**Martus: A Free, Secure and Open Source Information Management Tool**

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GPG key: https://www.bookshare.org/gpg-keys/ann-harrison.gpg
GPG fingerprint:  6DDB 5CDE 5E87 040C B2CA  910B AB8D C452 CE0C 75FA

Those who fight corruption in government, business and civil society often gather sensitive information from whistleblowers. Timely, accurate data frequently plays a critical role in exposing the abuse of power for private gain and can be used effectively to pressure perpetrators and encourage judicial accountability. Without the collection and use of such information, both anti-corruption and human rights campaigns have limited chance of success. While it is strategically important to gather such testimony, collecting this data can endanger those who choose to speak out. In order to encourage witnesses to expose acts of corruption, the identities of these people - and sensitive testimony that could implicate them - must be protected. In countries where corruption leads to violence, exposing the names of whistleblowers can sometimes set the stage for continued harassment, assaults, abductions or killings.

While protecting witnesses is key to encouraging transparency, activist organizations that gather evidence of corruption or human rights abuses often find themselves harassed by authorities. Their offices are raided, paper files and computers are seized. Sometimes precious information is simply lost or inadvertently destroyed. The failure to protect evidence not only puts witnesses at risk, it creates a culture of impunity and squanders opportunities for justice and accountability.

Activist organizations that fight corruption and other abuses in their society need a way to securely store and share information. They must prevent access to their data by unauthorized persons or organizations and they must take steps to keep this information from being lost. For most governments or private sector companies, the technology needed to protect sensitive data is not complicated or expensive. There are many technology vendors that provide sophisticated strategies for secure information storage and retrieval. But activist organizations that fight corruption often lack the resources to effectively protect their information and those who provide it. Although social justice groups throughout the world often collect large amounts of data, much of their information is stored in insecure formats. Critical documentation is often lost to viruses, computer theft, fire, neglect and staff turnover. These organizations need tools to effectively organize, secure and share their information so it can be used to effectively impact social policies.

In an effort to help reformers protect their data, Benetech created a free, open source and secure information management tool called Martus. Martus is the Greek word for witness. The Martus software allows users to create a searchable and encrypted database and back this data up remotely to their choice of publicly available servers. Martus uses encryption technology that scrambles data in a way that cannot be read except by those who have a password to unscramble the information. Martus users set up password-protected accounts and enter information that can be accessed only by them - or those they choose to share the data with.

The data protected by Martus is entered by the user into a series of information bulletins that can be made public or kept private. These information bulletins are accessed via a user interface that looks very much like e-mail formats familiar to most users.  Benetech built Martus to run on existing communications infrastructures and available technology. Martus is client software that sits on your

local computer. Those who use Martus back up their information to off-site servers via the Internet and download new releases of the software from the Martus web site. Information organized with Martus is sent to the server in an encrypted form that cannot be accessed by server operators. Launched in 2003, Martus is used by human rights workers, attorneys, journalists and corruption fighters to secure their information from eavesdropping, theft or equipment failure.

The Martus software is used around the world to monitor human rights, political rights and acts of violence. Here is an example of how Martus can be useful. In August 2005, a member of the Colombian Interdisciplinary Team for Forensic Work and Psychosocial Services (EQUITAS) was assaulted several times while traveling in Colombia. During one of these attacks, her laptop was stolen at gunpoint in an attempt to access the sensitive data it contained. Because EQUITAS was using Martus software to secure and back up their documents, this woman was able to calmly hand over her laptop with the knowledge that those who provided information to EQUITAS would remain protected. Whoever stole EQUITAS' computer got nothing but encrypted bits of data they could not read. EQUITAS was able to recover the information contained on the laptop from their Martus backup server and load it into a new computer.

In addition to encrypting sensitive data, the Martus system is designed to address problems that often confront organizations that use software tools to manage information. These groups often don't really know if they can trust the software they are using to keep their data safe. They also find it difficult to train their users and customize software tools to fit their needs. In addition, social justice groups often need better ways to effectively share, search, report and back up the data they collect. Martus has been designed to address each of these concerns.

