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The Internet of Things, Sensors and Actuators

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Already the name **IoT** tells us, that there are two basic components:

- ***Things*** represented by sensors and actuators and
- the ***Internet***, allowing simple access to the system through graphical user interface elements like gauges and graphs for data display or buttons and sliders as control elements, accessible on the Internet.

This lecture describes the *things* part of IoT

Interfacing sensors and actuators
After a short introduction of the basic building blocks an IoT system is composed of, sensor readout and control is described. A micro-controller acting as IoT gateway must provide the necessary device interfaces as well as a network (WiFi) interface. A few of these device interfaces are shown. As an example, reading of an I2C based air quality sensor and a dust sensor with a serial interface are demonstrated. The simplest way of programming the micro-controller, is the use of either the Arduino SDK, where programs are implemented in the C++ programming language or using MicroPython, a Python-3 interpreter that can be installed on the micro-controller. The demonstration will be done with MicroPython.

Author: Dr RAICH, Uli (retired)

Presenter: Dr RAICH, Uli (retired)

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