Stupid problems dealing with standards

Author:
Victor Pascual
IDEC Project
Parc de Montjuic, s/n
08038 - Barcelona
Tel. 34 93 567 15 00   Fax. 34 93 567 15 67
vpascual@icc.es   http://www.geoportal-idec.net

Abstract

From a technological point of view, IDEC Project (SDI Catalonia) is based on several standard components which interconnect themselves. One of these components is an interoperable client connected to different map servers according to specifications WMS (Web Map Services) and WFS (Web Feature Service) from OGC (Open GIS Consortium).

Initially, the fact that these maps servers were of different architectures, would not have to be an obstacle, since all of them had implemented some of these specifications, but things are not so easy and often standard connectors are released in non stable versions, without support, and, what is more grave, without respecting some parameters and recommendations stated in the specification.

On the other hand, both specifications, WMS and WFS, are little strict in the interpretation and implementation of some of their methods and parameters.

This implies a double effort, to learn how a specification works and to understand whether certain product conceives that specification.

For this reason, many "standards" server requests have to be modified depending on the map server which makes the demand, diminishing the credibility of the interoperability concept.

Moreover another difficult problem has been that a request could contain accents, apostrophes or own characters, since these elements are not accepted by some connectors or they return erroneous answers.

This paper describes some difficult problems to interconnect different map servers and the interpretation from the specifications made by some companies as well as make an introduction to some usual problems derived from the multilingual needs.

Paper

Introduction

Following the interoperability concept we have connected our generic client with four different Map Servers which they adopted the Web Map Service (WMS) according to OpenGIS specification.

The Map Servers are:

Name	Version	WMS
ArcIms	4.0	1.0.0
Geomedia Web Map	5.0	1.1.0
MapGuide LiteView	6.0	1.0.0
Minnesota MapServ	3.6	1.1.0

We have been able to connect all Map Servers with our client, but not in a systematic way.

We think that the optimal action would have been to send only one request to all Map Servers, changing only the values of each server (URL, layers), to receive a same result.

This unique request would be constructed starting from the parameters required by WMS specification and the result was not as expected due to parameters SRS and VENDOR SPECIFIC of WMS specification.

Spatial Reference System Parameter (SRS)

We have had many problems with the above parameter. Among others, the specification has two types of NAMESPACE for this parameter: EPSG and AUTO.

"The EPSG namespace makes use of the European Petroleum Survey Group tables [EPSG], which define numeric identifiers (the EPSG "CRS code," corresponding to the field "COORD_REF_SYS_CODE" in the EPSG database) for many common projections and which associate projection or coordinate metadata (such as measurement units or central meridian) for each identifier. "[1]

"The AUTO namespace is used for "automatic" projections; that's to say, for a class of projections that include an arbitrary center of projection. An SRS request parameter specifying an automatic projection includes the AUTO namespace prefix, a numeric projection identifier from the AUTO namespace, a numeric identifier from the EPSG [EPSG] namespace indicating what units are to be used for bounding boxes in that SRS, and values for the central longitude and latitude in decimal degrees"[2]

The first problem arose when trying to connect our client with MapGuide LiteView Map Server since it did not support the required Namespaces, EPSG or AUTO. On the contrary, MapGuide LiteView has implemented its own namespace, called ADSK:LL84 which only interprets Lat/Long coordinates.

In case of using cartography in UTM like in our case, the parameter SRS will have to be eliminated from the request in order to visualize the map correctly.

This implies that if the SRS parameter appears in the map request, *"LiteView interprets coordinates as lat/lon. If the SRS parameter is not present, LiteView interprets the BBOX and SYMBOLS parameters as coordinates of the Map Coordinate System"[3]* we have to put it out of our unique request used by our client.

