TURNING DATA INTO ACTION MICROGRANT - PROPOSAL TEMPLATE
MAKE IT SHORT & SWEET :-)

Project overview	
Flying Labs	Brazil
Project title	Flight for the Forest: Data-Driven Conservation in Chácara da Baronesa
Contact person for the proposal	Diego Ferruzzo
Team members involved in project (names & roles)	Diego Ferruzzo - Brazil FlyingLabs Director Marcelo Camardo - Brazil Flying Labs Director of Engineering Alexandre Falcão - Professor of Computer Science in State University of Campinas
Scope of proposed project *In this round, we will finance projects related to climate issues*	
Problem statement	According to a study by RAISG, the Amazon forest faces an alarming risk: within just five years, it could lose nearly half of what it lost in the past two decades due to highly predatory human activity. However, deforestation of small fragments within the Brazilian Atlantic forest also presents a critical challenge, exacerbated by climate issues. The Fapesp (São Paulo State Research Support Foundation) reveals that when approximately 25% of a one-hectare forest remnant is lost, local temperatures rise by 1°C. Clear-cutting the entire fragment could lead to a local temperature increase of up to 4°C. São Paulo state's 52 state parks persistently confront threats from irregular invasions, resulting in deforestation. This not only impacts quality of life but also contributes to rising average temperatures within the city. The project's goal is to address this pressing climate issue and preserve the Brazilian Atlantic forest within the Chácara da Baronesa State Park in São Paulo State.
The solution you propose	The proposed solution involves deploying a drone equipped with an RGB camera to conduct comprehensive monitoring of the Chácara da Baronesa State Park, spanning 38.5 hectares. Our primary objectives include vegetation classification, assessing vegetation health and density using the NDVI (Normalized Difference Vegetation Index), and identifying potential irregular housing areas. By adopting this data-driven approach, we aim to achieve efficient, evidence-based management for the preservation of this part of the Atlantic forest, as well as building local capacity.
SDG(s) targeted (one or multiple)	SDG 13: Climate Action which seeks to improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

	SDG 15: Life on Land which promotes the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and substantially increase afforestation and reforestation globally.
Stakeholders	
Main project stakeholder(s)	Local Authorities and Environmental Agencies: These organizations play a central role in park management, conservation efforts, and policy enforcement. They have the authority to allocate resources, enforce regulations, and make critical decisions regarding the park's preservation. Collaboration with these stakeholders ensures alignment with broader environmental goals and legal frameworks. Local Communities and Residents: The well-being of nearby communities directly depends on the park's condition. Engaging local residents fosters a sense of ownership, encourages responsible behavior, and promotes community-led conservation efforts. Their input, concerns, and support are vital for the success of the project.
Other stakeholders	Research Institutions and Universities: Academic institutions, such as the UFABC and Campinas University contribute expertise in environmental science, data analytics, and technology. Collaborating with researchers and students enhances the project's scientific rigor and capacity for innovation. Non-Governmental Organizations (NGOs): NGOs focused on environmental conservation can advocate for the park's protection, raise awareness, and engage in community outreach. Their involvement strengthens community ties and mobilizes resources for conservation efforts.
People impacted	Local Communities and Residents: People living near the park will experience direct effects. Improved park management can enhance their quality of life, and access to green spaces. Government Agencies and Authorities: Environmental agencies, and policymakers will be directly involved. The project's success influences their decision-making and resource allocation.
Potential partners	Local Non-Governmental Organizations (NGOs): NGOs focused on environmental conservation can provide advocacy, community engagement, and awareness campaigns. Their networks and expertise enhance community involvement and mobilize resources. Funding agencies: Collaboration with these agencies can provide financial support, research grants, and access to a broader scientific network.
If you have already engaged with any of the stakeholders listed, describe actions taken	We have already engaged with an expert in data analysis from the State University of Campinas. This expert, together with his research group, will help us process the images.
Details on data acquisition & size of project	

