Lightweight Advertising and Scalable Discovery of Earth Science Datasets, Services, Workflows and Events Using Broadcast Feeds

Brian Wilson (1), Rahul Ramachandran (2), and Sunil Movva (2)

(1) JET PROPULSION LABORATORY, Atmospheric Remote Sensing, PASADENA, United States (Brian.Wilson@jpl.nasa.gov), (2) Oak Ridge National Lab, Oak Ridge, TN, USA

Broadcast feeds (Atom or RSS) are a mechanism for advertising the existence of new data objects on the web, with metadata and links to further information. Users then subscribe to the feed to receive updates. This concept has already been used to advertise the new granules of science data as they are produced (datacasting), with browse images and metadata, and to advertise bundles of web services (service casting). Structured metadata is introduced into the XML feed format by embedding new XML tags (in defined namespaces), using typed links, and reusing built-in Atom feed elements. This "infocasting" concept can be extended to include many other science artifacts, including data collections, workflow documents, topical geophysical events (hurricanes, forest fires, etc.), natural hazard warnings, and short articles describing a new science result. The common theme is that each infocast contains machine-readable, structured metadata describing the object and enabling further manipulation. For example, service casts contain type links pointing to the service interface description (e.g., WSDL for SOAP services), service endpoint, and human-readable documentation.

Our Infocasting project has three main goals: (1) define and evangelize micro-formats (metadata standards) so that providers can easily advertise their web services, datasets, and topical geophysical events by adding structured information to broadcast feeds; (2) develop authoring tools so that anyone can easily author such service advertisements, data casts, and event descriptions; and (3) provide a one-stop, Google-like search box in the browser that allows discovery of service, data and event casts visible on the web, and services & data registered in the GEOSS repository and other NASA repositories (GCMD & ECHO). To demonstrate the event casting idea, a series of micro-articles—with accompanying event casts containing links to relevant datasets, web services, and science analysis workflows–will be authored for several kinds of events, such as hurricanes, smoke plume events, tsunamis, etc.