

Haris Kurtagic, SL-King
Jason Birch, City of Nanaimo
Geoff Zeiss, Autodesk

GEOREST WEB ACCESS TO PUBLIC GEODATA BASED ON ATOM PUBLISHING

Tim Berners-Lee, in *Government Data Design Issues*, proposes

- Geodata on the web in raw form.
- Raw geodata must be searchable

How do you find raw geospatial data ?

The image displays two web maps side-by-side, both overlaid with a large, semi-transparent red 'X'. The top map is Google Maps, showing the search bar, navigation controls, and map view options. The bottom map is Bing Maps, showing the search bar, navigation controls, and map view options. The red 'X' is centered over the map area, indicating that these services do not provide raw geospatial data.

Google Maps Interface:

- Navigation: Web, Images, Videos, Maps, News, Shopping, Gmail, more
- Search: Google maps, Search Maps, Show search options
- Find businesses, addresses and places of interest.
- Get Directions, My Maps, Set default location, Put your business on Google Maps
- Map controls: Traffic, More..., Map, Satellite, Terrain
- Map data: © 2010 LeadDog Consulting, Google, Tele Atlas, INEGI, Terms of Service

Bing Maps Interface:

- Navigation: Web, Images, Videos, News, Maps, Visual Search, More, MSN, Hotmail
- Search: Business name or category, Location, or search for locations only
- Get directions: Business, address, or landmark
- Map controls: 2D, 3D, Road, Aerial
- Map data: © 2009 Microsoft Corporation, © 2010 NAVTEG

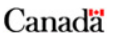
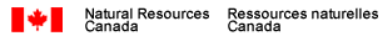
DATA.GOV



- HOME
- OPEN GOVERNMENT
- FEDERAL
- STATE/LOCAL/TRIBAL
- SUGGEST DATASETS
- DIALOGUE
- METRICS
- FAQ
- ABOUT

Open Government Directive Agency Datasets

An underlying goal of the **Open Government Initiative** is to change the culture of information dissemination data more widely available in more accessible formats. As one of the flagships of the Open Government Initiative, Federal datasets that increase public understanding of Federal agencies and their operations, advance transparency, and increase transparency, accountability, and responsiveness across the Federal Government. **Government Directive** specifically required agencies to register at least three new high-value datasets submitted to Data.gov both before and after the January 22 deadline are high-value, agencies have registered below as new "high value" datasets in accordance with Open Government Directive provisions.



Natural Resources Canada
www.nrcan.gc.ca

[Français](#) |
 [Home](#) |
 [Contact Us](#) |
 [Help](#) |
 [Search](#) |
 [canada.gc.ca](#)

[Natural Resources Canada](#) > [Earth Sciences Sector](#) > [GeoGratis](#)

"RAW" DATA

HM Government
Department of Agriculture and Agri-Food

Home Blog **Data** SPARQL Apps Ideas Forums

Name (click to search)

Census of Agriculture
2007 Census of Agriculture by province, the race, ethnicity and language spoken at home

Feed Grains
Downloadable data

Home > Data > List all datasets

List all datasets

Your search returned 3148 records

first previous 1 2 3 4 5 6 7

Acute sickness

The prevalence of self-reported acute sickness among adults in a national interview. Source: Department of Health (DoH) Public Health Survey

Tags: health

data.gov.uk

LMNOPQRSIU VWXYZ

City of Vancouver

Open Data Catalogue Beta v2

Residents Business Visitors Jobs with the City Services Departments City Projects Pay & Purchase Online

Open data home

- Get the data
 - Data catalogue
 - City web feeds
- About the data
 - Data formats
 - Data updates
 - Terms of use
 - Feedback

Park polygon features

March 19, 2010

The City has just added park polygon features. Park polygon features show a filled-in green area representing the boundaries of the park. This may add significantly to the look of the map and make it easier to recognize and use.

