



# A MODEL MODERN MAKER SPACE

Vienna's thriving Happylab is helping other makerspaces succeed

Written by Dale Dougherty



**DALE DOUGHERTY** is the founder of *Make:* and the president of *Make: Community.*



The founders of Happylab met while working on the autonomous sailboat *ASV Roboat*, shown here off the coast of Portugal en route to victory in the World Robotic Sailing Championship in 2009.



Happylab founders and co-CEOs (left to right) Roland Stelzer and Karim Jafarmadar at Happylab Vienna in 2023.

© Lukas Bast, Date Dougherty

**H**appylab Vienna, the first makerspace in Austria, was inspired by Professor Herbert “Happy” Hörtlehner, who taught electronics and robotics at local schools and at the University of Vienna. Both of Happylab’s founders, Roland Stelzer and Karim Jafarmadar, were students of the professor in computer science, although at different times.

“Happy had a very special way of teaching,” Karim told me during an interview at Happylab. “He didn’t come into class with any plan, but he asked ‘What do you want to do?’ And then we learned kind of by just doing and trying things out. It was kind of the maker way to learn things.”

The professor’s apartment was a place where his students past and present gathered for tinkering and sharing projects. While studying at university, Karim was part of a project to build a robotic sailboat and the team met at Happy’s apartment. Roland met Karim there and they both worked on *ASV Roboat*, which eventually won the World Robotic Sailing Championships four times in a row. At the start, *Roboat* was a small model boat, 1.5 meters long. It could sail

autonomously and then find its way back.

In 2005, Happy Hörtlehner passed away suddenly from a heart attack while on vacation. His students no longer had that place to meet outside of school and learn about new projects that others were doing.

## DER MAKERS-KELLER

Karim and Roland continued to work on the *Roboat* project and even bought a bigger sailboat, 4 meters long. On the way home with the new boat, Karim started thinking about where to put it.

They found some space to rent cheaply in a cellar in the neighborhood. “We couldn’t get the boat in actually, because it was too big,” he said. So they ended up having to rent a garage as well.

They hadn’t intended to open the cellar for others. But as soon as they had the space, other people wanted to use it. In 2006 the cellar became the first Happylab, an open workshop for tech enthusiasts, filling the need for a drop-in space that their professor’s apartment had once filled.

“We thought that it was cool that people came by,” said Karim. “We’re nice people and we didn’t

## FEATURES: Happylab Vienna



Workbench in the electronics area.



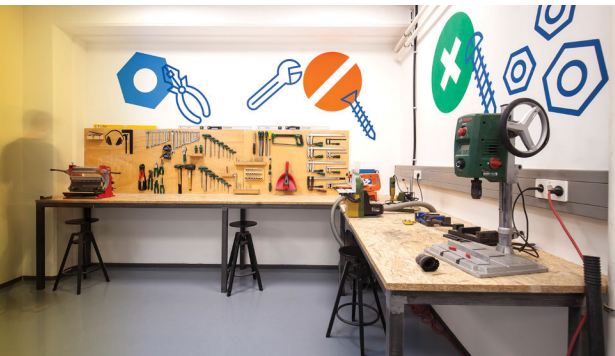
Welding station in the metal workshop.



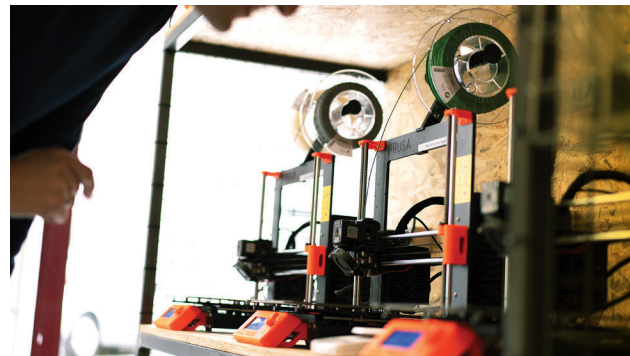
Wood workshop with large-format CNC milling machine for professional woodworking.



The innovation workshop for startups, founders, and makers.



Workshop with hand tools.



3D printer (fused layer process).



Laser cutter for metals.



Working on the computer-controlled CNC milling machine.

need all the things we had, all the time. So we opened it up. People just came and continued coming.”

## SEEDS OF A MAKER COMMUNITY

A small community started growing. “We thought that the people who would come would be technology nerds,” Roland recalled. “But what we saw very soon is that it was much wider —artists, people who were just curious about 3D printers, craftsmen, and more. So it was almost anybody.”

