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## Status and challenges of FAIR data principles for a long-term repository

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The data center of the National Science Foundation's Seismological Facility for the Advancement of Geoscience (SAGE), operated by IRIS Data Services, has evolved over the past 30 years to address the data accessibility needs of the scientific research community. In recent years a broad call for adherence to FAIR data principles has prompted repositories to increased activity to support them. As these principles are well aligned with the needs of data users, many of the FAIR principles are already supported and actively promoted by IRIS. Standardized metadata and data identifiers support findability. Open and standardized web services enable a high degree of accessibility. Interoperability is ensured by offering data in a combination of rich, domain-specific formats in addition to simple, text-based formats. The use of open, rich (domain-specific) format standards enables a high degree of reuse. Further advancement towards these principles includes: an introduction and dissemination of DOIs for data; and an introduction of Linked Data support, via JSON-LD, allowing scientific data brokers, catalogers and generic search systems to discover data. Naturally, some challenges remain such as: the granularity and mechanisms needed for persistent IDs for data; the reality that metadata is updated with corrections (having implications for FAIR data principles); and the complexity of data licensing in a repository with data contributed from individual PIs, national observatories, and international collaborations. In summary, IRIS Data Services is well along the path of adherence of FAIR data principles with more work to do. We will present the current status of these efforts and describe the key challenges that remain.