



Free and Open Source Software  
for Geospatial.

# An Open Architecture for RESTful Geospatial Web Services

**Haris Kurtagic**

Founder  
SL-King

**Jason Birch**

Sr Applications Analyst  
City of Nanaimo

**Geoff Zeiss**

Director of Technology  
Autodesk

# Open Standards and Open Data



# Open Standards



Autodesk

# Open Standards

- International IT infrastructure
  - W3C, IEEE, IEC, ECMA, SQL...
- Spatial data standards
  - OGC (SFS, GML, WMS, CityGML), ISO (SQL spatial extensions), ...
- Environmental data standards
  - INSPIRE
- Vertical industry standards
  - IFC, MultiSpeak, CIM,...
- Infrastructure data model standards
  - SDSFIE, DHS GDM, NIDM (Canada), ...

# Benefits of Open Standards and Open Source in DoD

## Open Standards

- **Increased security**
- Interoperability
- Avoid vendor lock-in
- Supports best of breed procurement
- Encourages competition
- Lowers cost

## Open Source

- **Security**
- Standards-compliant
- Flexibility and agility
- Quality
- Lower risk
- Reduced cost

# Free and Open Data

**OpenStreetMap**

The Free Wiki World Map

View Edit History Export GPS Traces User Diaries log in | sign up

OpenStreetMap is a free editable map of the whole world. It is made by people like you.

OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth.

OpenStreetMap's hosting is kindly supported by the UCL VR Centre and bytemark.

**Help & Wiki**  
News blog  
Shop  
Map key

Search [Where am I?](#)

examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ'.

Map labels: Barueri, Carapicuíba, Osasco, São Paulo, Guarulhos, Ferraz de Vas, Taboão da Serra, São Paulo Congonhas International Airport, São Caetano do Sul, Embu, Diadema, Santo André, Mauá, São Bernardo do Campo, Ribeirão Pires, Itapeverica da Serra, Permalink, Rio Grande da Serra.

Scale: 5 km, 2 mi

# Free and Open Data



# Public Access to Govt Geospatial Data

- **Australia**

Government of Queensland, Victorian Spatial Council

- **United States Federal**

Geospatial data collected by the Federal government is available at no cost and is in the public domain

- **California**

Legal precedent for free and open access to geospatial data

- **Canada**

As of April 1, 2007, geospatial data from Natural Resources Canada and other Federal, Provincial, and Territorial Governments is available for free

- **South Africa**

The National Government has adopted the principle that **digital geospatial data** is freely available.

- **Japan**

Basic Law: data collected by the government available to the public at nominal cost

- **Brazil**

It is mandatory for all Federal Government Agencies to publish geospatial data freely and free of charge to any identified user



# Open Infrastructure Data

The screenshot displays the North Shore City Open Infrastructure Data web application. The interface includes a search panel on the left, a main map area, and a bottom navigation bar. The search panel contains instructions for using the search and Map/Report tools. The map shows a network of infrastructure pipes in various colors (red, blue, green) and labels for roads like Brooks Street, Thornton Road, and Waiwau Road. A legend in the bottom right corner lists infrastructure types: WasteWater, WasteWater Label, Water Supply, Water Supply Label, StormWater, and StormWater Label, all of which are checked. The bottom navigation bar includes options like Map Tip, Aerial Photo, Property Info, Piped Service, District Plan, More, Metadata, and Legend.

**North Shore City**

**You can search for**

- an address
- a billing number
- road name
- school name
- park name

Scale 1: 5,000

Map/Report Data Export Help

**Step 1**  
**Type into the search box above**

A list of search results will be displayed below the search

**Step 2**  
**Click on the result you want**

The details for your chosen result will be displayed here.

**Step 3**  
**Use the Map/Report tool**

More detailed information will be displayed in printable format in a new window

public Map Tip Aerial Photo Property Info Piped Service District Plan More Metadata Legend

- WasteWater
- WasteWater Label
- Water Supply
- Water Supply Label
- StormWater
- StormWater Label

# City of Vancouver

- Open and Accessible Data
  - The City of Vancouver will freely share with citizens, businesses and other jurisdictions the greatest amount of data possible while respecting privacy and security concerns.
- Open Standards
  - The City of Vancouver will move as quickly as possible to adopt prevailing open standards for data, documents, maps, and other formats of media.
- Open Source
  - The City of Vancouver, when replacing existing software or considering new applications, will place open source software on an equal footing with commercial systems during procurement cycles.

What does open geodata access mean and how best to provide it ?



# Benefits of Open Data

- Encourages citizen engagement
- Promotes transparency and accountability
- Leads to economic development

# Geodata on the Web

- Tim Berners-Lee, in *Government Data Design Issues*, proposes
  - Geodata on the web in raw form.
  - Raw geodata must be searchable
- We suggest that **HTML web pages** are the best way of accessing geodata on the current web

**What is REST ?**



# Roy Fielding's Dissertation

UNIVERSITY OF CALIFORNIA, IRVINE

## **Architectural Styles and the Design of Network-based Software Architectures**

DISSERTATION

submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in Information and Computer Science

by

[Roy Thomas Fielding](#)

2000

Dissertation Committee:

Professor Richard N. Taylor, Chair

Professor Mark S. Ackerman

Professor David S. Rosenblum

# REST

- Representational State Transfer (REST)
- *Architecture style of networked systems*
- Relies on basic Web protocols HTTP and MIME
- Example is the Web



# REST Constraints

- **Addressability**
  - Each resource has URI
- **Stateless**
  - Each request contain all information necessary to understand request
- **Representations**
  - Resources have different representations: KML, JSON,...
- **Connectedness**
  - Representations can contain URIs

Richardson and Ruby, *RESTful Web Services*, O'Reilly

# RESTful Web Service

- HTTP Envelope
- URI
  - HTTP methods  
GET, POST, PUT, DELETE
  - HTTP Header
  - HTTP Response Codes
  - Returns Mime: JSON, KML, PNG, ...