Let's start with the question of trust. Martus uses strong, built-in encryption to safeguard data. The encryption used in Martus is the same technology used to secure sensitive business and financial information.  But social justice groups also need to trust that the software they are using contains no backdoors or secret access points that could be used to spy on their organization or harm its members. Unlike proprietary software tools, Martus is built with open source technology that allows the software to be fully examined. We encourage users to review the Martus software code to ensure trust and transparency – or locate a trusted person with the necessary skills. Each new release of the Martus software can be downloaded for free from the www.martus.org web site which distributes the software, documentation and user guides.

The Martus software is sufficiently flexible to accommodate a broad range of information and can be customized for specific purposes. Let's walk through a demo and take a look at how Martus works.

**Martus Bulletin Demo**

**Step 1: Getting Started With Martus**
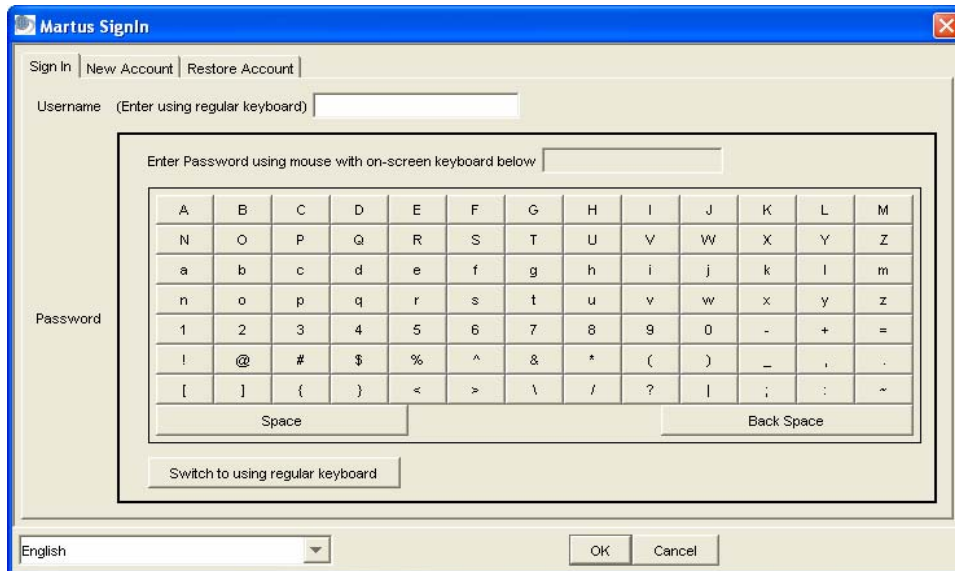
When you open Martus, you are presented with the form shown above. You can choose a language from the dropdown menu in the sign-in dialog box. Available languages include Spanish, French, Russian, Arabic, Thai, Persian, Nepali and English. You can use this form to create your own password and username. Help is available to ensure that you select an appropriate username and password for maximum security. A username can have between 8 and 50 characters; it can contain letters, numbers, punctuation, and spaces. You should choose a username that will be easy for you to remember. It is also important to remember how you capitalize it. Martus usernames are case-sensitive.

To prevent potential surveillance of your keyboard, Martus users click characters on the on-screen keyboard to create a password. There is no cursor in the Password field and you do not have to click inside it. Like usernames, passwords have between 8 and 50 characters. We encourage Martus users to create passwords of at least fifteen characters and employ a combination of letters, numbers, and punctuation to make the password more secure.

Users are encouraged to choose a password that they can remember, but one that would be difficult for someone else to guess. For example, we suggest that you not use the name or birth date of a family member or the name of your pet. If you forget your username or password, remember, there is no way for you to access private Martus bulletins you create or any of the data on your computer.  We strongly encourage Martus users to back up their passwords to a computer file or floppy disk because lost passwords cannot be retrieved.  Benetech staff and server administrators cannot read data encrypted with your password and they do not retain any password information.

