Extending the Google Maps API for Event Animation Mashups

Robert E. Roth | reroth@psu.edu
Kevin S. Ross | kevin.ross@psu.edu

GeoVISTA Center

Who here has made a map mashup?

Who here has made a map mashup?

Who here has made a mashup that includes ***data-driven*** animation?

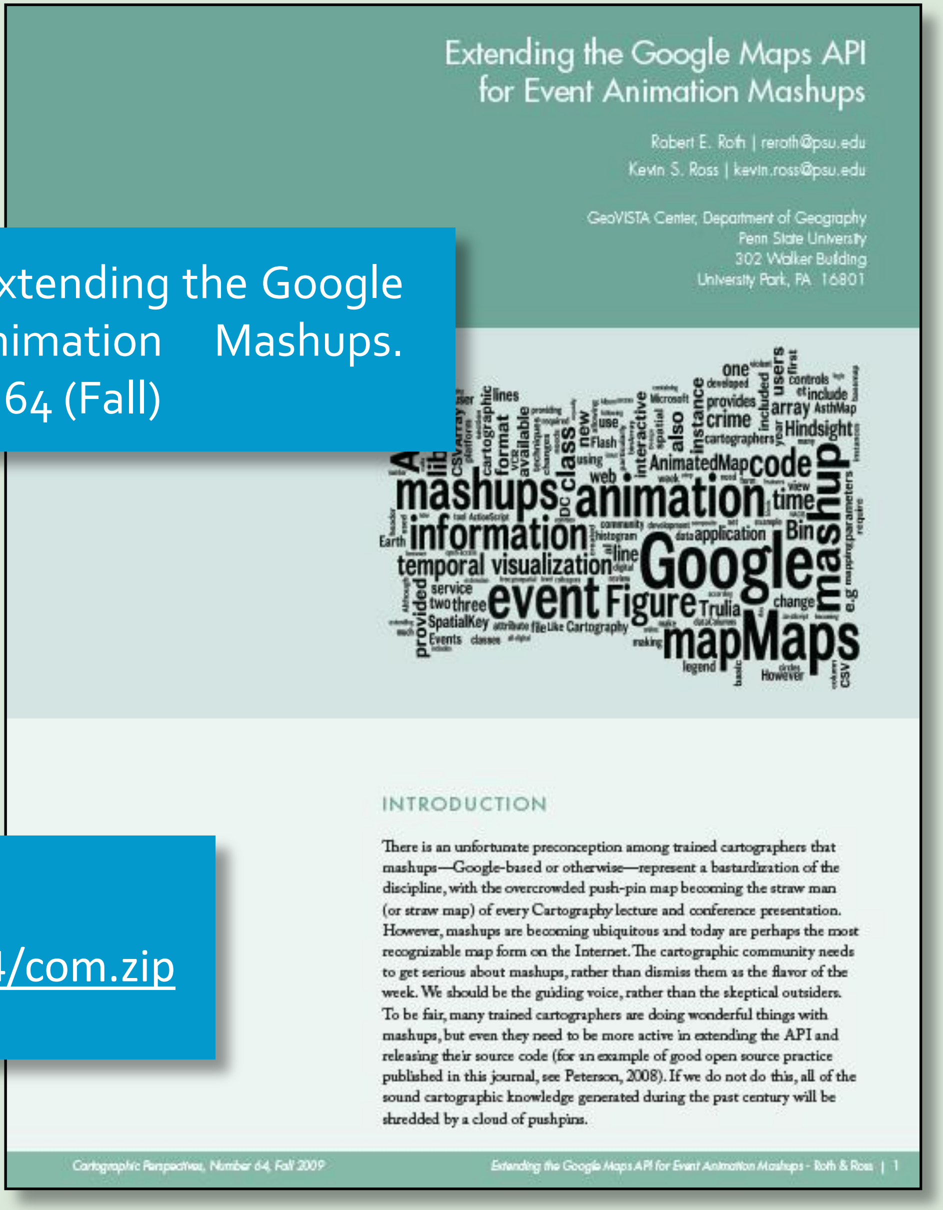
Making data-driven animations is ***really hard***…

…so let’s make it easier!