# Why REST ?

- It's Web
- Get all the services provided by the Web
  - Searching
  - Pass through firewalls
  - Caching
  - Scaling/load balancing
- Including rich internet applications (RIA)
  - Adobe AIR
  - Google Gears
  - Silverlight

# GeoREST open source project



# GeoREST is Open Source (www.geoREST.org)



**georest**

*GeoREST: Web-centric publishing for spatial data*

 Search projects

[Project Home](#) | [Downloads](#) | [Wiki](#) | [Issues](#) | [Source](#)

[Summary](#) | [Updates](#) | [People](#)

GeoREST is a web-centric framework for distributing geospatial data. It allows RESTful feature-based access to spatial data sources, including full editing capabilities, through a MapGuide server or directly via FDO.

Examples of data sources:

- SHP
- SDF
- SQLite (FDO)
- PostGIS
- Oracle Spatial
- Microsoft SQL Server Spatial
- MySQL
- Any other FDO vector data source

Example output formats:

- GeoJSON
- XML
- PNG (MapGuide layers only)
- HTML (Template)
- KML (Template)
- GeoRSS (Template)
- CSV (Template)
- Any other templatable text-based format

**Code license:** [GNU Lesser General Public License](#)

**Content license:** [Creative Commons 3.0 BY](#)

**Labels:** [geo](#), [REST](#), [MapGuide](#), [FDO](#), [SHP](#), [spatial](#), [SDF](#), [KML](#)

**Featured downloads:** [Show all](#)

↓ [GeoREST.0.3.6.zip](#)

**Links:** [Documentation](#)

**Feeds:** [Project feeds](#)

**Project owners:** [People details](#)

[jasonbir...@gmail.com](#),  
[hkurtagic](#), [jason.birch](#)

**Project committers:**

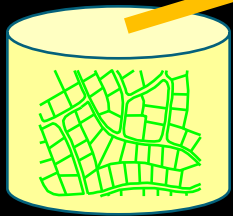
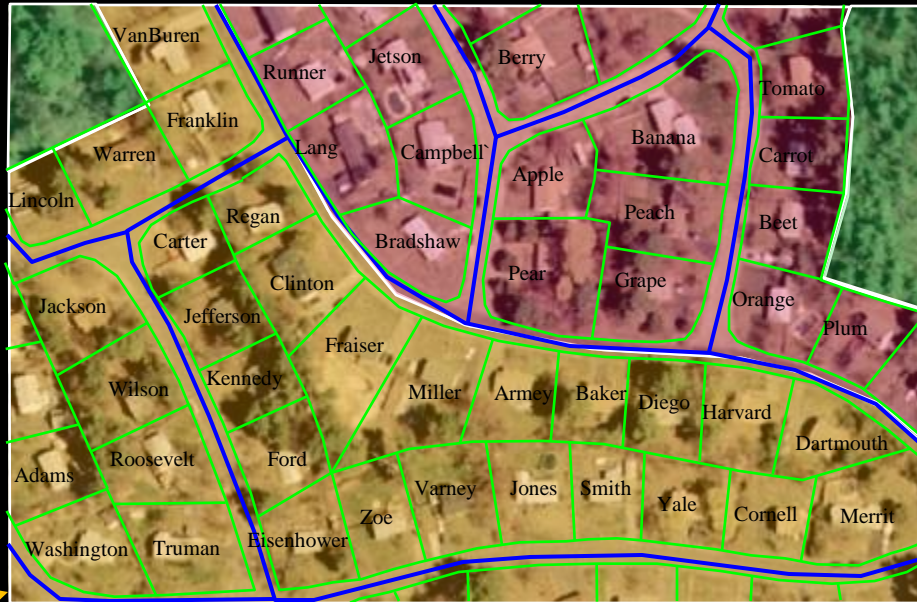
[simon.pelicon](#)

# GeoREST is Web Services

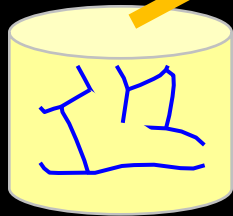
- Exposes FDO as web services
- Provides 3<sup>rd</sup> party application access to FDO data

