

Sahana Software Foundation

Strategic Plan

“No innovation matters more than that which saves lives.”

Avelino J. Cruz, Philippine Secretary of National Defence on the use of Sahana following disastrous mudslides in the Philippines in 2005.

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SAHANA SOFTWARE FOUNDATION STRATEGIC PLAN

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1 EXECUTIVE SUMMARY

1.1 The Need

Disasters have a devastating political, economic, social, and human impact on individuals and societies. Approximately 75,000 persons were killed by the Kashmir earthquake with 3 million left homeless¹. The 2004 Indian Ocean Earthquake and Tsunami left almost a quarter of a million dead, 500,000 injured, 5 million homeless, 1 million jobless, and caused at least \$7.5 billion in damages across several countries². The 2010 earthquake in Haiti affected similar numbers³. As the trends of population growth, urbanization, and global climate change converge, the scale and impact of disasters will only continue to grow. Spending on disasters will triple to \$185 billion per year by 2100, according to estimates in a UN and World Bank report⁴.

Disasters of this scale will require corresponding massive relief efforts. For humanitarian agencies helping disaster victims, some of the biggest challenges **involve effective coordination and management of requests for assistance and information**. Lifesaving decisions need to be made quickly. Without access to information needed to make good decisions, relief may not get to those who need it most, aid dollars are wasted, and lives may be lost. The Sahana Software Foundation was established to directly address these needs.

1.2 The Sahana Software Foundation Solution

The Sahana Software Foundation is dedicated to the **mission of saving lives by providing information management solutions that enable organizations and communities to better prepare for and respond to disasters**. We develop free and open source software⁵ and provide services that help solve concrete problems and bring efficiencies to disaster response coordination between governments, aid organizations, civil society and the victims themselves, such as:

- Reuniting separated families through registering missing and found persons
- Tracking and managing requests for help from individuals and organizations
- Tracking organizations and programs responding to the disaster, including the coverage and balance in the distribution of aid, providing transparency in the response effort
- Enabling relevant sharing of information across organizations, connecting donors, volunteers, NGOs, and government organizations, enabling them to operate as one

We are experienced at providing effective solutions. Over the past six years, we have supported national authorities and charitable organizations in response to sixteen major disasters and for thirteen disaster preparedness deployments. Our capabilities are mature and tested and are recognized as a leading solution by governments and humanitarian organizations. We have three main products: Eden, Vesuvius and Mayon.

1.3 Unique Qualifications

The Sahana Software Foundation's unique qualifications stem from our products' ability to function as a critical information bridge between organizations. We are committed to

fundamentally transform the way disaster response occurs through innovative solutions to coordination so that lives are saved and resources are effectively used. The Sahana Software Foundation's ability fulfill its mission of saving lives and ensuring disasters have less impact on a population is enabled by several key advantages:

- Make chaos manageable: We provide an efficient way of coordinating, managing, and tracking all of the critical information needed by organizations and individuals responding to a disaster.
- Designed for flexibility & scalability; Sahana software can be deployed in diverse contexts to meet the demands of scalability and rapid application development.
- Embrace a global & volunteer model to promote innovation that solves disaster problems
- Build open and affordable solutions: Our commitment to humanitarian free and open source software (HFOSS) technologies enables communities to adapt existing solutions to their evolving needs at a low cost.
- Reputation: A proven and powerful brand, Sahana Software Foundation has won numerous awards.

1.4 Summary of Strategic Plan

Customers: Sahana Software Foundation customers are trying to solve a problem that is a gap in their ability to manage or share information and coordinate with others after a catastrophic event: The Sahana Software Foundation's primary customers are:

- Governments and Government Agencies at the national, regional/state and local level (the Local Emergency Management Authorities or LEMAs)
- UN and other International Organizations
- International and National Voluntary and Non-Governmental Organizations

Competitors: Competitors to the adoption of Sahana software include: the reliance of humanitarian organizations on spreadsheets and documents for collecting and managing information; other humanitarian and open source technology projects like Ushahidi and Open Street Maps; commercial software products like ESI's WebEOC® and Microsoft's Share Point Server; Corporate Social Responsibility programs of Google, Microsoft, Yahoo or IBM; sector specific solutions such as AidMatrix for supply chain management and emergent systems developed on demand by groups such as Crisis Commons or Random Hacks of Kindness.

