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Development of a concept to check compatibility of fieldbus communication after a SW-update

Bachelor-/Masterthesis

This thesis aims to develop a methology and programm to check the compatibility of fieldbus communication if one of the communication partners is updated

Motivation

In today's fast manufaturing environment fieldbus systems are usually used for communication between devices. Manufacturing assemblies are often unique compositions of standardized components which are build especcially for one plant. The operation of those plants usually follows the "never change a running system" principle. Upcoming cybersecurity regulation will lead to neccessary software updates for components and systems. This raises the question if the plant and especially the communication between devices is still working after a softwre update or if maybe over updates are needed.

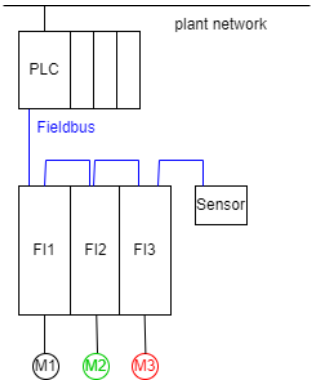

Figure 1: schematic structure of a simple manufacturing system

Aims

The aim of this thesis is to figure out which possibilities the common used fieldbus systems PROFINET and EtherCAT provide to modell compatibility relevant information. Based on this information a concept to check compatibility between versions shall be developed and ideally implemented.
hint: this thesis can also be written at SEW-EURODRIVE

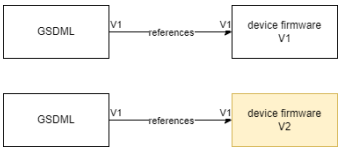

Figure 2: one-way reference between device description and device firmware

Helpful prior knowledge

- interest in digital twins, information modelling
- interest in industrial communication and control systems
- programming skills and fun at programming
- Lecture Cyber-Physical Production Systems

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