

## **NSRI IRAD 2022 PRIORITY DESCRIPTION ELECTROMAGNETIC SPECTRUM (EMS)**

The Electromagnetic Spectrum (EMS) transcends all physical domains, and in order for the Joint Military Force to gain and maintain control in all domains, a degree of superiority in the EMS is required to conduct operations against peer and near-peer adversaries in contested environments. Competing powers perceive US dependence, have noted EMS as a vulnerability and developed advanced EMS capabilities. In some instances, the US has not kept pace, and our technological advantages are eroding.

Current EMS capabilities are poorly coordinated, synchronized and managed; furthermore, it is difficult to assess outcomes, operations, training & readiness, planned modernization and the direction for Research & Development. The DOD must generate overmatching EMS sensing, maneuver and engagement capabilities that collectively present an impasse for any potential adversary. USSTRATCOM seeks research that identifies areas of potential growth in EMS capabilities that counter adversary advancements and can create overmatch in US capabilities.

In addition to advancements in EMS capabilities, the DOD seeks innovative ways to improve data analytics by incorporating cutting edge Artificial Intelligence and Machine Learning (AI/ML) algorithms that capture data from disparate information streams that can assist strategic leaders assess an operating environment and determine informed courses of action to consider. As the line between diplomacy and military intervention continue to blur, it is imperative that military strategy development be informed by disciplines that have previously been less important to military leaders – areas such as social sciences, data management, mathematics, statisticians, economics and other areas that now require in-depth assessment. Minor changes in one may not, as a singular event, be noteworthy; however, when combined with changes in any of the other variables may actually present a military threat or opportunity. The DOD has high interest in researching the efficacy of creating an engine that can fuse these sources of information and produce vector based forecasting models.

**All details regarding  
NSRI IRAD 2022  
funding are available  
[nsri.nebraska.edu/IRAD](https://nsri.nebraska.edu/IRAD).**