Please feel free to provide us with feedback on this or any other aspect of the Open Data website on our feedback page. As always, your use of the data available

City of Vancouver

- Search
- Help

Take our survey

Which data items would you still like to see added to the City's Open Data site?

Data updates

Receive updates on developments related to this site:

- Subscribe to the RSS feed
- Subscribe to the mailing list

Connect with the Community

Community developers have created a wiki and discussion group to share application ideas and discuss datasets.

Vancouver Open Data Wiki

Discussion Group

Please note: These community sites are not affiliated with the City of Vancouver.

nada

.km grid
ional

tistics

Data Catalogs

Your search returned 3148 records

first previous **1** **2** **3** **4** **5** **6** **7** **8** **9** next last

FEMA Public Assistance
Through the PA Program of FEMA, HUD provides assistance for debris removal and other emergency work.

Department of Housing and Urban Development

Name (click for metadata)

FHEO Filed Cases
The dataset is a list of all cases filed with HUD, including the case number and the date of filing.

Multifamily Housing
HUD's Real Estate Assessment Program (REAP) subsidizes multifamily housing projects.

Public Housing Agency
The dataset contains current information on Public Housing Agencies (PHAs) and their Rental Voucher Programs.

Public Housing Physical Condition
HUD's Real Estate Assessment Program (REAP) subsidizes multifamily housing projects.

SEMAP Performance
HUD's Section Eight Management Information System (SEMAP) tracks the performance of housing agencies (PHAs) in providing rental assistance.

Department of the Interior

Name (click for metadata)

Federal Volunteer Conservation Corps
Extract of open volunteer positions for the Federal Volunteer Conservation Corps.

Human Caused Fire

Number of wildland fires and acres burned as a result of human causes, from 2001 through 2008 (updated)



