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EGN**

Web Services & interfaces

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Author(s)	<i>Frans Knibbe, Geodan</i>



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1 Introduction

1.1 Purpose

This document contains the definitive description of the EGN infrastructure. It describes the different components of the EGN infrastructure and the public interfaces of these components. It can be regarded as an update of EGN D6.2 (EGN Web Services prototype & test interfaces). This document is related to EGN D6.5, which describes how the EGN Infrastructure can be implemented.

1.2 Executive summary

An overview of components of the EGN infrastructure is presented in chapter 2, showing how the OGC WFS standard is used for communication between servers and clients. In chapter 3 the interface of the EGN Local Services is described, in chapter 4 the interface of the EGN Central Server. In both cases part of the interface (the application schema) is available on-line rather than in print.

1.3 Glossary

The terms that the reader might be unfamiliar with are explained here:

EGN: EuroGeoNames.

ETL: Extract, Transform, Load. The process(es) by which data from one data model and data source are copied to another data model and data container.

EVN-DB: The EGN database containing exonyms and variants.

NMCA: National Mapping and Cadastral Agency.

OGC: Open Geospatial Consortium, an organization that provides standards for geographic information.

VAR: Value Added Reseller

WFS: The Web Feature Service as defined by the OGC.

2 Overview of components and interfaces

The basic elements of the EGN infrastructure are the Local Services (one for each NMCA) and the Central Service (one). Both these services are Web Feature Services according to version 1.1 of the OGC Web Feature Service Implementation Specification.

In the following paragraphs the various components of the EGN infrastructure are described in detail.

2.1 Top level

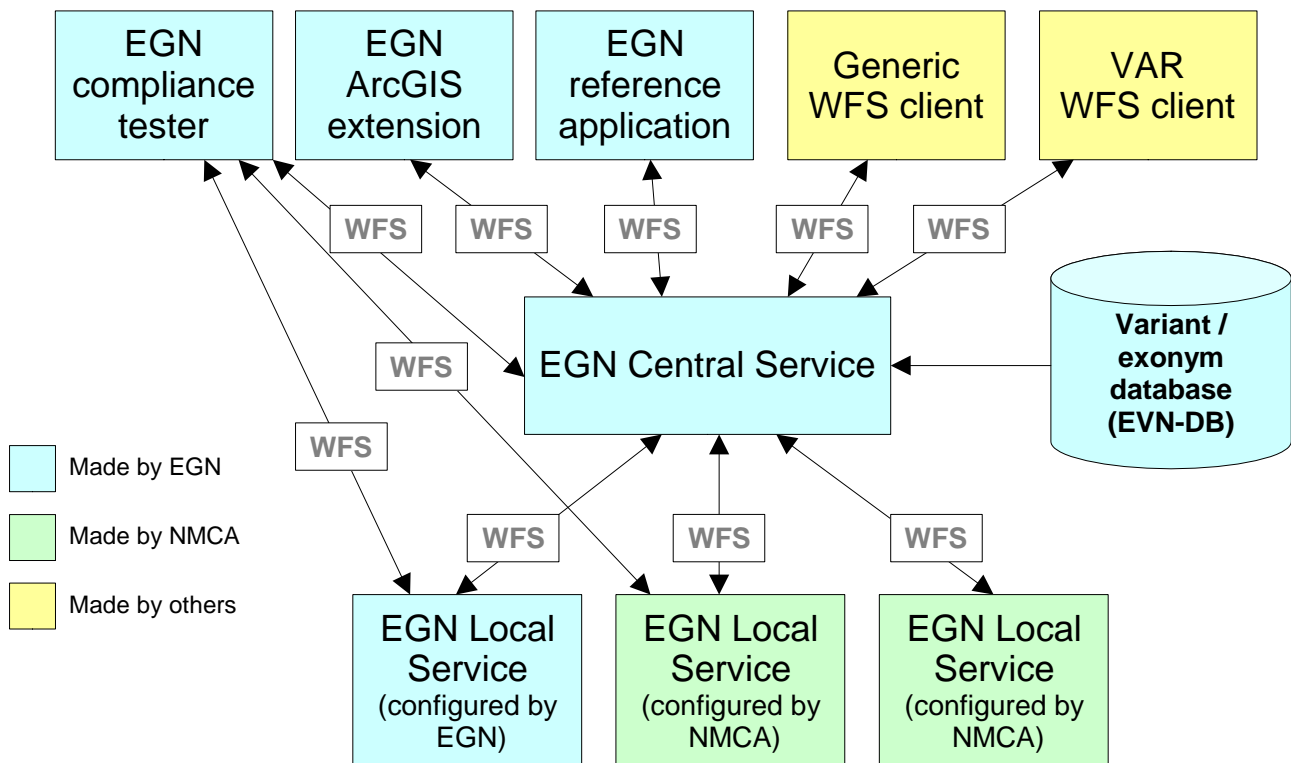


Diagram 1: Top level overview of the EGN infrastructure.

