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Developing a Next Generation Platform for Geodetic, Seismological and Other Geophysical Data Sets and Services

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The Data Services of IRIS and the Geodetic Data Services of UNAVCO have been supporting the seismological and geodetic research communities for many decades. Historically, these two facilities have independently managed data repositories on self-managed systems. As part of merger activities between IRIS and UNAVCO, we have established a project to design, develop and implement a common, cloud-based platform. Goals of this project include operational improvements such as cost-effectiveness, robustness, on-demand scalability, significant growth potential and increased adaptability for new data types. While we expect a number of operational improvements, we anticipate a number of additional benefits for the research communities we serve.

The new platform will provide services for data queries across the internal repositories. This will provide researchers with an easier path to discovery, and access to integratable data sets of related geophysical data.

Researchers will be able to conduct their data processing in the same, or data-proximate, cloud as the platform, taking advantage of copious and affordable computation offered by such environments. Following the paradigm of moving the computation to the data, this will avoid the time and resource consuming need to transfer the data over the internet. Furthermore, the adoption of cloud-optimized data containers and direct access by researchers will support efficient processing. In cases where transferring large volumes of data are still necessary, the large capacity of cloud storage systems will allow enhanced mechanisms such as Globus for transfer, which we will be exploring.

For many users a transition of the data repositories to a new environment will be nearly seamless. This will be made possible by implementing many of the same services already supported by the current facilities, such as the suite of FDSN web services. The project is currently in a prototyping stage, and we anticipate having a complete design by the end of 2022. We will report on the status of the project, anticipated directions and challenges identified so far.