Cloud based spectrum manager for future wireless regulatory environment

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**ABSTRACT**
The regulatory environment in radio frequency spectrum management lags the advancement of wireless technologies, especially in the area of cognitive radio and dynamic spectrum access. In this paper we argue that the solution towards spectrum Pareto optimal allocation lies with dynamic spectrum management as a policy and regulatory tool for addressing the dichotomy of technical, economic and socio-economic considerations. Different radio frequency bands have different technical characteristics and economic manifestation and, thus, a versatile tool would be desirable to deal with technical, economic and socio-economic objectives in various bands. While approaches based on geolocation spectrum databases and radio environment map architecture have served the cognitive radio and dynamic spectrum access industry, their focus has been on networks and technologies. In this paper we propose a cloud based spectrum manager as a tool focussed towards regulatory processes. With the proposed approach it is possible to deal with technical consideration of interference control resulting in achieving economic consideration of reducing rivalry and exclusivity with various spectrum policy and regulatory prescripts. The proposed spectrum manager should be able deal with all regulatory processes favouring cognitive radio and dynamic spectrum access, while enhancing economic value of radio frequency spectrum and achieving socio-economic benefits.