# FDO Enables Data sharing

**FDO** Allows you to connect natively to multiple spatial sources



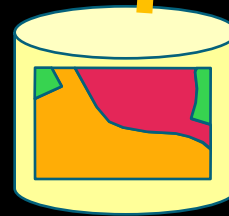
Parcel data from Oracle® databases



Utility data from an SDF file



Property data SQL Server™

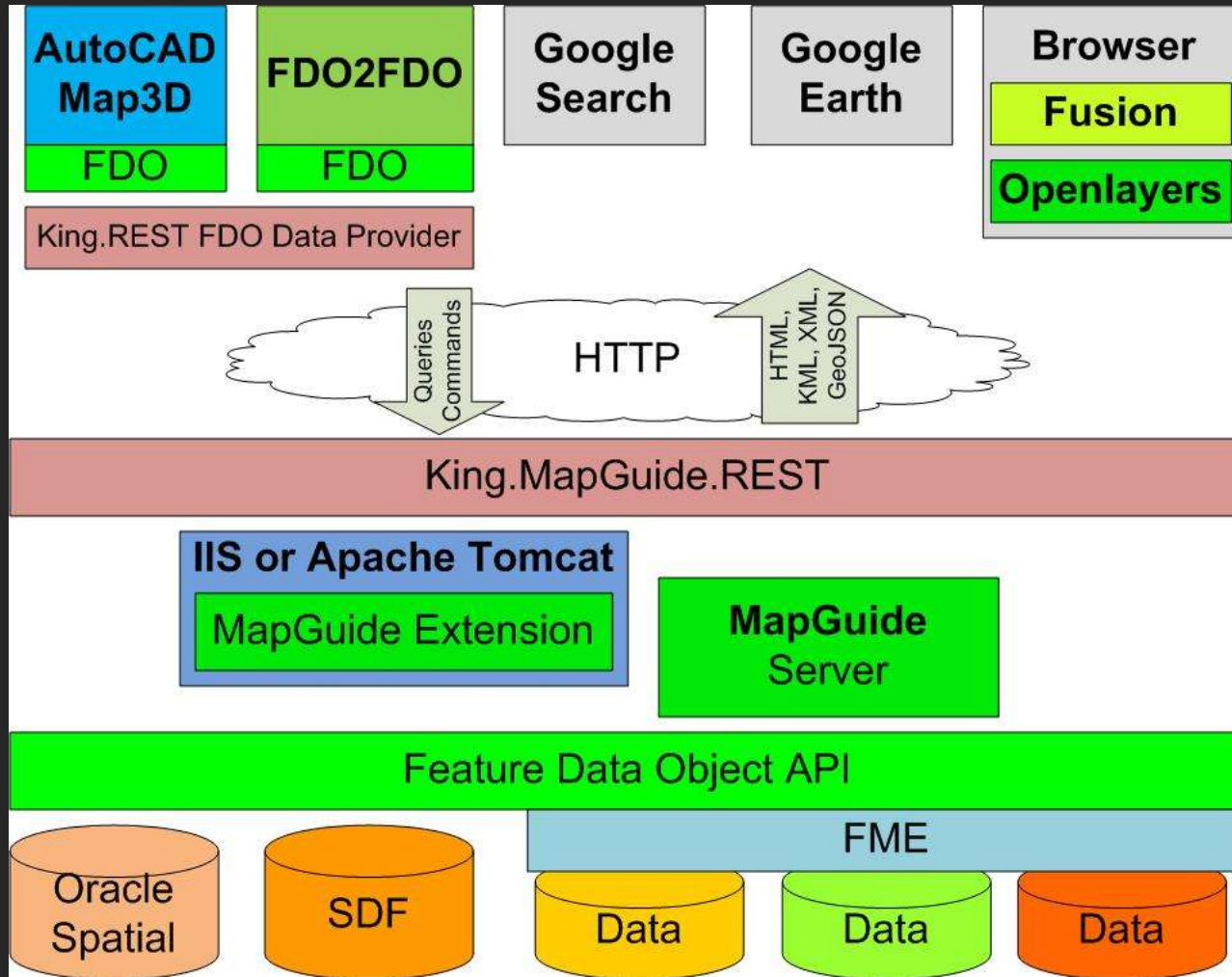


Zoning data ESRI® ArcSDE®



Aerial photos

# GeoREST Architecture





# Open Source Geospatial Foundation



## Web Mapping

deegree

Mapbender

MapBuilder

MapGuide Open Source

MapServer

OpenLayers

## Geospatial Libraries

FDO

GDAL/OGR

GEOS

GeoTools

## Desktop Applications

GRASS GIS

OSSIM

Quantum GIS

gvSIG

## Metadata Catalog

GeoNetwork

[WWW.OSGEO.ORG](http://WWW.OSGEO.ORG)