Roth RE and KS Ross. 2009. Extending the Google Maps API for Event Animation Mashups. *Cartographic Perspectives*, No. 64 (Fall)

Download at:
http://www.nacis.org/CP/CP64/com.zip

.



Extending the Google Maps API for Event Animation Mashups

Robert E. Roth | reroth@psu.edu
Kevin S. Ross | kevin.ross@psu.edu

GeoVISTA Center, Department of Geography
Penn State University
302 Walker Building
University Park, PA 16801

INTRODUCTION

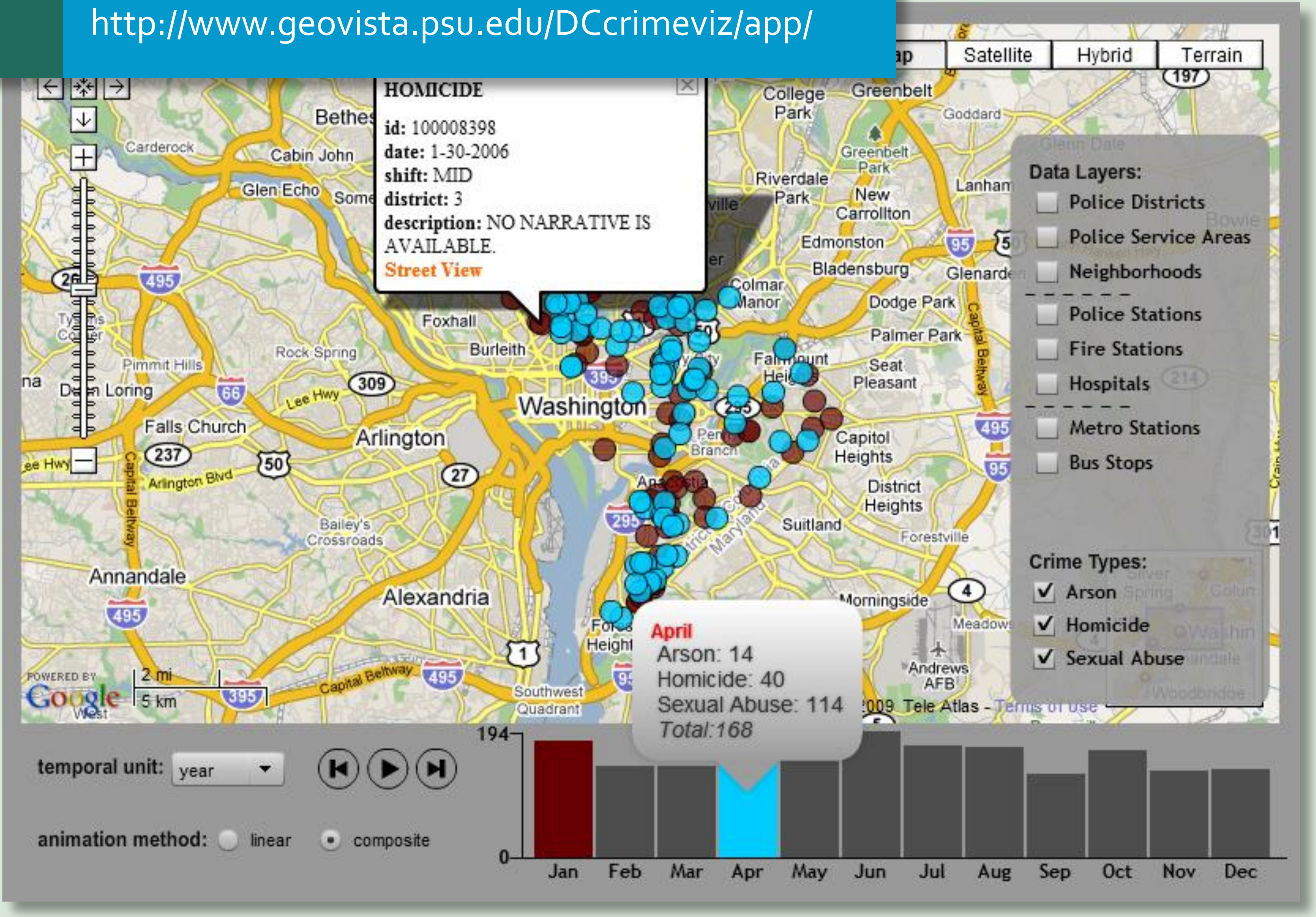
There is an unfortunate preconception among trained cartographers that mashups—Google-based or otherwise—represent a bastardization of the discipline, with the overcrowded push-pin map becoming the straw man (or straw map) of every Cartography lecture and conference presentation. However, mashups are becoming ubiquitous and today are perhaps the most recognizable map form on the Internet. The cartographic community needs to get serious about mashups, rather than dismiss them as the flavor of the week. We should be the guiding voice, rather than the skeptical outsiders. To be fair, many trained cartographers are doing wonderful things with mashups, but even they need to be more active in extending the API and releasing their source code (for an example of good open source practice published in this journal, see Peterson, 2008). If we do not do this, all of the sound cartographic knowledge generated during the past century will be shredded by a cloud of pushpins.