Diagram 1 shows a top level overview of the infrastructure. At the bottom, three EGN Local Services are drawn. In reality, any number of Local Services can be part of the EGN infrastructure. The EGN project is aiming at having 5-10 Local Services ready by the end of the EG-funded project (the end of February 2009). In the centre, the EGN Central Service is placed. It is the main access point of the EGN infrastructure, it enables EGN clients to search the various EGN data sources (EGN Local Services and EVN-DB). At the top of the diagram a number of EGN clients are drawn. The diagram illustrates that all public service interfaces make use of the WFS standard. These interfaces are specified further in chapters 3 and 4.

A description of the components visible in this diagram:

EGN Local Service: A Web Feature Service using the EGN application schema.

EGN Central Service: A Web Feature Service using the EGN application schema.

EGN clients: Any WFS client. The client should be aware of the EGN application schema. Examples are the EGN Reference Application (see EGN WP 7 documents) and the EGN ArcGIS client (EGN WP 8 documents).

EVN-DB: A database containing exonyms and variants. In other words, names that are not part of the data that NMCA's can provide.

2.2 EGN Central Service

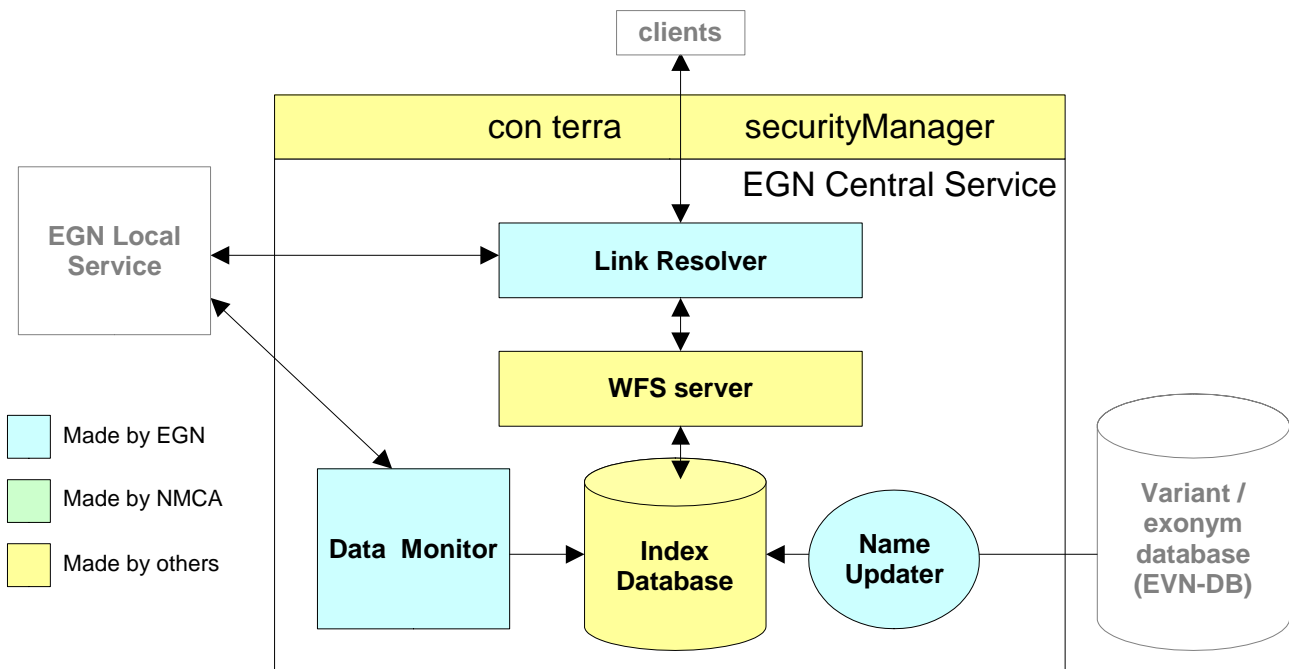


Diagram 2: Details of the EGN Central Service

Diagram 2 shows a close-up view of the EGN Central Service. The EGN Central Service is the hub of the EGN Infrastructure; it serves as a common access point for clients and integrates data from different sources (the EGN Local Services and the EVN-DB).

