

A Unified Approach for Naval Telecommunication Architectures

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Abstract : We present a chronological evolution for naval telecommunication networks. We distinguish periods: with or without multiplexers, with switch systems, with federative systems, with medium switching, and with medium switching with wireless networks. This highlights the introduction of new layers and technology in the architecture. These architectures are presented using layer models of transmission, in a unified way, which enables us to integrate pre-existing models. A ship of a naval fleet has internal communications (i.e. applications' networks of the edge) and external communications (i.e. the use of the means of transmission between edges). We propose architectures, deduced from the layer model, which are the point of convergence between the networks on board and the HF, UHF radio, and satellite resources. This modelling allows to consider end-to-end naval communications, and in a more global way, that is from the user on board towards the user on shore, including transmission and networks on the shore side. The new architectures need take care of quality of services for end-to-end communications, the more remote control develops a lot and will do so in the future. Naval telecommunications will be more and more complex and will use more and more advanced technologies, it will thus be necessary to establish clear global communication schemes to grant consistency of the architectures. Our latest model has been implemented in a military naval situation, and serves as the basic architecture for the RIFAN2 network.

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