Figure 1: Implementation of the Electric Mobility System Project

Project to be carried out in partnership with ANEEL - National Electric Energy Agency, DME Poços de Caldas (electricity concessionaire), and PUC Minas Poços de Caldas. The Campus will be responsible for the execution of US\$ 650 thousand, resulting from the approval of the project presented by the Campus for participation in the Call for Strategic Project 22/2018 - Development of Efficient Electric Mobility Solutions. Proposed solution:

1. Implementation of 3 electro stations: 1 fast charge (central area of Poços de Caldas); 1 semi-fast charge (west zone) and 1 slow charge (DMED garage).
2. Implementation of mobility system by electric bicycles: 30 bikes ( 1 bike rack at IF Campus; 1 bike rack at PUC Campus; 1 bike rack in the central area of Poços de Caldas).
3. Creation of the system for operation of all mobility systems (recharges and bicycles).

Source: Poços de Caldas Campus.

Available

at:

[http://www.aneel.gov.br/sala-de-imprensa-exibicao-2/-/asset\\_publisher/zXQREz8EVIZ6/content/chamada-de-p-d-sobre-mobilidade-eletrica-tem-uma-centena-de-empresas-interessadas/656877?inheritRedirect=false](http://www.aneel.gov.br/sala-de-imprensa-exibicao-2/-/asset_publisher/zXQREz8EVIZ6/content/chamada-de-p-d-sobre-mobilidade-eletrica-tem-uma-centena-de-empresas-interessadas/656877?inheritRedirect=false).

### Figure 2: IFSULDEMINAS 1st Technological Innovation Challenge

The goal is to enable employees and students to develop and test their skills, with real problems of the Institute, to encourage innovative culture, as well as the formation of creative and innovative professionals. The team will choose one or more problem categories to propose a solution:

1. Parking Management – IFSULDEMINAS has parking on all campuses. In some of them, more than one. The team should propose a solution that enables parking management as a whole, including mechanisms for access control and occupancy management. Innovative solutions should be used, preferably based on free and open solutions, seeking low cost of implementation and operation.
2. Institutional Mobility – There is constantly a large flow of personnel, equipment and materials between IFSULDEMINAS units. While trying to optimize the expenses arising from this flow, the priority is not to compromise the administrative and educational processes. Thus, the team should propose a solution to optimize and enhance institutional mobility, which may include a trip or ride sharing approach, route optimization and scheduling, among others.
3. Waste Management and Management – At IFSULDEMINAS, there is a constant environmental concern in the management and correct destination of the waste produced in all units. The team's challenge is to propose a solution for the sustainable management of solid waste produced in all campuses and the Rectory, measuring everything that is generated, thus providing subsidies for the correct disposal.

Source: Research, Graduate and Innovation Pro-Rectory. Available at: <https://portal.ifsuldeminas.edu.br/index.php/ultimas-noticias-ifsuldeminas/80-noticias-da-pppi/2950-1-desafio-tecnologico>.

### Figure 3: Poços de Caldas Campus – Automation of parking management using Arduino technologies

A difficulty encountered in various institutions are ways of managing their parking spaces. With the diffusion of vehicles in cities, the depletion of public or private spaces became common, generating mobility and environmental problems. In this way, the use of intelligent systems to assist in parking management comes support to mitigate these problems, ensuring agility efficiency. It is intended to develop an electronic gate controller technology for standalone entry and a free-space sensor using embedded technology, constituting an autonomous counting and control system, which have emphasis Internet of Things (IoT) that have the ability

to measure and manage parking spaces on IFSULDEMINAS. Source: Research, Postgraduate and Innovation Pro-Rectory. Project still confidential due to intellectual property not yet filed.

**Figure 4: Muzambinho Campus – Gratified Carpool application**

Most of the students depend on the ride to attend academic activities, and when they fail to do so, they take a long time to travel, reaching their destination tired and occasionally subjected to rain, cold and heat. From the detection of this need, came the proposal to develop an interactive mobile application, with the objective of facilitating transportation to the campus with the increase of people interested in offering rides, benefit people who take a ride, as well as enable the increase of number of members of the School Cooperative - COOPAM. Source: Research, Postgraduate and Innovation Pro-Rectory. Project still confidential due to intellectual property not yet filed.

**Figure 5: Machado Campus IFCarona Solidária – Hitchhike application**

The object of this project will become agile and efficient the hitchhiking process for students of IFSULDEMINAS Machado Campus, through the creation of practical and attractive applications or IFCarona application that enables rideshare. Among users who do the same often, or those who are available to offer the service, are cars parked on campus and, as a result, reduced car traffic and reduced greenhouse gas emissions. In addition to encouraging the use of hitchhikers that have great benefits for the banner environment, the app also caters for many students who need driving to an institution that can benefit the users of the app, use the hitchhiking system and thereby an improvement of urban mobility. That's why either the app or the cars that can benefit from routes, driving more people but not knowing which ones are close to their daily trajectories. This problem can be addressed by an information system. This project is justified because it involves a question of improving the flow of transport, bringing economic, environmental and social advantages to IFSULDEMINAS Machado Campus, being a solidarity transport option, improving mobility conditions, as it does not involve large investments in infrastructure. Source: Machado Campus. Available at: <https://gpex.ifsuldeminas.edu.br/index.php/comunidadeProjetos/main/edit/4471>.

**Figure 6: Campus Machado carpooling campaign**

IFSULDEMINAS Machado Campus sends environmental drafts to the entire academic community, including the incentive to carpooling or hitchhike, avoiding individual transportation. Source: Machado Campus.