Once Martus is set up, log-in requires only the simple entry of your username and password. Multiple accounts can exist on one computer, but Martus is private and secure, so access to the system requires the entry of correct login information. The guarantee of the best possible security is critical to the success of Martus. Through the use of this initial set-up form, the process of encryption and secure storage — on both the originating hard drive and on the server — requires no additional interaction or control by the user. Martus security is always on.

Martus also uses your username and password to remember your preferences. Authorized Martus users may change their username and
password. Let's look at the standard form of the Martus bulletin page.

## 2 Martus Bulletin Demo
## Step 2: Using Martus
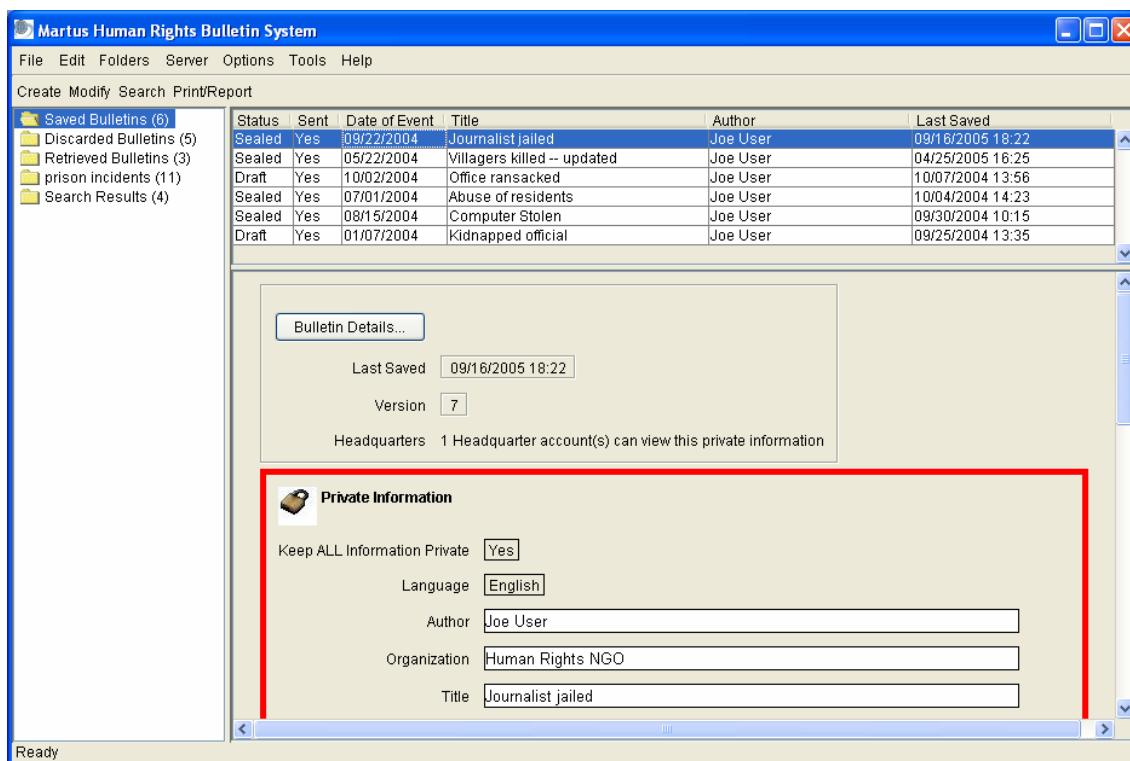


The Martus user interface is designed around a standard three-pane layout. On the left is a list of folders that can be used to organize bulletins. On the right is a list of bulletins in the currently highlighted folder with a preview of the currently selected bulletin below.

Features include:

- Localization. Currently, Martus is available in English, Spanish, French, Russian, Arabic, Thai, Persian, and Nepali. Over time, Martus will be localized into many languages. Also, some users prefer different presentations for date information. Martus accommodates many of these preferences.
- Edit contact information. Martus stores contact information for the reporting organization, which can be updated as needed. This information can be made available to people who view the public portions of the bulletin through the knowledgebase, providing visibility to the reporting organization.

