

NEWSLETTER

TLMOTO
TÉCNICO LISBOA



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Miguel Orvalho

Miguel is an ex-member of TLMoto. He started his journey in the team, in the structures area, and then became a project manager. He finished the Mechanical Engineering course at Instituto Superior Técnico, and currently works in a company where he produces tool systems for the manufacture of composite parts.



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

I found out about TLMoto through a friend of mine. At the time, I was looking to do something else besides the course, and the opportunity arose to join the team. As I love motorcycles, I thought it would be a great idea.

Can you tell us about your journey inside TLMoto?

When I joined TLMoto, the areas weren't as structured as they are today. There were two main areas: Structures and Electronics. At the time, I joined the Structures area and continued until we concluded TLM02e. Then, there was a major restructuring of the team and I ended up taking the position of project manager.

What challenges do you think you have found as a project manager?

I think the biggest challenge was not being a position so well defined. As a member of an area, we always have a clear objective and there is always something specific to do. However, as the team's first project manager, the job was a little more complicated. For the first time, I had to look at the project in a larger dimension, which made me also develop good organizational and planning skills. In addition, I would say that it was a challenge to manage a team and define working methods that met the needs of the project.

Was it difficult to reconcile university and the TLMoto?

In the beginning, when the team had few members, it made the project take up more of our time. When the team grew and was more organized, it was much easier to reconcile time. When we have things well organized, everything is always much simpler.

If you had to choose another area within TLMoto which one would you choose?

Another area that I was going to try was Dynamics, also partly because of the thesis I did. When I was on the team, this area didn't exist in a very clear way, although we tried to implement it, in a very simple way, even within the structures area.

Can you explain what you are doing professionally?

At the moment, I'm working in a company where we make tooling systems, that is, molds and tools for, for example, the manufacture of parts from composite materials. We make these tooling systems for the fields of super cars and formula 1, among other reasons.

What was your biggest motivation for continuing on the team?

I would say it was the growth of everything: the team, the project, seeing the improvements from a TLM02e to a TLM03e. It was very rewarding. If, at the time, the prototype was as we wanted? No, but it was better than the previous one. That was a great motivation even for us to keep pushing for ourselves. Another key aspect was to see our project able to go to Motostudent and be well classified.

Do you think that TLMoto helped you in your entry into the job market?

Undoubtedly. Being on the team was a real personal addition, especially in terms of knowledge. When working on a project of this kind, there are always little things that we hear every day, and that, for many, when entering the job market, are new. Also, when we apply the knowledge we gain from the course every day, it contributes a lot to not forgetting them and even to, in a certain way, develop them.

Do you think TLMoto influenced you in any way to follow this path?

On one hand, I've always liked competitive motorsports and, in that perspective, TLMoto didn't have much influence. On the other hand, it intensified this passion. Probably, I would already follow this path, but without a doubt this ambition is stronger now.

Do you have any professional dream that you want to fulfill one day?

Yes, in a very simple way, my dream is to one day become part of a MotoGP team.

What advice would you give someone who is considering joining the team?

If you want to do some more practical project, I really think you should. If you like motorcycles then TLMoto is really the perfect team.

Favorite MotoGP rider and team?

I don't think I have a favorite team or driver at the moment. However, before it was, without a doubt, Rossi.



SMARTENERGY

We are happy to announce our latest diamond sponsor, SmartEnergy.

This new partner of ours is a company founded in 2011 whose purpose is to foster and accelerate the transition of various industries to sustainable energy.

To this end, it focuses on investments in renewable technologies and projects essential to this transition.

With Smartenergy's support, our team will be able to reach its goals more easily and expand the horizons of the development of our new prototype.



MULTIMOTO

Multimoto is one of the newest members of our "family". This new partner is a company founded in 1989, formed by four brothers who together decided to unite their passion for motorcycles in a single company.

Currently, it continues with the same management and with the same passion, being the reference company in the vehicle and accessories distribution market.

It is the official and exclusive importer and distributor of the Kawasaki, Benelli, UM, Linhai and Segway.

One of Multimoto's great contributions was the supply of material for our pilot.





PARTICIPAÇÃO EM EVENTOS

Futurália **30/03 - 2/04**

Between March 30th and April 2nd, we were present at Futurália representing IST. In this education and professional training fair we were able to show our project to the younger public.

With us we had our first electric prototype, the TLM02e, which managed to capture a lot of attention and curiosity from the students who approached us with lots of questions.

Secondary school visits **04/04**

On April 4th we had the presence of a secondary school in our workshop. We started with a brief presentation of the project, followed by a visit to our workshop.

Students were able to experience the working environment in our workshop and also had the opportunity to expand their knowledge about the various components of a motorcycle. We hope to have more visits from schools who are curious to know more about our project!

