What is OpenLayers?
Library for adding maps to web pages.
OpenLayers does...

provide a slippy interface for map tiles,
OpenLayers does...

render vector features client side,
OpenLayers does...

deal in many standard and commonly used protocols & formats,
OpenLayers does...

and much, much more.
OpenLayers doesn't...

aim to be a general purpose widget framework,
OpenLayers doesn't... read from or write directly to your filesystem,
OpenLayers doesn't...

or make requests to other origins.
OpenLayers History

In the beginning...
OpenLayers History

http://vimeo.com/7126247
Layers
Raster Layers

- **Browser** requests many map tiles from **Server**.
- **Server** renders map data and returns images (e.g., PNG).
- **Browser** assembles a grid of tiles that the user can drag around.
Vector Layers

- Browser requests a batch of features from the server.
- Server parses the query and fetches data.
- Browser parses features from the response and renders them.
Vector Layers
Vector Layers

Orange, huh?
We've Got Style

```
var symbolizer = {
    pointRadius: 5,
    fillColor: "olive",
    fillOpacity: 0.75,
    strokeColor: "white",
    strokeOpacity: 0.5,
    strokeWidth: 1
};
```
We've Got Style
We've Got Style

How about different symbolizers for different points?
Rule Based Styling

```javascript
var aussie = new OpenLayers.Rule({
  filter: new OpenLayers.Filter.Comparison(
    {type: OpenLayers.Filter.Comparison.LIKE,
     property: "location",
     value: "Australia"},
   )
   symbolizer: {
     fillColor: "red"
   }
});
```
Rule Based Styling

```javascript
var other = new OpenLayers.Rule({
  elseFilter: true,
  symbolizer: {
    fillColor: "olive"
  }
});
```
Rule Based Styling

```javascript
var style = new OpenLayers.Style({
  strokeColor: "white",
  strokeWidth: 1,
  pointRadius: 5
});

style.addRules(["aussie", "other"],);
```
Rule Based Styling
Quick Style Overview

A vector layer gets a style map (OpenLayers.StyleMap).

The style map maintains a relationship between render intent and style (OpenLayers.Style).
Quick Style Overview

A style object (OpenLayers.Style) has a base symbolizer and any number of rules (OpenLayers.Rule).

Rules have a symbolizer (object literal) and may have a filter (OpenLayers.Filter) and scale constraints.
Vector
Formats, Protocols, and Strategies

Time for a metaphor.
Consider postal delivery.
You choose a language for your letter based on what your recipient can understand.

Let's call this your "format."
These things make up the "protocol."
Finally, you decide when to go to the mail box. If you have mail to pick up, you also decide what to do with the stuff you receive.

These are your "strategies."
Vector Behavior

A format (OpenLayers.Format) is used to serialize and deserialize vector feature data.

A protocol (OpenLayers.Protocol) manages communication with the data source.

Strategies (OpenLayers.Strategy) determine how to initiate communication and what to do with the results.
var presenters = new OpenLayers.Layer.Vector(
    "Presenters",
    {
        strategies: [
            new OpenLayers.Strategy.Fixed()
        ],
        protocol: new OpenLayers.Protocol.HTTP({
            url: "path/to/presenters.json",
            format: new OpenLayers.Format.GeoJSON()
        }),
        styleMap: new OpenLayers.StyleMap(style)
    }
);
The Cluster Strategy

```javascript
var presenters = new OpenLayers.Layer.Vector(
  "Presenters",
  {
    strategies: [
      new OpenLayers.Strategy.Fixed(),
      new OpenLayers.Strategy.Cluster()
    ],
    protocol: new OpenLayers.Protocol.HTTP({
      url: "path/to/presenters.json",
      format: new OpenLayers.Format.GeoJSON()
    }),
    styleMap: new OpenLayers.StyleMap(style)
  }
);
```
The Cluster Strategy
The WFS Protocol

```javascript
var cities = new OpenLayers.Layer.Vector("Cities", {
  strategies: [
    new OpenLayers.Strategy.BBOX(),
    new OpenLayers.Strategy.Cluster()
  ],
  protocol: new OpenLayers.Protocol.WFS({
    url: "/geoserver/wfs",
    featureType: "cities",
    featureNS: "http://opengeo.org/#world"
  }),
  styleMap: new OpenLayers.StyleMap(style)
});
```
The WFS Protocol
Demo Time
Credits

Thanks to the community of OpenLayers developers and users for making this a great project.

Thanks to OpenGeo for supporting open source development.


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http://tinyurl.com/vector-mayhem