

# Architecture for Humanity



The Open Architecture Network: An Online Community  
Dedicated to Building a Better Life for Millions

Case Study

## Highlights

### Technology Challenges

- Providing a way for architects to share data and information online
- Enabling extensive online collaboration among users
- Storing and managing very large content files
- Logging, tracking, and reporting on projects
- Delivering a highly secure process environment

### Solution

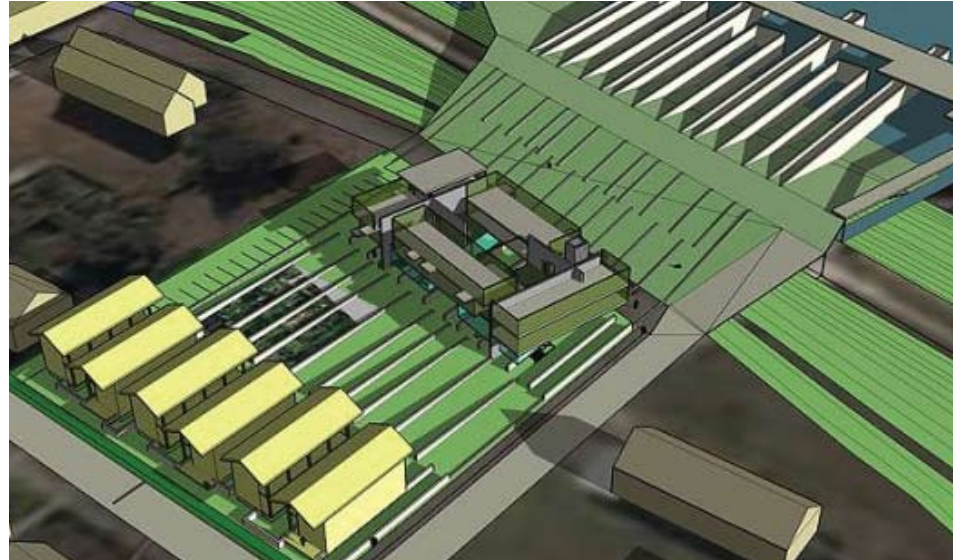
To help realize Architecture for Humanity's vision to "lift the living standards for everyone in the world," Sun helped create the Open Architecture Network (OAN), a means for architects to share information and collaborate online as they work to help people who have been displaced from their homes. The OAN is built on a Sun hardware platform, with open source Drupal content management software running on Solaris™ 10 OS.

### Sun Products

- Two dual-core Sun Fire™ X2200 M2 servers
- One 6TB Sun StorageTek™ 3511 Storage Array
- Solaris AMP Stack (CoolStack)
- Solaris 10 OS
- Solaris Containers

### Results

- Ability for architects to learn from others' experiences by sharing project designs and renderings online
- Extensive online collaboration functionality for architects, builders, communities, and individuals to work together to shape projects
- Continual improvement of core project software by a community of thousands of open source programmers



To lift the living standards for everyone in the world may seem a lofty goal, but Architecture for Humanity is making it happen. Its Open Architecture Network is an online community where architects and others can work together on projects to improve the lives of billions of people living in sub-par conditions.

Architecture for Humanity is devoted to seeking architectural solutions for humanitarian crises — by creating opportunities for architects, designers, and others to join together to help communities in need. The Open Architecture Network (OAN) grew out of this commitment, as an online community for those involved in providing transitional shelter and housing to people who have been driven from their homes by catastrophic events. In situations where resources are often scarce and materials likely to be limited, having a place to go to work with others and to learn from their experiences in similar situations can dramatically save time and reduce costs for these humanitarian projects.

It's a big idea — and, not surprisingly, one that presents several significant technology challenges. For example, how do you create

a network that lets people not simply share knowledge, but actually work with it dynamically, on a creative, collaborative basis? How do you manage and store content effectively when you're working with information and images from thousands of contributors? And how do you effectively secure a network that is by design as open as possible?

These are the questions that faced Architecture for Humanity. They found the answers in an online platform built on Sun hardware.

### The challenge of the open, collaborative, secure network

Since the whole purpose of the OAN is to share information and resources openly, an open technology platform is an essential underpinning of the network. The basic requirements for such a network include an

open and freely available operating system (OS), open source content management software, and an underlying hardware infrastructure that supports them.

Further, it's not enough for the technology platform to enable users to collect information and share it in a basic way. Web 2.0 technologies generally support that, but this project required the most extensive Web 2.0 collaboration features. For example, there are occasions when architects looking at diagrams of a particular type of building design need to make comments on specific places on the image and share them with others — who can in turn mouse over the comments, see them in the context of a particular image, and sketch out suggestions for changes. And they have to be able to engage in all of this complex, detailed collaboration over the Web using standardized browsers. The vast amount of content they generate in the process must, of course, be managed and stored effectively, too.

Finally, to meet the security requirements for this vibrant, collaborative environment, the open platform must have extensive security functionality built into it, as well as other features and functions that support security such as the ability to monitor and log project activity.

### **An open, secure network powered by Sun and Drupal**

The OAN is built on an online platform based on Sun hardware. This platform addresses the major technology issues associated with the requirements of the OAN. The network is powered by two Sun Fire™ X2200 M2 servers running the Solaris™ 10 OS, a combination that provides the scalability to accommodate a high level of online participation. Each server is also

attached to a shared Sun StorageTek™ 3511 Storage Array that provides 6TB of storage. Storage is critical because the OAN is a media-intensive, content-rich project that has to be able to ingest many photos, CAD designs, and renderings, all of which are likely to be very large files.

**“For the first time we are able to see all of the images on any given project, search for projects, rate projects, comment on projects, and invite people to join us on a project. And because Sun is providing support for the first year, we’re able to make it available to community designers everywhere.”**

#### **Cameron Sinclair**

Executive Director and Co-Founder, Architecture for Humanity

To manage all that content, the centerpiece of the software infrastructure is PHP-based Drupal open source software, chosen in no small measure for its commitment to the same spirit of community-driven development for which the OAN was built. The Sun Optimized AMP Stack for the Solaris 10 OS supports the Drupal CMS by providing an integrated version of Apache, 64-bit MySQL, Perl, and PHP open source applications. These binaries boost system performance over standard binaries while also reducing time to service. In addition, Sun has built more than a dozen modules in the Drupal framework in PHP that are very specific to the OAN.

Sun and Drupal address OAN security in several ways. All the software components are running in Solaris 10 Containers so that even if there is some exposure from a potential PHP-scripting vulnerability, for example, the breach would be contained within this secure environment. In addition, OAN draws on the expertise and experience of the Drupal security team. If any potential risk is discovered, the community responds by quickly identifying the exposure and the mitigation processes. There's also security built into the framework, where common security problems like CSRF can be mitigated by form keys and XSS protection and where security is to a great extent built into form validation.

#### **On the Horizon**

The launch of the OAN in 2007 is just the beginning of a new community that is coming together to literally change the world. As for the technology to support it, developments in the works include tools for converting CAD files more easily and for delivering more extensive support to local design groups. But ultimately, the technology will be driven by the evolving needs of the community. They may lead to new open source tools and technology that no one has even thought of yet.

#### **For more information**

To learn more about the components of the Sun platform for the OAN, visit [sun.com/afh](http://sun.com/afh) and [sun.com/samp](http://sun.com/samp).

For more information about Architecture for Humanity and the OAN, visit [architectureforhumanity.org](http://architectureforhumanity.org) and [openarchitecturenetwork.org](http://openarchitecturenetwork.org).