expoLAB2025

FREE FLIGHT AND FLIGHT LABORATORY

Can Bienvenido, c/ Josep Puigoriol 10 Teià, baixos, Saturday 20 September 2025, 7pm

1. Birdman flying on Baldiri Hill (Teià) in the mid-70s. Photo: Flight Laboratory.

The dream of flying like a bird... Man has always wanted to fly like a bird, to contemplate everything from above, rivers, valleys and mountains. To move with agility and almost effortlessly from one side to the other.

There are myths that say that some people achieved it millennia or centuries ago. At the end of the 19th century it became a reality, although with controlled flights of small height and distance (Otto Lilienthal and others).

It is from the late 60's and early 70's that the dream becomes real and accessible. NASA engineers gave some ideas. Bill Moyes in Australia, David Barish in New York,... California hippies, first with bamboo and plastic wings, and quickly aluminum and polyester fly the first truly successful hang gliders. And also much more advanced rigid wings. Hang gliders provide a method of flying autonomously and safely at low cost and are easy to transport and store in the garage at home. Initially, no licenses or permits are needed. Just go up the mountain and fly! The 70's, 80's, 90's are the golden age of hang gliding. It is called "free flying", years where there was also more freedom. In Catalonia, it is the fans of the Delta Club Barcelona, who in the mid-70's begin to fly hang gliding. Some daredevils to Montjuïc, to Creu de Montigalà for school-training, and then to Teià (an important free-flying center of the time), to Montseny and beyond.

2. Drawings of what free flight was like in the 70's.

The 90's will be the golden age of paragliding. The paraglider achieves the same as the hang glider, but its simplicity, its minimal volume and weight, and its incredible ease of transport and storage make it unbeatable. There can be nothing better for simple, autonomous and safe flying!

Wings (hanggliding and paragliding) have developed in an extraordinary way, and today in 2025 their flight capabilities reach milestones that are difficult to imagine.

However, flying a hang glider or paraglider is not without risks. The weather, the place of flight, the condition of the wing, or the condition of the pilot, are relevant factors in safety. Accidents can happen. Each pilot defines the degree of risk he wants to assume.

3. Jaume with the Airwave K2 approaching the landing field at Plana de Teià (formerly the Bienvenido vineyard), 1992.

4. Pere over Teià with the Gypaaile Astazou, 1992. This paraglider was built in La Seu d'Urgell.

In particular, I have always been interested in the design and construction of wings. I identify my first design as the drawing of a parachute ascending in a vertical current. I was perhaps 8 years old at the time. Then, seeing the hang gliders at the foot of the Baldiri hill in Teià, I started making small models with reed and plastic. In 1982 I made the first hang glider (in reed and plastic) in full scale and in 1992 the second. I joined paragliding in 1989 and have flown moderately —assuming very low risk— since then until approximately 2013 (and now on a short break :-) in high-altitude flights).

