

CityTracking

PROJECT	GRANTEE	INNOVATION	GRANT
CityTracking	Stamen Design, LLC	A web service and open source tools to display public data in easy-to-understand, highly visual ways	\$412,000

Federal, state, and municipal governments are publicly releasing previously unavailable datasets. There has not been a corresponding increase, however, in the tools that make that data legible to the public. CityTracking is a project of Stamen Design, a San Francisco-based design and technology studio, which aimed to create open-source toolsets to present and host urban information in a manner that was easy for technically adept journalists, cities, and the public to use. The project created web-based tools which would allow users to create highly polished, easily sharable maps from public data. Ultimately, the project wants data visualization to become part of the core of local information offered by cities, civic groups, and local businesses.

THE INNOVATION

CityTracking is a public project comprised of open-source toolsets for presenting digital data about cities that journalists and the public can easily access and use to create highly polished maps. Although there are a number of other web-based platforms for creating maps (such as Google Maps, OpenLayers, Polymaps, and Tableau), the project's main innovation was to raise the bar on the visual appeal of easily creatable maps, turning map making into an aesthetic and cultural exercise. Through CityTracking, Stamen designed unique and aesthetically pleasing cartographic styles based on data from Open Street Map. CityTracking's cartographic styles include:

- **Toner:** A high contrast, minimalist mapping style which uses only black and white to create a basemap.
- **Terrain:** A mapping style which includes shaded hills, larger text, and green for park

areas as an open-source alternative to the terrain style of Google Maps.

- **Watercolor:** This style which incorporates colorful textures that appear to be hand-painted.
- **Burning Map:** The burning map style uses fiery animations to represent streets.
- **Trees, Cabs, and Crime:** A mapping style only available within San Francisco that represents the datasets for tree locations, taxi cab GPS positions, and crime reports in colorful halftones.

IMPLEMENTATION

Stamen Design won Knight News Challenge funding to create tools to help make data visualization part of the core of local information offered by cities, civic groups, and local businesses. The goal was to change the way people view, talk about, and use digital city services. At the outset, CityTracking planned to market its tools to cities, journalists, and the public in San Francisco, Oakland, and Berkeley, and then expand to other cities. As part of the project, CityTracking also planned to host an annual Data Visualization for Cities Conference which would build interest in CityTracking's tools and explore the current state of the field. The project also planned to regularly add code to CityTracking's open source code base through GitHub to allow other groups and developers to use its code to build server-side data visualization programs.

The project released the following open source toolsets, among others, through City Tracking:

- **Dotspotting:** Dotspotting is a hosted web service that allows cities and citizens to

upload geographic information, host it, and embed and export it in various ways. The project was made available to the public on December 7, 2010 and formally launched on June 17. Cities including San Francisco, New Haven, and Los Angeles used Dotspotting to map a variety of their urban datasets on crime, vehicle crashes, and the locations of prisons. The tool allows users to place a variety of different types and colors of dots on a map.

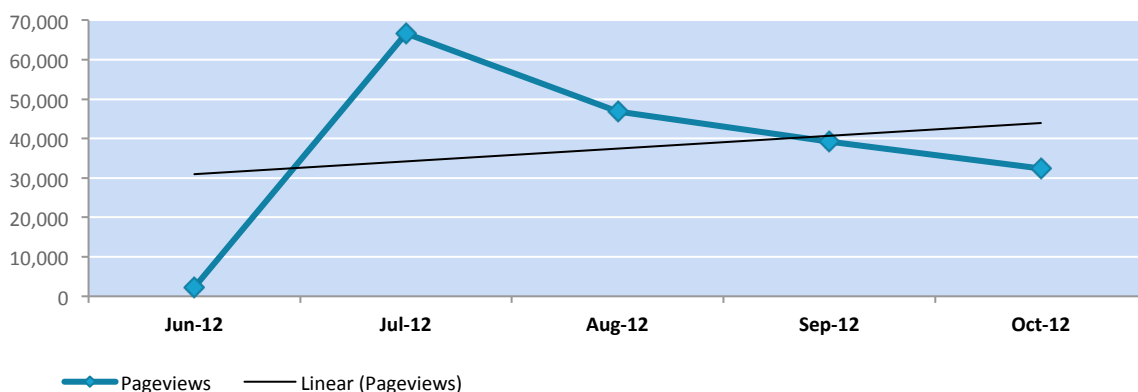
- **Toner:** CityTracking released a second open-source tool, Toner, to the public on June 29, 2011. Toner is the underlying code component of the distinctive black-and-white mapping style used in Dotspotting.
- **Flamework:** Flamework is an open source framework for web applications that CityTracking created for Dotspotting. Flamework continues to be actively developed as a part of the Dotspotting project, and has been used in a number of Stamen Design's commercial projects including work for MapQuest.
- **Tile Farm:** CityTracking spent the majority of its effort on Tile Farm, available at <http://maps.stamen.com>. Tile Farm is an open source tile generating engine which provides users with a browsable, embeddable, and otherwise immediately usable map of the whole world which can be used in Google Maps, Modest Maps, and other mapping APIs without having to