Photograph by Jake Norton

DOI/BLM

Natural Resources

preceding a survey

local

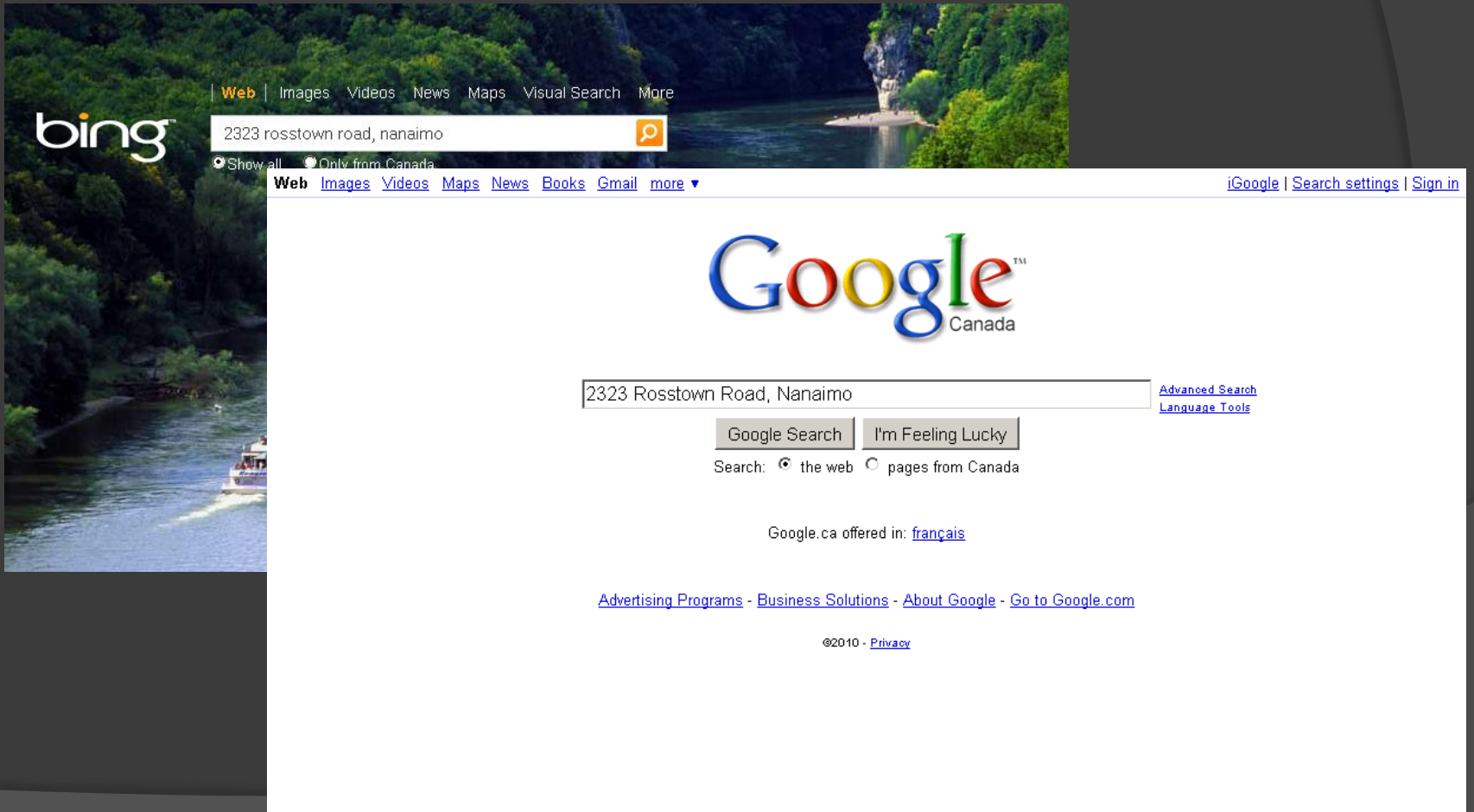
(ing). Affordable

local

nding). These

Support

Wouldn't it be nice if...



And see..

Web [Images](#) [Videos](#) [Maps](#) [News](#) [Books](#) [Gmail](#) [more](#) [Web History](#) | [Search settings](#) | [Sign in](#)

Google [Advanced Search](#)

Search: the web pages from Canada

Web [Show options...](#) Results 1 - 10 of about 2,030 for 2323 rosstown rd. (0.17 seconds)

2323 ROSSTOWN ROAD, Nanaimo, BC | Property Report (05536.130)
Address: **2323 ROSSTOWN ROAD, NANAIMO, BC CANADA. Map of 2323 ROSSTOWN ROAD, Nanaimo BC.** [Open in NanaimoMap](#) · [Open as KML \(Google Earth\)](#) ...
maps.nanaimo.ca/data/prop

2323 ROSSTOWN ROAD - PROPERTY REPORT



[Nanaimo Property](#)
2323 ROSSTOWN ROAD
05548.050, Property Report
maps.nanaimo.ca/data/prop


[Show more results](#)

[geothought: GeoWeb 2.0](#)
4 Aug 2009 ... To see an example
from Kevin Wiebe said "If a city
geothought.blogspot.com/2009/08/04-geo-web-2-0/

[Microsoft PowerPoint](#)
File Format: PDF/Adobe Acrobat
<title>**2323 Rosstown Rd, Nanaimo BC**
reports/property/2323%20Road
geowebconference.org/.../New-Projects

[Between the Poles: FOS](#)
25 Oct 2009 ... If you want to
www.w3.org/2005/Atom

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

GENERAL INFORMATION		PARCEL MAP
Address:	2323 ROSSTOWN ROAD, NANAIMO, BC	 Open in NanaimoMap Open as KML (Google Earth) Open in Google Maps Open in Bing Maps
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 SINGLE FAMILY RESIDENTIAL ZONE
Garbage Pick-Up	Route: D-3 Number of Cans Allowed: 2
Sewer Benefiting Area	YES
GIS Link	116707
Location	49.19552, -123.9979

ASSESSMENT DATA

1-10 of 12 results · [Advanced](#)

