

StEM: Open Source Mapping + Environmental Stewardship

Statement of Interest

This design project identifies the largest and most visible non-human organisms in the urban environment – street trees – as critical entry points for citizen engagement with ecological health. Street trees provide New York City with a long list of ecological and economic services. They filter pollution from the atmosphere, soak up stormwater before it can overwhelm sewage treatment plants, and shade buildings and sidewalks to reduce energy consumption. An established stand of curbside trees can increase property values and entice shoppers to linger on commercial streets. For many city dwellers, street trees are the only trees they're likely to encounter in their day-to-day, and function as shorthand for "nature" itself.

Yet despite thousands of potentially aware citizens walking past these trees daily, they suffer from systematic neglect. Some estimates suggest that at least thirty percent of young trees die within five years of being planted. Chronic shortfalls in municipal budgets limit the resources available for professional street tree stewardship. As a result, New York City relies on thousands of volunteer stewards to help water, prune, and protect the urban forest.

This design project provides tools and methods for engaging distributed citizen action in the management of our urban environment, starting with street trees and their soil beds. Most of NYC's stewards do their work blindly, unaware of the efforts that neighbors are contributing to maintaining a community's street trees. They have few tools available to manage their volunteer work and their disconnectedness results in missed opportunities for collaboration on larger, more complex stewardship projects. They need to be able to see where stewardship is concentrated – to avoid duplicating efforts and to refocus their energies in neglected patches of the urban forest.

To summarize the challenges that our design project is responding to, stewards need tools to help them track their individual efforts, see the work undertaken by the rest of the stewardship community, and connect with other stewards in their neighborhoods. We believe that the recent emergence of low-cost, web-based, open source technologies provides the raw materials for developing the tools that stewards are looking for. Crafting these raw materials into useful tools will involve a process that William McDonough describes as "the manifestation of human intention" – the process of design.

Project Proposal

are co-founders of StEM, an effort to design and develop an accurate, detailed, and interactive web-based interface to New York City's street trees. StEM has partnered with OpenGeo to develop a beta version of a map and underlying database that would allow street tree stewards to track their work, see the work of other stewards, and connect with neighboring volunteers to launch community-wide tree care projects.

Funding from the Kalil Fellowship would provide us with the resources to refine the existing beta version of the StEM map. Specific deliverables would include:

- Integration of the current map [see www.stemproject.org] with a content management system to support individual user "profiles" for tracking individual acts of stewardship;
- Improved user experience and more engaging site layout and design to simplify the process of tracking stewardship, seeing work histories, and connecting with stewards;
- A prototype for a scannable tree ID tag to be deployed through the urban forest to enable the general public to participate as they walk down the street.

In addition to designing and developing the StEM map, we have been actively engaged in collecting new data on street tree locations, tree bed dimensions, tree species, and other variables. Funding from the Kalil Fellowship would provide us with the resources to:

- Collect data on street trees in three of New York City's community districts for immediate inclusion on the web-based StEM map;
- Train student and community volunteers to collect data as "citizen scientists;"
- Collaborate with a larger selection of community-based organizations to build smaller data sets from patches of urban forest throughout New York City

Project Budget

Funding from the Kalil Fellowship will finance work hours spent achieving the deliverables described in the "Project Proposal" section above. The following table describes the anticipated distribution of resources:

Staff Expense	Hourly Rate	Hours	Total
web and mapping developer	\$ 20.00	200	\$ 4,000.00
field coordinator	\$ 20.00	50	\$ 1,000.00
			\$ 5,000.00

We have leveraged in-kind donations of staff time from other project collaborators, including staff at OpenGeo, for CY 2010. Funding from the Kalil Fellowship will give us the resources necessary to manage the many volunteer efforts that are helping to collect data on street trees from the field and develop the we-based StEM map. Every dollar of staff funding from the Kalil Fellowship will be matched by approximately \$17 in donated staff time from OpenGeo (based on an estimated \$85,000 value of OpenGeo staff time budgeted for StEM in CY 2010).