

NEWSLETTER

TLMOTO
TÉCNICO LISBOA



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Nádia Pires

Nádia Pires started her journey at TLMoto in January 2023, as a member of the Logistics department. She is currently responsible for managing the non-technical areas, holding the position of Business Manager. Nádia completed a bachelor's degree in Mechanical Engineering at the Instituto Superior Técnico and is now in her first year of a master's program in Engineering and Management of Innovation and Entrepreneurship, at the same university.

What were the biggest challenges you faced while holding the position of Business Manager?

Undoubtedly, it's the management of people. Sometimes, we go through phases where there's more work, and it requires a higher level of dedication. Since we are a student organization, we can't commit all our time to the team. Sometimes, this lack of availability isn't communicated correctly, and I find it challenging to handle these situations. It can be a bit difficult to strike a balance between staying informed about what people are doing while not overwhelming them, all the while trying to ensure that things get done on time and don't fall behind.

How did you find out about TLMoto and why did you decide to join?

My first contact with TLMoto happened when I came for a field trip to Técnico. So when I started college, I already knew the team. I've always had a strong passion for motorcycles, ever since I was a child, riding with my dad and uncles. That's why, as I already knew I wanted to attend Técnico, I immediately knew I wanted to be part of the project someday. However, when I entered university, I had some fears about joining the team without much technical knowledge. I was a bit apprehensive that I wouldn't be able to contribute in any way, so I waited until my third year to join the team. If I could do it all over again, I would have liked to join earlier. Now I realize that I didn't need my course to be part of the team, and I never felt like I needed to know more to be here. I think it was a late decision, but it was a good decision.

If you hadn't joined Logistics, which other area would you have chosen?

When I applied to TLMoto, I enrolled in the Structures department because I was majoring in Mechanical Engineering, and I thought I would prefer a technical area. However, when I realized that after completing my bachelor's degree, I wanted to change my field of study, I understood that it made more sense for me to join a non-technical area, and that's when I joined Logistics. I believe that entering this area was one of the best decisions I made because it made me realize that Mechanical Engineering wasn't really what I wanted.

What do you think led you to become a Business Manager?

I would say it was a combination of the need for the role and my qualifications. It was at a time when the previous Business Manager needed to step down because they didn't have much available time for the project, and I was looking for more things to occupy my time. In fact, it was a period when I could be 100% committed to the project. I've always enjoyed working in the Logistics area, and I think I performed well while I was there. Apparently, the management could see that I had good organizational skills and was proactive. Moreover, it coincided with the time when I was responsible for organizing the team's participation in Futurália, which went quite well, and I think they realized they could trust me. It was a somewhat rapid transition; I was a member of the Logistics team for only three months before becoming a Business Manager. Still, it made perfect sense to me. Despite really enjoying what I did in the area, I think I can contribute more now. But yes, I would say it was my ability to organize well, people realizing that I was dedicated to the team, and my capacity to do more than just Logistics. Additionally, I had no intentions of leaving so soon, which also helped.

Do you feel that you have gained any skills since joining the team?

Absolutely, it's definitely everything related to organization and time management. For example, I used to take much longer to complete a task, but now everything is much more automated because I'm capable of prioritizing effectively. People management has also been challenging, and it's one of the areas where I feel I've improved the most, partly because it was the area I had the most difficulty with. On a more personal note, I think it has been great for my confidence and self-esteem. Since becoming a Business Manager, I believe much more in my abilities because I know I can do the job that's expected. In a way, it has revolved around organization, people management, and everything related to task distribution. Additionally, I've learned to work with various management programs.

Was it easy to balance TLMoto with your studies?

It varied over time. During my undergraduate studies, there were times with exams or more challenging projects, and I didn't have as much time for TLMoto. Nevertheless, I think I always managed to balance things and find time for both my studies and the team. Now, during my master's, it's easier to manage and allocate my time to the team because I have fewer courses. At times, it was a bit challenging, I won't lie, but overall, it wasn't very difficult for me because I also love what I'm doing. For example, if I'm tired of doing college work, I might switch to TLMoto tasks because I really enjoy it, and it doesn't bother me. It's like taking a break from studying.

If you had to describe your experience on the team in a few words, what would you say?

In a few words, it's been challenging! But I would say it has been a massive turning point in my life, both professionally because I figured out what I really wanted to do, and personally, in terms of believing more in myself and my work. I should also mention that the team is very important to me. I had been at college for three years, and I finally felt like I belonged somewhere, which hadn't happened within Técnico before.