- Organize information. A standard set of system-generated folders allows for automatic organization of basic document classes, such as Saved Bulletins and Discarded Bulletins. Some folders, such as Search Results, can be renamed for easy information management. Users can also create additional custom folders for their own use.
- Print bulletins. Standard print commands are used to emphasize a familiar work environment. Print results can be saved to a Report file.

## What You Are Seeing

When it comes to using applications on a computer, Martus users have a wide range of familiarity and skill — and they utilize a wide variety of computers. To answer these needs, Martus is patterned after the most popular application used on personal computers: email. This model is simple and familiar to nearly everyone who uses a personal computer. Martus is a Java-based, open-source application — and that means cross-platform compatibility. Martus will run on a standard PC, on a Macintosh, and on Linux machines. It is simple to install and use. Even encryption is easy — it requires no additional interaction on the part of the user.

## 3 Martus Bulletin Demo
## Step 3: Creating a Bulletin

As the screen above indicates, creating a bulletin is much like composing an email message. The Create Bulletin screen contains several important fields:

- User can check the "Keep ALL Information Private" option to make the entire bulletin private. They can also uncheck the option to make most of the information public (though information in the Private section will always remains private regardless). Private areas are designated by a red border. This feature will be discussed in greater detail in a following screenshot.
- The Language drop-down can be used to specify the language of the bulletin.
- The Author field is filled-in according to the Contact Information form, but may be edited.
- You can enter the name of your organization or company in the Organization field.
- Use the Title field to enter a descriptive title for the bulletin.
- Use the Location field to enter a specific town, province or state, and country.
- Use the Date of Event drop-down menu to specify the exact date or date range of the actual occurrence. It is filled-in, but it may be edited.
- Use the Date Entered drop-down to specify the date that the bulletin is being created. It is filled-in, but it may be edited.
- Use the Keywords field to specify words that will be significant to others searching the Martus knowledgebase. The knowledgebase is comprised of the bulletins that you make available to other people.

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- Use the Summary field to enter a brief description of the incident.
- Use the Details field to enter a more detailed description of the incident.
- Use the Attachments field to attach associated documents, digital photos, maps, or other resource files to your bulletin. **Note**: attachments may be specified as public or private on an individual basis.
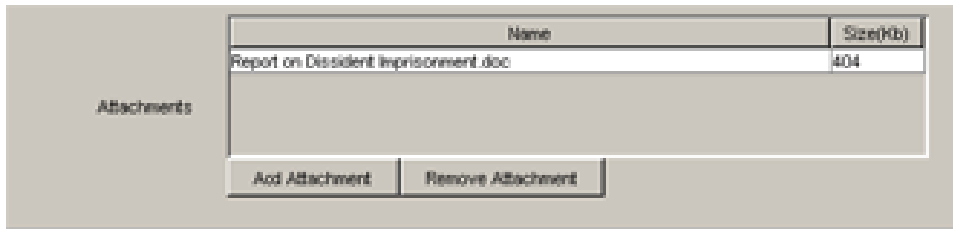


- Use the Private field —outlined in red below— to enter any information that you want to protect from public view. This information could include, for instance, the names of whistleblowers. While you can choose to export the pubic portion of the bulletins to search engines, the information in the Private field will always remain private.
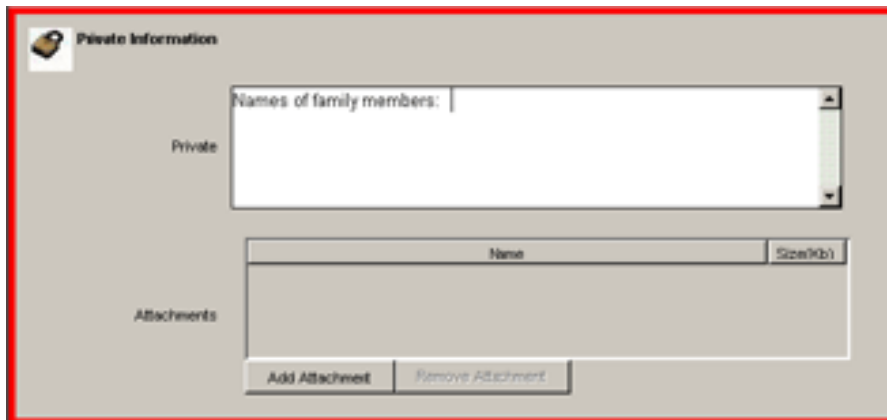


