

Interview

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Can this European space startup challenge Elon Musk’s SpaceX and Starlink?

Pythom Space is betting on smaller rockets and satellites

Mimi Billing

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On the outskirts of Stockholm, at the heart of a newish development site on the waterside by Nacka Strand, bustling with dozens of local restaurants and businesses, there is a black ten-meter rocket resting on a link bridge.

The spacecraft belongs to Swedish-American space startup Pythom Space, and has piqued the interest of passersby and the company’s employees alike (some have been knocking on the door of the startup to find out more and subsequently joined it).

But what is a spacecraft startup doing here, surrounded by other companies and their employees, and not tucked away in some desert?

“We don’t need that much space,” says Pythom CEO Filip Stern Cedell, looking over his shoulder as he guides Sifted around the office.

Here the company is building the rocket, engine, fuel tanks and control system. The goal is to create a small space rocket that can launch swarms of satellites without the need for a large-scale spaceport.

“We only need a concrete slab. We could do it out here, we could do it on the sea, or in the middle of the forest,” Stern Cedell says. “You could launch it anywhere, anytime. So technically, we could refuel our rocket and send it up here on the street.”

First carbon-neutral rocket?

So why doesn’t Pythom need the amount of physical space demanded by other companies in the sector?

The story begins with two Swedish-American explorers, Tina and Tom Sjögren. The pair travelled across the South Pole, the North Pole and hiked up Everest around the turn of the millennium. But, as Stern Cedell tells, they were disappointed when they found out the highest mountain known to man was actually on Mars.

The explorers wanted to climb that mountain but without having to stay on Mars for all eternity. So they needed to build a rocket capable of getting them there and back in one piece.

They invented a propulsion system that enabled rockets to be launched anytime, anywhere. By doing that, they could also replace liquid oxygen with biofuels, meaning that, in comparison to other space companies, they don’t need to rely on having huge cooling systems nearby at all times.



Filip Stern Cedell with one of the rocket engines.

“No one else does this,” Stern Cedell says, picking up one of the rocket engines that the company has 3D-printed to get the right shape for its “Black Magic” pressure system, which puts it at 150 times the atmospheric pressure.

“Space has been a solved problem since reaching orbit in the ’60s. What’s different today is that you can do it much cheaper with new methods. So you have 3D printing, you have laser fibre welding, you have CAD tools to design software, CAM to do machining, and new fuels — or actually old fuels — that you can make useful with new technology.”

An iron wall between the US and Sweden

Pythom Space — which maintains a holding company in Switzerland “to keep neutrality”, a sister company in the US, and another in Sweden — is betting on building smaller rockets to make sure that every country can affordably have its own space programme.

According to PitchBook data, the company has so far only raised a couple of million dollars from the Swedish Wallenberg family’s investment vehicle FAM, Swedish space VC Rymdkapital, former astronaut Christer Fuglesang and a group of angel investors by the name of Space Cowboys.

Whilst the two explorers are running the business in the US, Stern Cedell is running the team of eight in Sweden. Although the two companies use the same innovation, they are very much two different units.

“There are very strict military laws on export-regulated technology, so we have a sort of iron curtain between the organisations,” Stern Cedell says. “But there are certain things we can cooperate on, such as wrapping carbon fibre tanks and things that don’t fall under these export laws.”

The export laws Stern Cedell points to are Swedish ISP (Inspectorate of Strategic Products), which works with control and compliance of defence material and dual-use products, and ITAR in the US.

“It’s almost like an internal space race between the US and Sweden — who can do this the fastest, best and cheapest. Right now they’re a little ahead of us,” Stern Cedell says, pointing to a screen showing a live feed from the US office of a half-built rocket.

Space-based defence

According to Stern Cedell, Pythom has already attracted interest from the Swedish military as well as DARPA, the research and development agency of the United States Department of Defense.

“If there’s a war, the first thing that’s going to happen is they’re going to bomb a spaceport. Then they can’t fly. Then you have no space access, no satellites,” he says.

He adds that the first thing Russia did in Ukraine was to cut off ground communication: “It’s only thanks to Starlink and the satellite that you can have internet and communication at all.”

“And then you can see with the help of images what’s happening in the war — which areas are occupied, who is preparing to attack with their patrols in different places. So if you don’t have space capability today, you are both blind and deaf on the battlefield.”

“We want to make it possible to buy your own rocket for \$1m. And a satellite swarm with eight satellites for the same amount. That will give you a complete space programme for about \$2m,” Stern Cedell says.

Whilst SpaceX was cheap compared to the incumbents when it started, in comparison to Pythom’s \$1m and Rocket Lab’s \$7m, its price tag of \$60m sounds like a lot.

“We usually compare SpaceX to a space bus. You pay for a ticket on a rocket with everyone else. But the bus doesn’t really go where you want to go. You just have to tag along. In comparison, we are saying that we are building a space Uber,” he says.

Drug discovery in space

Similar to SpaceX, Pythom will focus on the commercial market — and the satellites are key to getting the economics to work, according to Stern Cedell, who points out that two-thirds of Rocket Lab’s revenue comes from subsystems.

But it’s the future markets that excite Stern Cedell most.

“Space is a completely new domain where atoms behave completely differently. So you can do space pharma — where you develop new medicines in zero gravity, where crystals actually grow in stronger formations. So you can have medicines with completely new properties.”

He also mentions that you can already manufacture crystals for semiconductors in space that are 50 times more efficient than they are on Earth.

“In the future you can also do space mining of asteroids. Space-based solar cells that are about 40 times more efficient than they are on Earth,” he says. “That is the most exciting — we don’t know what will happen when we push the costs to enter space.”

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