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Electronic Warfare Systems Supporting the Database of the Radio Environment Maps

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Abstract: The problem of spectrum management is relevant both for civilian and military systems, but it is much more complex when coalition operations are considered. Some limitations to efficient data exchange over radio channels are caused by the static frequency assignment

method, inefficient frequency usage and lack of a common spectrum operational picture in NATO coalition operations.

These problems could not be solved at the national level, thus it was of high importance to take up the discussion and to make a NATO-coordinated effort. For this purpose NATO has established the Research Task Group on Electromagnetic Environment Situational Awareness (NATO IST-146 RTG-069) aiming to work out the concept of the Radio Environment Maps (REM) enabling their users to obtain the spectrum operational picture and to minimize the level of interferences between wireless systems of coalition forces. One of the main goals of the research group is to define the architecture of the system and to specify interfaces to other systems in the area of frequency planning and constant spectrum monitoring. It is assumed that the function of the sensors may be performed by dedicated radio receivers, spectrum analysers, cognitive radios and Electronic Warfare (EW) or Intelligence, Surveillance, Reconnaissance (ISR) systems.

In the paper we discuss the concept of the REM and the problem of the data delivery from other systems, e.g. EW systems equipped with a variety of sensors. We also present exemplary maps created using different methods and analyze how the deployment of sensors affects the quality of maps.

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