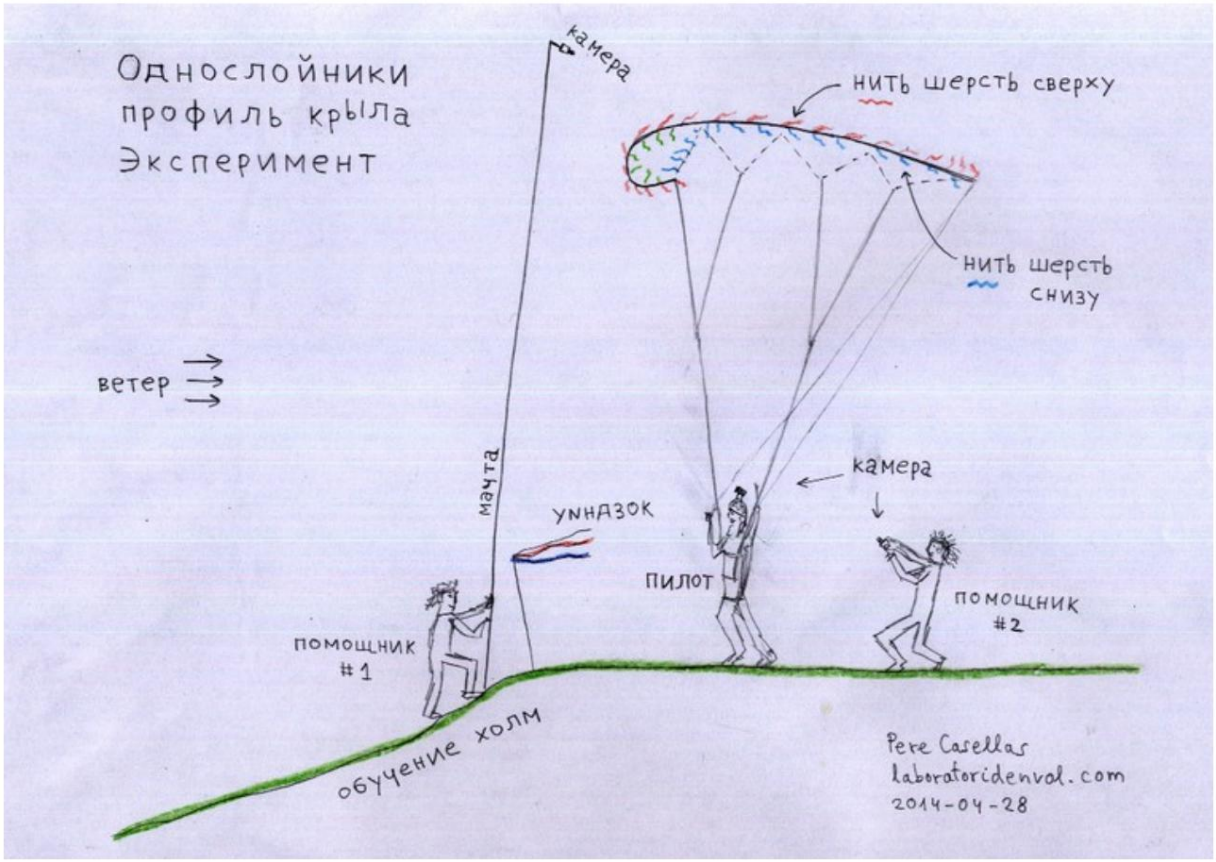
Flight Laboratory http://www.laboratoridenvol.com is the name under which I have grouped my free-flying wing design ideas in the form of a website. The designs, projects, ideas, and programs are shared in open source with many friends who have wanted to join this community. I have been a master of design, some colleagues have learned from me, I have learned from them, and some have surpassed me in many aspects. This is the magic of sharing knowledge in a free format. Applicable to mathematics, physics, programming, engineering in general and of course to the design and construction of wings.

The basic idea of the Laboratory is that the design software, the data files, and the results files in editable CAD format, are freely distributed, for study, modification and improvement if necessary, for any purpose, private or commercial. This is the idea of the GNU project and its General Public License. This is why many of the Laboratory's designs carry the prefix "gnu" in their name.