Cartographic Perspectives, Number 64, Fall 2009

Extending the Google Maps API for Event Animation Mashups - Roth & Ross | 1

DC CrimeViz

http://www.geovista.psu.edu/DCcrimeviz/app/



HOMICIDE

id: 100008398
date: 1-30-2006
shift: MID
district: 3
description: NO NARRATIVE IS AVAILABLE.
Street View

April
Arson: 14
Homicide: 40
Sexual Abuse: 114
Total:168

Data Layers:
- □ Police Districts
- □ Police Service Areas
- □ Neighborhoods
- □ Police Stations
- □ Fire Stations
- □ Hospitals
- □ Metro Stations
- □ Bus Stops

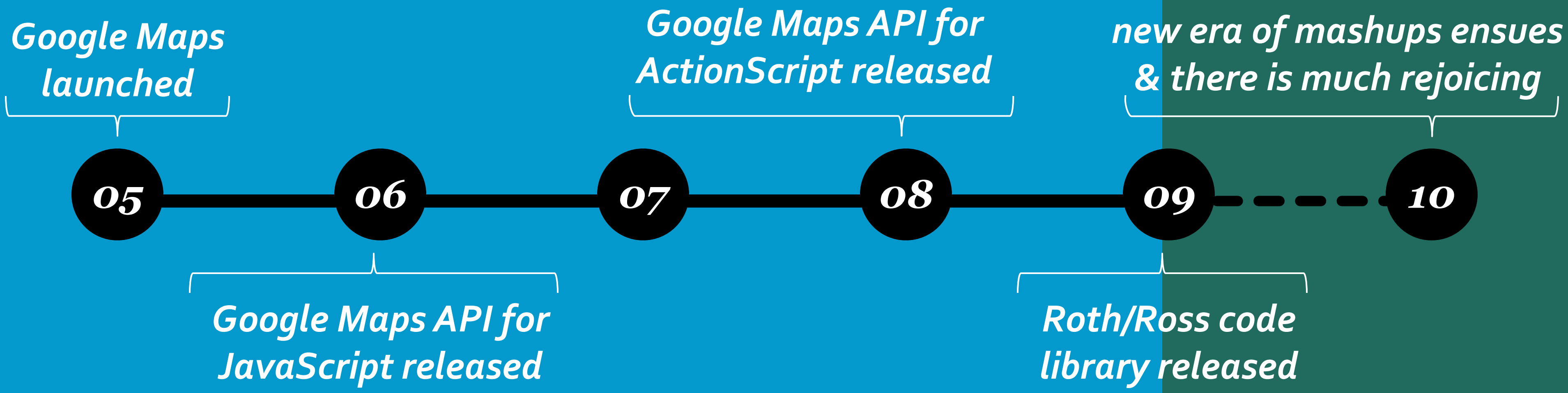
Crime Types:
- ✓ Arson
- ✓ Homicide
- ✓ Sexual Abuse

temporal unit: year

animation method: ○ linear ● composite

Google Maps Web Service

an selective history



Google Maps launched

Google Maps API for JavaScript released

Google Maps API for ActionScript released

Roth/Ross code library released

new era of mashups ensues & there is much rejoicing

1. existential change: appearance and disappearance (events)