# Examples of GeoREST applications

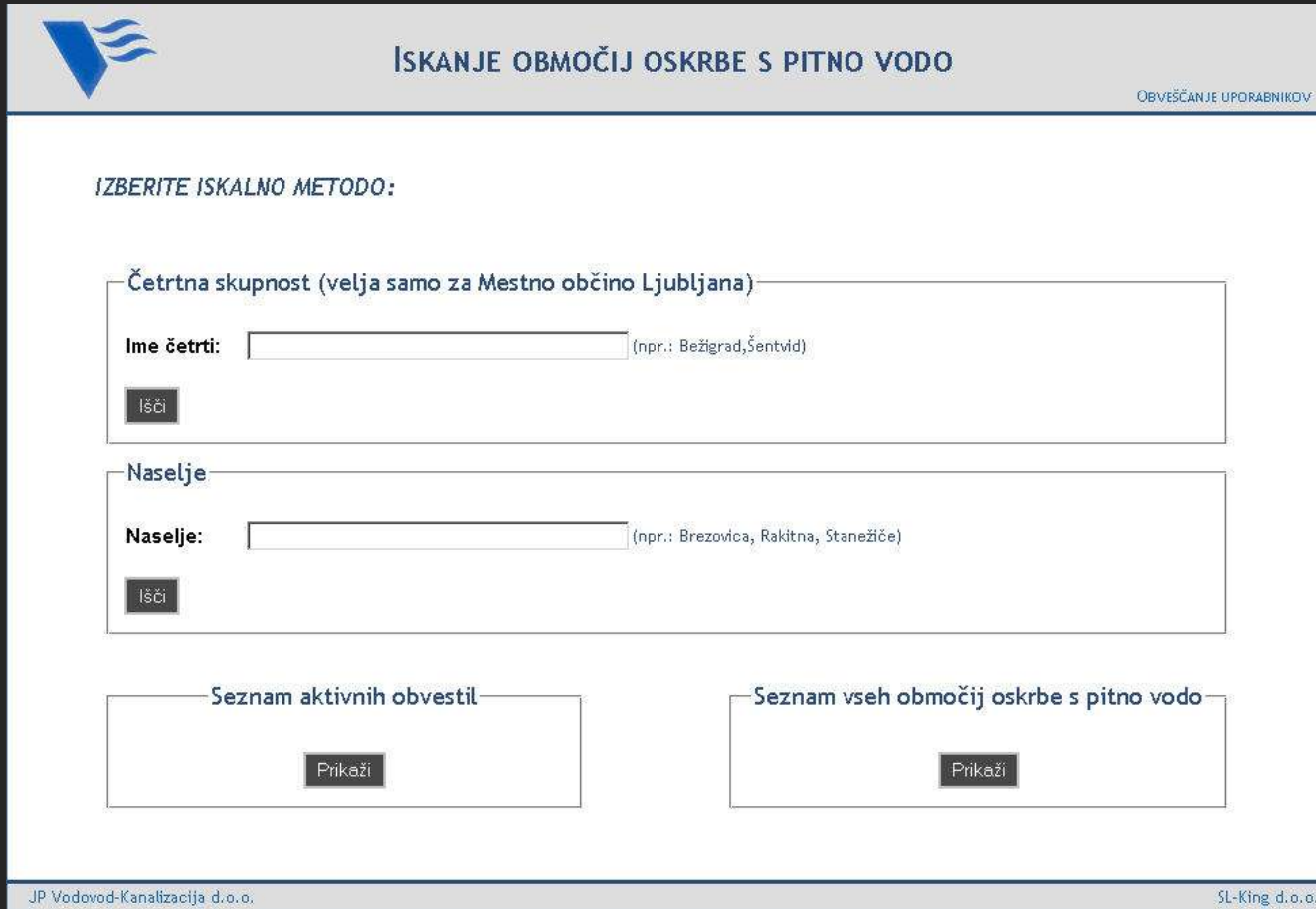


# Slovenian Water Company

*(JP Vodovod-Kanalizacija d.o.o.)*

- Company required by government to report any problems with water
- Citizen can go to web site
- Identify the city ward or suburb in which he/she lives
- Find notifications of problems

<http://share.vo-ka.si/iskanje/>



The screenshot shows a web application interface for searching water supply areas. At the top left is a logo with three blue waves. The main title is 'ISKANJE OBMOČIJ OSKRBE S PITNO VODO'. On the top right, it says 'OBVEŠČANJE UPORABNIKOV'. Below the title, the instruction 'IZBERITE ISKALNO METODO:' is displayed. There are two main search sections. The first section is titled 'Četrtna skupnost (velja samo za Mestno občino Ljubljana)'. It contains a text input field labeled 'Ime četrtri:' with a placeholder '(npr.: Bežigrad, Šentvid)' and a 'Išči' button. The second section is titled 'Naselje'. It contains a text input field labeled 'Naselje:' with a placeholder '(npr.: Brezovica, Rakitna, Stanežiče)' and a 'Išči' button. At the bottom, there are two buttons: 'Seznam aktivnih obvestil' with a 'Prikaži' button, and 'Seznam vseh območij oskrbe s pitno vodo' with a 'Prikaži' button. The footer contains 'JP Vodovod-Kanalizacija d.o.o.' on the left and 'SL-King d.o.o.' on the right.

Enter address to identify water region

[http://share.vo-ka.si/mgrest/rest/data/cetrtr/.html?filter 1 and like D42 UIME=Bežigrad&count=25&start=1&submit=Išč](http://share.vo-ka.si/mgrest/rest/data/cetrtr/.html?filter=1%20and%20like%20D42%20UIME=Be%C5%BE%20igrad&count=25&start=1&submit=I%C5%A1%C4%87i)



## VODOOSKRBNA OBMOČJA GLEDE NA ČETRTNE SKUPNOSTI

O STORITVI

### SEZNAM NAJDENIH ČETRTI

| Številka | Ime četrtri               | Vodooskrbno območje         |
|----------|---------------------------|-----------------------------|
| 45       | četrtna skupnost Bežigrad | Kleče, Hrastje, Jarški prod |
| 46       | četrtna skupnost Bežigrad | Kleče                       |
| 47       | četrtna skupnost Bežigrad | Jarški prod                 |

*Nazaj na iskanje*

Choose water region

[http://share.vo-ka.si/mgrest/rest/data/cetrtr/.html  
?filter 1 and like D42 UIME=Šentvid&count=25&start=1  
&submit=Išči](http://share.vo-ka.si/mgrest/rest/data/cetrtr/.html?filter 1 and like D42 UIME=Šentvid&count=25&start=1&submit=Išči)



## VODOOSKRBNA OBMOČJA GLEDE NA ČETRTRNE SKUPNOSTI

O STORITVI

### SEZNAM NAJDENIH ČETRTRI

| Številka | Ime četrti               | Vodooskrbno območje |
|----------|--------------------------|---------------------|
| 53       | Četrtna skupnost Šentvid | Šentvid             |
| 54       | Četrtna skupnost Šentvid | Šentvid             |
| 55       | Četrtna skupnost Šentvid | Šentvid             |
| 56       | Četrtna skupnost Šentvid | Šentvid             |
| 57       | Četrtna skupnost Šentvid | Kleče               |

*Nazaj na iskanje*


<http://share.vo-ka.si/mgrest/rest/data/vodarna/H.html>

**OBMOČJE OSKRBE S PITNO VODO: KLEČE, HRASTJE, JARŠKI PROD**

**Vođoskrbno območje Kleče, Hrastje, Jarški prod**

**Aktivne opozorila za sistem:**  
Za sistem predmetnega vodovirnega območja trenutno ni aktivnih opozoril.

**Spisek naselij, aztrane žrtsti, vključenih v sistem:**  
**Mestna Občina Ljubljana:**  
dal Most, Štepanj (ko vas), Štepanj vas, Kodačeva, Spodnja Hruška, Zgornja Hruška, dal Prž.