[Project Announced](#)
... enter "2323 Rosstown Road,
... click on the ...
[project-announced.html](#)

[Project Announced](#)
... enter "2323 Rosstown Road,
... click on the ...
[project-announced.html](#)

[Project Announced](#)
... enter "2323 Rosstown Road,
... click on the ...
[project-announced.html](#)

Searchable Raw Geospatial Data

Web Images Videos Maps News Books Gmail more ▾ Web History | Search settings | Sign in

Google Search [Advanced](#)

Search: the web pages from Canada

Web [Show options...](#) Result ALL RESULTS

2323 ROSSTOWN ROAD, Nanaimo, BC | Property Report (05536.130)
Address: 2323 ROSSTOWN ROAD, NANAIMO, BC CANADA. Map of 2323 ROSSTOWN ROAD, Nanaimo BC. Open in NanaimoMap · Open as KML (Google Earth) ...
maps.nanaimo.ca/data/prop

[Nanaimo Property](#)
2323 ROSSTOWN ROAD
05548.050, Property Report
maps.nanaimo.ca/data/prop

[Show more results](#)

[geothought: GeoWeb 2009](#)
4 Aug 2009 ... To see an example from Kevin Wiebe said "If a digital geothought.blogspot.com/2009/08/04/geo-web-2009-08-04.html"

[Microsoft PowerPoint](#)
File Format: PDF/Adobe Acrobat
<title>2323 Rosstown Rd, Nanaimo BC
reports/property/2323%20Rosstown%20Road%20Property%20Report
geowebconference.org/.../New%20Property%20Report%20-%202323%20Rosstown%20Road%20-%2005536.130

[Between the Poles: FOS](#)
25 Oct 2009 ... If you want to see a map of the property, click on the map icon in the top right corner of the page.

bing

Show all Only from Canada

ALL RESULTS 1-10 of 12 results

2323 ROSSTOWN ROAD, Nanaimo, BC | Property Report ...
Open as KML (Google Earth) Open in Google Maps Open in Bing Maps: Folio: 05536.130: Plan: 27484: Size: .29 ACRES: Legal Description: LOT 7, SECTION 18 AND 19, RANGE 7, MOUNTAIN DISTRICT. PLAN ...

SEARCH HISTORY
Now you can go back further with search history.

2323 ROSSTOWN ROAD - PROPERTY REPORT

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

GENERAL INFORMATION **PARCEL MAP**

Address:	2323 ROSSTOWN ROAD, NANAIMO, BC
Folio:	05536.130
Plan:	27484
Size:	.29 ACRES
Legal Description:	LOT 7, SECTION 18 AND 19, RANGE 7, MOUNTAIN DISTRICT, PLAN 27484

[Open in NanaimoMap](#)
[Open as KML \(Google Earth\)](#)
[Open in Google Maps](#)
[Open in Bing Maps](#)

EXTENDED INFORMATION

Zoning	RS-1 SINGLE FAMILY RESIDENTIAL ZONE
Garbage Pick-Up	Route: D-1 Number of Cans Allowed: 2
Sewer Benefiting Area	YES
GIS Link	116707
Location	49.19552, -123.9979