2. changes in spatial properties: movement, expansion/contraction, shape change

3. changes in thematic properties: changes in the attribute value

Andrienko et al. (2003)

TUTORIAL

Extending the Google Maps API for Event Animation Mashups: Tutorial

Robert E. Roth & Kevin S. Ross

OVERVIEW

The following tutorial provides step-by-step instructions for using our library extending the Google Maps API for Flash to include event animation. We have written the tutorial in a way that does not require any experience programming with ActionScript3 (AS3) or with the Google Maps API for Flash. For the most part, the code we provide in the following code banks can be copied and pasted directly, only modifying the values of the input parameters according to your particular mapping context. Operational knowledge of AS3 and the API is needed to modify or extend our classes if custom functionality is needed. The Google Maps API for Flash reference is available here:

http://code.google.com/apis/maps/documentation/flash/reference.html

This tutorial is an instructional material accompanying the following technical paper: Roth RE and KS Ross. 2009. Extending the Google Maps API for Event Animation Mashups. *Cartographic Perspectives.*

Requisite background theory on mashups, APIs, and event animation are included in the article.

SETTING UP THE GOOGLE MAPS API FOR FLASH

INSTALL FLASH

Flash is a proprietary web authoring environment produced by Adobe as part of the Creative Suite. The Google Maps API works with any development environment using AS3 (Flash CS3 or sooner and all versions of Flex). The most recent version (CS4) is available for a 30-day free trial at:

http://www.adobe.com/downloads/

Figure 1 provides an annotated overview of the various interface panels of the Flash CS4 authoring environment. Depending on the panel configuration left by the last user of the application you may see a different set of panels (e.g., some present or not present) or these panels may be in different locations on the interface. Flash panels are interactive; they can be dragged around the application or they can be closed completely. If you do not see a panel referenced in this tutorial, you can activate it using the Window Tab in the Top Menu Bar. Flash CS4 also allows you to tear-away and move all panels to a preferred configuration.

12 | Extending the Google Maps API for Event Animation Mashups: Tutorial - Roth & Ross

Cartographic Perspectives, Number 64, Fall 2009

1. *Setting up the Google Maps API for Flash*
2. *Formatting the CSV File*
3. *Applying the Code Library*

1. ***CSVArray.as:*** A class for ingesting a CSV file at run-time and converting it into a usable format

