

# FOUR EYES ON AN IoT-PRODUCT

Security for a new product. dormakaba Schweiz AG had their new access solution, exivo, checked by Redguard's security experts. In that process, the initial situation was not without challenges: exivo is developed and operated in the cloud, it connects virtual and physical components (Internet of Things), and Redguard's work and tests had to keep up with agile software development.



One would not have been able to create more demanding requirements: exivo does not manage just any process, but controls who is allowed to enter which space in a building at what time. The access system is an entirely new development and – for the first time at dormakaba – is being developed and operated in the cloud. exivo consists of physical devices on the customer's site; it is, therefore, an example of an advanced Internet-of-Things solution. And as if that was not enough complexity, exivo is also a multifunctional system with extensive features. Partner companies can, for example, use exivo to order, plan, and manage access solutions for their customers. exivo is, in other words, a complete access package. As a result, the new product, in addition to several modules, also manages different user groups with different functions and authorization levels.

„This maximizes our requirements regarding security; they go beyond the high measure that is standard for an access solution,“ says Patrik Eigmann, chief engineer in charge of the new product at dormakaba. „exivo must deliver the maximum security on many levels.“

## Product and Processes Examined

A predecessor product or a product model did not exist for the new all-rounder from Zurich. dormakaba has developed exivo from scratch. For Patrik Eigenmann, therefore, it was evident from the start that regarding security there would also be the need for a critical view from the outside.

„Here, the four-eyes principle was indispensable.“ After an invitation to tender, dormakaba chose Redguard. In top of the good reputation and proximity, Redguard's offer was simply the most convincing proposal he said to justify the choice. During the development process, Redguard intensively scrutinized the entire exivo product development with regard to security. The experts' eyes focused on processes and products alike. The conclusion after the supervision according to Patrik Eigenmann: In many areas, Redguard provided valuable input for a plus of security; the experts did not find any substantial issues that would have called the application into question; but they identified weak points and recommended measures, which increased the security level of the application even more.



## Firmware Improvements

In the exivo web application, for example, the structure of user roles and authorizations has been phrased more clearly. Concerning the physical hardware at the customer's premises (peripheral controller), pre- and re-tests have led to improvements in the controller's firmware, such as a guaranteed up-to-dateness of all safety certifications. Together, the level of checks has been raised. Thus, dormakaba and Redguard did not stop at man-in-the-middle attacks but armed the simulated attackers with additional internal information to make their success more likely. Eigenmann: „A maximum of manipulation possibilities has been simulated.“

## Work Process Checked As Well

Testing hardware and applications, however, was but one job of many. Because dormakaba developed the application internally, it was equally important to ensure maximum security during the software development process. As is well known, a product is only as secure as all safety-related topics considered during software development. „So Redguard also looked at how we are working,“ says Patrik Eigenmann. Security is, according to his understanding, not an addition, but a self-evident part of the development process.

One focus of Redguard's support was the technical consulting of the developers. Redguard gave answers to questions such as: How well is the development documented, which user permissions are there, which rules of conduct apply to the developers? Here, according to Patrik Eigenmann, „numerous topics were addressed“, that the company has also implemented.



**“On security questions, we need a critical look from the outside. The four-eyes principle is indispensable. In addition to the focus on the product, this also requires an examination of the way we work.”**

**Patrik Eigenmann**, Lead Engineer exivo



Concrete example: The Apple computers, on which the product was developed, were initially not integrated into the company's IT. This has now been corrected, to the benefit of the entire group: Now, all „Macs“ are managed by Global IT, reports Eigenmann.

## One Eye on Infrastructure

Included in the technical consulting in the development process was Redguard's test of the development environment infrastructure (including Amazon Web Services). As with the hosting of the application in the cloud, Redguard was able to signal to the customer that there were no security concerns.

## Rating: Excellent

From Redguard's point of view, this project posed an additional challenge in dormakaba's use of an agile approach to software development that extended to Continuous Integration and Continuous Deployment (CI/CD). That meant that security consulting had to accompany the entire development process step by step. At dormakaba, people are very satisfied with this new project partner in security matters. Patrik Eigenmann awards the collaboration with Redguard the rating „Excellent“. Technical know-how, professionalism, speed, and flexibility at Redguard were on point. „Nothing better could have happened to us.“ This is especially noteworthy because the product is an entirely new development and with a cloud-based solution on top of that his company has taken a new approach. It is evident to Eigenmann that in security questions he will continue to trust Redguard's scrutinizing, external eyes.