You can export the data in a Martus bulletin to an XML file, which you can open in any application that supports XML
 (Extensible Markup Language). XML documents include tags that define the structure of the document and the role of each document component in that structure. You can also import formatted bulletins from your other electronic data (for example, spreadsheets or other databases) using XML, including bulletins that have been exported from Martus. In addition, you can import files as bulletin attachments such as pictures, word-processing documents, or spreadsheets. Importing data requires that users, or their technical assistant, write scripts to transfer the data into an XML format. Once that has been done, the end-user can run the import commands from inside Martus.

This ability to import and export information allows data transfer between Martus and other programs as needed by your organization.

Let's look at a standard Martus bulletin again and examine a few more features.



**What You Are Seeing**

Martus bulletins are designed to capture all the important information about a specific incident. A key feature is that some of the information is always kept private, while the rest can be made public. The entire bulletin, including both the public and private portions, is sealed to prevent anyone from making changes. The private section can be used for sensitive information, such

as the names and the status of victims, specific locations, suspected perpetrators, legal strategies, and so on. Only the person that created the bulletin, or other Martus users to whom they gave specific access, can ever view the private portion of a bulletin.

Users can create bulletins at any time, whether they are connected to the Internet or not. At the end of an edit session, one of three actions takes place:

1.        The user clicks "Save Draft" to store the bulletin in the Saved Bulletins folder. This saves the work so far on the user's computer, and allows the user to continue editing at a later time. If an Internet connection is available, the draft bulletin will also be backed up to a Martus server.
2.        The user clicks "Save Sealed" to store the bulletin in the Saved Bulletins folder, and disallow any further changes to the bulletin. To incorporate updates to sealed bulletins you can create a new version of the bulletin. When an Internet connection is available, it will be automatically sent to a secure Martus server.
3.        The user can choose to cancel any edits they have made.

Most Martus users find that the standard bulletin fields meet their needs. However, if a user needs to create fields beyond the standard Martus fields, they can also create custom fields of various types. The following screen shows an example of a customized bulletin format.



Your organization's Headquarters, or other partners, may want to access some of the bulletins you create. To accomplish this, you may choose to share specific bulletins with other Martus users, if desired. "Headquarters" accounts can be created, which permit these users to view selected bulletins, including the private data in them, only if you give them permission. They will not be able to create bulletins using your account, but can send bulletins to a server on your behalf if you do

not have Internet access. At any time, the user may choose to discard a bulletin from their computer. Doing so will not affect any copies that have already been sent to a Martus server.

Setting up Headquarters accounts provides several advantages: it gives your partners and organization's leaders more information, and it ensures that someone will be able to access your private bulletin data even if you lose access to your account.
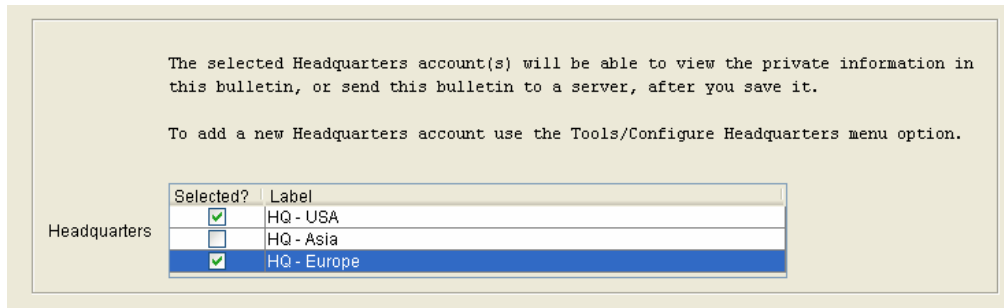


If you need to ensure that no one can access your Martus account from your computer, you can delete all the bulletins currently on the computer using the Delete my Data command. Before doing this, you must make sure you've backed up your data to a Martus server so that you can retrieve your bulletins again, once it is safe to do so.

