<u>Final Abstract</u>
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Compared with hardware-based communication system, software-defined radio (SDR) is a communication system whose components functionalities are implemented in software running on an embedded device. Due to its flexibility and re-configurability, the military has pushed the SDR technology to become communication of the future, envisioning seamless communication among various military units. Momentum has been built up in academia and industry to adopt the SDR for implementing next generation communication systems. Universal Software Radio Peripheral (USRP) is one of the most popular SDR platforms developed so far to support the open-source GNU radio software package. In this project, usability and capabilities of the SDR are studied using USRP boards. Different communication systems have been implemented on the USRP platform and their functionalities have been validated.