

# Dynamic Spectrum Markets

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Tutorial

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Significant progress is being made on the technical capabilities of mobile and wireless devices and systems in terms of, e.g., spectrum usage flexibility and radio access adaptability. Furthermore, regulations in various countries are opening up to the idea of cognitive radio and other dynamic spectrum access related paradigms. In tandem with such developments, various standards are being developed by the IEEE, ETSI and others, with a view to taking advantage of the opportunities in cognitive radio and dynamic spectrum access that are being created. This is important, because although regulations may allow such technologies to exist while ensuring that no negative impacts result, standards are necessary to ensure that the dynamic spectrum access related products developed by a range of manufacturers are compatible, will coexist efficiently, or indeed will be able to communicate and form dynamic spectrum access links and networks.

This tutorial provides a general overview of the objectives and purposes of standardization, particularly discussing the importance of standards to the viability and performance of various facets of dynamic spectrum access. It then focuses on some specific dynamic spectrum access related standards, starting with the IEEE 802.22 wireless regional area networks standard--the first standard being worked on to utilize TV Whitespace. Next it discusses the IEEE DySPAN

Standards Committee (1900 series) standards as well as ongoing efforts within ETSI's Reconfigurable Radio Systems work area on standardizing a range of technologies which facilitate dynamic spectrum access concepts. Finally, the tutorial briefly touches on some lesser-known, newer, or related standards work of interest, including the relatively recent drive to extend Wi-Fi for operation in TV Whitespace (the IEEE 802.11af standards task group), the IEEE 802.19 "Wireless Coexistence" standards working group, the ECMA-392 standard, and the IEEE 802.11y and 802.16h standards.

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