Competitive Advantage: Sahana software is unique amongst its competitors in two ways: First, Sahana software is the only system designed to provide management tools that allow responding agencies to work with the large amounts of data available to them; it allows them to assign individuals to tasks and facilitates management of people, places, and things that are important in disaster relief. Second, it provides a powerful platform for interoperability such that other tools and users can use Sahana software to share information efficiently. Free and open source software like Sahana also allows for the distribution of the source code without cost, which is in keeping with humanitarian principles of disaster relief organizations such as the Red Cross⁶ as well as a Humanitarian Free and Open Source Code of Conduct⁷ that our own

community has written and promoted for adoption by other organizations seeking to apply technology solutions for disaster relief.

Marketing Plan: The Sahana Software Foundation will focus on creating a Brand Architecture of the organization and its projects that will clarify its overall purpose through its core programs: Advocacy & Partnerships; Software Development; and Deployment & Training. The Sahana Software Foundation will fully develop and leverage our “brand” based on the integrity and experience of our organizational leadership, our existing reputation, and the flexibility and effectiveness of our software. We are defining the product portfolio within that brand architecture to enable customers to better understand the value of our solutions and ensure SSF focus on critical needs. We plan to position Sahana Software Foundation with attributes of leadership, innovation, and bridge building. SSF is more than about software solutions; it is about fostering the information and communication and social networks that save lives.

Operations Plan: We will pursue building sustainable organizational capacity of the Sahana Software Foundation for *successful professionalization, and usage of Sahana software as a requisite part of disaster response and preparedness globally* via three main programs:

- **Software Development Program:** The core activity of the Sahana Software Foundation is to support software development by hosting the infrastructure and tools used by software developers, leading core framework development to ensure quality, consistency and security, and maintaining the code base.
- **Deployment and Training Program:** We will develop a formal program to support the deployment of Sahana software before, during and after emergencies, including organizing a deployment “team” available to travel to sites of emergencies and work directly with responding agencies on how to make best use of information management tools like Sahana.
- **Advocacy Program:** An important purpose for the Sahana Software Foundation is to promote the adoption of Sahana software and the principles of HFOSS and collaborative open source approaches to disaster information management. The goal of this program is to fundamentally transforming the way disaster response occurs through innovative solutions to coordination challenges.

The Sahana Software Foundation structure includes a Board, Officers, Members and several Executive and Project Management Committees who coordinate the voluntary efforts of SSF's global community of contributors and will be responsible for carrying out these programs. Over the course of three years, we will grow the Foundation to support several full time staff, as well as part-time staff and contractors who will increasingly take responsibility for the Foundation's activities and allow for professional growth of these programs.

Partnerships: The Sahana Software Foundation's partnerships are critical to our ability to implement our operational programs and to our marketing plan. There is a need to formalize many of these relationships through the exchange of Memoranda of Understanding (MOUs) in

order to best be able to leverage the resources that these partnerships bring to the work of the Sahana Software Foundation. Key partnerships include:

- **Existing users** of Sahana software are the best advocates and references we have to convince humanitarian organizations to adopt Sahana software for themselves. This group includes the City of New York's Office of Emergency Management, the City University of New York's School for Professional Studies, the International Federation of the Red Cross and Red Crescent Societies (IFRC) and the US National Library of Medicine.
- **Academic Partners** such as the International Conference on Information Systems for Crisis Response and Management (ISCRAM), Healthscapes at the University of Wisconsin-Madison, and the HFOSS Project at Trinity College are key partners that help the Sahana Software Foundation meet its customer's needs.
- **Volunteer Organizations** dedicated to applying technology solutions for humanitarian purposes, such as Humanity Road, Crisis Commons and the Standby Crisis Mappers Task Force.

