Radio Environment Map Construction: A Mini-Review

Publisher: IEEE
Cite This
PDF

Oluwatobi E. Dare; Kennedy Okokpujie; Emmanuel Adetiba

Abstract:
Radio Environment Map (REM) is a multi-domain radio information of a geographical location. In the contemporary period, the proliferation of wireless communication has played a significant role in driving the advancement of emerging technologies, including edge computing and the Internet of Things (IoT). Consequently, there exists a pressing necessity to optimize the utilization of the limited spectrum resources available. A technical paradigm embraced by Federal Communications Commission (FCC) to enhance spectrum efficiency is the Database-driven Dynamic Spectrum Sharing (DSS) where users with no prime right (secondary user) are allow to opportunistically use the licensed spectrum. The information contained in REM plays a vital role in DSS. This paper reviews the REM concept, the layers of information contained in the REM, REM construction techniques, related works in literature, the state-of-the-art methodology and REM applications.

Published in: 2023 2nd International Conference on Multidisciplinary Engineering and Applied Science (ICMEAS)

Date of Conference: 01-03 November 2023

Date Added to IEEE *Xplore*: 05 January 2024

ISBN Information:

DOI: 10.1109/ICMEAS58693.2023.10379358
Publisher: IEEE

Conference Location: Abuja, Nigeria

I. Introduction

The current spectrum allocation system adheres to a conventional approach, wherein specific segments of the spectrum are solely licensed to traditional radio users, including the mobile carriers, radio and television broadcasters and military. This arrangement leads to suboptimal utilization of the spectrum resource [1].

Authors
Oluwatobi E. Dare
Dept. of Electrical & Information Engineering, Covenant Applied Informatics & Communication African Centre of Excellence (CApIC-ACE), Covenant University, Canaanland, Nigeria
Kennedy Okokpujie
Dept. of Electrical & Information Engineering, Covenant Applied Informatics & Communication African Centre of Excellence (CApIC-ACE), Covenant University, Canaanland, Nigeria
Emmanuel Adetiba
Dept. of Electrical & Information Engineering, Covenant Applied Informatics & Communication African Centre of Excellence (CApIC-ACE), Covenant University, Canaanland, Nigeria
HRA, Institute for Systems, Science, Durban University of Technology, Durban, South Africa