ASSESSMENT DATA ▾

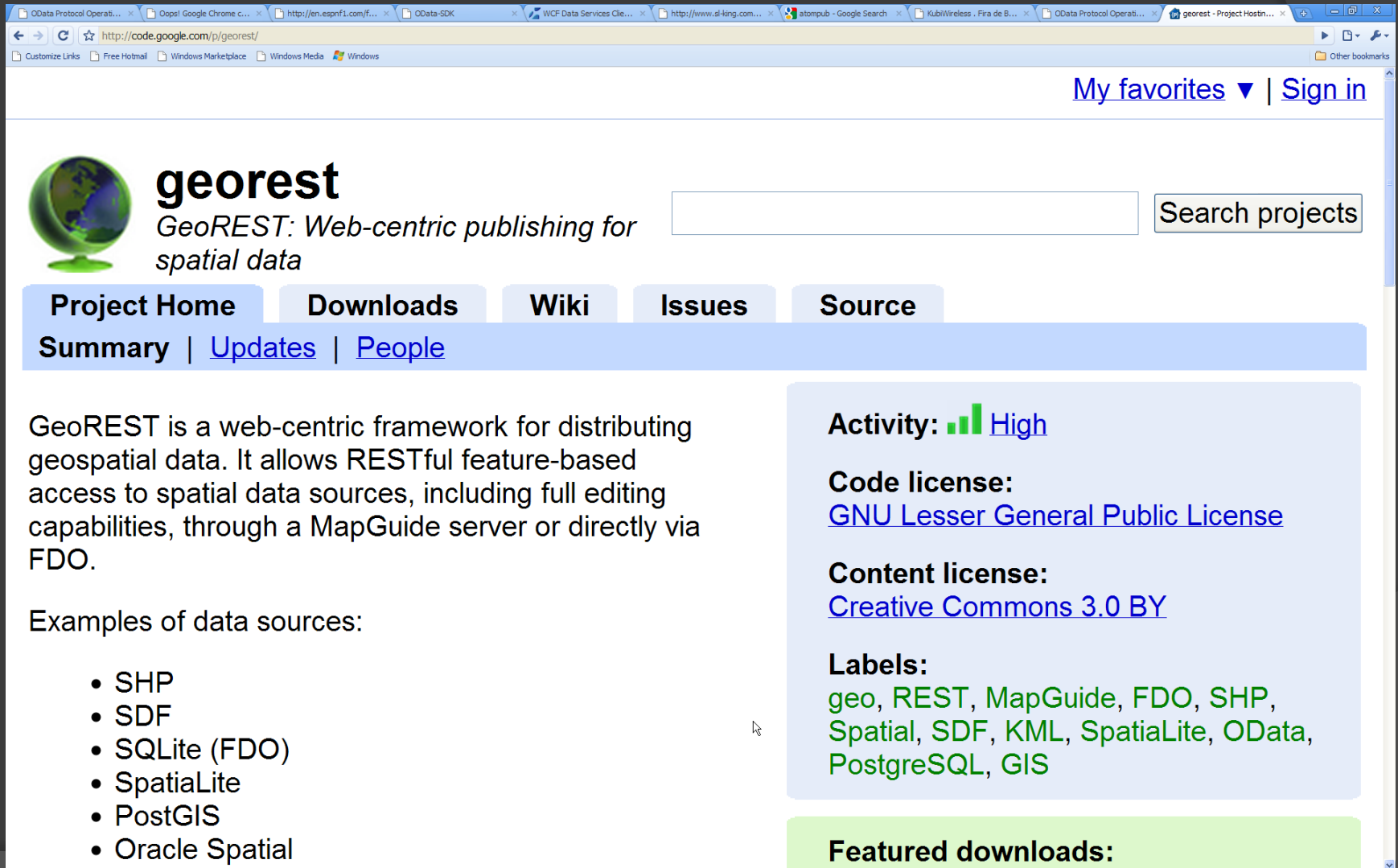
[Cached page](#)

xmlns:atom="http://www.w3.org/2005/Atom">
</name> <atom:author>
[Cached page](#)

[Source GeoREST Project Announced](#)
Spatial data is searchable, enter "2323 Rosstown Road" in the search engine, and then click on the ...
[g-open-source-georest-project-announced.html](#)