Pokaži kot KML (Google Earth)


**Načini obveščanja v različnih primerih**

| Primer   | Mesta obveščanja   |
|--|--|
| Omejitve in preposeđi uporabe vode ali odstopanj | <ul style="list-style-type: none"> <li><b>Lokalne radijske postaje:</b><br/>RTV SLO 1, program, Val 202<br/>Radio Aktual<br/>Radio 1<br/>Radio Center</li> <li><b>Center za obveščanje</b></li> <li><a href="http://www.vo-ka.si">http://www.vo-ka.si</a></li> <li><b>Pisno obveščanje</b><br/>občine<br/>šole<br/>vrčci<br/>Inštitut za varovanje zdravja RS<br/>ZRS<br/>bolnišnice<br/>domovi za starejše občane<br/>dijaški domovi</li> </ul> |

|  |  |
|--|--|
|  | strani. Tani so mesta, kjer se info tabele nahajajo, tudi opisane.   |
| <b>Neskladnosti v hišnem omrežju</b>             | <ul style="list-style-type: none"> <li>• Osebo ali upravnik stanovanj</li> </ul>   |
| <b>Posegi na priključkih</b>                     | <ul style="list-style-type: none"> <li>• Osebo, telefon</li> </ul>   |
| <b>Splošna obvestila o skladnosti pitne vode</b> | <ul style="list-style-type: none"> <li>• Informacijska pisarna JP Vodovod-Kanalizacija d.o.o. Vodovodna cesta 90 Ljubljana</li> <li>• <a href="http://www.vo-ka.si">http://www.vo-ka.si</a></li> </ul> |

\*Časovni intervali obveščanja in ostali podatki o načinih obveščanja so zapisani v posebnih št. storitvi

**Prikaz območja vodovirnega sistema v Google Maps:**



Prikaži več informacij

Map | Sat | Ter | Show search

© 2014 Microsoft Corporation. All rights reserved. Microsoft, Bing, and the Microsoft Dynamics logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

