Proposal Title: Convergence Accelerator Pilot (RAISE): Open Knowledge Network for Spatial Decision Support
Institution: Portland State University
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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.

The broader impact and potential societal benefit of this Convergence Accelerator Phase I project is improved access to spatial data and related software tools that will support decision making and public participation that are needed to address a wide range of complex problems. Spatial decision support (SDS) tools are used across a diversity of domains, including public health, emergency management, city planning, education, natural resource management, public safety, transportation, utilities, and the delivery of public and private services more generally. Despite many successful applications, the effectiveness of spatial decision support contributions is limited by challenges in integrating information across complex organizational networks and across an array of data and tools developed for narrow (often discipline-specific) applications. This project will develop technologies and participatory methods that will help bridge organizational and disciplinary boundaries, thereby building a foundation for an open knowledge network for spatial decision support (OKN-SDS). The interdisciplinary project team plans to engage stakeholders in three applied case studies: the management of wildland fire, water quality, and biodiversity conservation. These three use-cases will be used to develop and test participatory and automated methods for structuring, tagging and sharing decision-relevant information. These demonstration projects, the accompanying development of the underlying technical architecture for the OKN-SDS, and outreach to broader SDS-related communities will motivate and facilitate the integration of SDS data and tools that is needed to better address a diverse range of decision-making processes that require spatial decision support.

The intellectual merit of the project is based on the participatory and open technology development process that the team will use to develop resources for creating use-inspired spatial decision support applications relevant to challenges in many disciplines. The project team will investigate the utility of automated tools for resource discovery, ontology development, and social network analysis, validating the methods in the three proposed use cases (wildland fire, water quality, and biodiversity conservation). Through integration and comparison of these techniques, the project team will deliver insights into efficient and effective methods for OKN development.

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.