Financial Plan: The Sahana Software Foundation is seeking to raise \$300-600K per year over the next three years to support the development of the core capacity of the organization to develop partnerships and community resources to enable key program areas. We plan to double our budget after the third year. The Sahana Software Foundation is seeking **donor support** in the form of direct and in-kind contributions and grants from Foundations, Corporations, Governments and Government Agencies; International Organizations, Individuals and University partners. The Sahana Software Foundation's **direct sources of revenue** will include: Professional Services, both Training/Certifications and Consultation Services. The Sahana Software Foundation also is sustained by significant **in-kind donations** of human and material resources.

2 ORGANIZATION ANALYSIS

2.1 Organizational History

The Sahana Software Foundation represents the first and most mature HFOSS project and inspired the HFOSS movement itself⁸, but it is also a new organization in terms of being a legal entity and non-profit organization. Our 501(c)(3) status application is still pending with the US Internal Revenue Service. Sahana software was originally developed by members of the Sri Lankan IT community who wanted to find a way to apply their talents towards helping their country recover in the immediate aftermath of the 2004 Indian Ocean earthquake and tsunami⁹. The word “Sahana” means “relief” in Sinhalese, one of the national languages of Sri Lanka. Since then, our community has grown to include experts in emergency and disaster management as full partners in the software development process. This is extremely unique in the governance of software projects, and a unique strength of the Sahana Software Foundation.

The Lanka Software Foundation¹⁰ (LSF) was the first owner of the intellectual property making up Sahana software, and under its stewardship, Sahana software grew into a global free and open source software project supported by hundreds of volunteer contributors from dozens of countries and it supported national and local authorities and relief agencies in their response to numerous large-scale, sudden-onset disasters¹¹. But providing ongoing support for a global humanitarian effort did not match the mission of LSF, which is to start up commercially viable open source software projects, primarily for Sri Lankan businesses¹², not to manage projects in perpetuity. So in early 2009, the directors of the Lanka Software Foundation approached Sahana's volunteer community which had been supporting the project and advised them of their desire to allow Sahana to spin off into its own organization to be managed autonomously by that community.

The Sahana Software Foundation was established in 2009 by an initial board of directors as a non-profit organization registered in the State of California to serve the needs and requirements of a diverse group of customers. SSF partners with disaster and technologies experts, technology, professional services and disaster response organizations and to better address information needs and the following questions:

- How can conditions and urgent requirement be effectively communicated to the international donor community?
- How can responsible authorities understand where hospitals that can accommodate additional patients are located?
- How can family members remaining in villages be reunited with their parents, spouses, and children separated by evacuation?

2.2 Company Profile

The Sahana Software Foundation seeks to improve the impact of disaster response through effective use of information tools in the following areas:

- Advocate, Educate and Engage: Across both disaster response and technology communities, energize and provide focus to the volunteer movement.
- Establish Partnerships: Create standby and preparedness agreements with disaster response agencies and NGOs, universities, and technologies companies.
- Ensure Standards and Governance: Coordinate user group and technical standards to prioritize and plan enhancements. Ensure interoperability, quality and consistency to facilitate the sharing of information in disasters.
- Support Effective Usage: Create a robust stakeholder engagement and feedback process. Provide documentation and training to vendors, and developers, including certification. Support organizations in their use of Sahana software following disasters directly.

Mission Statement:

To help alleviate human suffering and save lives by providing information management solutions that enable organizations and communities to better prepare for and respond to disasters

Vision Statement:

Our Vision is to build and sustain a global open and collaborative community of contributors to information and communications technologies for disaster management, in order to:

- Support the needs of Sahana customers the needs of disaster responders and victims by promoting and developing innovative open source solutions for disaster information management
- Support adoption of open standards for data exchange between information systems to manage disaster data.