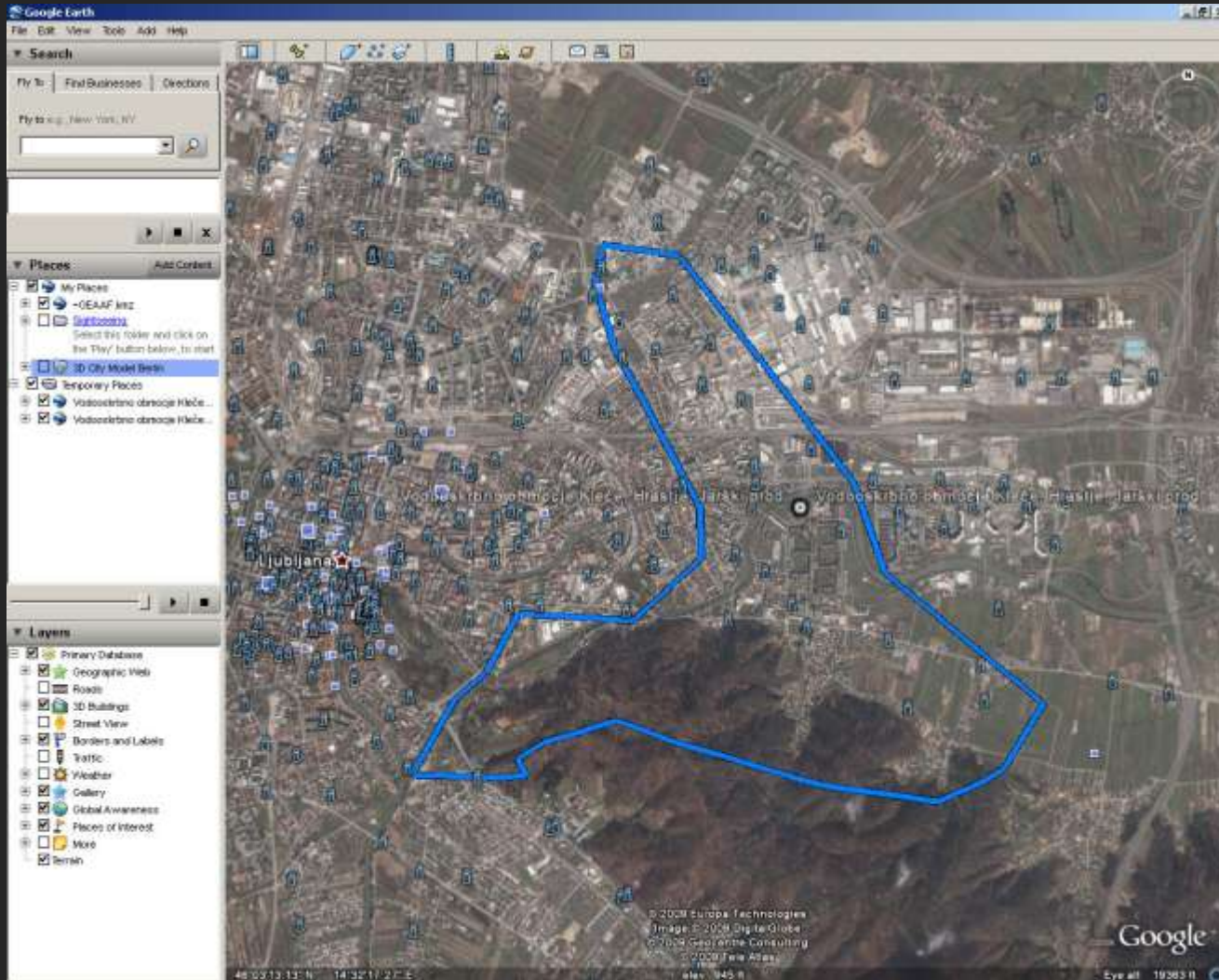
Mapa ne deluje

JP Vodovod-Kanalizacija d.o.o. | 30. Avg 2014

HTML

Retrieve water district maps

<http://share.vo-ka.si/mgrest/rest/data/vodarna/H.kml>



KML

Retrieve water<sup>32</sup> district maps

Autodesk



<http://share.vo-ka.si/mgrest/rest/data/vodarna/H.xml>

```
- <FeatureSet>
- <Features>
- <Feature>
- <Property>
  <Name>LINK </Name>
  <Value>H</Value>
</Property>
- <Property>
  <Name>FeatId</Name>
  <Value>15</Value>
</Property>
- <Property>
  <Name>ID</Name>
  <Value>1160476</Value>
</Property>
- <Property>
  <Name>COUNT</Name>
  <Value>16</Value>
</Property>
- <Property>
  <Name>ID2</Name>
  <Value>672054</Value>
</Property>
- <Property>
  <Name>ID21</Name>
  <Value>4</Value>
</Property>
- <Property>
  <Name>VPLIV</Name>
  <Value>Kleče, Hrastje, Jarški Brod</Value>
</Property>
- <Property>
  <Name>AREA</Name>
  <Value>5749631.39300000002</Value>
</Property>
- <Property>
  <Name>PERIMETER</Name>
  <Value>13790.968000000001</Value>
</Property>
```

