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Creating OGC Web Processing Service workflows using a web-based editor

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The OGC WPS (Web Processing Service) specifies how geospatial algorithms may be accessed in an SOA (Service Oriented Architecture). Service providers can encode both simple and sophisticated algorithms as WPS processes and publish them as web services. These services are not only useful individually but may be built into complex processing chains (workflows) that can solve complex data analysis and/or scientific problems.

The NETMAR project has extended the Web Processing Service (WPS) framework to provide transparent integration between it and the commonly used WSDL (Web Service Description Language) that describes the web services and its default SOAP (Simple Object Access Protocol) binding. The extensions allow WPS services to be orchestrated using commonly used tools (in this case Taverna Workbench, but BPEL based systems would also be an option).

We have also developed a WebGUI service editor, based on HTML5 and the WireIt! Javascript API, that allows users to create these workflows using only a web browser. The editor is coded entirely in Javascript and performs all XSLT transformations needed to produce a Taverna compatible (T2FLOW) workflow description which can be exported and run on a local Taverna Workbench or uploaded to a web-based orchestration server and run there.

Here we present the NETMAR WebGUI service chain editor and discuss the problems associated with the development of a WebGUI for scientific workflow editing; content transformation into the Taverna orchestration language (T2FLOW/SCUFL); final orchestration in the Taverna engine and how to deal with the large volumes of data being transferred between different WPS services (possibly running on different servers) during workflow orchestration.

We will also demonstrate using the WebGUI for creating a simple workflow making use of published web processing services, showing how simple services may be chained together to produce outputs that would previously have required a GIS (Geographic Information System) locally.