Goals and Objectives:

In order to fulfill our mission and vision we have the following **goals**:

- Help alleviate human suffering and help save lives through the efficient and effective use of information technologies after a disaster
- Bring efficiencies to disaster response coordination by facilitating effective information sharing between disaster responders and beneficiaries
- Empower disaster victims and responders by providing them with the information they need to help themselves and others
- Build disaster resilience and preparedness through training, education and the deployment of systems for managing disaster information in advance of a disaster.
- Provide a nurturing environment for community development of humanitarian free and open source software applications that support all four phases of emergency management

We will measure the success of our organization by Sahana Software Foundation's ability to sustain the following **objectives** in improved disaster response:

- Capabilities used at the onset of a disaster as integral part of disaster response management by disaster response organizations.
- Capabilities adopted in advance and used by disaster response organizations to manage their response
- Disaster information management gaps identified in previous response efforts.

- The time or number of resources managing information tasks in a disaster being reduced.
- Tools provided allowing victims and responders to track down needed information.
- Trainings and education conducted to assist in the deployment of Sahana software disaster management systems by professional and charitable organizations. The growth of the volunteer community contributing to Sahana software's development.

Governance:

The Sahana Software Foundation structure includes a Board, Officers, Members and several Executive and Project Management Committees who coordinate the voluntary efforts of SSF's global community of contributors.

- Board - The Sahana Software Foundation Board is responsible for all activities and affairs of the Foundation and all Foundation powers are exercised by or under the direction of the Board.
- Officers and Staff - The Officers and staff of the Sahana Software Foundation have the day-to-day responsibilities for the operations of the Sahana Software Foundation.
- Members - Members of the Sahana Software Foundation Board are responsible for sustaining and promoting the adoption and growth of the Sahana and serve on many of its Executive Committees.
- Executive Committees – Executive Committees have and may exercise all the power and authority of the Board in the management of the business and affairs of the Foundation. The Sahana Software Foundation has established several Executive Committees, responsible for Financial Oversight, Community Development, and other critical functions.
- Project Management Committees (PMCs) - The role of the Project Management Committee (PMC) is to ensure that the community is behaving and governing itself in a manner that is consistent with the objectives of making Sahana a successful open source project. This includes operational, legal and procedural oversight on Sahana releases. The Foundation has established multiple PMCs to manage its projects
- Volunteer Working Groups – assist the officers and staff in supporting the operations of the Foundation, in such areas as user administration and security response.
- Community - The largest group in Sahana consists of the larger community of about 200+ people helping to promote, provide feedback and apply Sahana
- Sponsors - The organizations and groups that keep us operational and running by donating funds, infrastructure and resources

2.3 Sahana Software Products

The Sahana Software Foundation develops free and open source software and provide services that help solve concrete problems and bring efficiencies to disaster response coordination between governments, aid organizations, civil society and the victims themselves, such as:

- Reuniting separated families through registering missing and found persons
- Tracking and managing requests for help from individuals and organizations
- Tracking organizations and programs responding to the disaster, including the coverage and balance in the distribution of aid, providing transparency in the response effort

- Enabling relevant sharing of information across organizations, connecting donors, volunteers, NGOs, and government organizations, enabling them to operate as one

We are experienced at providing effective solutions. Over the past six years, we have supported national authorities and charitable organizations in response to sixteen major disasters and for thirteen disaster preparedness deployments. Our capabilities are mature and tested and are recognized as a leading solution by governments and humanitarian organizations. We have three main products:

- **Eden:** Eden is a flexible humanitarian platform with a rich feature set which can be rapidly customized to adapt to existing processes and integrate with existing systems to provide effective solutions for critical humanitarian needs management either prior to or during a crisis.
- **Vesuvius:** Vesuvius is focused on the disaster preparedness and response needs of the medical community, contributing to family reunification and assisting with hospital triage.
- **Mayon:** Mayon is currently in development with a public release planned for late in 2011. It provides an emergency personnel and resource management solution that is highly scalable to manage large numbers of events, persons and resources.

2.4 Past Accomplishments¹³

Current Deployments:

Sahana software is currently deployed and used by a growing number of customers.