XML

Retrieve water district maps

<http://share.vo-ka.si/mgrest/rest/data/vodarna/H.json>

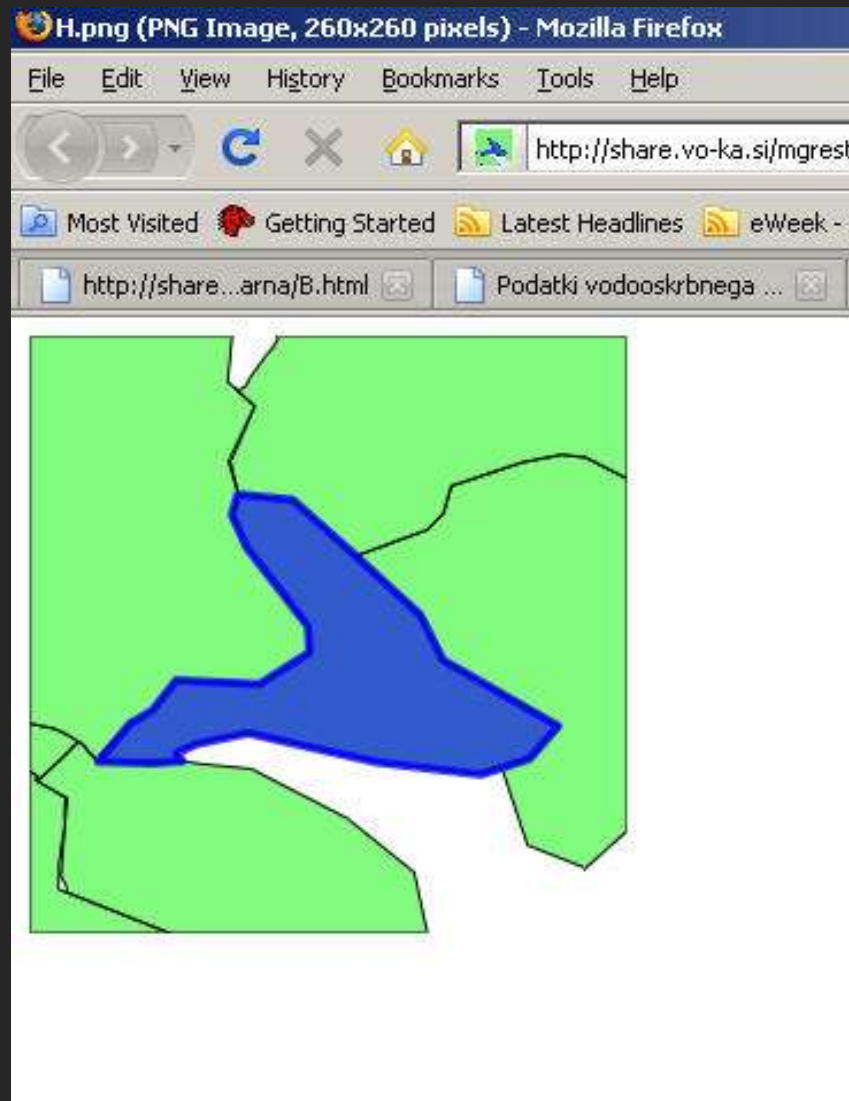
```
H.json - Notepad
File Edit Format View Help

{"type": "FeatureCollection", "features": [{"type": "Feature", "geometry": {"type": "Polygon", "coordinates":
[[[14.514606352317989,46.042554700568296],[14.515271924071211,46.043358710564441],
[14.517870637925427,46.044901439676956],[14.52059046461355,46.048359327498247],[14.526381708506358,46.048095477176354],
[14.527615940116103,46.048039207045093],[14.528638940950986,46.047992556991403],
[14.530218544334701,46.047920507054236],[14.53596255650767,46.051581849749113],[14.53580027640538,46.054548992806431],
[14.532679159202646,46.058582220461034],[14.528709750192121,46.063710662398684],
[14.527219799647192,46.067011767347772],[14.527027671872794,46.067437411373568],
[14.527700744095874,46.069801017582563],[14.527769156459367,46.0697940595552],[14.533208285322901,46.06924072441938],
[14.534058472104004,46.069154208541434],[14.541328311355947,46.062699240189183],
[14.545652442005816,46.058742941295435],[14.54871457335134,46.05594084554577],[14.551369675763066,46.05068581353845],
[14.55292243108382,46.049795081105493],[14.564628938051722,46.043078075715314],[14.561359017539251,46.039331923476034],
[14.558125860273018,46.038273357067425],[14.555737508416431,46.037491303322675],
[14.543715615274156,46.038913180193639],[14.536742575321348,46.040479674432994],
[14.534066906509649,46.041088762706437],[14.528891560510125,46.04226666032497],[14.523004080493148,46.041026339104029],
[14.520644379694877,46.039971346319547],[14.521370386648034,46.039025004185852],[14.51781351838712,46.038807797510614],
[14.511634295672268,46.038964127696119],[14.514606352317989,46.042554700568296]]]}, "id": {"LINK": "H"}, "properties":
{"LINK": "H", "Featid": 15, "ID": 1160476, "COUNT": 16, "ID2": 672054, "ID21": 4, "VPLIV": "Kle\u010de, Hrastje, Jar\u0161ki
Brod", "AREA": 5749631.3930000002, "PERIMETER": 13790.968000000001, "ACRES": 131.99299999999999, "VODARNA_E": "Kle\u010de, Hrastje,
Jar\u0161ki prod", "OSKRBOVALN": "<strong>Mestna ob\u010dina Ljubljana:</strong><br><br>del Most, \u0160tepanjsko naselje, \u0160tepanja vas,
Kodeljevo, Spodnja Hru\u0161ica, Zgornja Hru\u0161ica, del Prul", "ID3": 0, "IME_SIS": null, "ID_ARSO": 0, "OMEJITEV_R": "RTV SLO 1.
program, Val 202 <br />Radio Aktual<br />Radio 1<br />Radio Center", "OMEJITEV_1": "4x dnevno", "OMEJITEV_C": "Center za
obve\u0161\u010danje", "OMEJITEV_S": "<a href=\"http://www.vo-ka.si\">http://www.vo-ka.si</a>", "OMEJITEV_P": "ob\u010dine<br />\u0161ole<br
/>vrtci<br />In\u0161titut za varovanje zdravja RS<br />ZIRS<br />bolni\u0161nice<br />domovi za starej\u0161e ob\u010dane<br />dija\u0161ki
domovi<br />gostinski lokali in<br />drugo.", "NESKLADNOS": "osebno ali upravnik stanovanj", "POSEG_PRIK": "osebno,
telefon", "LETNO_PORO": "<a href=\"http://www.jh-lj.si/index.php?m=3&id=1248\">Spletna stran s
poro\u010dilom</a>", "SPLOSNA_OB": "Informacijska pisarna JP vodovod-Kanalizacija d.o.o.<br />Vodovodna cesta 90<br
/>Ljubljana"}}}]}
```

JSON

Retrieve water district maps

<http://share.vo-ka.si/mgrest/rest/data/vodarna/H.png>



PNG

Retrieve water district maps

Autodesk

# Use Google CTemplate Files

- `cetr.tpl` is template for single result for one city ward
- `cetr.ti.tpl` is result when query returned multiple city wards
- `vodarna.tpl` is result html template for single water district



# Nanaimo Geodata Reporting

## Business Problem

- Reporting – simple, no programming access to geodata in NanaimoMap
- Support Google Search - Provide users to search for public geodata without having to learn a new query system
- Open data access - Provide geospatial data in a variety of "Neo-Geography" formats like KML, GeoJSON, ...



# Nanaimo Geodata Reporting


## Solution

- RESTful web services architecture of GeoREST
- Access to data configured via XML and *Google CTemplate* to deliver multiple representations (KML, GeoJSON, ...) of the same feature with no programming.

## Development

- **SL-King** and City of Nanaimo

# http://maps.nanaimo.ca/data/property/

**PROPERTY SEARCH** 

[Home](#) > [Data](#) > [Property](#)

Please choose a search method from below, or browse the [Nanaimo property street index](#).

**Nanaimo Properties by Street**

House Number:  (example: 455)

Street Name:  (example: Wallace)

**Nanaimo Properties by Folio Number**

Folio:  (example: 8096)


**Nanaimo Properties by Legal Plan Number**

Plan Number:  (example: 584)


Copyright 2009 City of Nanaimo [Use subject to Terms and Conditions](#)

http://maps.nanaimo.ca/data/property/.html  
?filter\_1\_and\_equal\_house=2323&filter\_2\_and\_like\_street=Rosstown&count=20&submit=Search