A description of the components visible in this diagram:

con terra securityManager: The con terra securityManager is a commercial software product that was made available to the EGN Consortium to serve as a security layer. The securityManager provides rule-based access control to the EGN Central Service.

WFS Server: The WFS Server receives WFS requests from clients and creates a response based on data from the Index Database.

Index Database: A relational database containing the feature data that can be used in GetFeature queries, plus some administrative data that are used by the Data Monitor. For some data providers, data elements that are present in Local Databases can be left out of the Index Database. A data element left out of the index database can not be found when it plays a role in the selection criteria of the GetFeature request (as they are not indexed). However, these data elements can be a part of the GetFeature response (see the description of the Link Resolver).

Data Monitor: This component keeps contact with all the connected Local Services. If an update of

a Local Service is detected, the Index Database will be updated based on the new version of the Local Service. The Data Monitor uses a transactional Web Feature Service (WFS-T) to update the Index Database.

Link Resolver: The Link Resolver performs optional post-processing of responses from the WFS Server. It allows NMCA's to specify that certain data elements (feature attributes) should not be stored in the Index Database. If it is known that attributes are not in the Index Database, but are available from a Local Service, the Link Resolver will request these data from the Local Service and insert them in the WFS response before it is sent to the requesting client.

Name Updater: The Name Updater can update the Index Database if either the EVN-DB has changed or if an update of the Index Database by the Data Monitor has occurred. The Name Updater checks the contents of the EVN-DB against the Index Database and makes the necessary changes.

2.3 EGN Local Service

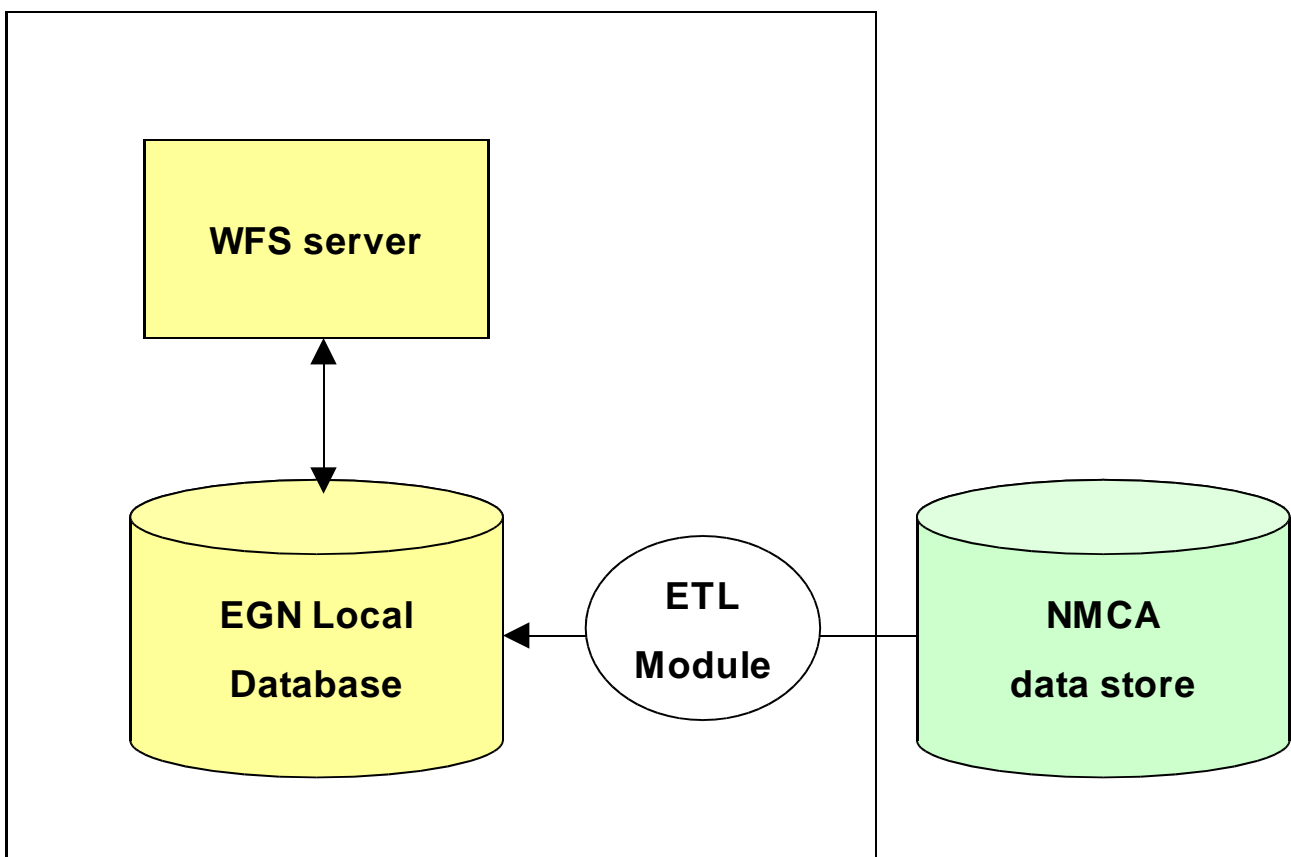


Diagram 3: Details of the EGN Local Service

The EGN Local Service publishes NMCA name data that are transformed to the EGN data model.