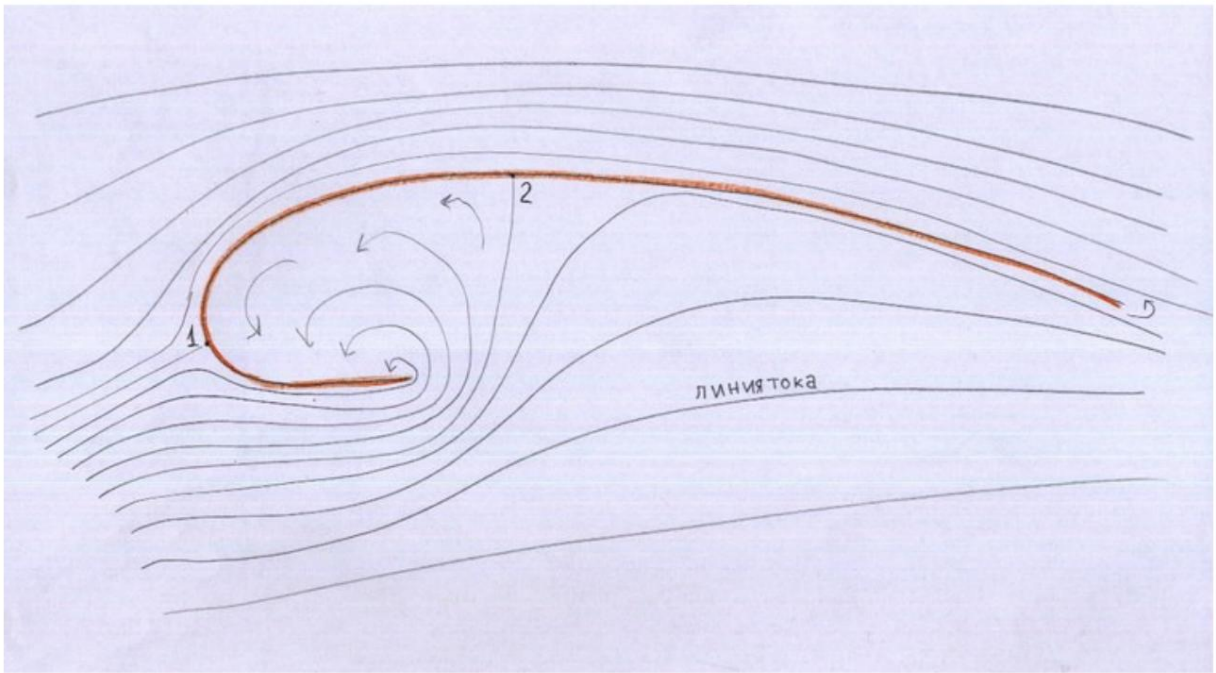
5. Paraglider gnuLAB2 «Barretina». Design Flight Laboratory, manufacturer Strip-Air. High-altitude flight in Àger, year 2011.

The Laboratory uses flat areas, small slopes, wind, gravity, the Sun to study and test wings. In the studio, microscope and scanner to analyze fabrics and strings, sewing machine, weights, pulleys and winches for resistance experiments. Paper and pencil to do graphic experiments. A GNU/Linux computer to program in Fortran and work with CAD files. A web server and FTP program to publish the results, and e-mail and a whasapp group to contact friends, inventors, and builders spread all over the world.