Schools and universities might have the same equipment, even better equipment than Happylab, said Roland. “The special thing about our space is the people who come together and meet each other, who help support each other and work on projects together.”

Happylab reflected a mindset that anyone could learn to do things with some basic help. “This is probably something we learned from the Happy professor,” said Roland. When they added a CNC machine, they created a one-hour workshop so that anyone can learn to use it. “You don’t need to have any background knowledge. After one hour, you can learn how to do simple things with the machine,” said Roland. “You should learn enough to not hurt yourself and not damage the machine. The rest is learn-by-doing and watching others.”

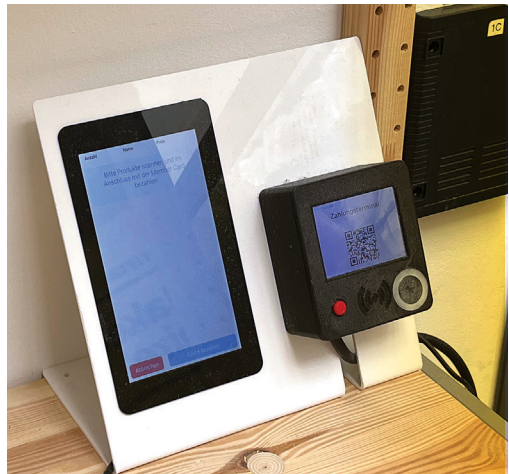
Happylab outgrew the original cellar and moved to a larger 2,500-square-foot space in 2010. “Every time we moved was because we could not fit any more people or machines into the space. It was the next logical step,” said Karim. Each move came with risks, which they took on, even though it was basically the two of them responsible for paying a higher rent. “So far, each time it has worked out,” said Karim, as more people came to use the larger space.

In 2021 Happylab moved to their current 10,000-square-foot space in the Stuwerviertel neighborhood near Vienna’s famous Prater park. By that time, they had opened new locations in Salzburg (2014-2020) and Berlin (2016–present).

## AUTOMATING A MAKERSPACE

As both of the founders were programmers, they wanted to automate as much as possible the management of a makerspace. “We don’t want to

**“WE THOUGHT THE PEOPLE WHO WOULD COME WOULD BE TECHNOLOGY NERDS, BUT IT WAS MUCH WIDER — ARTISTS, PEOPLE WHO WERE JUST CURIOUS ABOUT 3D PRINTERS, CRAFTSMEN, AND MORE. SO IT WAS ALMOST ANYBODY.”**



Happylab designed the Fabman automation system for makerspace management.

have people having to do all the boring things that have to be done,” said Karim. They automated access control to the building for members, who can come at any time of day or night. Automation freed them up to focus on workshops and community building. It also helped them grow membership to 1,600 members.

But it was a 2010 incident shortly after opening their second space that made Happylab really focus on safety and unsupervised users. “We had just moved in and everything was new and we were proud of it,” said Roland. “One of our power users did some laser cutting and the job was almost finished, but he was not completely done when he decided to go to lunch. When he came back, six fire engines were outside the building

## FEATURES: Happylab Vienna

and the new lab was on fire.”

Roland wrote about what happened on their website: “The laser cutter’s axis had gotten stuck, causing the laser to work on the same spot for a prolonged period. The plexiglass [workpiece] caught fire, followed by the laser cutter’s lid, followed by the whole ceiling. My co-founder Karim was in the lab’s office when it happened. He only noticed the fire when the power went out because the electrical wiring in the wall was starting to melt.”

“That’s not the very best start,” said Roland. They closed for two months and had to renovate everything. Luckily, insurance covered most of the costs. Roland and Karim realized they needed a solution to prevent this kind of problem happening again. They laser-cut a wooden case for an Arduino and a chip card reader and connected it to one of their fabrication machines. They called the device a bridge. “Now, you have to authenticate yourself before you can switch on the machine and you have to stay at the machine for five minutes, or you have to show your card again,” Roland explained. “Otherwise it goes into an emergency shutdown and stops working.”

Once they’d added card readers for each machine, they thought the system could be used for booking time on machines as well as charging for usage. “When makers from other labs visited us, they said that ‘We are facing exactly the same problems and that’s what we need,’” said Roland. Eventually, Happylab’s solution for managing a makerspace became a product called Fabman. However, turning their one-site solution into one that worked for many different kinds of makerspaces required them to start from scratch and build a new, well-engineered system. It’s a software-as-a-service that operates from a web browser. Over 120 makerspaces around the world now are using Fabman, from small private spaces to university labs.

