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5G 物聯專網系統運用於國防之芻議

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摘要

物聯網（Internet of Things, IoT）通信技術，其不僅可實現機器對機器設備間互聯互通、自主通訊與管理功能，更揭櫫萬物皆可聯網、物物交流、物人對話及人人溝通的宏觀願景。在邁入「萬物互聯」的時代之際，第四代（4G）行動通信所提供的通信品質服務，將造成日漸不足之窘境，因此擁有更高資料傳輸率、更低延遲時間及介接更多用戶量的第五代（5G）行動通信需求，勢將應運而生。是以，若能運用物聯網技術透過感測網路、邊緣運算及人工智慧（Artificial Intelligence, AI）雲端的串流成功整合 5G 專網，以提供超高速、超低延遲、超大連結等三大系統效能，運用於軍事上則可大幅滿足未來戰場通信任務需求，對建立新一代戰場資訊安全、快速可靠的指揮系統，進而在分秒必爭的戰場上，對發展現階段臺海兩岸不對稱作戰之國軍優勢，預期將有莫大助益。

關鍵詞：5G 行動通信、不對稱作戰、物聯網、毫米波通信、感測網路

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Application Concept of Applying Internet of Thing to 5G Private Network System

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Abstract

The Internet of Things (IoT) technology, which can not only promote machine-to-machine device interconnection, private communication, and management function, it also reveals the macro vision that everything can be connected, communication of things, dialogue between people and communication. As we enter the IoT era, the communication service quality provided by the fourth-generation (4G) mobile communication will cause an increasingly insufficient situation. Therefore, the demand for fifth-generation (5G) mobile communication with higher data transmission rates, lower delay times, and access to more users will come into being, so that the IoT can be integrated into 5G private network through sensing technology, edge computing and artificial intelligence (AI) cloud streaming, to provide three major system performances such as ultra-high speed, ultra-low latency, and ultra-large number of users. Applied to the military domain, it can greatly meet the needs of future battlefield communication missions, establish a new generation of battlefield information security, fast and reliable command system, and then on the battlefield that counts every second, it has a lot advantage for the development of the national defense at the current stage of asymmetric warfare across the Taiwan Strait.

Keywords: fifth-generation (5G) mobile communication, asymmetric warfare, Internet of Things (IoT), millimeter wave communication, sensor network

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