The Greenstone digital library software

Greenstone is a suite of software for building and distributing digital library collections. It is not a digital library but a tool for building digital libraries. It provides a new way of organizing information and publishing it on the Internet in the form of a fully-searchable, metadata-driven digital library. It has been developed and distributed in cooperation with UNESCO and the Human Info NGO in Belgium. It is open-source, multilingual software, issued under the terms of the GNU General Public License. Its developers received the 2004 IFIP Namur award for “contributions to the awareness of social implications of information technology, and the need for an holistic approach in the use of information technology that takes account of social implications.”

http://www.greenstone.org

Technical

Platforms. Greenstone runs on all versions of Windows, and Unix, and Mac OS-X. It is very easy to install. For the default Windows installation absolutely no configuration is necessary, and end users routinely install Greenstone on their personal laptops or workstations. Institutional users run it on their main web server, where it interoperates with standard web server software (e.g. Apache).

Interoperability. Greenstone is highly interoperable using contemporary standards, It incorporates a server that can serve any collection over the Open Archives Protocol for Metadata Harvesting (OAI-PMH), and Greenstone can harvest documents over OAI-PMH and include them in a collection. Any collection can be exported to METS (in the Greenstone METS Profile, approved by the METS Editorial Board and published at http://www.loc.gov/standards/mets/mets-profiles.html), and Greenstone can ingest documents in METS form. Any collection can be exported to DSpace ready for DSpace’s batch import program, and any DSpace collection can be imported into Greenstone.

Interfaces. Greenstone has two separate interactive interfaces, the Reader interface and the Librarian interface. End users access the digital library through the Reader interface, which operates within a web browser. The Librarian interface is a Java-based graphical user interface (also available as an applet) that makes it easy to gather material for a collection (downloading it from the web where necessary), enrich it by adding metadata, design the searching and browsing facilities that the collection will offer the user, and build and serve the collection.

Metadata formats. Users define metadata interactively within the Librarian interface. These metadata sets are predefined:

- Dublin Core (qualified and unqualified)
- RFC 1807
- NZGLS (New Zealand Government Locator Service)
- AGLS (Australian Government Locator Service)

New metadata sets can be defined using Greenstone’s Metadata Set Editor. “Plug-ins” are used to ingest externally-prepared metadata in different forms, and plug-ins exist for

- XML, MARC, CDS/ISIS, ProCite, BibTex, Refer, OAI, DSpace, METS

Document formats. Plug-ins are also used to ingest documents. For textual documents, there are plug-ins for

- PDF, PostScript, Word, RTF, HTML, Plain text, Latex, ZIP archives, Excel, PPT, Email (various formats), source code

For multimedia documents, there are plug-ins for

- Images (any format, including GIF, JIF, JPEG, TIFF), MP3 audio, Ogg Vorbis audio, and a generic plug-in that can be configured for audio formats, MPEG, MIDI, etc.
User base

**Distribution.** As with all open source projects, the user base for Greenstone is unknown. It is distributed on SourceForge, a leading distribution centre for open source software.

- Distributed via SourceForge since: Nov 2000
- Average downloads since then: 4500/month
- Currently running at: 4500/month
- Proportion of downloads that are documentation: 60%
- Proportion of downloads that are software: 40%
  - Of these, 80% are Windows binaries
  - 15% are Linux binaries
  - 5% are source

**Examples.** Examples of public Greenstone collections (see [http://www.greenstone.org for URLs]) can be found at:

- Association of Indian Labour Historians, Delhi
- Auburn University, Alabama
- California University at Riverside
- Charles Darwin University, Australia
- Chicago University Library
- Detroit Public Library
- Gresham College, London
- Hawaiian Electronic Library
- iArchives, Utah
- Illinois Wesleyan University
- Ionian University, Greece
- Indian Institute of Management
- Kyrgyz Republic National Library
- LeHigh University, Pennsylvania
- Mari El Republic, Russia
- National Centre for Science Information, Bangalore, India
- Netherlands Institute for Scientific Information Services
- New York Botanical Garden
- Peking University Digital Library
- Philippine Research Education and Government Information Network
- Secretary of Human Rights of Argentina
- Slavonski Brod Public Library, Slovenia
- State Library of Tasmania
- Stuttgart University of Applied Sciences
- Texas A&M University Center for the Study of Digital Libraries
- Tulane University
- University of Illinois
- University of Namibia
- University of North Carolina ibiblio project
- Vietnam National University
- Vimercate Public Library, Milan, Italy
- Washington Research Library Consortium
- Welsh Books Council
- Yale University