“We always say it’s the operating system for a lab,” said Karim. “So this is something you get; it should always work because this is the most important part. And then you can build your own applications on top of it.”

Each makerspace that uses Fabman generates usage statistics, which could be a valuable way to understand many aspects of a makerspace.



Happylab/Fabman

**A stuck gantry and absent operator caused this laser cutter to ignite the workpiece, itself, and Happylab’s brand new space in 2010.**

Roland said that “so far, 443,075 machining jobs from a total of 4,927 different users have been logged in Happylab’s Fabman system. In total, that’s 270,934 hours of making.”

## COINS AND MINUTES

Fabman also helps address a problem for membership-based spaces that charge casual users and heavy users the same monthly fee. That fee might cover some basic machine usage and heavy users could be asked to pay more based on their usage. Fees could also be higher during times of peak demand.

“There are those who are hobbyists and those who are professionals,” explained Roland. “When we charged a higher flat fee for professionals, many of them said they were hobbyists and tried to hide the work from us, just to get the lower monthly fee.” Eventually, Roland and Karim decided not to distinguish between the two groups anymore. They introduced a credit system with “coins.” With the monthly fee, each user gets a certain amount of coins. When the coins are used up, then users pay for the additional minutes they use. “I think it’s a fair way,” said Roland. “It allows us to offer monthly usage at a reasonable price.”

Happylab moved into their current space in Vienna during Covid-19. It’s about twice as large as their previous space, with a large main room with work tables as well as 3D printers and laser cutters. There’s a classroom that’s used for workshops, and dedicated rooms for metalworking, woodworking, ceramics, and a materials shop.

Sometimes Roland wishes their makerspace was one big room with all their members and machines visible in one space, but he knows that’s not practical, as some machines are

loud and some are more dangerous than others. “What works,” he says, “is having a large common area with a big table in the middle, so people can see what the others are working on.”

## FIFTH MAKER FAIRE VIENNA

When I met with them in June, Roland and Karim had just finished organizing their fifth Maker Faire Vienna after a three-year hiatus due to Covid. The event was held in a two-story industrial building that once was used for building steam engines. Maker Faire Vienna had about 300 makers exhibiting for a crowd of about 10,000 people. In HappyLab’s booth, they displayed the work of some of their makers. MiniMotoz ([minimotoz.at](http://minimotoz.at)) are CNC-cut and laser-engraved kids’ balance bikes built by Robert Poeckh. Epiphany is a nightstand for capturing ideas when you wake up, by Benedict Heinzl and Dominik Glatzl of GoldenRatio.

I asked Roland how the public perception of HappyLab has evolved over time. “It definitely changed in a positive way,” he said. “In the beginning, some saw us as nerds playing around with crappy tools but this has definitely changed.” They work closely with the Vienna Business Agency, which also provided financial support for the setup of the new space. “There are more and more success stories,” said Roland. “I always see it like a football team in a small village, where every young boy or girl can enter and can start playing football there. You don’t need any prior knowledge, but when you see some talent, you have to guide them to the right people, to the right tools, to the right knowledge; they need skills and help to go on to the next level.”

Having managed a makerspace for nearly 20 years, how have they avoided getting burned out? “At least for me personally, it’s important that there are two of us,” said Roland. “You can’t always be 100 percent motivated so you need to have a good team around you.”

Karim said, honestly, that he doesn’t always like having two people in charge. “We discuss everything like thousands of times until we come to a decision,” he said. “So even though we’re just a small company, it takes us ages to decide on something.” Nonetheless, he believes that together they make better decisions because they



Happylab booth at the fifth Maker Faire Vienna.



MiniMotoz wooden balance bikes, prototyped at HappyLab Vienna.



(Left to right) Dale Dougherty with HappyLab founders Roland Stelzer and Karim Jafarmadar, community manager Vjara Jovkova, and members Lukas Winter and Martin Unterberger.

Dale Dougherty

have thought about it so much.

The duo and their team have managed to build and sustain a successful community-based makerspace with more than 2,000 members from Vienna to Berlin, which they believe makes HappyLab “the largest maker community in Europe.” Others are trying to replicate their model, and that pleases Karim. “It is a nice recognition from others that they tried the same way because they think this is a good way to do it,” he said.

“HappyLab was an experiment from the beginning,” Roland added, “and still is.” 🚫