

Reusable Software Services for Science Data Systems

A common science data processing software framework yields the benefits of reuse while remaining adaptable to address requirements that are unique to the mission. The Earth Science Data Systems section (381) has been developing infrastructure services that allow for reuse and rapid development of new science data systems at relatively low cost, increasing the reliability of the deployed software system. The software framework, named Enterprise Data Management (EDM) Services, implements a set of services that are operated by the Institutional Computing and Information Services (ICIS) office for data archiving, database hosting, application hosting, middleware and metadata management. These services enable projects to reuse services that are already provided by the institution in the construction of their applications. In addition to operating the framework using common information services, the EDM service components can be delivered to and operated by the mission to allow for scalability and tailoring to the needs of the mission. The SeaWinds Processing and Analysis Center (SeaPAC), for example, integrated the EDM Catalog and Archive Service with the SeaPAC ground data system to enable the process management function of the system. The Catalog and Archive Service was delivered to the SeaWinds project through a collaboration established by ICIS and SeaWinds providing a database and system independent implementation that scales and adapts to meet the needs of the SeaWinds mission.

As the EDM framework matures, new services to support the construction of science data systems will be added to support small and medium size missions and experiments. Simple PI-led experiments will then be able to use science data system services without having to implement and run their own systems. This will alleviate scientists and mission specialists from having to reconstruct new data systems for each science mission while providing a common interface and operating environment for running science data system applications and services.