### 2323 ROSSTOWN ROAD - PROPERTY REPORT



[Home](#) > [Data](#) > [Property](#) > 2323 ROSSTOWN ROAD

| GENERAL INFORMATION |  | PARCEL MAP  |
|---------------------|--|---|
| Address:            | 2323 ROSSTOWN ROAD, NANAIMO, BC                                  | <br><a href="#">View as KML (Google Earth)</a> |
| Folio:              | 05536.130  |   |
| Plan:               | 27484  |   |
| Size:               | .29 ACRES  |   |
| Legal Description:  | LOT 7, SECTION 18 AND 19, RANGE 7, MOUNTAIN DISTRICT, PLAN 27484 |   |

| EXTENDED INFORMATION  |   |
|-----------------------|---|
| Zoning                | RS-1<br>SINGLE FAMILY RESIDENTIAL ZONE                  |
| Garbage Pick-Up       | Route: <a href="#">D-3</a><br>Number of Cars Allowed: 2 |
| Sewer Benefiting Area | YES   |
| GIS Link              | 116707  |
| Location              | 49.19552, -123.9979                                     |

View other properties on [ROSSTOWN ROAD](#), or [search for other Nanaimo properties](#).

Copyright 2009 City of Nanaimo Use subject to [Terms and Conditions](#)



# Google Search

2323 Rosstown - Google Search - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.google.com/search?q=2323+Rosstown

Most Visited Getting Started Latest Headlines eWeek - RSS Feeds

Product reviews and prices, software d... 2323 Rosstown - Google Search

Web Images Maps News Video Gmail more Sign in

Google 2323 Rosstown Search Advanced Search Preferences

Web Results 1 - 10 of about 487 for 2323 Rosstown. (0.25 seconds)

[2323 ROSSTOWN ROAD, Nanaimo, BC | Property Report \(05536.130\)](#)  
Map of **2323 ROSSTOWN ROAD**, Nanaimo BC View as KML (Google Earth). Folio: 05536.130. Plan: 27484. Size: .29 ACRES. Legal Description: LOT 7, SECTION 18 AND ...  
[maps.nanaimo.ca/data/property/116707.html](http://maps.nanaimo.ca/data/property/116707.html) - 6k - [Cached](#) - [Similar pages](#)

[Nanaimo Property Search Results](#)  
2320 **ROSSTOWN ROAD**, 05548 055, Property Report · A-3. 2321 **ROSSTOWN ROAD**, 05536.135, Property Report · D-3. **2323 ROSSTOWN ROAD**, 05536.130, Property Report ...  
[maps.nanaimo.ca/data/property/.html?count=500&filter\\_1\\_and\\_equal\\_street=ROSSTOWN+ROAD](http://maps.nanaimo.ca/data/property/.html?count=500&filter_1_and_equal_street=ROSSTOWN+ROAD) - 60k - [Cached](#) - [Similar pages](#)

[Need help with a geeky movie shoot! - Page 2 - God Hates Fraggles ...](#)  
**2323 Rosstown Rd.** It's the second bus stop after you turn left off of ... **2323 Rosstown Road.** Take the #44 if you're a busser, and it's the second stop ...  
[godhatesfraggles.net/forums/showthread.php?p=36677](http://godhatesfraggles.net/forums/showthread.php?p=36677) - 64k - [Cached](#) - [Similar pages](#)

[May 2nd Meeting - God Hates Fraggles Forums](#)  
I want every last one of you to come to my house at **2323 Rosstown Road**, stay overnight, and have one last HELL OF A NIGHT to remember before my soul gets ...  
[godhatesfraggles.net/forums/showthread.php?p=43934](http://godhatesfraggles.net/forums/showthread.php?p=43934) - 70k - [Cached](#) - [Similar pages](#)  
[More results from godhatesfraggles.net »](#)

[Lewisberry, Pennsylvania new and used car dealers - Chevrolet ...](#)  
455 **Rosstown Rd**, Lewisberry, PA. Dressler's Electric Service (717) 938-4685 ... (717) 938-**2323** 2050 Old Trail Rd, Etters, PA. Dicks Radiator Service ...  
[pennsylvania-cars-sale.com/lewisberry/](http://pennsylvania-cars-sale.com/lewisberry/) - 15k - [Cached](#) - [Similar pages](#)

http://maps.nanaimo.ca/data/property/116707.html

## 2323 ROSSTOWN ROAD - PROPERTY REPORT



[Home](#) > [Data](#) > [Property](#) > 2323 ROSSTOWN ROAD

| GENERAL INFORMATION |  | PARCEL MAP  |
|---------------------|--|---|
| Address:            | 2323 ROSSTOWN ROAD, NANAIMO, BC                                  | <br><a href="#">View as KML (Google Earth)</a> |
| Folio:              | 05536.130  |   |
| Plan:               | 27484  |   |
| Size:               | .29 ACRES  |   |
| Legal Description:  | LOT 7, SECTION 18 AND 19, RANGE 7, MOUNTAIN DISTRICT, PLAN 27484 |   |

| EXTENDED INFORMATION  |   |
|-----------------------|---|
| Zoning                | RS-1<br>SINGLE FAMILY RESIDENTIAL ZONE                  |
| Garbage Pick-Up       | Route: <a href="#">D-3</a><br>Number of Cans Allowed: 2 |
| Sewer Benefiting Area | YES   |
| GIS Link              | 116707  |
| Location              | 49.19552, -123.9979                                     |

View other properties on [ROSSTOWN ROAD](#), or [search for other Nanaimo properties](#).

# Summary

- Open data in government
  - encourages citizen engagement
  - promotes transparency and accountability
  - leads to economic development
- GeoREST provides web searchable access to raw geospatial data
- GeoREST API that can be used by web developers to embed open data access in their applications.

haris@sl-king.com

jason.birch@nanaimo.ca

geoff.zeiss@autodesk.com

geospatial.blogs.com

# Building for a sustainable future