Size of mapping area	38.48 hectares
Drone and sensor	Brazil Flying Labs will allocate the entire micro grant toward acquiring a DJI Phantom 4 Pro V2.0 Drone, equipped with a 4K/60fps camera.
Timing of the mapping (when & how many days)	After obtaining all authorizations and in appropriate weather, data collection will take approximately 3 days.
List the data outputs you will produce. How will they be used by the stakeholders?	1. Orthomosaic are high-resolution stitched aerial images, they serve as an essential visual tool for forest monitoring: Stakeholders can assess forest cover, and identify areas affected by deforestation and irregular housing areas. 1. Digital Surface Models (DSMs) represent the Earth's surface, including terrain features and structures. Stakeholders can analyze terrain variations, slopes, and elevation profiles. 2. Vegetation Indices (NDVI) quantifies vegetation health based on spectral reflectance. Stakeholders can monitor vegetation stress, identify deforested areas, and track reforestation efforts. NDVI data contribute to understanding ecosystem dynamics.
How will you ensure your data gets turned into action?	To ensure that the collected data translates into meaningful action, our project will follow the process: 1. Data Collection and Analysis: The drone equipped with an RGB camera will capture images of the Chácara da Baronesa State Park. We will use image processing techniques to extract relevant information, such as Digital Surface models, and potential irregular housing areas. The NDVI (Normalized Difference Vegetation Index) will help assess vegetation health. 2. Data Integration and Visualization: Visualizing the data on maps will provide a clear overview of the park's condition. Stakeholders can access this information through user-friendly dashboards. 3. Evidence-Based Decision-Making: Local authorities will use the data to make informed decisions. For example, if irregular housing areas are detected, targeted interventions can be planned. Evidence-based policies will guide park management and conservation efforts. 4. Community Engagement: We will share data insights with the local community through a workshop with an educational program. Engaging residents fosters a sense of ownership and encourages responsible behavior. Community feedback will influence action plans. By translating data into actionable insights, we aim to create a positive impact on the park's preservation, local communities, and the broader ecosystem.
Expected project outcomes & impact	
Foreseen short-term results of your project	1. Vegetation Mapping and Health Assessment: In the short term, the project will provide vegetation maps of the park. We will assess the health of different vegetation types using the NDVI

	derived from RGB imagery. This information will guide targeted conservation efforts and help identify areas needing immediate attention. 1. Identification of Irregular Housing Areas: The drone data will allow us to detect potential irregular housing areas within the park. By identifying encroachments, we can take prompt action to prevent further habitat loss and ensure the park's integrity.
Foreseen long-term results of your project	1. Improved Biodiversity and Ecosystem Health: Over the long term, effective management informed by drone data will lead to enhanced biodiversity within the park. By preserving diverse habitats, we can support native plant and animal species, contributing to a healthier ecosystem. 1. Community Engagement and Sustainable Practices: Engaging local communities in conservation efforts will foster a sense of ownership and responsibility. Over time, community-led initiatives and sustainable practices will become integral to the park's success. 2. Use of drone technology for forest preservation: Capacity will be developed in stakeholders regarding the use of drone technology for forest preservation and environmental responsibility.
How will you measure impact?	1. Vegetation Health and Density Assessment: We'll monitor NDVI values derived from drone imagery. These values serve as a reliable indicator of vegetation health. By comparing these values with established benchmarks for healthy vegetation, we can gauge the positive impact of our conservation efforts. 1. Detection of Irregular Housing Areas: Our project will focus on identifying and mapping any irregular housing areas within the forest. To validate our findings, we'll conduct ground surveys and verify the accuracy of drone-detected locations. 2. Community Engagement: Measuring awareness and participation is crucial. We'll assess how well the local community understands and actively supports forest preservation. Increased community involvement will signify a successful impact on both environmental awareness and collective action.
How will this project contribute to your Flying Labs goals?	This would be the first Brazil FlyingLabs' project. It will allow us to train our project management skills, as well as our technical skills in GIS with drones and in TDIA projects . This project will also provide technical resources and equipment to Brazil FL, which will allow us to continue growing by offering data-driven decision-making processes with drone technology. It will offer us the opportunity to open up space in the discourse of actions on climate issues in the regional scenario, which is one of the goals of Brazil FlyingLabs.

Realistic timeline proposed

The project must be implemented and completely finalized within a period of up to 6 months from the proposed start date. Please take into consideration that the main efforts of the work should focus

on testing the various phases of the "Turning Data into Action" program, stakeholder engagement and impact assessment, not the mapping itself.

Project time frame	
Proposed Start Date	May, 2024
Proposed End Date	Oct, 2024

Share here under your main activities and indicate in which month (and part of the month) you plan for this activity.

Milestones / Major activities	Month: May		Month: Jun		Month: Jul		Month: Ago		Month: Sep		Month: Oct	
Purchasing drone	x	x										
Manage permissions to carry out flights		x	x	x								
Drone a software training and practice			x	x	x							
Collecting data					x	x						
Producing data outcomes and dashboards							x	x	x			
Presentation on Climate issues and TDIA with local authorities								x	x			
Workshop on Climate issues and TDIA with local community									x	x		
Use case disclosure								x	x	x	x	

Realistic budget proposed

The maximum amount of each grant will be USD 4,000, therefore we ask for a short and small project. If the project exceeds this cost, you need to have proof that you have secured additional funding as part of your submission.

Share here under the summary of your cost. *Bonus points: you can use the Budget Template to create a detailed project budget and include it in addition to the summary below.*

Cost	Amount in USD	Short Description of Cost
Human resources	–	–
Stakeholder engagement	–	–
Data acquisition logistics (drone rental, travel, lodging, etc.)	500,00	Transportation to Chácara da Baronesa State Park
Production of outcomes	500,00	Back-end, dashboard production and cloud hosting
Other *(please specify)*	4.464,00	Drone acquisition
Other *(please specify)*	–	–
Other *(please specify)*	–	–
Total	**5.464.00**	–
The budget includes additional funding *(please specify amount and source)*	1.464,00	From Brazil Flying Labs' own resources