

Toward the realization of Real World OS architecture — Implementation of a prototype system —

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Abstract

“Real World OS”(RWOS) is proposed as an architecture for autonomous distributed cooperative agents such as human, sensor and software agents on Internet. RWOS treats a parallel workflow in real world by introducing new concepts of project programming and stage. By using the architecture, it becomes possible to design activities of agents in the real world easily. In this presentation, we implement a prototype system of project programming as a first step of realizing RWOS.

Keyword: Real world OS, RWOS, agent computing, Internet of Things(IOT), Internet of Everything(IE)

In IOE era everything such as people, objects, data and services will be connected with each other on the Internet [1]. Not only people, everything such as actuators and sensors are connected on the Internet, and each is to act as an autonomous agent with a service function. In IOE-era, it requires the architecture to support the entire service that has been designed as a workflow of autonomous distributed cooperative agents with a service function.

RWOS is proposed as an agent-based system architecture for analysis, design, implementation and management for the system that composed of real world agents such as people and objects [2]. RWOS architecture has been proposed for developing and managing program that controls real-world agents on the Internet.

For example in the case of construction

works on the real world, defined in RWOS, task in the workflow is called “stage”, the workflow itself is called “project”. Various agents for working in construction works such as wallpaper craftsmen and plumbers, do the task in accordance with the role in the stage. Thereby, the whole service is performed as an autonomous distributed system on the real world as is defined on the workflow. In accordance with the workflow that is designed as a project, each task is executed cooperatively. RWOS supports the cooperative parallel execution and data flow among agents.

As a first step to realize RWOS, we have implemented a prototype system of project programming for the purpose to establish programming interfaces and problem-solving on the implementation.

Currently, we have implemented stage

control in RWOS. It is necessary to improve project programming interface and APIs that is called “Role Container” for the agents on the real world.

By evaluating the prototype system of RWOS, the detailed features of RWOS architecture will be clarified in detail. By using RWOS architecture, it is expected to build a well performed integrated service system in the real world easily.

References

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