

## Definition of Bachelor Thesis Project

### MQTT-Extension for the Abilities Description of a 'Thing'

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Assignment In the world of IoT (Internet of Things) the message protocol MQTT (MQ Telemetry Transport) plays a major role for the discrete message transport between the 'Things'. MQTT is a publish/subscribe messaging transport protocol which is completely agnostic to the content it delivers. This renders the protocol very light weighted. However, it is very difficult for a receiver to get knowledge about the abilities of a specific 'Thing' or even to interpret the message received by a 'Thing', as it is sent in the form of a byte array. Today many message provider send the message as a UTF-8 JSON string, which is easy to interpret even by humans. But, the conversion to and from such a string requires computing power and asks for quite some bandwidth. Further more there is yet no description language which allows to describe the abilities of a complete 'Thing'.

The aim of this thesis is to provide a special description language for the abilities of a 'Thing' comprising its parameters and events in a way that it is allowed even for very limited device (in computing power and bandwidth) to describe themselves and to send the messages and receive the parameters in the most appropriate way for the 'Thing'. The 'Thing' description shall be realized in an way to provide a solution which preserves the simplicity of MQTT. In particular, the following aspects are crucial for this thesis:

- The 'Thing' description must be easy to be read by others
- The 'Thing' description has to comprise the parameters (input) and events (output) of a 'Thing'
- The 'Thing' description is provided with minimal impact for the existing protocol MQTT v3.1.1 OASIS Standard

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