

Modeling Process-Aware Internet of Things Services over an ARDUINO Community Computing Environment

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(Pt9)Abstract—The authors' research group had exocogitated a conceptual architecture and its functional reference model for realizing a process-aware services over Internet of Things collaborative community computing environments, and it had released it to the academic worlds of the Internet of Things and the workflow technologies, as well. As a consecutive research work, we are now on the validation phase of the proposed architecture through modeling and enacting process-aware services over a practical Internet of Things community computing environment. The purpose of this paper is to model a process-aware service and organize an ARDUINO-based Internet of Things community computing environment to show the feasibility of the concept of the process-aware Internet of Things. In order to define the process-aware service, we especially, use a business process modeling tool, which is supporting the business process modeling notations based upon the standard specification of OMG-BMIDTF. Each of the activities made up of a process-aware service is associated with either a sensor or an actuator of ARDUINO with a control program embodying its related service. As an operational example, we model an imaginary process-aware service fulfilled by two ARDUINO-sensors such as hygrometer and thermometer, and two ARDUINO-actuators such as buzzer and LED-lighter, and implement their control programs. Through the operational example, we are able to practically prove that the concept of process-aware Internet of Things services ought to be a reasonable and applicable concept in any forms of the real Internet of Things community computing environments.

(Pt9)Keyword—Internet of Things (IoT), ARDUINO, community computing, process-aware IoT-service, process-aware Internet of Things Architecture



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