

# **Floodplain on the Web: Designing a Virtual Presence for Human and Environmental Change**

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## **Abstract**

This position paper explores the role of web sites, and the design of these sites, in promoting human participation in specific environmental efforts. The importance of sustainable interaction design to an environmental project web presence is illustrated through our work on the Emiquon Field Station (EFS) web site. In particular, we are interested in how social computing principles inform web site design in the context of a sustainable interaction design discipline.

## **History of the Emiquon Field Station**

The Illinois River is part of one of the great large-floodplain river ecosystems in the world. The naturally dynamic relationship between a large river and its floodplain is paramount in maintaining the natural ecological productivity and diversity of these systems.

A century ago, much of the Illinois River's floodplain was isolated from the river by levees, drained by ditching and pumping, and converted to intense agriculture. These changes in land use eliminated or significantly altered the important ecological processes of seasonal flooding (i.e., the flood pulse) that formerly sustained the phenomenal biological productivity and diversity of the Illinois River ecosystem.

Restoration of floodplains along the Illinois River, and other streams, is an essential part of restoring the natural ecological processes and the biological diversity of the Illinois River ecosystem.

In 2007, 7,425 acres of land immediately adjacent to the Illinois River and owned by The Nature Conservancy began a transformation from farmland to its natural state - a large river floodplain. This undertaking represents one of the first river reclamation efforts on this grand scale.

In order to study, research, and document this unique, immense experiment, the University of Illinois at Springfield (UIS) established the Emiquon Field Station (EFS) at The Nature Conservancy's Emiquon site. Elements that make EFS a unique facility include:

- Its location and cooperation with the Conservancy makes EFS the premier scientific facility associated with the Emiquon restoration.
- EFS has established both on-site and on-line learning.

- EFS supports UIS student and faculty research, and works in conjunction with the Conservancy's staff and other collaborating scientists.
- EFS will develop a collection documenting species diversity and change - both at the traditional (specimen) level and at the molecular (meta-genomic) level.

### **EFS on the Web: First Wave**

Currently, UIS supports only one faculty / administrator to work at EFS: the EFS director. Other UIS faculty, staff, and community members volunteer to help with the project including all non-director EFS Advisory Board members of which the authors of this paper are members. The initial EFS web presence was developed by the Associate Director of EFS (an unpaid position), who is a UIS computer science faculty member. Eventually, the site was redesigned to conform to the official UIS web templates, maintained by the UIS Office of Web Services. Working within those templates, the Associate Director added information and links as the need arose.

In its initial, somewhat crude, form, and after it was converted into a more professional "official" UIS website, the EFS website was always considered a work-in-progress. The EFS director and volunteers did not systematically plan the site from the ground up. Instead, the site has grown in fits and starts as volunteers attempted to add new information, sometimes reorganizing one piece without evaluating how these changes affected other parts of the website.

The current EFS web design includes some user participation aspects, including the EFS Director's blog, <http://emiquonfieldstation.blogspot.com/>, and the ability to link to live data about environmental conditions at Emiquon which allows users to obtain a deeper experience of Emiquon at a distance, <http://www.ysieconet.com/public/WebUI/Default.aspx?hidCustomerID=94>. Yet, in exploring our goals for the EFS web site and the user response we desire to our site, it became clear that much could be gained by bringing social computing principles to our focus and design.

### **Gathering Around the Virtual Floodplain: Sustainable Interaction Design and EFS**

Sustainable interaction design in one case describes design activities that focus on environmental impact of objects and how to design new objects, or reuse old, to ensure that objects interact with the environment in a sustainable way i.e., does not further harm an ecosystem. In another case, objects may be designed to promote environmentally-aware behaviors in humans e.g., encouraging energy conservation through the design of an object. Sustainable interaction design may be also be applied to interactive experiences that complement environmentally-focused projects and it is this case that is the focus of our paper.

It should be noted that the mission of the EFS is not to promote and further sustainable interaction design per se. However, when we examined the goals of the EFS web site and how we might extend the current site design, aspects of sustainable interaction design in the context of behavior change emerged:

**Goal:** Engage web site visitors in the EFS mission. Grab their attention. Help them learn something about us each time they visit.

**Desired outcome:** Promote human support (monetary, physical visits to EFS, and broadening awareness of environmental efforts and stewardship).

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**Goal:** Disseminate scientific data generated at Emiquon.

**Desired outcome:** Build a community of scientists who can share pertinent data.

As part of our design work, we also articulated the primary audiences for the EFS web site and the behavior change theme emerged again:

**Primary EFS users:** People who fund grants so that they will fund EFS, researchers and practitioners in restoration and ecology so that they will contribute to the body of research, and students so that they will take EFS classes.

Finally, as we examined the most important information that should be communicated via the EFS web site, human participation emerged as paramount:

**Most important information to communicate via the EFS web site:** events at Emiquon, media coverage of the field station and its events, and data.

Our work to improve the design of the current EFS web site has just begun and as illustrated above, this work will be focused on behavior change via the design of the site. While the role of social computing in encouraging participation in virtual spaces is not new, we believe that the body of sustainable interaction design principles should include virtual space designs that complement environmental projects. Specific goals related to environmental project support, and environmental stewardship should be examined in light of current social computing principles, and current and new social computing mechanisms should be emphasized as virtual spaces continue to be leveraged for social and environmental change.

As EFS Advisory Board members charged with improving the current EFS web site, our success will be measured on a number of fronts: visits to the site, participation in community spaces in the site e.g., wikis, blogs, scientific data exchange, increased funding for EFS and ultimately getting students to think more carefully about ecological impacts of humans through the information and interactions offered through the EFS web site. Some behavior changes resulting from use of the EFS web site will be easier to measure than others e.g., increases in funding tied to information shared via the web site versus increased environmental consciousness among students of EFS. Our hope is that a dialogue around sustainable interaction design approaches and practices will also include a means for the HCI community to measure effectiveness of sustainable interactions design, both in terms of environmental improvements and human commitment to sustainable practices.