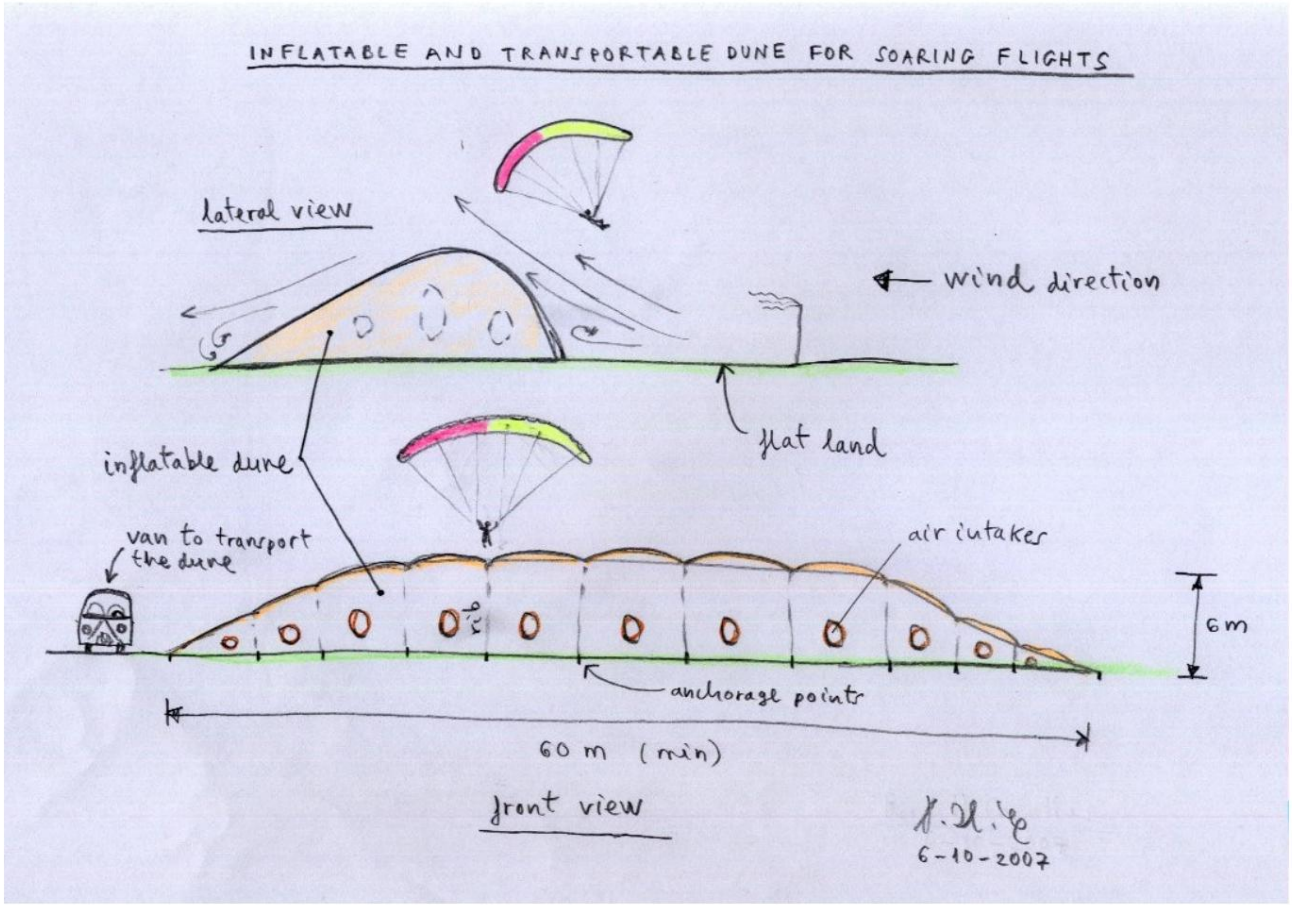
6. «Suluk 2» single-skin paraglider built in Greenland. In the photo, Pere with the Suluk 2 doing a mini-jump on the beach of the Darnius reservoir, year 2022. It is part of the BHL (Barretina Hyper Lite) series of paragliders, which begins with the BHL1 (BHL-JAP) built in Germany, then with the Batlite series from the Murcian friends of Adrenaline Paragliders, and continues until the BHL8 model, which is about to be released.



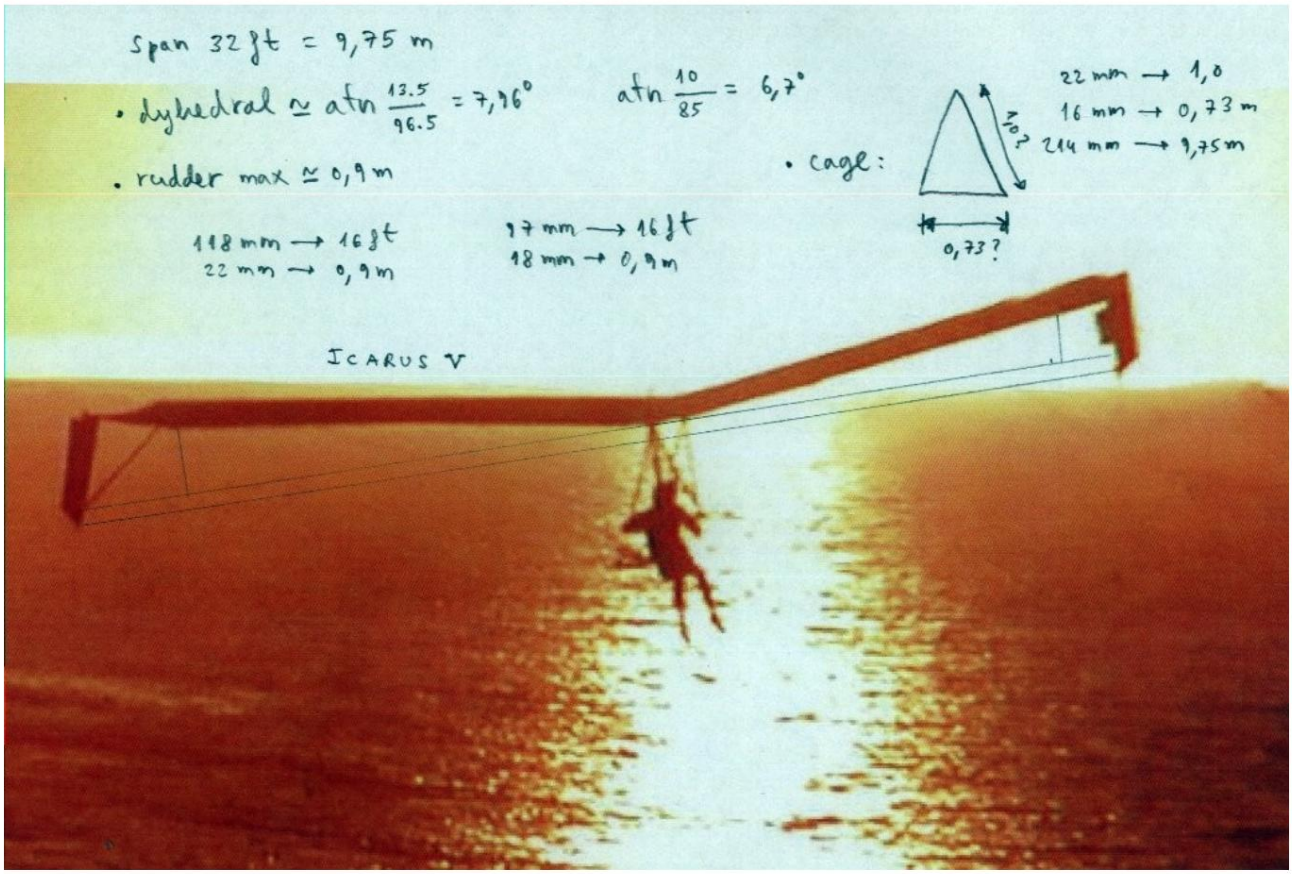
7. Illustration for experimental study of air flow around the paraglider profile, carried out with colleagues from Ukraine, 2014.