- Since 2007, the City of New York's Office of Emergency Management has used Sahana software for managing its all-hazards sheltering plan, which involves over 500 shelters capable of housing over 800,000 persons and staffed by over 60,000 city agency employees and volunteers.
- Since 2009, the US National Library of Medicine (NLM) has used Sahana software to support disaster preparedness and response in family reunification and hospital triage, enabling capture of photos, exchange of data across facilities for use in US-hospital-focused catastrophic situations for the Bethesda Hospitals Emergency Preparedness Partnership as well as international responses such as the Haitian earthquake of 2010, the 2011 Christchurch (New Zealand) Earthquake the 2011 Sendai (Japan) Earthquake and Tsunami.
- Other ongoing usages support the Governments sponsored Sahana Taiwan project at Academia Sinica, the Sri Lankan Government's National Disaster Relief Services Center, the Philippine Red Cross, the International Federation of Red Cross Societies' Asia Pacific Region, the Disaster Risk Reduction Project Portal at the Asian Disaster Preparedness Center and Healthscapes at the University of Wisconsin-Madison.

Historical Use of Sahana Software:

Because it can be rapidly adapted, Sahana software has been deployed in response to disasters in: Japan and Columbia (2011); Venezuela, Mexico, Pakistan, Chile, and Haiti (2010); Indonesia and Sri Lanka (2009); China, Myanmar and India (2008); Peru and Bangladesh (2007); Indonesia (2006); the Phillipines, Pakistan and Sri Lanka (2005). The effectiveness of Sahana software is highlighted by a number of these successful disaster deployments:

- After the Haiti earthquake of 2010, Sahana was used as a registry of the nearly 700 organizations responding, tracked almost 10,000 requests for assistance and information collected by Project 4636¹⁴, provided the most accurate and complete registry of the 162 operating hospitals and medical facilities along with bed availability and status, and aggregated 41 data layers from various sources onto one situation map. More than 230 registered users entered data into the system, which was accessed by over 8,600 visitors. The site was used daily by dozens of responding agencies in the first month of the disaster response.
- After the Chengdu-Sitzuan Earthquake of 2008 in China, Sahana was used by the Chengdu police to track over 40,000 families; 42 separated family members were reunited using Sahana;
- In Pakistan in 2005 following the Kashmir earthquake, the Government used Sahana software for registering reports of missing persons and separated family members and connected them with records taken at hospitals of the survivors; at the same time, both the current Chair and the CEO of the Sahana Software Foundation were in the country advising the Prime Minister on the response, and secured donations of needed tetanus vaccine through corporate sources. Today, the US National Library of Medicine's Lost Person Finder Project extends those capabilities using Sahana Software to tie triage and patient intake records directly with reports made of missing persons and provides publicly accessible web interfaces as well as an iPhone application.
- After the 2004 Asian Tsunami, the Sri Lanka Center for National Operations used Sahana to identify the location of all relief camps and the demographic breakdown of over 26,000 victims (by age, gender, and illnesses) to help them target relief.

References:

A US State Department White Paper¹⁵ on the Haiti Earthquake response noted, partly in reference to Sahana:

“Within hours after the report of the Haiti earthquake, a new community of virtually connected volunteers affiliated with ICT consulting companies, private corporations, open source software proponents, academic/research institutions, NGOs, and even the Haitian diaspora community began applying new ICT

applications to the earthquake response... This new community needs to be recognized as a new player in the humanitarian information environment...”

And a 2011 report by the UN and Vodaphone Foundations, Harvard Humanitarian Initiative, and UN OCHA entitled “Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies makes the following statement about the Sahana Software Foundation's work in its Executive Summary:

“[N]ew partners are offering faster, more effective means of analyzing an ever-increasing volume and velocity of data.... Volunteer and technical communities (V&TCs) like... Sahana... approach problems in ways that challenge the status quo. As organizations, some....are struggling to attain financial sustainability, especially when asked to respond to successions of major disasters.” ¹⁶

The Sahana Software Foundation was recognized as one of three “2010 Cool Vendors in Risk Management and Compliance” by Gartner, Inc., received the Best Practices Award at the 2010 DRJ Springworld Conference by Public Private Businesses, Inc. for our collaborative response to the Haiti earthquake disaster, and received the Free Software Foundation Award for Social Benefit in 2006, an award that was itself inspired by Sahana.

