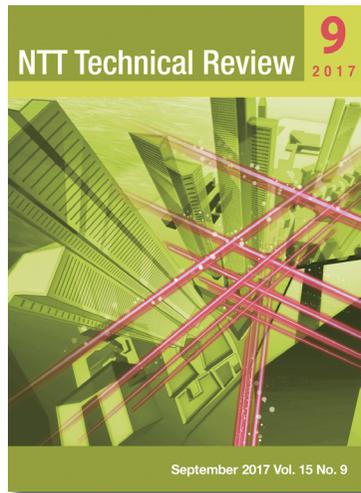


<https://www.ntt-review.jp/archive/2017/201709.html>



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The Internet of Things and New Value Creation

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Feature Articles

The Internet of Things and New Value Creation

Research and Development Initiatives on the Internet of Things at NTT

▼Abstract

The Internet of Things (IoT) holds great promise for creation of new value in society, and this age of utilizing IoT represents a third era, which could be called the driving era, with great changes in the role of telecommunication networks and their requirements. This article introduces network and information processing requirements for realizing this new IoT era and describes a reference architecture for this functionality. It also introduces IoT related initiatives at NTT.



Regular Articles

Orbital Angular Momentum Multiplexing Technology towards the Realization of Tbit/s Wireless Transmission

▼Abstract

We explore the potential of orbital angular momentum (OAM) multiplexing towards enabling high-speed wireless transmission. OAM is a physical property of electromagnetic waves that are characterized by a helical phase front in the propagation direction. This characteristic can be exploited to create multiple orthogonal channels, and thus, wireless transmission using OAM can enhance the wireless transmission rate. We clarify two major issues in OAM multiplexing: beam divergence and mode-dependent performance degradation. To address these issues, we present a simple but practical receiver antenna design method. Because there are specific location sets with phase differences of 90 or 180 degrees, the method allows each OAM mode to be received at its high signal-to-noise ratio region. We confirm the feasibility of OAM multiplexing in a proof of concept experiment at 5.2 GHz. Finally, we briefly introduce the future directions of this work.