**UN agencies** with an interest in Greenstone include

- UNESCO, Paris
  Sponsors distribution of the Greenstone software as part of its *Information for All* programme

- Food and Agriculture Organization (FAO), Rome
  Their *Information Management Resource Kit* uses Greenstone as the (only) example of digital library software in the *Digitization and digital libraries* self-instructional module

- Institute for Information Technology in Education (IITE), Moscow
  Have commissioned an extensive course on *Digital libraries in education* that uses Greenstone for all the practical work

- United Nations University (UNU), Japan
Two CD-ROM collections of UNU material have been produced

**Humanitarian collections.** Greenstone is used by Human Info NGO in Belgium to produce collections of humanitarian information and distribute them on CD-ROM widely throughout the developing world. (For more information, contact Michel Loots <mloots@humaninfo.org>)

- Number of humanitarian collections: approx 35–40
- Annual distribution of each one: approx 5,000 copies

**Languages.** One of Greenstone’s unique strengths is its multilingual nature. The reader’s interface is available in the following languages:

- Arabic, Armenian, Bengali, Catalan, Croatian, Czech, Chinese (both simplified and traditional), Dutch, English, Farsi, Finnish, French, Galician, Georgian, German, Greek, Hebrew, Hindi, Indonesian, Italian, Japanese, Kannada, Kazakh, Kyrgyz, Latvian, Maori, Mongolian, Portuguese (BR and PT versions), Russian, Serbian, Spanish, Thai, Turkish, Ukrainian, Vietnamese

The Librarian interface and the full Greenstone documentation (which is extensive) is in:

- English, French, Spanish, and Russian.

**Training** is a bottleneck for widespread adoption of any digital library software. Many international training courses have been run.


- **Self-study courses**
  - FAO and UNESCO IITE have produced training material on Greenstone

- **Digital Library conferences**
  - There have been Greenstone tutorials (on several occasions) at all major digital library conferences: JCDL, ECDL, ICADL, ICDL

- **Librarian conferences**
  - There have been Greenstone workshops and presentations at LITA, DLF, ALA Annual Conference

- **Payson Institute, Tulane University**
  - has run courses that use Greenstone collections as a resource in locations in Africa (Burkina Faso, Cameroon, Cote d’Ivoire, Democratic Republic of Congo, Ghana, Rwanda, Senegal, Sierra Leone, Togo) and Latin America (Argentina, Bolivia, Columbia, Ecuador, Guatemala)

- **Others**
  - There have been several Greenstone courses in India (e.g. Khozikode, Poona), some in Canada (Vancouver, Calgary, Edmonton), one in Cuba (Havana).

**E-mail support**

- Number of people on Greenstone email lists: 600
- Number of countries represented: 70
- Number of messages (excluding spam): 150/month

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The *toki* (adze) was a gift from the Māori people in recognition of the New Zealand Digital Library Project’s contributions to indigenous language preservation, and resides in the project laboratory at the University of Waikato. In Māori culture there are several kinds of *toki*, with different purposes. This one is a ceremonial adze, *toki pou tangata*, a symbol of chiefship. The *rau* (blade) is sharp, hard, and made of *pounamu* or greenstone—hence the Greenstone software, at the cutting edge of digital library technology. There are three figures carved into the *toki*. The forward-looking one looks out to where the *rau* is pointing to ensure that the *toki* is appropriately targeted. The backward-looking one at the top is a sentinel that guards where the *rau* can’t see. There is a third head at the bottom of the handle which makes sure that the chief’s decisions—to which the *toki* lends authority—are properly grounded in reality. The name of this *taonga*, or art-treasure, is *Toki Pou Hinengaro*, which translates roughly as “the adze that shapes the excellence of thought.” *Haramai te toki, haumi e, hui e, tākī e.*