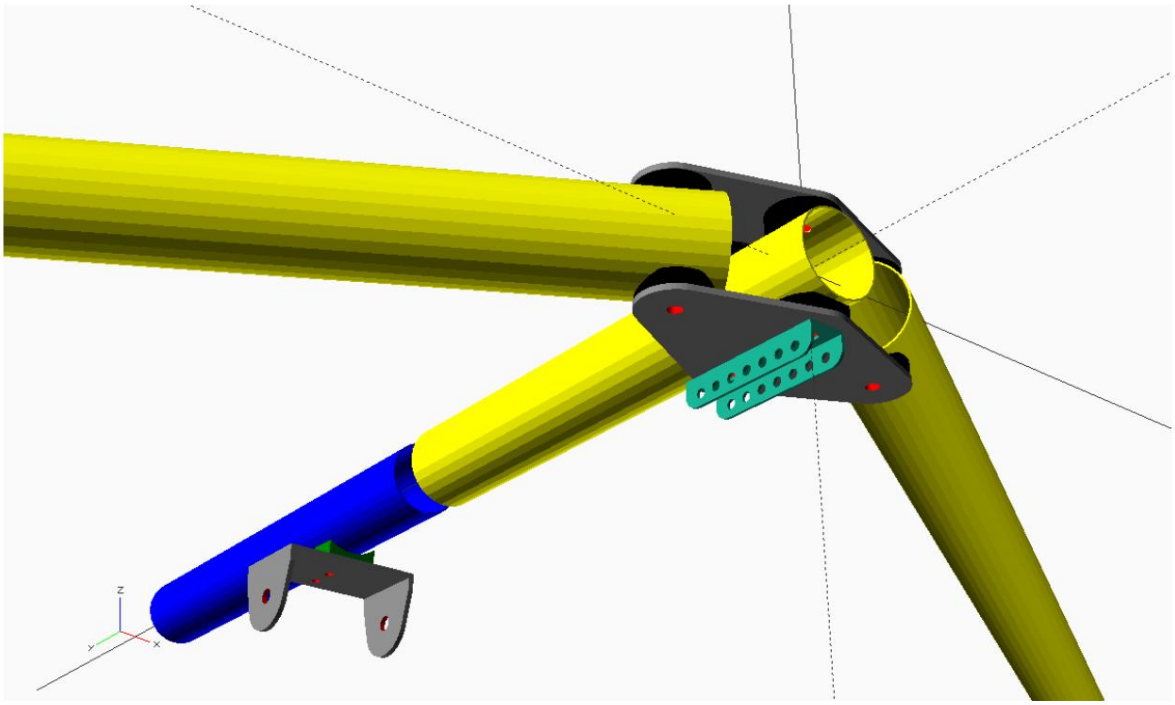
8. A graphic experiment, with paper and pencil, streamlines.



