Doing the Smart EM Environment - From the Smart Entities Design to the System Architecture Planning

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The Smart EM Environment (SEME) is based on the needs to overcome the postulate of 5G wireless networks that only the end-points of the communication links (i.e., the base transceiver stations (BTSs) and the users' terminals) can be optimized to fulfill the quality-of-service (QoS) and performance requirements. It means to control the propagation environment, which lies in between the transmitters and the receivers of the wireless channel, by leveraging on the emerging technologies EM smart skins (EMSs) and artificial intelligence (AI). The SEME is a paradigm-shifting wireless vision where wireless networks are equipped with the functionalities of (i) customizing the radio environment (i.e., controlling the propagation of EM waves and environmental objects) besides the capability of optimizing the end-points of the communication links; and (ii) optimizing the resulting wireless communication and networks with the aid of AI-based computational methods. The session will give an overview of current trends in doing the SEME from the smart entities design to the wireless system architecture planning.