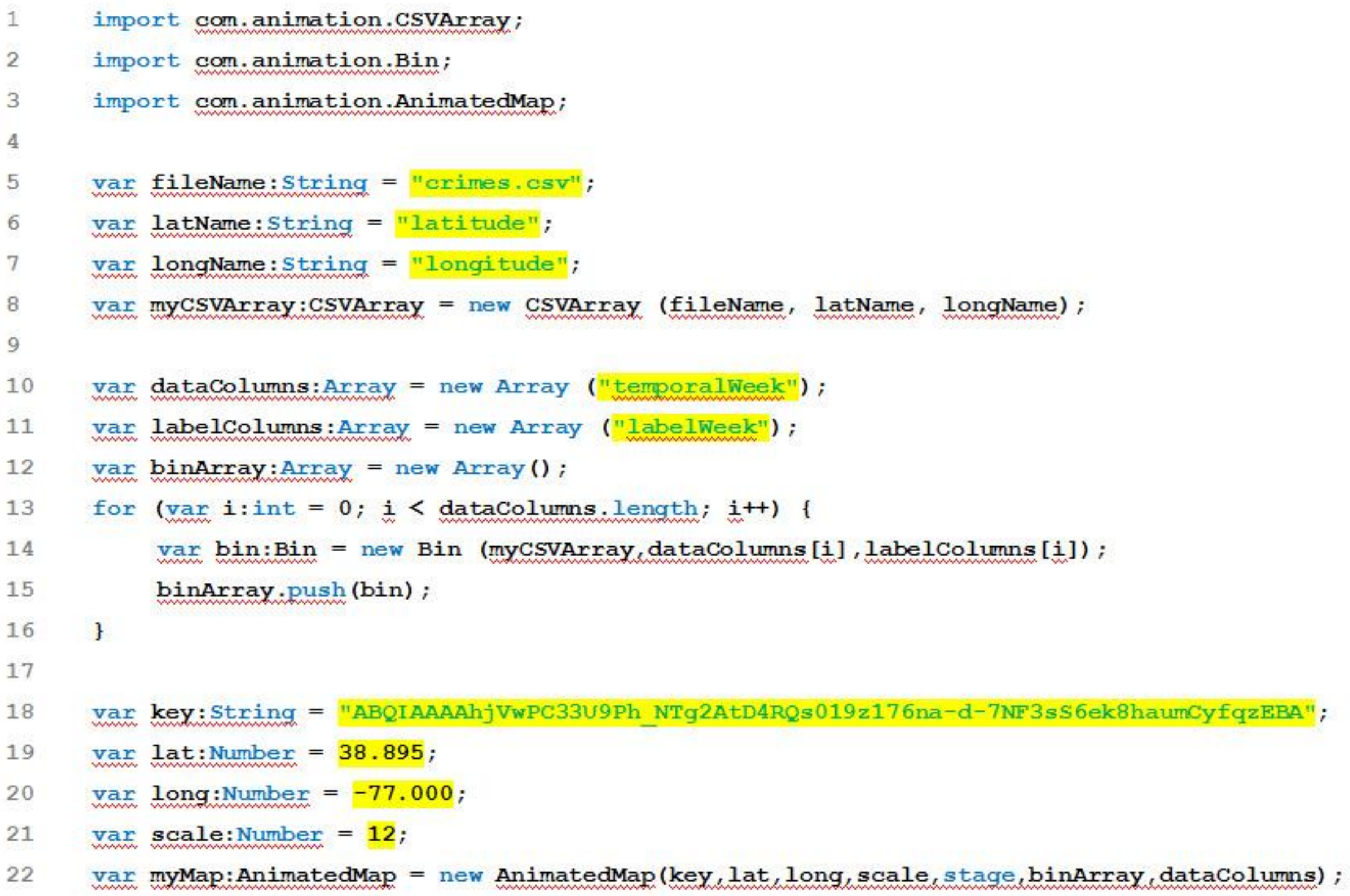
2. ***Bin.as:*** A class for partitioning the entries in the CSV file according to an attribute, producing a set of bins (i.e., time slices) for the animation

3. ***AnimatedMap.as:*** A class for loading the Google Maps map service, setting the layout, and instantiating the TemporalControls and TemporalLegend classes

4. ***TemporalControls.as:*** A class for drawing and programming the VCR controls and animation ComboBox selection

5. ***TemporalLegend.as:*** A class for drawing and programming the interactive temporal legend