## What You Are Seeing

Martus bulletins are created and saved locally on your personal computer. Whenever an Internet connection is available, both sealed and draft bulletins are automatically sent to a Martus server. A user can periodically save a draft copy of a bulletin, and then continue editing it at a later time. Once a bulletin is sealed, however, it cannot be modified - even by the original author. This ensures that a bulletin cannot be altered, even if a password is later compromised. If additional information is gathered, or a bulletin needs to be changed, you can create a new version of a sealed bulletin to capture any updates, without over-writing the previous versions.

Let's take a look at how you can use Martus to search your bulletins for specific data.

## Martus Bulletin Demo
## Step 5: Searching the Martus Knowledgebase

Martus offers powerful search capabilities:

- Simple search. You can search for terms across all bulletin fields to find bulletins concerning specific activities or geographies.
- Power search. You can choose specific fields (both standard and custom) in which to search and use AND/OR functionality to sharpen your search.
- Rename results folders. A folder may be renamed from Search Results to, for example, the name of a village/province or type of violation. In this way, search results are collected and stored for future analysis.
- Saving search filters. You can save frequently used searches for future use.

Now let's examine the Martus Reporting Tool:

**Print Preview**

| Author | Date of Event (beginning) | Last Saved | Title |
|---|---|---|---|
| Field User 1 | 08/03/2004 | 09/25/2004 | Unlawful detention |
| Field User 1 | 01/07/2004 | 09/25/2004 | Kidnapped official |
| *Last Saved: 09/25/2004 = 2* | | | |
| Field User 1 | 07/01/2004 | 10/04/2004 | Abuse of residents |
| *Last Saved: 10/04/2004 = 1* | | | |
| *Author: Field User 1 = 3* | | | |
| Field User 2 | 08/15/2004 | 09/30/2004 | Computer stolen |
| *Last Saved: 09/30/2004 = 1* | | | |
| Field User 2 | 11/01/2004 | 07/12/2005 | Political assasinations |
| Field User 2 | 02/11/2004 | 07/12/2005 | Conflict affects villagers |
| Field User 2 | Unknown | 07/12/2005 | Attacks against minorities |
| *Last Saved: 07/12/2005 = 3* | | | |
| Field User 2 | 09/22/2004 | 09/16/2005 | Journalist jailed |
| *Last Saved: 09/16/2005 = 1* | | | |
| *Author: Field User 2 = 5* | | | |
| Field User 3 | 04/07/2004 | 10/07/2004 | Attacks on human rights groups |
| Field User 3 | 10/02/2004 | 10/07/2004 | Office ransacked |
| *Last Saved: 10/07/2004 = 2* | | | |
| *Author: Field User 3 = 2* | | | |
| Joe User | 05/22/2004 | 04/25/2005 | Villagers killed -- updated |
| *Last Saved: 04/25/2005 = 1* | | | |
| *Author: Joe User = 1* | | | |
| **Total Bulletins: 11** | | | |

Print To Printer   Print To File   Cancel

-      Customized reports are created from information in bulletins and can be printed to a printer. The reports can also be sent to an HTML file that can be opened in a browser, or other application such as word processor or spreadsheet for further editing/formatting if desired.
-      Reports include user-selected subsets of fields from bulletins that match designated search criteria.
-      There are two Martus report formats.  A tabular report lists bulletin fields as columns in a table, with each bulletin as one row in the table. A page report lists the selected subset of fields from each bulletin separately, and is formatted as bulletins appear when printed individually.
-      Reports can display sorted raw bulletin data, and can also show summary counts of bulletins grouped by user-selected fields.
-      You can save frequently used report formats for future use.