[BC | 1 | YellowPages](#) ...
... 130-2323 Boundary Road, Vancouver, BC,
[+Recovery/Nanaimo+BC](#) · [Cached page](#)

www.georest.org



The screenshot shows the georest.org website in a browser window. The browser's address bar displays the URL <http://code.google.com/p/georest/>. The page features a navigation menu with links for [Project Home](#), [Downloads](#), [Wiki](#), [Issues](#), and [Source](#). Below the navigation, there are links for [Summary](#), [Updates](#), and [People](#). The main content area includes a description of GeoREST as a web-centric framework for distributing geospatial data, a list of examples of data sources (SHP, SDF, SQLite (FDO), SpatiaLite, PostGIS, Oracle Spatial), and a sidebar with activity status (High), code license (GNU Lesser General Public License), content license (Creative Commons 3.0 BY), and labels (geo, REST, MapGuide, FDO, SHP, Spatial, SDF, KML, SpatiaLite, OData, PostgreSQL, GIS). A featured downloads section is also visible at the bottom.

[My favorites](#) ▼ | [Sign in](#)



georest

GeoREST: Web-centric publishing for spatial data

[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)
- SpatiaLite
- PostGIS
- Oracle Spatial

Activity:  [High](#)

Code license:

[GNU Lesser General Public License](#)

Content license:

[Creative Commons 3.0 BY](#)

Labels:

[geo](#), [REST](#), [MapGuide](#), [FDO](#), [SHP](#), [Spatial](#), [SDF](#), [KML](#), [SpatiaLite](#), [OData](#), [PostgreSQL](#), [GIS](#)

Featured downloads:

ODATA & GEOREST

Open Data Protocol

“The **Open Data Protocol (OData)** is a Web protocol for querying and updating data that provides a way to unlock your data and free it from silos that exist in applications today.”

www.odata.org

ODATA

HTTP

Atom

AtomPUB

JSON

HTTP://.../vancouver/libraries

```
<feed xmlns=http://www.w3.org/2005/Atom ... >
  <title type="text">libraries</title>
  <id>http://.../vancouver/libraries(10)</id>
  <title type="text"></title>
  <entry>
<content type="application/xml">
  <m:properties>
    <d:library_name>Britannia</d:library_name>
    <d:latitude m:type="Edm.Double">49.2756486</d:latitude>
    <d:longitude m:type="Edm.Double">-123.0737717</d:longitude>
    <d:address>1661 Napier St</d:address>
  </m:properties>
.....</entry>
<entry>...</entry></feed>
```

HTTP://.../vancouver/libraries
?\$format=JSON

```
{"d":[{"library_name":"Britannia","latitude":"49.2756486","longitude":"-123.0737717","address":"1661 Napier St"}  
, {...}] }
```

HTTP Header

accept: application/json

OData Example

Live OData Service from Vancouver

OData Producers

SharePoint 2010, SQL Azure,
IBM WebSphere, ...

GeoREST

OData Live Services

Netflix, Open Government Data Initiative
(OGDI), Stack Overflow, Vancouver,
Edmonton, ...

City of Nanaimo

OData Consumers

Browsers, Odata Explorer, Excel 2010,...

FDO Provider

OData Client Libraries

Javascript, PHP, Java, .NET, iPhone, ...

C++

ODATA Operations

Filtering

Ordering

Paging

Projection*

CRUD

Service Operations

Batch Requests

ODATA Filtering

[http://www.sl-king.com/rest/odata.svc/towns\(1\)](http://www.sl-king.com/rest/odata.svc/towns(1))

[http://www.sl-king.com/rest/odata.svc/towns
?\\$filter=Peoples gt 500000](http://www.sl-king.com/rest/odata.svc/towns?$filter=Peoples gt 500000)

[http://www.sl-king.com/rest/odata.svc/towns
?\\$filter=substringof\('little',Name\) eq true and
Peoples gt 100000](http://www.sl-king.com/rest/odata.svc/towns?$filter=substringof('little',Name) eq true and Peoples gt 100000)

Ordering Paging

[\\$orderby=Name asc](http://www.sl-king.com/rest/odata.svc/towns)

[\\$top=50&\\$skip=100](http://www.sl-king.com/rest/odata.svc/towns)

[\\$skiptoken](#)

