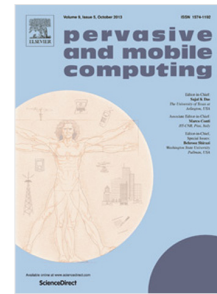


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# Machine-to-Machine Wireless Communication Technologies for the Internet of Things: Taxonomy, Comparison and Open Issues

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## Abstract

Machine-to-Machine (M2M) communication technologies enable autonomous networking among devices without human intervention. Such autonomous control is of paramount importance for several deployments of the Internet of Things (IoT), including smart manufacturing applications, healthcare systems and home automation just to name a few. As a result, several M2M technologies are nowadays available on the market as either proprietary solutions or the effort of standardization initiatives, each targeted for a specific class of IoT applications and characterized by unique features in terms of achievable performance, frequency in use and supported network topologies. In this paper, we aim to organize the existing M2M approaches and technologies into a consistent framework that provides an in-depth vision of the main trends, future directions and open issues. We provide three main contributions in this survey. First, we identify the main use cases and requirements of M2M scenarios and we introduce a multi-layer taxonomy for M2M solutions, taking into account both deployment types and PHY/MAC characteristics. Second, in light of such characteristics, we provide an in-depth review of the existing M2M wireless technologies, considering both proprietary and open/standardized solutions for proximity-based, short-range and large-scale networks. Finally, we perform a critical comparison of the surveyed solutions over different M2M use cases and requirements, and we identify the research directions and open issues that still have to be addressed.

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