

Abstract

The Internet of Things (IoT) is a hard to grasp technological term for a lot of people, which nowadays gains an ever increasing significance in our everyday lives. The number of network connected devices raises every year in an exponential manner and has long surpassed the size of the human population. According to some forecasts, the number of such devices can reach 50 billion by the year 2030.

The design of these devices is a complex and compound challenge, which requires an extremely broad spectrum of engineering knowledge and experience. Despite of it's complexity, it is possible for engineers and hobbyists of practically any level, to create IoT systems. My thesis work aims to serve as a guide for people being interested in the design of such devices, from hardware to software engineering alike. In this document, I will first briefly describe the literature of IoT, the must-known aspects of hardware design and finally, the details of the software which will run on the final product, using a not so widely adapted but much more powerful technology, the dataflow architecture. During this work, I try to describe and compare the available solutions in detail, illustrating the covered topics with the example of a network-connected device, monitoring and displaying weather parameters. By the end of this thesis work, the reader can gain comprehensive knowledge about the topics I am covering and can start creating his/her own IoT projekt with a little more experience.

The knowledge gained can serve great for every engineering-minded reader and can provide a solid starting ground for further and deeper study. All of the technologies mentioned in this document can be improved in several ways, inspiring the continuing advancement of engineering and science in general.