A description of the components visible in this diagram:

NMCA data store: The source data used for the local EGN gazetteer.

WFS Server: A WFS server that is configured as EGN Local Service. It uses data from the EGN

Local Database.

EGN Local database: A relational database containing EGN data according to the EGN data model.

ETL Module: A software component that performs ETL transformation of a selection of NMCA data to the EGN data model and populates the EGN Local Database with the transformed data.

3 EGN Local Service interface specification

The EGN Local Service should be compliant with the OGC Web Feature Service Implementation Specification, version 1.1 (see chapter 5: References). Furthermore, the EGN Local Service should be based on the EGN Local Service application schema. This schema (XSD) can be requested from the EGN Local Service Reference Server. At the moment of writing the URI is:

[http://egn.geodan.nl/deegree-wfs/services?service=WFS&version=1.1.0&request=DescribeFeatureType&namespace=xmlns\(egn=http://www.eurogeonames.eu/egn\)](http://egn.geodan.nl/deegree-wfs/services?service=WFS&version=1.1.0&request=DescribeFeatureType&namespace=xmlns(egn=http://www.eurogeonames.eu/egn))

3.1 The EGN Local Service version identifier

A requirement of the EGN Local Service is that the version should always be correct. The version of the service is made available by means of the attribute *version* of the *Gazetteer* element. The following rules apply:

The version identifier is in the form “X.Y.Z”, where

X: This number will be increased if the data model/application schema changes.

Y: This number will be increased when there has been an update of the 'fixed' feature types: FeatureClassification, Gender, Status and GrammaticalNumber.

Z: This number will be increased every time all or a part of the data are updated.

A change in version numbers **X** or **Y** will be initiated by the administrator of the EGN Central Service. Increasing **Z** after each update of the contents of the EGN Local Database is in the responsibility of the administrator of the EGN Local Service.

3.2 Fixed feature identifiers

For the correct functioning of data aggregation by the Name Updater it is important that all EGN Local Services use the same identifiers for those data elements that are shared by all EGN WFS. These identifiers are supplied by the EGN consortium in the SQL script that loads all translations for these shared elements. This means that the administrator of an EGN Local Service is not free to pick alternative values for the following attributes:

- FeatureClassification.featureClassificationID
- Gender.genderID
- Status.statusID
- GrammaticalNumber.grammaticalNumberID

4 EGN Central Service interface specification

The EGN Central Service will be compliant with the OGC Web Feature Service Implementation Specification, version 1.1 (see chapter 5: References). Furthermore, the EGN Central Service should be based on the EGN Central Service application schema. This schema (XSD) can be requested from the EGN Central Service Reference Server. At the moment of writing the URI is:

[http://egn.geodan.nl/egn-central-service/services?service=WFS&version=1.1.0&request=DescribeFeatureType&namespace=xmlns\(egn=http://www.eurogeonames.eu/egn\)](http://egn.geodan.nl/egn-central-service/services?service=WFS&version=1.1.0&request=DescribeFeatureType&namespace=xmlns(egn=http://www.eurogeonames.eu/egn))

The schema used for the EGN Central Service is almost identical to the schema of the EGN Local Service. The only difference is that there are additional attributes in the EGN Central Service to allow 'sounds like' searching:

- soundex*
- metaphone*
- dmetaphone*
- dmetaphone_alt*

At the time of writing, the attribute *metaphone* is the recommended way to perform 'sounds like' searching. Research has shown that using this attribute has the most relevant results. However, client developers are free to use or try out the other 'sounds like' attributes.

5 References

1. OGC Web Feature Service Implementation Specification version 1.1.0, reference code: OGC 04-094. URL: <http://www.opengeospatial.org/standards/wfs>
2. OGC Filter Encoding Implementation Specification version 1.1.0, reference code: OGC 04-095. URL: <http://www.opengeospatial.org/standards/filter>
3. OGC Geography Markup Language (GML) Encoding Specification version 3.1.1, reference code: OGC 03-105r1. URL: <http://www.opengeospatial.org/standards/gml>