What advice would you give to someone considering joining the team?

One piece of advice I would give to someone looking to join the team is: don't wait for your second or third year to do it. I'd say each person should do it when they feel it makes sense for them, regardless of whether they think they know enough or not. Personally, I didn't learn anything in the project that I hadn't learned in my classes before, and perhaps if I had joined earlier, it would have been helpful to figure out if I was on the right path with my degree. I have no regrets about joining the team, and I don't see myself leaving anytime soon. I believe that the longer you spend on a project like this, the more you gain from the experience, and the sooner you start, the better. If, by chance, someone doesn't like it, there's no harm in leaving, so I think there's nothing to lose. Experience in the TL.

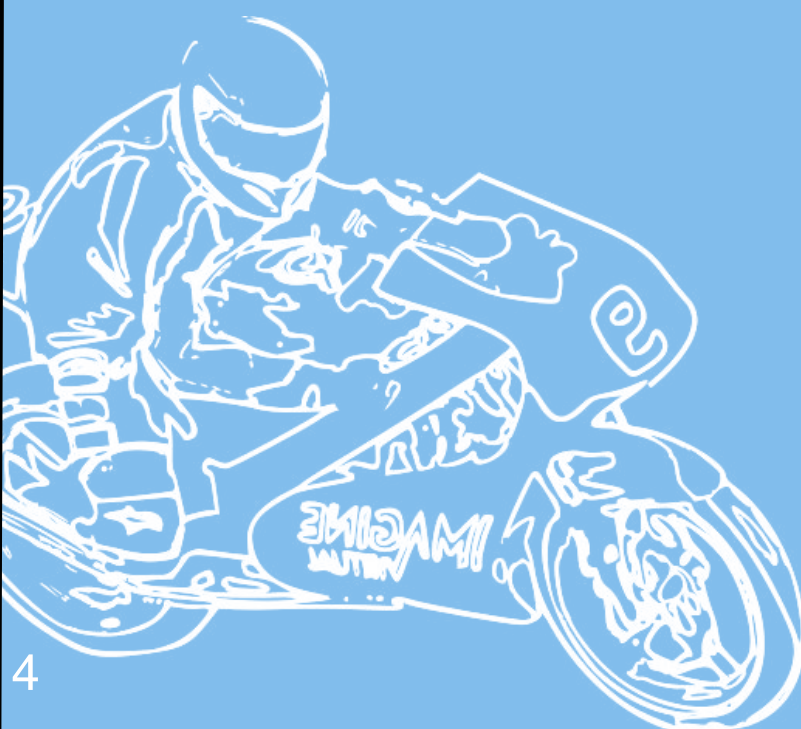


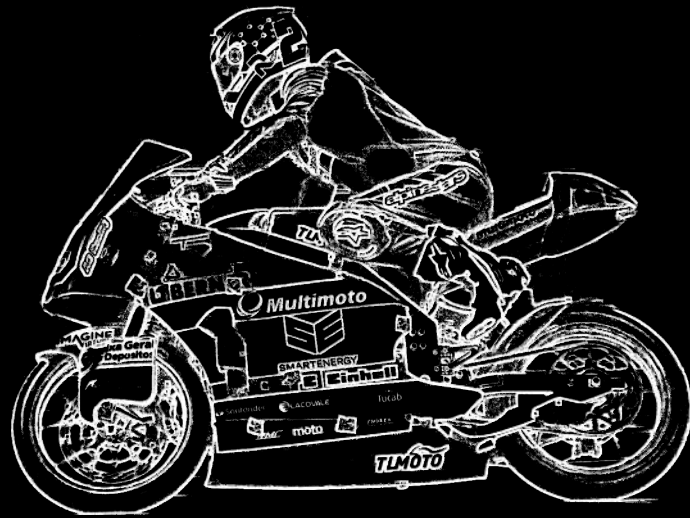
Do you have any professional dreams that you hope to fulfill one day?

I don't have a specific dream job in mind, but I do know that I've discovered my love for business organization, event logistics, and understanding the inner workings of companies. So, I think I'd like to have a leadership position in a company that allows me to combine these interests. I'm not actively doing anything right now to achieve this, and I'm not sure if it's a full-fledged dream, but I would love to work in the organization of MotoGP or Formula 1. In a way, it would involve doing what I'm doing now in the team but at a professional competition level.