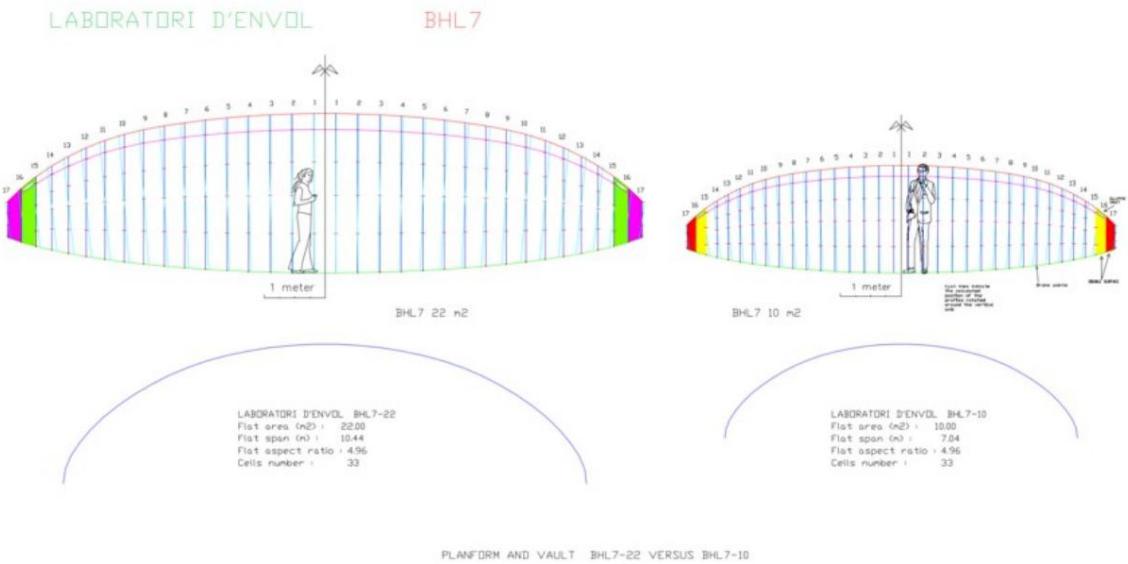
9. Proposal for an inflatable and transportable dune, year 2007.



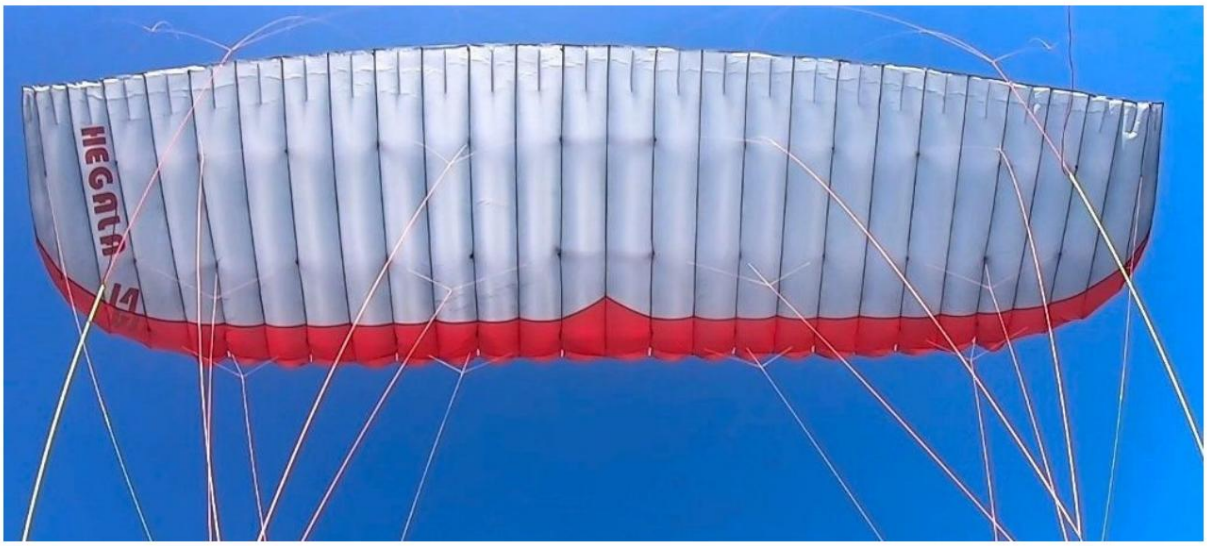
10. Rigid wing "gnuV" study (Icarus V).