## What You Are Seeing

The lasting power of Martus is the knowledgebase - or the collection of bulletins that users have access to. The Martus knowledgebase has two distinct audiences: information producers, such as grassroots organizations; and information consumers, such as human rights organizations, funders, and academics. Martus search and reporting functionality reveals the value of the knowledgebase. Simple keyword searches across all bulletin data have the ability to reveal broad trends. Power searches — using AND/OR technology and field-specific search terms — allow highly targeted searches for very specific incident information.

Martus reports allow users to summarize and display data that matches user-specified search filters (e.g. the bulletins gathered over the last month grouped by regional offices, or the number of bulletins that contain specific keywords, etc.)  Reports can be used to show progress of a data collection project and describe the types of information that have been gathered.

# 6 Martus Bulletin Demo
## Step 6: The Power of the Martus Design

As this demonstration illustrates, Martus is based on widely-used and well-understood concepts. Further, the basic technologies required for Martus are currently available in the marketplace. The development requirements for Martus do not involve the creation of new core technology. Instead of re-inventing the wheel, the focus of the Martus development effort concentrates on adapting existing technology and bringing it together into a single application — one that can be easily embraced and widely used. Martus is:

- Simple to install, from CD or the Web
- Easy to use, based on the well-known email application model
- Encrypted and secure, through little or no effort on the part of the user
- Replicated redundantly, guaranteeing easy bulletin restoration and no

    data loss

- Highly searchable, for study and advocacy

To see this demo on the web, please visit http://www.martus.org/martusdemo/

Martus provides grassroots groups with the power to control their own information, allowing them to decide what to make public and what should be kept securely private. While Benetech's Martus Team administers a series of secure servers around the world, Martus users can choose to back up their data to a server of their choice. The current Martus servers are located in Hungary, the Philippines, Colombia, Thailand and the U.S. Neither the server administrators, nor the Martus Team, can view the encrypted data that sits on these servers. If an organization wants to make their data public, Martus allows them users to make non-confidential portions of bulletins accessible to the public through a web-based search engine

https://martus.ceu.hu/servlet/SimpleSearch - permitting activists, prosecutors, press and the public to read direct accounts of those affected by corruption or human rights abuses.

One of the major hurdles that activist organizations face is training their staff to use software tools. Martus works with grassroots NGOs to offer outreach, training and support. By employing a 'train the trainers' method of instruction, the community of Martus users grows each year and the reliance on professional outreach by Martus staff decreases. Because of our partnerships with users, Martus is now utilized by social justice projects around the world. More than one thousand website visitors from over seventy countries have downloaded the Martus software. Martus has been introduced and used in Colombia, Egypt, Guatemala, Iraq, Kenya, Mexico, Nepal, Peru, the Philippines, Russia, Somalia, Sri Lanka, Thailand (both in-country and for Burma) and the United States. Ongoing translations of the Martus software and user documentation are in progress to support these activities. Martus has been translated into Nepali and Persian, Spanish, Arabic, French, Russian, Thai and English. If you can provide translation assistance in these or other languages, please let us know.

Martus is committed to meeting the diverse needs of human rights and anti-corruption groups. While developing this tool, the Martus team consulted with Human Rights Watch, the Open Society Institute, the United Nations, the American Association for the Advancement of Science (AAAS) and grassroots organizations from more than a dozen countries. We also gathered initial user feedback from NGO partners in Sri Lanka, Cambodia, Guatemala and Russia. The Martus development team continues to incorporate feedback from Martus users around the world into several new Martus releases each year. If you have a suggestion for how Martus can be improved or need more information, please contact us at info@martus.org.