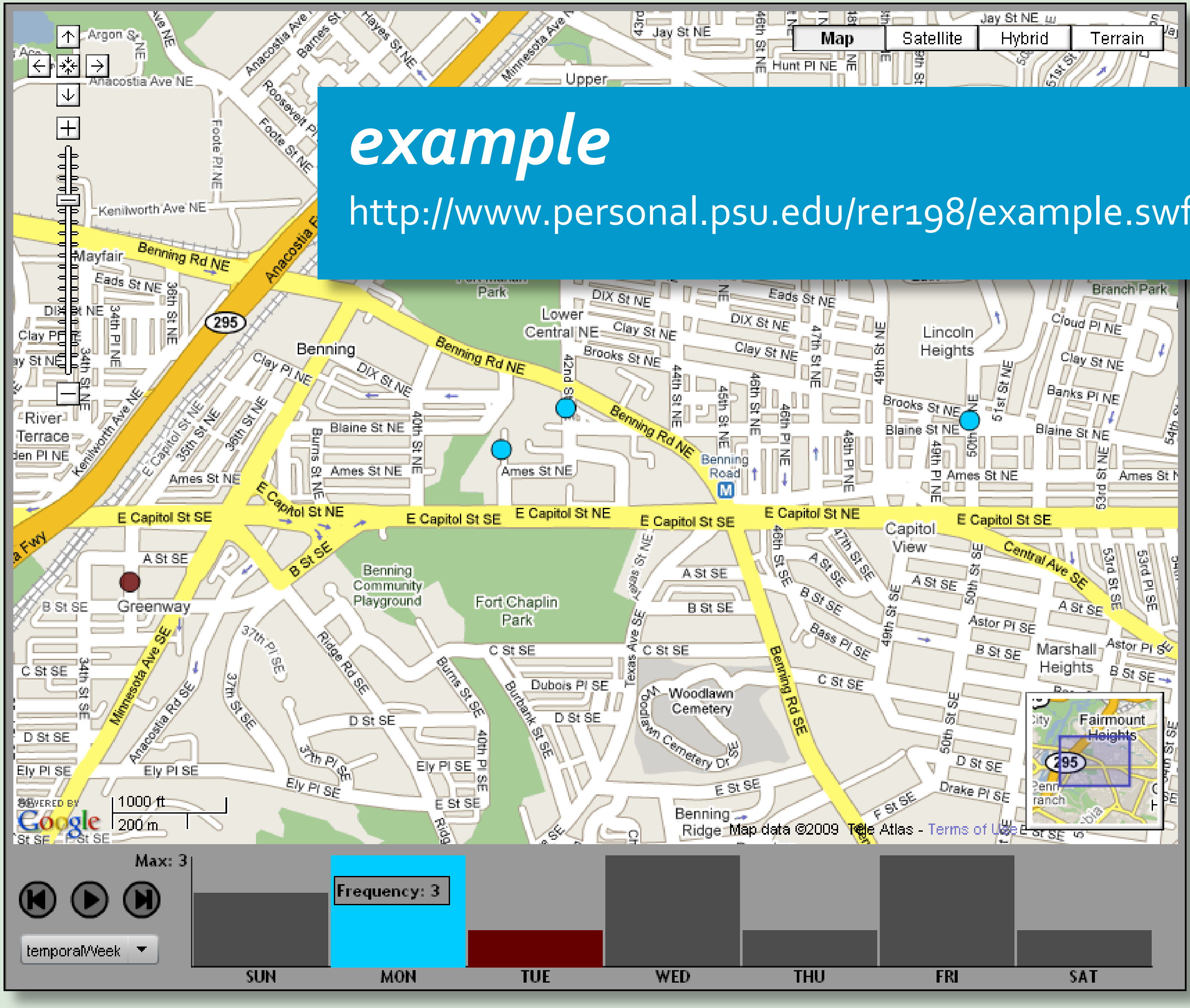
6. ***ToolTip.as:*** A class for generating information windows when rolling over the bars in the temporal legend



```
import com.animation.CSVArray;
import com.animation.Bin;
import com.animation.AnimatedMap;

var fileName:String = "crimes.csv";
var latName:String = "latitude";
var longName:String = "longitude";
var myCSVArray:CSVArray = new CSVArray (fileName, latName, longName);

var dataColumns:Array = new Array ("temporalWeek");
var labelColumns:Array = new Array ("labelWeek");
var binArray:Array = new Array();
for (var i:int = 0; i < dataColumns.length; i++) {
    var bin:Bin = new Bin (myCSVArray,dataColumns[i],labelColumns[i]);
    binArray.push(bin);
}

var key:String = "ABQIAAAAhjVwPC33U9Ph_NTg2AtD4RQs019z176na-d-7NF3sS6ek8haumCyfqzEBA";
var lat:Number = 38.895;
var long:Number = -77.000;
var scale:Number = 12;
var myMap:AnimatedMap = new AnimatedMap(key,lat,long,scale,stage,binArray,dataColumns);
```

example

http://www.personal.psu.edu/rer198/example.swf



Links

1. http://www.nacis.org/CP/CP64/com.zip
2. http://www.geovista.psu.edu/DCcrimeviz/
3. http://www.personal.psu.edu/rer198/

Thanks!
Rob