Wearable wireless body-to-body networks, 5G and the internet of things

Description

Arbia, D., Alam, M., Moullec, Y., & Hamida, E.. (2017). Communication Challenges in on-Body and Body-to-Body Wearable Wireless Networks—A Connectivity Perspective. Technologies, 5(3), 43.

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“Wearable wireless networks (wwns) offer innovative ways to connect humans and/or objects anywhere, anytime, within an infinite variety of applications. wwns include three levels of communications: on-body, body-to-body and off-body communication. successful communication in on-body and body-to-body networks is often challenging due to ultra-low power consumption, processing and storage capabilities, which have a significant impact on the achievable throughput and packet reception ratio as well as latency. consequently, all these factors make it difficult to opt for an appropriate technology to optimize communication performance, which predominantly depends on the given application. in particular, this work emphasizes the impact of coarse-grain factors (such as dynamic and diverse mobility, radio-link and signal propagation, interference management, data dissemination schemes, and routing approaches) directly affecting the communication performance in wwns. experiments have been performed on a real testbed to investigate the connectivity behavior on two wireless communication levels: on-body and body-to-body. it is concluded that by considering the impact of above-mentioned factors, the general perception of using specific technologies may not be correct. indeed, for on-body communication, by using the ieee 802.15.6 standard (which is specifically designed for on-body communication), it is observed that while operating at low transmission power under realistic conditions, the connectivity can be significantly low, thus, the transmission power has to be tuned carefully. similarly, for body-to-body communication in an indoor environment, wifi ieee 802.11n also has a high threshold of end-to-end disconnections beyond two hops (approximatively 25 m). therefore, these facts promote the use of novel technologies such as 802.11ac, narrowband-iot (nb-iot) etc. as possible candidates for body-to-body communications as a part of the internet of humans concept.”

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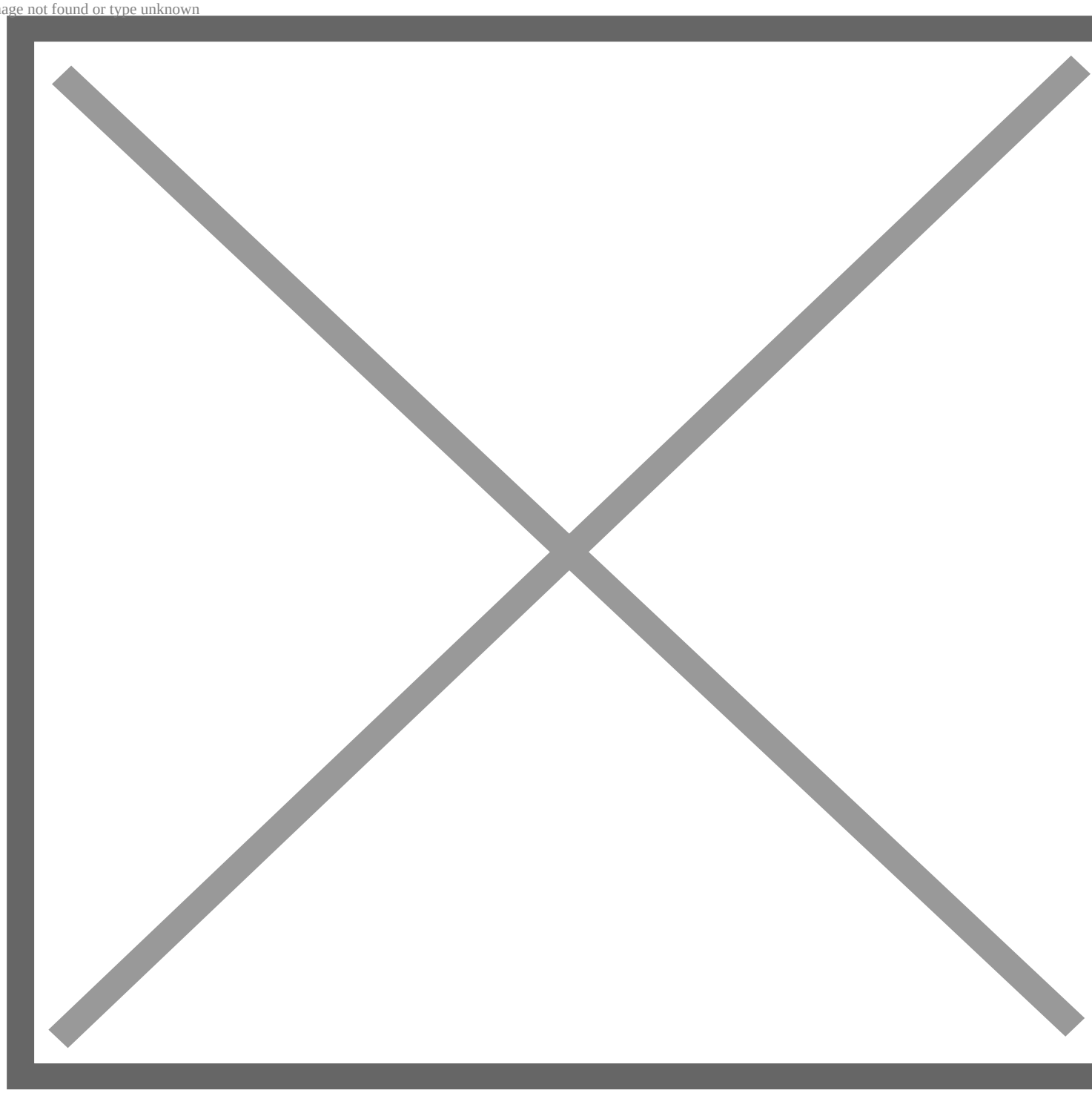

Category

1. General

Tags

1. 5G

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