11. Lehanggliding software, for hang gliding wing design (in development)

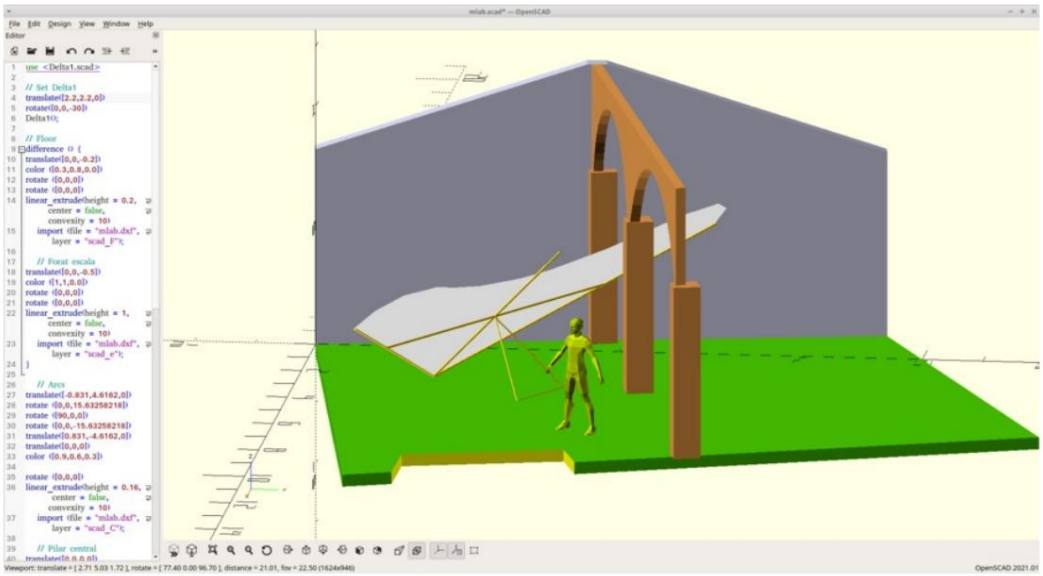


12. Barretina Hyper Lite 7 project, developed with *Leparagliding software , Open source GNU GPL license.*



13. Hegala v2 project (Hegala = wing, in Basque). Designed in the French Basque Country and built in Germany, year 2024.

14. Project «gnuC» Flight Laboratory (the most advanced wing of the Laboratory), flying near Chengdu (China), year 2023.



15. Flight Laboratory Project – Les Escaules

At expoLAB2025 we will talk about free flight in Teià, in the rest of the world, and we will review some of the designs of the Laboratory. We will also see some videos of the wings in flight.

After this expoLAB2025, the wings and designs of Laboratorio d'envol definitively leave Teià (El Maresme) and fly towards the new headquarters in Les Escaules (Alt Empordà). There we will continue the task of studying and sharing the dream of flying.

Pere Hernández i Casellas

Teià, September 2025

Special thanks to all the friends and collaborators of Laboratorio d'envol, whose list is extensive and spread all over the world. From the Canary Islands to Greenland, passing through Iecla, El Prat de Llobregat, Collbató, France, Italy, Germany, Switzerland, Poland, Ukraine, Belarus, Russia, China, USA, and all of America to the Argentine Pampas, and others.