Favorite MotoGP rider and team?

This question is a bit complicated. I love motorcycles, but I follow Formula 1 more. In MotoGP, I have to say that my favorite rider is Miguel Oliveira, and as for the team, it might be KTM, Aprilia, or Ducati. Now, if it were Formula 1, it would definitely be Lewis Hamilton, and when it comes to the team, I can't choose between Mercedes and Ferrari.





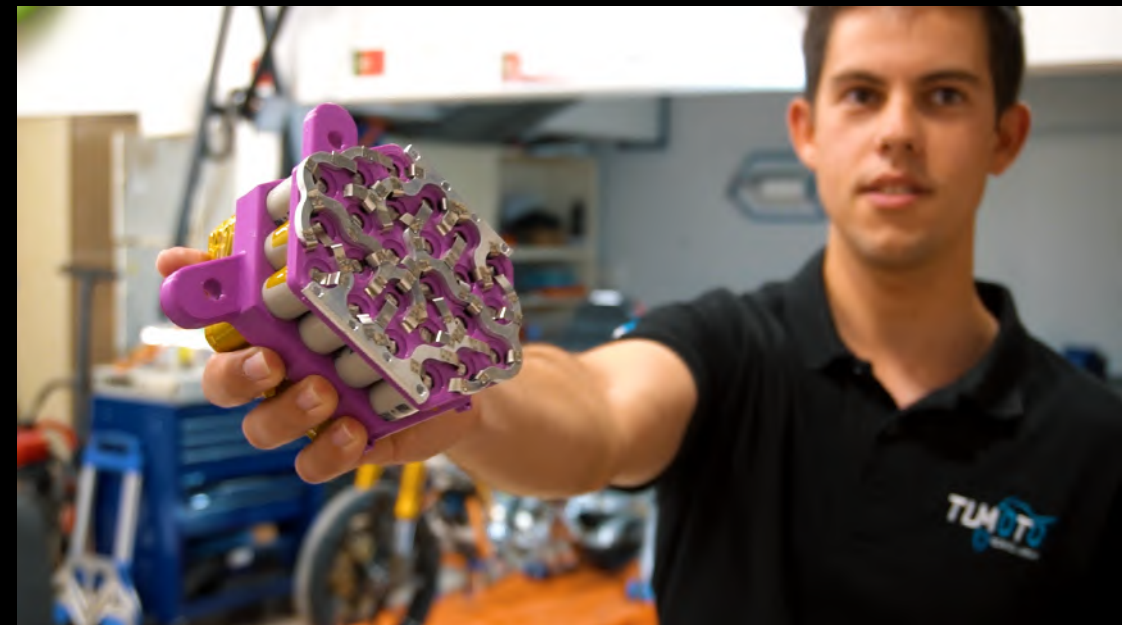
TLM04e: The Final Stretch

We're getting closer and closer to welcoming the fourth prototype of the team, the TLM04e. The journey has been long, but it's about to come to an end. After all the research, conceptual development, and design work done by the team, in recent months, the project has come to life with the start of the manufacturing process, where all the structural and aerodynamic components of the motorcycle are being developed. Creating a prototype from scratch may not be an easy task; however, the team is experiencing this final stretch with great enthusiasm.



FROM COMBUSTION TO SMARTENERGY

After an edition where the Structures team introduced us to the challenges of transitioning to an electric motor, it is now time for Aerodynamics and Cooling to showcase their challenges in developing their first electric prototype. Aerodynamics is composed of three sub-areas: Design and Composites, responsible for designing and iterating the fairings and all aerodynamic components, as well as leading their manufacturing; and CFD, which simulates these iterations to refine the best aerodynamic solution. As for cooling, the team collaborates with propulsion to efficiently cool their components.



In what was the boldest transition for TLMoto, the major and unique change that took place in this department pertains to cooling. While in combustion motorcycles it is necessary to cool the engine, which can withstand higher temperatures, in an electric motorcycle, it is necessary to cool not only the motor at lower temperatures but also a battery pack at equally low temperatures compared to a combustion engine. Therefore, while the Aerodynamics team did not feel the need for any significant changes, the Cooling team faced an exciting challenge that they are still working diligently to overcome.

