Project Proposal „Distributed Storage System“

Background:

Manufacturing companies use various software systems (ERP, MES, etc.) to support their internal processes. Continuing digital integration of production facilities (e.g. workstations, machines, warehouses, etc.) enables companies to get new information and useful knowledge about their processes. Ideas for such improvements may arise directly on the shop floor. Their implementation and integration, however, usually turns out to be complicated. In this project, a software system shall be implemented that enables integration of autonomous software components and that makes collection information readily available. The system approach shall support system extensions through low barriers for integration of new software components.

Project Description:

In the course of this project students shall develop a software system for the management of inventory levels. According to the individual structure of a company, current inventory levels shall be detected via sensors and the generated inventory data shall be made available by the software system. To enable high flexibility and scalability of the inventory management system, it shall have a distributed software architecture. Warehouse components shall be represented by software components and get integrated into the software system. This enables the software system to make current inventory data available to other system components. An inventory management service collects data from the individual warehouse components, processes it and displays it in a dashboard to the user.

Targets:

- development of at least two warehouse components (e.g. storage for screws and storage for brackets)
- component integration and communication via publish-subscribe pattern (e.g. using MQTT)
- development of a dashboard to display current inventory levels
    - overview of overall inventory levels
    - provision of inventory information; amount, type and storage location of stored goods
- documentation
    - technical documentation (architecture and code), preferably in English
    - user manual, in English or German

Requirements:

- programming experience
- good German and English language knowledge

Partner: The Project will be organized in cooperation with the University of Applied Science Jena.