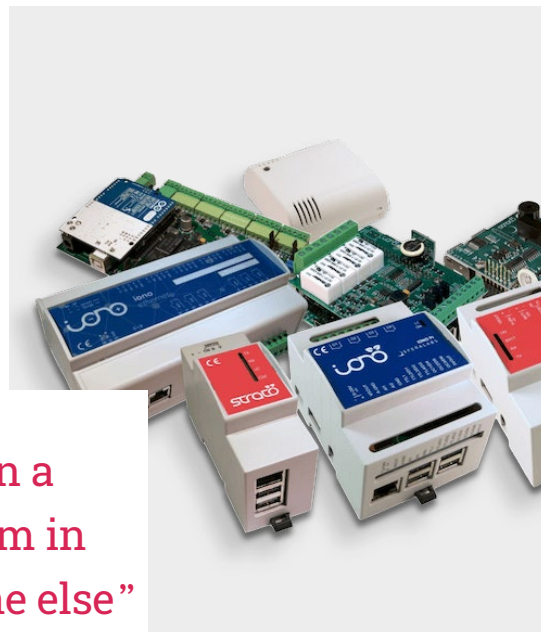


Customer story

Sfera Labs: Raspberry Pi “the platform our customers prefer for industrial applications”

Raspberry Pi solution	Raspberry Pi Compute Module 4
Size of business	Small to medium
Industry	Industrial automation

“We were the first company to introduce Raspberry Pi in the industrial automation environment,” is the bold claim of Sfera Labs’ COO Maria Chizzali. The Italian company focuses on designing, manufacturing and selling open technology for the industrial world, and much of its expertise is in industrial automation servers, I/O modules, and sensors based on Raspberry Pi technology. The idea for the business was a direct response to Raspberry Pi.



“An open solution is better than a traditional proprietary platform in which you depend on someone else”

The challenge

Sfera’s customers require everything from pure industrial applications using I/O for multiple sensors (for example, in the energy sector, a big market for Sfera), to Compute Module and Raspberry Pi for edge computing logic, to airport security applications. Cost and mechanical robustness are often among the key considerations, as is production lifetime. “In the industrial automation world, long-term availability is fundamental. Nobody is going to invest in an application if they are not 100% sure that in five years they will be able to use the application,” Chizzali notes.

An ambition for Sfera Labs right from the start was to provide an open platform that would let systems designers avoid lock-in with proprietary platforms that could only work with other hardware and software from the same manufacturer. Back then if you wanted a means of controlling your heating system you’d have to buy software from the same company, Chizzali explains, and the same applied to building control and automation systems. “We had this idea of trying to develop software that was hardware-independent, so it would be able to talk to Siemens, LeGrande or whatever. Sfera Labs’ vision was to enable the designers to get the best parts of the best products for the project without being tied to a specific company because of the software.”

The solution

Sfera started by identifying where they could offer features to help industrial customers take advantage of Raspberry Pi, such as DIN rails, UPS, and hardware enclosures. They began building expansion boards with ports, I/O modules, sensors, and power supplies that would suit a range of industrial applications. Sfera has since developed product lines around control/server units, I/O modules, and sensor modules.

Strato Pi is a control unit known for its extensive communication protocol support, reliability, and fault tolerance, and was one of Sfera's earliest product lines. Sfera began using Raspberry Pi in Strato in February 2016, upgrading to Raspberry Pi Compute Module with Strato Pi CM in 2019. In 2020 they added a CM Duo edition featuring two SD card slots, allowing for one to be used for additional storage or as a redundant drive.

Strato is ideal for micro businesses such as small hotels or B&Bs, allowing them to control heating, lights, temperature, and access from a single 200 euro module. "It's been in our product line since forever," says Chizzali, "and is one of our most popular products".

The company's other two main hardware ranges are Iono input/output control modules, and Exo environmental sensors and interfaces. Both of these support a broad range of wired and wireless communication protocols, making them ideal for adding to an existing network where they can monitor noise, humidity, seismic activity, air quality, and so on.

Sfera's 2021 launches included Exo Sense Pi, based on Raspberry Pi Compute Module 4. Around the CM4 module Sfera has built sensors and sensor server software. Chizzali characterises a typical use case scenario in which the user wants to monitor the air quality, temperature, and ventilation of a room, and also needs to be able to detect occupancy levels. A Bluetooth sensor counts the number of people in the room and, via a wireless connection to an external speaker, the device is able to issue an audible warning in the form of a preset phrase, such as "please wait for someone to exit this room before entering".

“Cost and mechanical robustness are key considerations”

Why Raspberry Pi?

Sfera Labs felt confident in choosing Raspberry Pi because of its large production volumes and the long manufacturing lifetimes to which it commits.