ELETRONICS

In recent months, the BMS subarea has been working on the BMS-Slave boards, which have been extensively tested to ensure the prototype's safety. Meanwhile, the BMS-Master board is in the process of programming and testing to ensure the reading of voltages and temperatures from the battery pack. Both boards are now in their final version and properly soldered, awaiting final testing. In terms of wiring, an electrical connection schematic for the motorcycle was created to better understand the placement of each wire. Regarding the Dashboard subarea, the final version of the layout for the LCD on the dashboard has been developed, and it has been completed with the information that is intended to be displayed on it, in collaboration with the Propulsion area. Additionally, the programming of the dashboard's PCB is still ongoing.



AERODYNAMICS AND COOLING

During the last quarter, the Aerodynamics and Cooling department focused heavily on constructing the fairings for the new prototype, TLM04e, as well as the development and testing of the powertrain cooling system, both beforehand and during the race. Furthermore, the CFD subarea was responsible for optimizing the aerodynamic results and values of the new prototype. Lastly, with an eye towards the fifth prototype, the department began researching new aerodynamic and cooling concepts and designs.



POWERTRAIN

The Powertrain department ensured the necessary deliveries for MotoStudent - 'Prototyping and Testing' and 'Powertrain Validation Video.' The Battery subarea members completed the manufacturing of the 30 modules that make up the battery pack. Tests were conducted on the cold plate and the entire battery pack to verify if the busbars were correctly dimensioned and if the cooling technique applied to the pack was sufficient. Meanwhile, the Motor and Controller subarea, in cooperation with the Electronics department, conducted numerous tests on the motor and the motorcycle's electrical system. The controller was programmed to achieve the desired motor behavior, and cooling tests were carried out on the motor in collaboration with the Aerodynamics and Cooling department. In the Modeling and Simulation subarea, a new integration of the propulsion model (CESIUM) with the dynamics model (LapTime) was developed, and the model was restructured to make it faster, more intuitive for new members, and to correct certain errors. This subarea is also working on future projects for the next prototype, TLM05e.



STRUCTURES

During the past quarter, the Structures department primarily focused on preparing the necessary components for manufacturing. They also planned how and where to develop the components, not only in metal, such as the frame and arm, but also in plastic through 3D printing. Members of the Structures department were also responsible for creating technical drawings and engaging in discussions with the companies assisting us in this process to determine the best course of action.



DYNAMICS

The Dynamics department was responsible for making adjustments to the linkage of the new prototype, TLM04e, which involved designing the system to accommodate bearings, changing shafts, and conducting fatigue testing. Additionally, they initiated the design and modeling of the linkage for the fifth prototype, which is still in development. This included optimizing the geometric parameters, specifically adjusting the constants of the Motus controllers and planning the simulations to be performed. The department also focused on researching the feasibility of applying genetic algorithms for optimization and explored methods for modeling the rider as a system of rigid bodies. Filters were applied to the Motus, and a track identification algorithm was implemented in Laptimer.



HUMAN RESOURCES



Over the past few months, the Human Resources department has been responsible for completing the recruitment process initiated in March. This included introducing new members, creating a document about the recruitment process, and generating a feedback report from the new members. The team's data and support material for the department were also updated, and a new implementation of weekly reports about the areas and their status was introduced. Furthermore, the department ensured all routine tasks, such as selecting members of the month, monitoring team-wide and individual area meetings, and conducting exit interviews.

LOGISTICS

In the last quarter, the Logistics department was highly focused on preparations for MotoStudent, including team organization and the gathering of all necessary materials. It played a vital role in organizing the welcoming week for new IST students and preparing workshop visits. This department was also responsible for ensuring deliveries needed for finance, ordering necessary materials for the development of the new prototype, and overseeing the development of the frame in collaboration with team members, which is currently present in the workshop.

SPONSORS

In the past quarter, the Sponsors department primarily focused on all the necessary work with the team's partners. This included contacting potential sponsors and managing relationships with current sponsors to meet the needs of the other team areas. Additionally, they were responsible for filling out applications and developing reports required by contests that the team applied for.

MARKETING & DESIGN



The Marketing and Design department took responsibility for energizing the team's social media presence and creating content for them. They were also in charge of developing a design for TLM04e and planning its rollout. Additionally, over these months, the department placed significant focus on the team's image, planning and initiating a TLMoto rebranding, which included new merchandise and the renewal of the website, which will be launched soon. Finally, they were also responsible for creating and updating platforms for organizing the team's data.



SMARTENERGY



PARTNERS



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