A Pragmatic Note on Knopflerfish-based Ambient Assisted Living (AAI) Systems Engineering

Number 8 - Article 8

Year of Publication: 2011

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Abstract

The unprecedented adoption of pervasive computing, autonomic communication, mesh networking, and ubiquitous sensing technologies in sync up with a growing and gorgeous variety of highly miniaturized, multifaceted and smart devices, sensors, actuators, robots, displays, and controllers has set in a stimulating and sparkling stage for the fulfillment of the
ambient intelligence (AmI) vision. That is, intelligence everywhere all the time is the ultimate vision for the evolving and enabling IT. IT infrastructures are increasingly virtualized and autonomic, IT systems and networks are becoming context-aware and cognitive through self-identification and environmental monitoring tags, stickers, sensors, system building-blocks such as services are fully process-centric, model-driven application components engineering is gaining more traction, etc. Interoperable and shared services and intelligent agents all collaboratively set to facilitate the realization of futuristic AmI applications. These have given the relevant and right confidence in the minds of many in order to establish and sustain a series of stunning smart environments such as smart homes, buildings, hospitals, hotels, stations, stadiums, etc. A bevy of real-time and real-world applications such as ambient assisted living (AAI), smart energy management, etc. are being explored, experimented, and espoused. The industry is abuzz with a growing array of robust and resilient AmI technologies, frameworks, middleware, etc. Natural interfaces for machine-to-machine (M2M) communication are fast emerging and evolving. Smart healthcare is the first mover to the technology-sponsored and splurged AmI space.

In this paper, A standards-based ambient healthcare system has been developed and tested. This is a great gift for the elderly, debilitated and disabled. Also, this system can substantially improve the living conditions of humans by leaps and bounds. Here our focus is to develop and sustain an ambient assisted living (AAI) system by using Open Services Gateway Initiative (OSGi), which is emerging as the most prominent and dominant service integration, composition and collaboration standard. There are several best-in-class implementations of the OSGi specification. This present implementation has carefully considered the pros and cons of them and finally zeroed down on Knopflerfish and derived the system architecture using a peer-to-peer approach. Furthermore it also developed a decentralized network of services and devices.

Reference


Index Terms

Computer Science Ubiquitous Computing

Key words

Knopflerfish Ambient Assisted Living
smart home