CRUD Create Update Delete

HTTP POST PUT DELETE

Submit Atom Entry

HTTP Response

POST /OData/OData.svc/Categories HTTP/1.1

accept: application/atom+xml

content-type: application/atom+xml

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<Entry xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
  xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
  xmlns="http://www.w3.org/2005/Atom">
  <title type="text"></title>
  <category term="DataServiceProviderDemo.Category"
    scheme="http://schemas.microsoft.com/ado/2007/08/dataservices/scheme" />
  <content type="application/xml">
    <m:properties>
      <d:ID>10</d:ID>
      <d:Name>Clothing</d:Name>
    </m:properties>
  </content>
</Entry>
```

HTTP/1.1 201 Created

Location: [http://services.odata.org/OData/OData.svc/Categories\(10\)](http://services.odata.org/OData/OData.svc/Categories(10))

Content-Type: application/atom+xml;charset=utf-8

```
<Entry xml:base="http://services.odata.org/OData/OData.svc/"
  xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
  xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
  xmlns="http://www.w3.org/2005/Atom">
  <id>http://services.odata.org/OData/OData.svc/Categories(10)</id>
  <title type="text"></title>
  <updated>2010-02-27T21:39:54Z</updated>
  <Link rel="edit" title="Category" href="Categories(10)" />
  <category term="DataServiceProviderDemo.Category" scheme="..." />
  <content type="application/xml">
    <m:properties>
      <d:ID m:type="Edm.Int32">10</d:ID>
      <d:Name>Clothing</d:Name>
    </m:properties>
  </content>
</Entry>
```

OData Client Libraries

Javascript

PHP

Java

Windows Phone 7 Series

iPhone (Objective C)

.NET

more coming in OS

.NET

```
Uri svcUri = new
Uri("http://localhost:12345/Northwind.svc");

context = new NorthwindEntities(svcUri);

// Define a LINQ query that returns Orders and
// Order_Details for a specific customer.
var ordersQuery = from o in
context.Orders.Expand("Order_Details") where
o.Customer.CustomerID == customerId select o;
```

Javascript

```
var exampleService = new Sys.Data.OpenDataServiceProxy("/northwind.svc");
```

```
exampleService.query("/Customers", cbSuccess, cbFailure, userContext);
```

```
exampleService.query("/Customers('ALFKI')/Orders?$filter=ShippedDate ge '1998-01-01'", cbSuccess, cbFailure, userContext);
```


GeoREST & ODATA

Enables OData service
on your spatial data

OData functionality

Extends OData with geo

GeoREST & ODATA

Geometry as GML or GeoJSON

Spatial Operations
&bbox=6.5,40,11.5,44
&filter=INTERSECT WITH
GeometryFromWKT(...)

GeoREST & OData

Apache CGI, ISAPI,
standalone HTTP Server

OData collections from spatial data
.shp, PostGIS, SpatiaLite, Oracle,
SQL Server... FDO

Resources are defined .cfg files
(OData collections)

```
<RestConfig> <Data>
  <Resource uri part="towns">
    <Source type="FDO">
      <Provider>King.Spatialite</Provider>
      <ConnectionString>File=../data/SpatialiteDemo/test-2.3.sqlite</ConnectionString>
      <FeatureClass>Default:Towns</FeatureClass>
    </Source>
  <Representation renderer="OData" >
    <Method name="GET" defaultcount="500" maxcount="600" />
    <FeedOverride> <Title>Italian Towns for the Spatialite Demo Data</Title>
    <Author>
      <Name>GeoREST Project</Name>
      <Uri>http://www.georest.org/</Uri>
      <Email>info@georest.org</Email></Author>
    </FeedOverride><EntryOverride>
      <Title type="Property">Name</Title>
    </EntryOverride>
  </Representation>
</Data></RestConfig>
```

SpatiaLite FDO provider

new FDO provider King.SpatiaLite

native SpatiaLite support

run SpatiaLite, SQLite SQL queries

spatial indexes, projection, etc..

www.sl-king.com/fdospatialite