The evolution of the Martus software is shaped by the needs of its users who submit suggestions for new features. Since its initial release in 2003, Martus has expanded to include greater opportunities for customization, improved data sharing between users and more advanced search tools. The most recent release of Martus in the fall of 2006 offers expanded reporting capability requested by users. The Martus development team continues to refine the software to allow for easier transfer of data into Martus from non-secure databases or software tools. In the coming years, Benetech envisions building a version of Martus that would be web-based or which uses removable media such as USB bootable CDs. This would be useful for people who may not own a computer, but have access to other computers.


One of the challenges of developing and maintaining the Martus software is finding the necessary funding. Benetech largely funded the initial Martus design and development effort after the inception of the project in 2000. During the initial phase of Martus development, Benetech also received grants from the Open Society Institute and the John D. and Catherine T. MacArthur Foundation to complete technical work on Martus client software. This funding helped Benetech conducted market and field research for Martus in Sri Lanka, Guatemala and Russia.


Since the launch of the Martus software in 2003, a number of organizations have funded Martus training, consulting, software customization and feature development. These funders include the Asia Foundation which has supported Martus projects in Thailand, the Philippines and Nepal. Freedom House has funded Martus deployment in Mexico and Central Asia. The Oak Foundation has provided support for Martus projects as part of its core support for Benetech's Human Rights Program. The International Human Rights Law Institute at DePaul University has provided funding for technical development, the Martus reporting tool, continued translation of Martus into Arabic

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and a Martus initiative in Iraq.

The U.S. State Department, which acknowledges the importance of strong encryption to protect human rights data, provided funding for the development of a Martus security feature that erases data from a users' local computer in the event of an adverse security incident. The U.S. State Department also provided funding for initial Martus translations in French and Arabic and Martus trainings in Kenya, Egypt and Nigeria.

Regardless of the source of funding, Benetech controls and manages all Martus software development which is always undertaken with open source software tools that support source code review. Martus funders and Benetech staff do not have the ability to view human rights data encrypted by Martus or stored on secure Martus servers. Martus users are free to use any of the publicly available worldwide Martus servers to store their uploaded information, or develop their own backup solution for Martus bulletins. Benetech encourages Martus supporters to conduct code reviews of the open source Martus software to ensure trust and transparency. We support open source software because we think everyone should be able to examine their technology tools very closely.

Effectively securing human rights data is costly. Benetech seeks funding from a variety of sources for continued Martus development and deployment. We do not directly compete for funds with human rights activists, who are our partners and customers. Rather, Benetech works with technology companies, foundations, universities and other funding sources that have a long-established and substantial commitment to human rights. In addition to monetary support, Benetech seeks service donations, including hosting for Martus servers, translation of software and documentation and source code review to ensure transparency. The Martus source code can be found at http://sourceforge.net/projects/martus/.

For some users, the Martus software is serving as a customizable front end for complex data analysis projects that quantify deaths or violations in conflict zones and prevent governments from promoting a false accounting of the facts. The Martus team is now working with a network of Thailand-based Burmese human rights organizations which are using Martus to capture testimonies about human rights violations in Burma. Martus is also being used by a human rights project in Iraq to protect the identities of vulnerable witnesses. Several organizations in Colombia are now using Martus including EQUITAS – the group that saw the value of Martus when they were robbed of their laptop. In the U.S., Human Rights Watch has used Martus to secure case files and other information used by attorneys representing detainees inside the Guantanamo prison.

In Guatemala, Martus is being used to secure, organize and back up data gathered from the recently discovered Guatemala National Police Archive. Workers at the archive, many of whom lost family members during the Guatemalan civil war, have created more than 10,000 Martus bulletins to begin securing the estimated 80 million documents inside the archive. The project, which is ongoing, is supported by the Guatemalan Office of Human Rights Ombudsman and several Guatemalan NGOs.

Researchers hope that that the information gleaned from the National Police Archive, and secured by Martus, may answer lingering questions about the role of security forces in Guatemala's 30-year civil war. These measures create a firm foundation for stronger governance, decrease corruption and help ensure accountable police and security forces. Protecting sensitive data, and the whistleblowers who provide it, is an essential step in pursuing social justice throughout the world. If

you would like more information about securing your information with Martus, we invite you to get in touch with us.