



FACTSHEET

INTERNET OF THINGS

The Internet of Things, a system of interconnected sensors, devices, everyday objects, machines and equipment, has the potential to revolutionise the way that we live and work. But there are still many questions that have to be answered before this can happen: questions about security, availability, connectivity, data volume and protocols. Not to mention questions about new business models, software-as-a-service and digital transformation. We will clear up all of these questions with you in regards to your specific project.

Your benefits

- Risk minimisation thanks to experienced specialists
- You can count on the right technologies and protocols
- Flexibility and scalability with the help of cloud platforms used as an IoT backend
- Embedded and backend development from a single source

INTERNET OF THINGS

No matter whether your company's strengths lie in device manufacturing or in backend and web development: We will provide end-to-end advice and supply you with the necessary know-how.

FLEXIBILITY

IoT best practices

Think big, but start small: In creating IoT applications, we place a special focus on developing architectures that are scalable – sometimes for several hundreds of thousands of devices. But we start every IoT project with a prototype that involves just a handful of devices. Using such small prototypes makes it much easier to clear up any architecture questions related to security and device management. It is often this prototype phase that first reveals which end-device data are actually useful and what type of value added can be obtained from them.

Connectivity and IoT protocols

In the Internet of Things, a “thing” can be practically anything and can be located anywhere in the world. However, in spite of the growing level of interconnectedness, one question keeps cropping up: How do we connect the thing to the net? For example, can we use an insecure Wi-Fi network to communicate data? What alternatives to mobile communications are availa-

ble? How do we deal with an unstable network connection in a travelling vehicle? What connectivity options do low-energy devices have? In addition to these questions, we have to delve into a range of IoT protocols: well-known ones like FTP or HTTP, as well as less well-known ones like MQTT, AMQP and CoAP. We will shine light into this jungle and discuss the background and correlations.

The cloud as a backend for the Internet of Things

How do you create a backend for the Internet of Things? The major public cloud providers Amazon and Microsoft have thought long and hard about this question and offer ready-made, flexible IoT backend services on their platforms. These services take a lot of problems off our hands. Above all, they are secure, scalable and very easy to use. Thanks to their open interfaces, these services can also be integrated into every application, no matter whether they are hosted in the cloud or whether the work involves an ERP system in your own data centre.

Big Data analysis

Telemetry is the most frequent use of the Internet of Things. In telemetry, devices send opera-



tional data to the backend, where they are collected and analysed. It is not unusual for large amounts of data to pile up here. Efficiently storing and analysing such information are the core disciplines of “Big Data”. We will talk you through your data-storage options and which approaches to data analysis would be best for you.

Usability and user experience

IoT devices come in a variety of form factors and with various input and output functions. Some have monitors, like heating controls or washing machines. Others have different ways of communicating with us (things like voice and gesture recognition). Some have no input or output functions at all and are not able to tell us directly what they do. It is also possible to interact with devices via web or smartphone apps. Despite the differences, users would like to use an interconnected service that extends across devices instead of a few non-connected user interfaces. One key requirement is to consider not only the user friendliness of the individual UIs, but also the shared user experience across a number of devices. We will show you how to create such modern user interfaces.

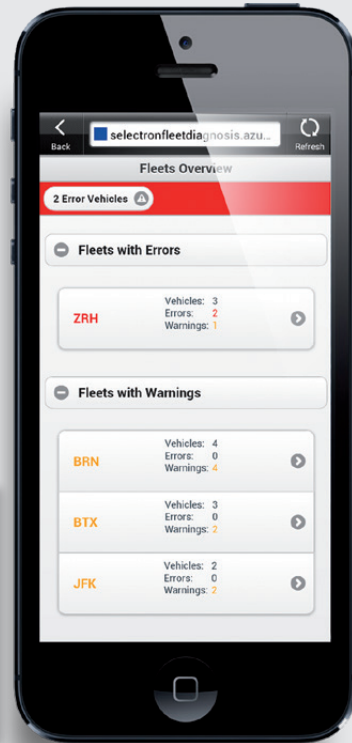
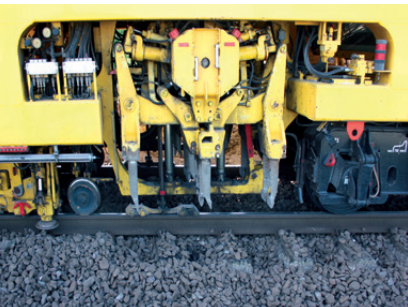
SAMPLE PROJECTS



Selectron fleet monitoring

Selectron fleet monitoring facilitates remote diagnosis of a train during operation. The faster reactions produced by this process reduce the downtimes of rail vehicles when they require service.

The expertise offered by the cloud and IoT experts at bbv is to thank for the fast, secure and scalable implementation of the solution, which offers high availability at minimal operating costs.



Why bbv?

bbv Software Services is a Swiss software and consulting company that helps its clients to bring their visions and projects to life. We develop individual software solutions and provide our clients with well-founded consulting services, first-class software engineering and many years of industry experience as they work to create successful solutions.

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