download OpenStreetMap or needing to work with servers and technical code.

After publically releasing Dotspotting, CityTracking realized that users expressed more interest in the tool's background maps than in its ability to put dots on a map. CityTracking responded by making the code for its Toner style available for download and by creating Tile Farm, the open-source map of the world which can be used to style and download highly polished street-level map tiles. CityTracking hosted its inaugural Data Visualization for Cities conference at Stamen's headquarters in San Francisco's Mission District. The conference gathered over 40 city officials, data visualization experts, and people working in tech. It featured a mix of talks by Stamen personnel demonstrating their work and panel discussions and workshops in which city employees and data visualization practitioners shared their experiences.

Despite the interest the conference generated in CityTracking's tools, marketing proved to be the largest challenge for the project and CityTracking struggled to find the capacity on its 12-person team to provide effective outreach and training to potential users. Without a team member in charge of marketing and publicity, the project heavily relied on industry speaking engagements and Stamen's blog posts and tweets to build awareness and adoption of its tools. CityTracking also found that while it primarily aimed to reach journalists and the

Pageviews of Maps.Stamen.com



public, the majority of its users were the developers and designers working for journalists and cities.

REACH AND OUTCOMES

CityTracking experienced less adoption during its grant period than the project team had hoped but has nonetheless made an impact, providing tools to help people gather cities' data and make that data legible through mapping and visualization. The number of embedded maps created using the project's first mapping application, Dotspotting, is unavailable, but the average monthly traffic for unique visitors to Dotspotting's website shows an average of 810 unique visitors a month for 2011, and 749 unique visitors a month for 2012. The use of maps.stamen.com is significantly higher, with a total of 116,579 embeds between its creation and November 2012.

As noted above, CityTracking found that the majority of its users were developers and designers working for journalists and cities. A number of cities across the United States have used CityTracking, including San Francisco, Oakland, Berkeley, Los Angeles, and New Haven. The state government of California and the national government of Bosnia have used CityTracking as well. The project's blog provides several examples of how individuals are adapting and using their maps in creative ways: using watercolor maps as art, depicting maps on sneakers, mapping health inspections in Atlanta and wildfires in Colorado. CityTracking also noted the positive, enthusiastic response it

received from cities such as San Francisco and its mayor's Office of Economic Development.

An important goal of CityTracking was to build an open source code base which would allow other groups and developers to use its code to build server-side data visualization programs. From July to September 2011, there were a total of 11 public data repositories and 6 unique contributors to CityTracking's code on GitHub. From September 2011 to July 2012, these numbers increased only slightly with 15 public data repositories and 10 unique contributors. By August 2012, CityTracking's code was forked 341 times, 558 people had identified bugs, and 837 people had contributed changes that were incorporated into CityTracking's code. Both CityTracking and Dotspotting are being closely watched by influential members of the open source community on GitHub.

CityTracking has experienced considerable growth in the two years following its Knight News Challenge grant period, gaining hundreds of thousands of users and averaging over 5,000 embeds per month. The project team attributed this growth to their sustained promotion efforts and their tools' ease of use.

Embeds from Maps.stamen.com

Cartographic Style	Number of Embeds
Watercolor	63,686
Toner	42,620
Toner-labels	8,262
Terrain	1,409
Toner-lines	373
Toner Lite	229
Total embeds	116,579