ZOO-Project

THE WAY TO USE OTB APPLICATIONS AS WPS SERVICES

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An introduction to ZOO-Project

ZOO-Project is a Web Processing Service (WPS) implementation written in C and C++. It is an open source platform, released under MIT/X11 Licence, which implements the WPS standards (1.0.0 and 2.0.0) published by the OGC.

ZOO-Project provides a developer-friendly framework for creating and chaining WPS compliant Web Services. Its main goal is to provide generic and standard-compliant methods for using existing open source libraries as WPS.
The ZOO-Project Story

ZOO idea at FOSS4G 2008
ZOO 1st talk at FOSS4G 2009
ZOO-Project 1.0 release at FOSS4G 2010
ZOO-Project 1.1 release at FOSS4G 2011
ZOO-Project 1.2 enters OSGeo incubation in 2012
ZOO-Project 1.3 release at FOSS4G 2013
ZOO-Project 1.4 release at FOSS4G 2014
ZOO-Project 1.5 release in July 2015
ZOO-Project 1.6.0 has been released early 2017

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ZOO Tribe

ZOO Tribal Council
(Project Steering Comitee)
  ZOO Keepers
  (Comiters)
  ZOO Visitors
  (Users and Developers)
  ZOO Animals
  (FOSS4G & FOSS librairies)

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# ZOO Tribal Council (PSC)

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<th>Prénom</th>
<th>Nom</th>
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<td>Nicolas</td>
<td>BOZON</td>
<td>ESRI France</td>
<td>FRANCE</td>
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<td>Maria</td>
<td>BROVELLI</td>
<td>Politecnico di Milano</td>
<td>ITALY</td>
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<td>HAYASHI</td>
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<td>Daniel</td>
<td>KASTL</td>
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<td>Venkatesh</td>
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<td>Angelos</td>
<td>TZOTSOS</td>
<td>National Technical University of Athens</td>
<td>GREECE</td>
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## ZOO Keepers (Comiters)

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<td>Trevor</td>
<td>CLARKE</td>
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ZOO Tribe often meets!
ZOO Supporters

KNOWLEDGE PARTNERS

http://zoo-project.org
Get involved!

Talk to the ZOO-Tribe
- Mailing lists
- IRC

Contribute Code
- Bug tracking
- Languages support
- New WPS services

Contribute Docs
- Enhancements and corrections
- Translation (Transifex)

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Open WPS platform

**WPS Server**

**ZOO-Kernel** is a powerful server-side C Kernel able to manage and chain WPS services.

**WPS Services**

**ZOO-Services** is a collection of ready to use WPS services based on existing libs.

**WPS API**

**ZOO-API** is a server side Javascript API for creating and chaining WPS Services.

**WPS Client**

**ZOO-Client** is a client side JavaScript library for interacting with WPS Services.

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ZOO-Kernel implements the WPS 1.0.0 and WPS 2.0.0 specifications of the Open Geospatial Consortium and runs on GNU/Linux, MacOS X and Windows™ platforms.

ZOO-Kernel is able to execute WPS Services written in C/C++, Fortran, Java, PHP, Perl, Ruby, Python, C#, JavaScript and R.

ZOO-Kernel is able to interact with GIS engines such as GRASS, OTB or SAGA-GIS. So no more coding is needed!

Run your code through WPS compliant web services.
OGC WebServices Publication

MapServer support: automatic result publication as: WMS/WFS/WCS

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Asynchronous request

GetStatus: ongoing status informations.

GetStatus also available as a service for WPS 1.0.0!
Nested inputs/outputs (2.0.0)

Sample nested outputs.
ZOO-Kernel security section

ZOO-Kernel is now able to pass any security parameters required that has been received in the initial WPS request and that should be send when accessing secured resources.

```
[security]
attributes=Authorization, Cookie, User-Agent
hosts=*                  # First example

[security]
attributes=Authorization, Cookie, User-Agent
hosts=localhost, 127.0.0.1 # Second example
```
The schema has been provided by IRD, IRSTEA, Geolabs, Noveltis.

The ZOO-Kernel now supports remote execution of OTB Applications!
ZOO-Kernel HPC Support use

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ZOO-Services

ZOO-Services is a growing collection of ready to use WPS services built on top of reliable open source libraries such as GDAL, CGAL and more.

A ZOO-Service is a couple gathering a source code to execute and a ZCFG or YAML file which describes the Service and the needed input/output.

In the upcoming version, the metadata informations of a ZOO-Services can also be stored in a structured PostgreSQL database.

Turn your code into a WPS service easily.
Available services

500+ ready to use WPS

GDAL

CGAL
**OTB Support**

**OTB2ZCFG:** command line tool using the OTB C++ API converting every single OTB application description available from the ApplicationRegistry to the ZCFG metadata file with the ServiceType set to OTB.

**ZooWatcher:** a class that inherits from FilterWatcherBase used internally by the ZOO-Kernel to give information about an ongoing OTB application running as a WPS service.

**ZOO-Kernel:** by using the OTB C++ API it converts internal structure for storing inputs and outputs into the corresponding Parameter then runs the Application. When the application ends, it sets the output as for every other language/GIS engine support.

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ZOO-API

ZOO API is a server side Javascript library designed to simplify the creation and chaining of WPS processes.

Uses Mozilla Spider Monkey as JavaScript engine.

ZOO.Process server side classes.

Call and chain your WPS Services the simple way.

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Example 1/2 (MapMint 1.0)
Example 2/2 (MapMint 1.0)
ZOO-Client

ZOO-Client is a client-side JavaScript API which provides simple methods for interacting with WPS server from web applications.

It is helpful for sending requests to any WPS compliant server and to parse the output responses using simple JavaScript.

ZOO-Client relies on modern JavaScript libraries and can be seamlessly integrated in new or existing web applications.

ZOO-Client uses *logic-less* Mustache templates for creating well-formed WPS requests

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Example 1/5 (SAGA Demo)
Example 2/5 (OTB Demo)

This map demonstrates some of the OTB WPS services. Please see otb.js for global configuration and definition of required JS files. For information relatives to the application itself, refer to the otb-eco.js.
Example 3/5 (MapMint 2.0 Client)
Example 4/5 (MapMint 2.0)
Example 5/5 (MapMint 2.0 / Manager)

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MS4W: a ZOO-Project package

A spatial thanks to Jeff McKenna for his hard work!
MapMint

FAST AND EASY WEBMAPPING

GIS in the browser and Web GIS generator
http://mapmint.com
MapMint Client modules
Come to Bucharest next year!
Questions?

MULTUMESC PENTRU ATENȚIA DUMNEAVOASTRĂ.

THANKS FOR LISTENING.

ありがとうございました

MERCI DE VOTRE ATTENTION.