

SWING : an European project for a new application of an ionospheric network

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SWING (Short Wave critical Infrastructure Network based on a new Generation high survival radio communication system) is an European project aimed at studying a high survival HF radio network to link European Critical Infrastructures (ECIs). This system is thought to replace broad band internet communication, maintaining the minimum flux of essential information for the ECIs management and control, in case of wide scale threats, including terrorist attacks, able to put out of order internet links over the Mediterranean region. SWING is designed to evaluate the threat and increase the security awareness, as well as the level of protection, of analogous and/or interdependent ECIs.

In order to meet these goals SWING was finalized to recognize how and when the internet communication fails, and to develop the standard software and hardware tools necessary for implementing communication protocols suited for a reliable and interoperable Short Wave (High Frequency) radio network back up. To meet the above mentioned objectives the main activities concerned the designation of ECIs in the regions of interest and the analysis of potential communication problems among them, followed by the identification of the most suitable topology for a high survival radio communication network.

Moreover, SWING has determined the criteria for early warning alerts, the procedures to activate the backup network, as well as the minimal amount of information necessary to maintain control over ECIs keeping them linked even in critical conditions. For what concerns the HF radio network, SWING has defined and designed the software and hardware necessary to a high survival HF radio network, keeping into account the existing HF network communication protocol and architecture. Since the network can use both the ionospheric channel and, if required, the ground wave propagation, SWING also has considered the ionospheric channel characteristics in order to manage the transmission frequencies of the HF network. The activities of SWING here shortly described joined the efforts of four institutions (INGV-Italy, CNIT-Italy, NOA-Greece, OE-Spain).