Initially, ArcIms and Minnesota MapServ supported the namespace EPSG:23031 corresponding to the system of reference of our cartography (UTM 31-N, Datum ED50). In fact, these parameters only have a descriptive importance in the capabilities but not within the request GetMap since the parameter SRS could also be eliminated from the requests addressed to ArcIms and Mapserv, obtaining a positive result.

Geomedia Web Map which does not support EPSG:23031 does not allow that parameter SRS be eliminated from their request GetMap, returning the error "Parameter SRS is Missing". Anyhow, it allows to specify an erroneous value that nothing has to do with the real map coordinates as for instance EPSG:4326.

Owing to the mentioned problems, we have not been able to send a unique request GetMap for the four Map Servers but only one valid for ArcIms, MapGuide and Mapserv, where the parameter SRS had been eliminated, and another one for Geomedia that paradoxically is the unique that better fit the specification and where parameter SRS was contemplated although an erroneous value is contained.

Vendor-Specific Parameters (VSPs)

Concerning this parameter, the specification states:

"*A generic client is **not** required or expected to make use of these VSPs. An OGC Web Service **shall** produce a valid result even if VSPs are missing or malformed (i.e., the Service **shall** supply a default value), or if VSPs are supplied that are not known to the Service (i.e., the Service **shall** ignore unknown request parameters)."* [4]

ArcIms, Mapserv and Mapguide use VSPs parameters in their request, but dependency degree would have to be zero, as stated in the specifications, differs according to the context**.**

In Mapserv, VSPs parameters are totally required so that the request operates, being in the parameter MAP where the path of the file (it contains all service configuration) is described.

In ArcIms, it is not necessary that VSPs parameter (ServiceName) be specified in a way that ArcIms would use the service by default, configured in connector properties. Anyhow, this is not useful considering that it would only allow calls to one service for each connector. It is advisable to create different services and to call them from the same WMS connector, using the VPSs ServiceName. This means that VPSs parameter in ArcIms is not an essential tool but almost necessary.

Concerning MapGuide LiteView it is possible to pass a request without using the VPSs. Within LAYERS parameter to insert the project name of Mapguide (i.e. Layers=IDEC.mwf&) is required. This implies that all layers be included within the request, but layers cannot be controlled individually.

On the contrary, to have access to individual layers, the LAYERS parameter can be used to specify the layers and VPSs SELECT to specify the project name.

Lastly, the Geomedia Web Map allows a request without using any parameter VPSs: the call becomes through an ASP file and not through a connector type servlet. Therefore, you can create as many ASPs as projects contain the application.

Web Feature Service (WFS)

The other specification used by our client has been WFS connector of ArcIms. We have had problems to obtain Features, making WFS request on ArcSde, but the most relevant problems have arisen from the use of own characters such as: "'","ç", """. within requests.

As we had problems to obtain a GML and **to parser** this GML correctly we had devoted most of our time trying to solve these problems through programming and codifying all features.

During the searching processes end users have always used textual values (i.e. name of a municipality) but requests sent by WFS always have been numerical (i.e. postal code).

SUMMARY

The day in which a user can create a standard client without considering the Map Server to which connections will be made has not yet arrived. We have to reach a better knowledge of Map Servers to be able to *adapt our standard request.*

We could say that standard version is still in a primary phase but as soon as be more developed we will not have to worry about the components (parts) located at servers.

It also seems that within WMS the required parameter SRS has a practical sense in the GetCapabilities request, but not in the GetMap request.

We have spent a lot of time in solving these problems following the specifications that still are in their first versions, event though we have got experience which we hope be shared by all people involved in the world of the interoperability.

References

[1] OpenGIS® Web Map Service Implementation Specification, rev. 1.1.1 Pg: 15, January 2002

[2] OpenGIS® Web Map Service Implementation Specification, rev. 1.1.1 Pg: 16, January 2002

[3] LiteView Developer's Guide, Pg24, October 2001

[4] OpenGIS® Web Map Service Implementation Specification, rev. 1.1.1 Pg: 19, January 2002