MecanIST **04/04 - 06/04**

Between the 4th and 6th of April, MecanIST took place and TLMoto was invited to participate in one of the days of this event to let IST students know more about our project.

It was a great day, where we were able to clarify several doubts about our project and all the development that we have been doing over the years.

DEM Industry Day **13/04**

On the 13th of April, the 1st edition of the Industry Day, organized by the Department of Mechanical Engineering (DEM), took place.

Undoubtedly, we could not fail to be present at this event and continue to present and promote our project to IST students and teachers.

Expomoto **05/05 - 08/05**

Between the 5th and 8th of May, at the invitation of our sponsor Multimoto, we were present at Expomoto in Porto. At a fair with numerous motorcycles, our electric prototype TLM02e was not indifferent to the eyes of the public.

During these days we had the opportunity to present and promote our project, outside of an academic environment, which gave us a greater reach. It's moments like this that give us the opportunity to get closer to those who support our project and help us form increasingly lasting relationships!



TESTS

In the last three months, our team went to OTA and AG Racing to test our prototype, TLM03e. At OTA, we did braking, acceleration and maximum speed tests and also carried out tests that allowed us to validate aerodynamics, dynamics and propulsion models

From AG Racing we were able to test safety systems and other parameters that allow us to achieve better motorcycle performance

POWERTRAIN

During the last quarter, the propulsion area was working on both prototypes.

The TLM03e was taken to a power bank where it was possible to configure the controller in the desired way and other parameters essential to its operation were also configured, such as the accelerator and the temperature and voltage limits of the batteries.

The area has also been working together with the electronics area in the telemetry part, already thinking about the next track tests.

For the TLM04e, various battery cell tests are being carried out.

In conjunction with the areas of structures and cooling, the study of concepts for the integration of the battery pack in the main structures of the next prototype has been carried out.

