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Proposal Title: Convergence Accelerator Phase I (RAISE): Convergence Research
                      to meet Ocean Decision Challenges
Institution: Gulf of Maine Research Institute
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The NSF Convergence Accelerator supports team-based, multidisciplinary efforts that address challenges of national importance and show potential for deliverables in the near future.

This Convergence Accelerator Phase I project will provide the foundation for a suite of forward-looking decision-making tools for fisheries. This project will develop an Open Knowledge Network (OKN) to advance the transformation from ocean data to ocean information to ocean knowledge, with the goal of producing outcomes that will improve ocean resource decision making and business planning in the face of rapidly changing ocean conditions. Fisheries in the Northeast contributed $7 billion to the regional economy and provided 172,000 jobs in 2016, as well as contributing to the social fabric of coastal communities. This productivity is threatened by the rapid changes underway in the northwest Atlantic ecosystem. This project will produce tangible products that can be used by individuals, businesses, and communities to make better-informed decisions about fisheries resources.

The proposed Fisheries OKN will support transformative advances in fisheries decision making by integrating data across atmospheric, oceanic, ecosystem, and human dimensions to produce forecasts and conduct scenario testing that can inform near term tactical decisions, medium term strategies, and long-term planning. The project will support a transformation from a reliance on historical observations to forward-looking decision making that considers the rapid changes ecosystems are currently experiencing. The effort relies on data and insights from across the disciplines of oceanography, ecosystem science, climate science, social sciences, and computer science integrated to develop innovative tools and advance knowledge. This effort also requires deep engagement with a range of decision makers including fisheries managers and advisors, fishing industry, and the seafood supply chain to understand their needs and to deliver actionable information. This project seeks to produce fundamental new understanding of how processes in ecosystems, climate and human systems interact. It will also develop new statistical and computational approaches to enhance the impact of publicly-available ecosystem and environmental data on management and business decisions. During Phase I, this project will focus on three areas: 1) convergence team building and integration across disciplines, 2) designing the data infrastructure for the fisheries OKN, and 3) evaluating convergence opportunities in core application areas. This research will add insights to important questions about how individuals and groups of humans transform their decision making in the face of environmental and ecosystem changes, and will develop understanding of the kinds of data, information products, and processes that enable decision making.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review

criteria.