

## A Cloud-Based Spectrum Database Approach for Licensed Shared Spectrum Access

**Authors :** Hazem Abd El Megeed, Mohamed El-Refaay, Norhan Magdi Osman

**Abstract :** Spectrum scarcity is a challenging obstacle in wireless communications systems. It hinders the introduction of innovative wireless services and technologies that require larger bandwidth comparing to legacy technologies. In addition, the current worldwide allocation of radio spectrum bands is already congested and can not afford additional squeezing or optimization to accommodate new wireless technologies. This challenge is a result of accumulative contributions from different factors that will be discussed later in this paper. One of these factors is the radio spectrum allocation policy governed by national regulatory authorities nowadays. The framework for this policy allocates specified portion of radio spectrum to a particular wireless service provider on exclusive utilization basis. This allocation is executed according to technical specification determined by the standard bodies of each Radio Access Technology (RAT). Dynamic access of spectrum is a framework for flexible utilization of radio spectrum resources. In this framework there is no exclusive allocation of radio spectrum and even the public safety agencies can share their spectrum bands according to a governing policy and service level agreements. In this paper, we explore different methods for accessing the spectrum dynamically and its associated implementation challenges.

**Keywords :** licensed shared access, cognitive radio, spectrum sharing, spectrum congestion, dynamic spectrum access, spectrum database, spectrum trading, reconfigurable radio systems, opportunistic spectrum allocation (OSA)

**Conference Title :** ICWMCS 2014 : International Conference on Wireless and Mobile Communication Systems

**Conference Location :** Paris, France

**Conference Dates :** August 28-29, 2014