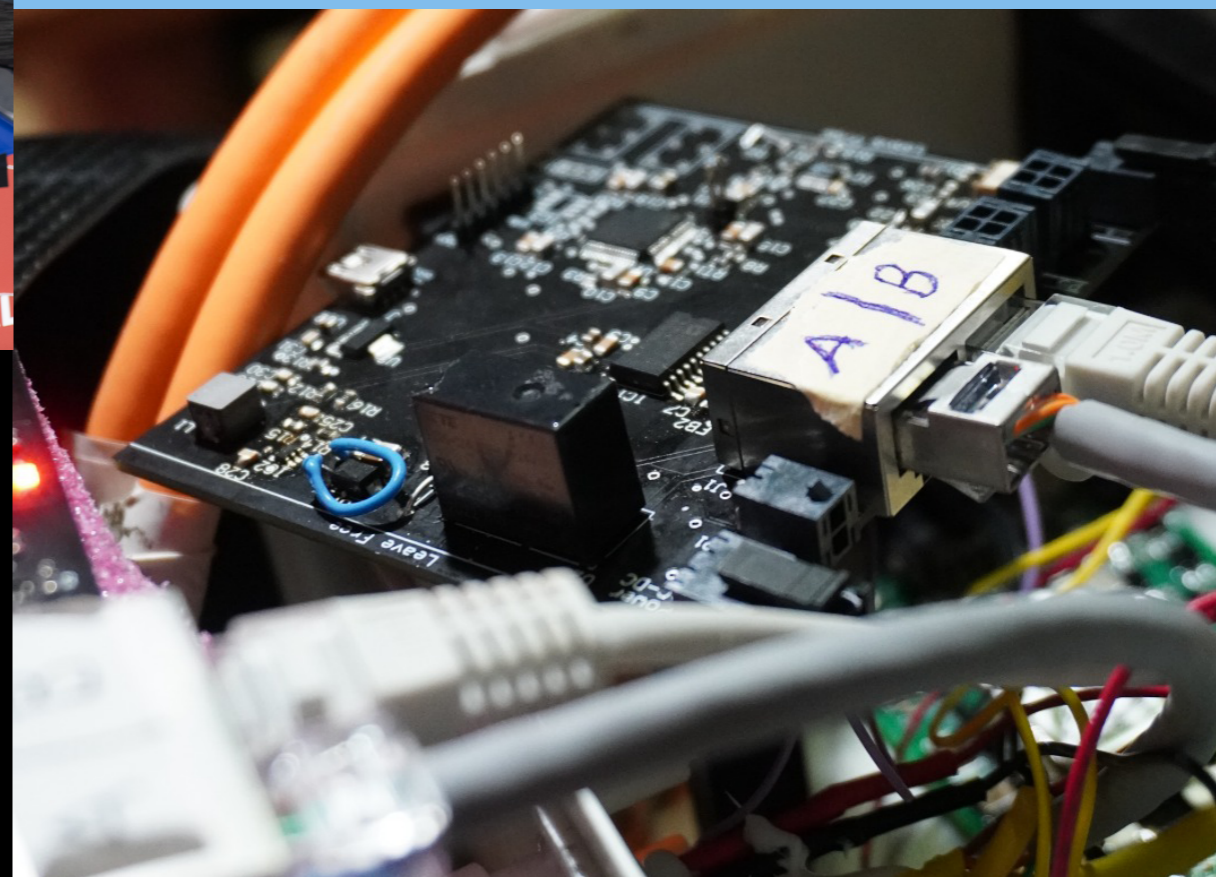
ELECTRONICS

The telemetry sub-area was working on collecting data for tests such as GPS and suspension potentiometers. An attempt was made to obtain relevant data sent by the controller, such as the temperature of the motor and the number of its rotations.

In the BMS subarea, adjustments were made to TLM03e in order to improve aspects of it.

Spare plates were also welded to be used in tests.

Regarding the TLM04e, some more research is being done to implement this prototype and a general planning of the area was made in view of the deadlines established by MotoStudent. Finally, preparations were made for future activities for the next recruitment.





AERODYNAMICS & COOLING

This quarter, the area's organization was reformulated into three new sub-areas: CFD Development, Design and Cooling Systems. In CFD Development, the CAD used in the simulations was updated in order to reduce the errors in the simulations and mesh studies were carried out to obtain better results. In Design, the first iterations of the TLM04e were designed, based on the research done previously.

In Cooling Systems, the reliability of our simulations was improved through better modeling of the interior of the motorcycle, compared to what was done in previous years. In-depth research has also been done on new types of electric propulsion cooling. Finally, simulations are being carried out to test the concept of ducted air cooling.

DYNAMICS

In the last few months, several simulations were carried out to optimize the geometry of the bike, having arrived at geometric values that will be implemented in the TLM04e.

Our models have also been updated, namely the one we have to simulate the behavior of the motorcycle on any track of choice.

In the sub-area of suspensions, a very extensive research work was carried out, from the analysis of tires to the study and modeling of suspension systems of the new prototype, including the modeling of the brakes.

STRUCTURES

The work developed in the sub-area of main structures focused on the study of the components of the old prototypes to find points to improve. The research carried out was focused on the tubular frame of the prototype, in which the advantages and disadvantages of tubular frames in relation to twin spar frames were analyzed. An analysis of the main components of TLM03e was made.

In addition, project development work was carried out with sketches on paper and later in CAD. The battery box sub-area has been developing various concepts of fastening methods for the battery pack structure. The packing of the cells inside the structural box was also optimized, and it was concluded that the hexagonal structures would be the optimal way of packing.

HUMAN RESOURCES

During the last few months, the human resources area was responsible for preparing the next recruitment for the team. The monitoring of members, sub-leaders and leaders was also carried out in order to monitor their motivation and look for possible improvements.

Finally, several teambuildings were held in order to integrate the new members and maintain the team spirit.

PROJECT MANAGEMENT

In recent months, in the Project Management area, a restructuring of the area was carried out and responsibilities were defined.

There was also a brainstorming of ideas and improvements to be implemented in the team.

In addition, the team charter was updated and sharepoint was reorganized, a database platform was implemented for human resources to organize the recruitment.

Finally, a status report was made on the project, where its evolution (global and in each area), social engagement and financial situation were analyzed.

LOGISTICS

The logistics area was present at various events and fairs such as Futurália, the day of the industry, Expomoto, SET and MecanIST. They also dealt with the organization of the coffee breaks for the QSR workshops. Finally, tasks have been carried out on new projects, which are not yet finished.

SPONSORS

Over the last few months, the Sponsors area has closed new partnerships, namely with Smartenergy, which will make it possible to participate in new competitions such as Moto Engineering Italy, QSR, which focuses on training and developing personal skills, Multimoto, which helps in obtaining technical components and Rodorent, which helps us transport material and the motorcycle.

This area was also present at Expomoto, where we made the project known and offered exposure to our partners.

In addition, partnerships were made to publicize the project with AEIST (Association of IST Students), BEST (Board of European Students of Technology) and WIE (Women in Engineering).

MARKETING & DESIGN

Over the last 3 months, the Marketing area was present at various fairs and events such as Futurália, MecanIST, SET, Industry Day and at Expomoto at the invitation of Multimoto.

In addition to attending events, the team has been working on the design of new merchandising, from clothing and flags to stickers and roll-ups, material has also been developed to promote the recruitment and some videos have been recorded and edited for sponsors and for the team.



SMARTENERGY



PARTNERS



THANK YOU

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