

**Master 2017**

**Ms. Reshma Khamgal**

**Configuration of a Smart Sensor Automation System using Data Exchange via NFC.**

***ABSTRACT - Masterthesis***

For investigations of this master thesis an Industrial Automation plant lab module was used. It consists of Sensors and Actuators (SAN-Sensor / Actuator Node) which are connected via proprietary bus interface (SANI-SAN Interface) to Ethernet enabled Transmitters (UTN-Universal Transmitter Node). The UTN can host several automation functions, like flow control or level control applications (CiF - Control in the Field). A UTN together with several SANs is called a MultiSensor device. All SANs and UTNs have integrated Near Field Communication (NFC) Technology.

This Master Thesis includes Development of Mobile Application for an Android System to write necessary data to the Automation devices like SAN and UTN, using NFC technology. Automation devices have integrated Dynamic NFC tag IC (M24SR64-Y) to store data which is necessary for configuration of connected sensors and actuators. When RF host writes data to the M24SR, GPO pin of M24SR goes low and triggers interrupt. Then MCU STM 32 reads process values from Sensor nodes and updates the process values in Data management of UTN. UTN reads process values from connected Sensor nodes and writes process values to the actuators.

The NFC Android Application shall be used for different kind of interaction with the NFC tag of Automation devices. Example: provide identification ("=Taufe"), read / write process values and calibration using selected data exchange format.

SANs and UTN are time synchronized. This is needed to perform control algorithms within an automation task. In order to have a system wide time base, NTP - Server (Network Time Protocol) is used. All UTNs in the network use the NTP protocol to synchronize with NTP Server. NTP server provides Timestamps to UYN.