

## IGSN e.V.: Architecture and Governance of Registration and Identification Services for Physical Samples in the Digital Universe

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The International Geo Sample Number, or IGSN, is a unique identifier for samples and specimens collected from our natural environment that has been developed by the System for Earth Sample Registration SESAR ([www.geosamples.org](http://www.geosamples.org)). The IGSN was created to overcome the problem of ambiguous naming of samples that has limited the ability to share, link, and integrate data for samples across data systems in the growing network of Geoscience digital data and knowledge system. Over the past 5 years, SESAR has made substantial progress in implementing the IGSN for sample and data management. SESAR has worked with a broad community of Geoscience researchers, Geoinformatics specialists, and sample curators to establish metadata requirements, registration procedures, and best practices for the use of the IGSN. The IGSN is now recognized as the primary solution for sample identification and registration, and supported by a growing user community that includes large sampling campaigns such as the International Continental Drilling Program, the Critical Zone Observatories, and the US Extended Continental Shelf program, US and European core and sample repositories, and a wide range of geoscience data systems.

In order to advance broad disciplinary and international implementation of the IGSN, a group of international leaders in Geoscience informatics, representing various Geoscience disciplines, national agencies, major Geoscience projects, and international standard organizations (OGC, ISO), met in 2011 to develop a consensus strategy for the long-term operations of the registry with approaches for sustainable operation, organizational structure, governance, and funding. The group endorsed an internationally unified approach for registration and discovery of physical specimens in the Geoscience community, and refined the existing SESAR architecture to become a modular and scalable approach, separating the IGSN Registry from a central Sample Metadata Clearinghouse (SESAR), and introducing 'Local Registration Agents' that provide registration services to specific disciplinary or organizational communities. Registration agents can develop extended IGSN metadata profiles to match 'local' requirements, and provide tools for metadata submission and metadata management, and metadata archiving.

The development and implementation of the new IGSN architecture is underway with funding provided by the US NSF Office of International Science and Engineering. A formal governance structure is being established for the IGSN model, consisting of (a) an international not-for-profit organization, the IGSN e.V., that defines the IGSN scope and syntax and maintains the IGSN Handle system, and (b) a Science Advisory Board that supports and guides policies, technology, and best practices of the SESAR Sample Metadata Clearinghouse and Local Registration Agents. The IGSN e.V. is being incorporated in Germany at the GFZ Potsdam, and a founding event is planned for the AGU Fall Meeting.