

# Abstract

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## **An investigation of Self-Organization in Ad-Hoc Networks**

Wireless Sensor Network (WSN) is an emerging special type of ad-hoc wireless networks technology. It is usually designed for special purpose applications. WSN has its own special characteristics that differentiate it from other types of wireless networks. These differences raise new challenges to be overcome one of them is self-organization. As in any rising domain, it is essential to specifically define the meaning of new terminologies. The terms self-organizing and self-configuring are an example of such terms that may have overlapping meaning. In this investigation, we tried to make a definition for both terms to specifically determine their role in the ad-hoc domain, stress on the differences between them. Consequently, we tried to show the importance of self-organization in enhancing sensor network's performance, efficient usage of its resources. Thus, we tried to highlight the role of different networking layers in affecting self-organization to be a guideline during WSN design phase. We also introduced a new self-organizing protocol that utilizes directional antenna in an In-Flight entertainment system. Finally, we highlighted some of the future needs in the WSN domain, their need for research attention.