Special Issue

Cognitive Radio Applications and Spectrum Management

Message from the Guest Editor

Wireless communication networks suffer from capacity bottlenecks because the amount of available spectrum is fixed, while wireless traffic demands keep growing by approximately 50% a year. This is particularly the case in the lower spectrum bands (< 7 GHz) exhibiting most favorable propagation properties, but mmWave bands are also becoming more crowded, both for terrestrial and satellite communications. Since the early days of wireless communication, wireless spectrum has been allocated according to a static frequency plan leading to many fixed frequency bands. Most of these bands are licensed for exclusive use by specific services or radio technologies, and the process for changing spectrum allocation is extremely slow (cf. spectrum allocation for 5G taking many years). Fixed, exclusive spectrum allocation is further characterized by severe overprovisioning and underutilization both in time and geographically, hence leading to a lot of waste of precious resources. Static frequency planning is obviously not a sustainable spectrum allocation model, leaving no room for future wireless services and new wireless actors.

Guest Editor

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