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Complex data analysis in the cloud with the ENVI / IDL Services Engine

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ABSTRACT:

Information from remotely sensed imagery and measurement data is already an integral part of many decision-making processes. This is encouraged by the increasing number of geodata portals, e. g. as part of the Earth observation program Copernicus / GMES. We present in this contribution the new technology ENVI / IDL Services Engine that helps to provide up-to-date geospatial information where it is needed. Image analysis capabilities of ENVI as well as data analysis and visualization based on IDL can be made available in an individual, cloud-based solution. Online-apps for the processing of remote sensing data can be developed and can be made available for the user. In addition, organizations have the opportunity to use these services as part of their enterprise infrastructure.

The ENVI / IDL Services Engine uses open standards and is therefore fully compatible with various middleware components and geoservers, i.e. also with ArcGIS Server. It supports devices as mobile phones or tablet PCs and client software as JavaScript. The ENVI / IDL Services Engine was designed to enable application developers to create customized applications in IDL and other programming languages. In the Services Engine these algorithms are wrapped as HTTP REST-based services. The HTTP REST calls from a client and / or middleware component to the Service Engine invoke the service and the result is returned to the calling application. This allows e. g. GIS users to access advanced image analysis functions via ArcGIS Online.

One essential feature of cloud computing is the adaptation to varying utilization. With the Services Engine it is possible to extend or decrease the number of computing entities, depending on the requirements (scalability). The requests are distributed to multiple nodes (load balancing). Thus, complex analyses with large datasets and correspondingly high demands on the system resources can be shifted from the desktop level to server-side hardware. Accordingly, lightweight applications are sufficient on the client side and help even non-technical users to interactively execute specific tasks.