Open platforms are key, Chizzali believes, because of the number of people who will be knowledgeable about them and because of the support from their communities, compared to a specialised and closed proprietary platform. From a practical standpoint, "if your supplier disappears for some reason, or your programmer quits, you don't have to panic because there are many other people [who are versed in that platform] so you can find another programmer and you can find a good supplier."

This resilience is becoming increasingly appreciated, says Chizzali. Whether in professional, industrial, or building environments, people using proprietary platforms can get stuck with systems controls that they cannot change, and that hinders them, sometimes to the extent they cannot comply with new regulations and new methods of production. In industrial settings, control systems need to evolve depending on the situation, the regulations or the market, Chizzali points out. "An open solution is better than a traditional proprietary platform in which you depend on someone else and someone else's updates."

Chizzali points out 40 million Raspberry Pi sales and a forum with close to 300,000 members whose 1.6 million posts should not be ignored in the troubleshooting and support equation. "If there is a problem – and it is impossible that problems do not exist – whenever there is a problem, if you have a proprietary platform, all you can do is wait for the next release. If you have a problem on an open platform with community forums the size of those of Raspberry Pi and Arduino, the community very often finds a solution in just a matter of days."

Raspberry Pi also appeals for prototyping, not least because it is low-cost. “You buy a couple of Raspberry Pis, developers software test it and, when you’re done, you have software that is ready,” says Chizzali. You don’t need to develop your own hardware such as an embedded application or device. Faster prototyping means reaching the production stage sooner and being quicker to market. As a result, Raspberry Pi is “definitely the platform where we are doing most of our business, definitely the platform that we’re doing most of our research and development on and it’s definitely the platform that our customers prefer for industrial applications.”

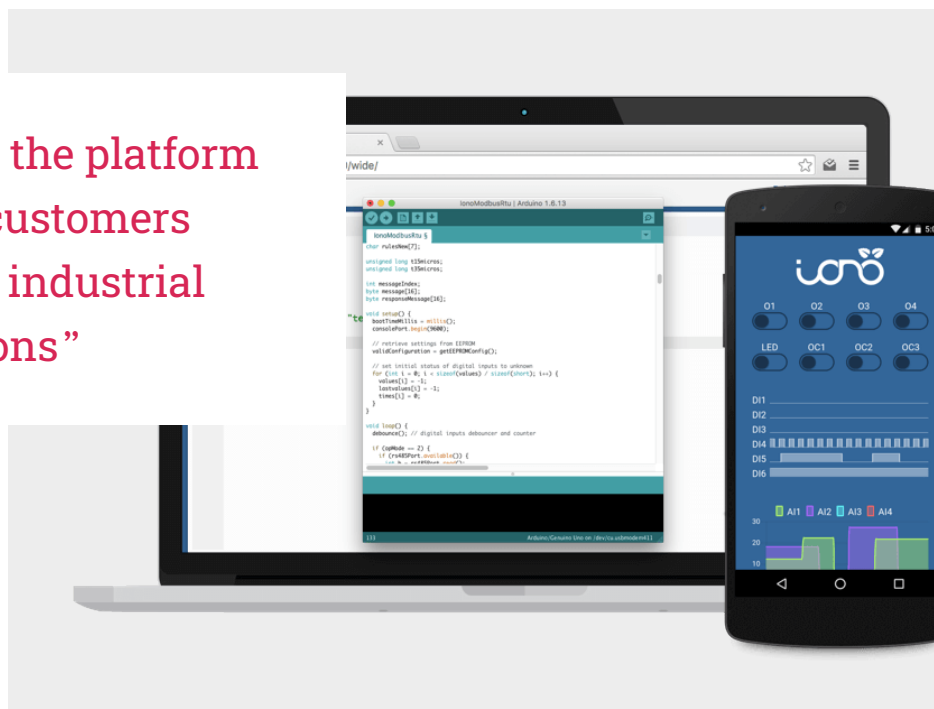
The results

Sfera is active in no fewer than 62 countries, its main markets being North American, Europe – particularly Germany and the Netherlands – and Australia. Energy sector customers are a key segment. “By their nature,

energy companies and types of application are new,” explains Chizzali. “They don’t have anything that’s ‘legacy’, so obviously they use Raspberry Pi and software based on it.” Emerging markets in Africa are also becoming a good market for Sfera as a result. “We grew slowly, but we recently passed the 100 protocols threshold,” notes Chizzali.

Long-term clients are satisfied. Hi-Interiors, which makes the Hi-Can Smart Bed, has worked with Sfera for a decade. COO and co-founder Gianni Tallarico explains, “Hi-Interiors’ expertise is in the digital transformation of furniture and we wanted to work with a partner who had a similar strength in electronics and software development. Sfera Labs leveraged Raspberry Pi’s open platform to design the control system for our HiCan and HiAm using their Strato Pi server and Exo Sense sensors. The success of this project led to a ten-year relationship between the two companies. The modular system architecture that Sfera Labs developed greatly simplified the transition to our second-generation smart bed, the Hi Bed.”

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