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Abstract Submission

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Abstract

Presentation Preference:

☐ Podium Presentation   ☒ Poster Presentation

Title:

Communication Protocols for Life Science Automations Systems on Resource Constrained Devices

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Abstract *(250 words max.)*

Using a standardized device-centric SOA is a possible way to solve interoperability needs in future embedded networked systems, like wireless sensor networks. Wireless sensor networks can be a benchmark for all communication systems because of the enormous demands for low power, low computing power, wireless range and data rates. The usage of a Service-oriented device architecture (SODA) has several advantages, like providing plug-and-play capability for network devices, fault-tolerant services, and standardized interfaces. Besides these advantages, additional resources are required to host a necessary software stack. For resource-constrained devices, SODA toolkits like UPnP stacks or DPWS toolkits are available [WS4D, SOA4D]. However, more work is necessary especially for deeply embedded devices. Deeply embedded devices are small microcontrollers with only a few kB of memory and RAM (e.g. MSP430, ARM7). These devices cannot be applied with huge operating systems. In the field of home healthcare monitoring, these devices are essential because of the combination of price, power consumption, size, weight and the build-in hardware modules. Existing solutions and devices, to set up a body area network for monitoring vital functions, are still using proprietary communication protocols including proxy concepts, to access single nodes and associated data. We present a new approach, which can be applied on deeply embedded devices and serve specification conform DPWS requests. Thereby, communication proxies become redundant and the advantages of SODA are also available on the lower layers, which are nearest to the physical tier.