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The GEOsciences Network (GEON): One step towards building cyberinfrastructure for the geosciences

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The goal of the GEON project is to develop a prototype cyberinfrastructure for the Geosciences, based on close collaboration among IT and Geoscience researchers. We have deployed a distributed system consisting of "nodes" that host datasets and/or tools and applications programs, called the GEONgrid. The development of this prototype is guided by earth science problems being addressed in the Rocky Mountain and the Mid-Atlantic region testbeds. A major goal is the use of the Semantic Web and data integration technologies to enable intelligent search and discovery of resources. To facilitate such objectives, an important activity is the development of both high level, as well as domain-specific, ontologies via workshops that involve the broader community. We are also working closely with the EarthScope project in order to develop an interpretive environment for EarthScope-related science. We are also actively engaged with other related cyberinfrastructure projects around the world, not only in the Geosciences, but in other science disciplines as well. Our vision of the future in the Geosciences is for investigators to utilize information technologies to facilitate collaborative, inter-disciplinary science efforts. Scientists will be able to discover data, tools, and models via portals, using advanced, semantics-based search engines and query tools, in a uniform authentication environment that provides controlled access to a wide range of resources. A services-based environment facilitates creation of scientific workflows that are executed in the distributed environment. Advanced GIS mapping, 3D, and 4D visualization tools will allow scientists to interact with the data. Such an environment enables new modes of science and can transform the day-to-day conduct of science.