

## Internet of Things für Zugangssysteme

The topic of this thesis attends to an Internet of Things implementation for a sliding door. The industry partner Bircher Reglomat AG develops and sells sensors for door systems worldwide. Nowadays Internet of Things has a huge impact on all industrial sectors in many ways. Due to this development Bircher Reglomat AG intends to extend and enlarge their Know-How about Internet of Things applications.

An existing sliding door system was expanded into an IoT demonstrator. An embedded Linux system serves as a gateway, which records data on the CAN bus of the door system. Images of the outside area are captured by a camera and linked together with sensor data. A webserver on the gateway visualizes the data and the images on a web page.

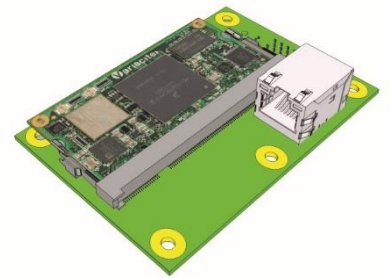
Thereby it's possible for installation engineers to control the whole door system from an external site. This creates additional benefits, such as preventive maintenance, which saves the customer time and money. The gateway, which is based on a System-on-Module, was implemented using the Yocto-Project. This open-source-project provides methods, tools and templates to create a custom Linux-based system.

The acquired data and images are stored on the gateway in files for further utilization. The implementation of the data generation represents the first milestone of an IoT application. By expanding the door system with other sensors and actuators, more specific information could be recorded. Through the analysis of this data, Bircher Reglomat AG can create added value for their customers.

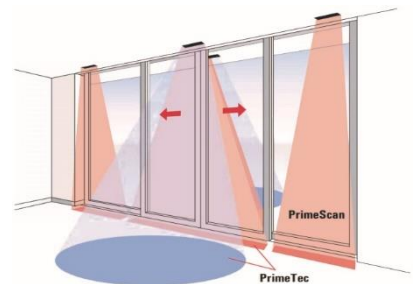


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Future Bircher Reglomat sensors could act a gateway with an integrated module. A possible variant of how such an additional module might look like is modeled in the figure above.



In this figure a sliding door with their protecting-(red) and activating fields (blue) is shown. To ensure the functional safety the primary and the secondary closing edge must be observed.