2.5 Unique Qualifications

In disaster response, aid organizations typically must focus on their own responsibilities to their donors and their beneficiaries. As a result, they often operate in silos, and coordination with other organizations which have different missions becomes a challenge that grows in proportion to the scale of the disaster. The Sahana Software Foundation's unique qualifications stem from our products' ability to function as a critical information bridge between organizations. We are committed to fundamentally transform the way disaster response occurs through innovative solutions to coordination so that lives are saved and resources are effectively used. The Sahana Software Foundation's ability fulfill its mission of saving lives and ensuring disasters have less impact on a population is enabled by several key advantages:

- **Make chaos manageable:** The Sahana Software Foundation addresses gaps that limit disaster response effectiveness by building information bridges with our advocacy, community and technology solutions. Our software provides solutions that are scalable to the demands of large disasters and small ones. We provide an efficient way of coordinating, managing, and tracking all of the critical information needed by organizations and individuals. The sustained focus on collaboration and open standards for information sharing provides maximum benefit to organizations and the communities affected by disasters.
- **Designed for flexibility & scalability;** Sahana software can be deployed in diverse contexts to meet the demands of both large municipalities like the City of New York where scalability, stability and security are critical, and in response to sudden onset disasters like the earthquake in Haiti, where extremely rapid development of new capabilities is essential.

- Embrace a global & volunteer model to promote innovation that solves disaster problems: The Sahana Software Foundation is built on the deep commitment of global disaster response and IT volunteers from over a dozen countries and from all regions of the globe, who believe in our mission. New members are attracted to creating social good through technology.
- Build open and affordable solutions: Our commitment to humanitarian free and open source software (HFOSS) technologies enables communities to adapt existing solutions to their evolving needs at a low cost. Many humanitarian agencies find that they can adapt solutions to their evolving needs at a low cost and further enhance core capabilities for others to benefit. Using an open source approach is also in alignment with humanitarian principles, such as the Red Cross Code of Conduct¹⁷
- Reputation: A proven and powerful brand, Sahana Software Foundation has won numerous awards, including being recognized as a 2010 Gartner Inc. Cool Vendor. We have growing adoption by response agencies, including the Red Cross and UN.

3 INDUSTRY ANALYSIS

3.1 Market Size & Trends

As the trends of population growth, urbanization, and global climate change converge, the scale and impact of disasters will only continue to grow. According to the United Nations¹⁸, the world's urban population will increase to 6.4 billion by 2050, when 70% of the world's population of 9.2 billion will live in urban areas. Booz & Company expects spending on urban infrastructure to approach \$350 trillion over the next 30 years, and that figure excludes water and sanitation¹⁹. A UN and World Bank report has estimated that spending on disasters will triple to \$185 billion per year by 2100²⁰. There is an incredible responsibility here. The Sahana Software Foundation seeks to leverage its humanitarian free and open source software, its own resources and its expertise in disaster management, and an active community of volunteers, to significantly enhance the world's ability to mitigate and respond to disasters that threaten increasingly large numbers of vulnerable persons concentrated in densely populated urban environments.

3.2 Customers

Sahana Software Foundation customers are trying to solve a problem that is a gap in their ability to manage or share information and coordinate with others after a catastrophic event: The Sahana Software Foundation's primary customers are:

- Governments and Government Agencies at the national, regional/state and local level (the Local Emergency Management Authorities or LEMAs)
- UN and other International Organizations
- International and National Voluntary and Non-Governmental Organizations

3.3 Competitors

Competitors to the adoption of Sahana software include: the reliance of humanitarian organizations on spreadsheets and documents for collecting and managing information; other humanitarian and open source technology projects like Ushahidi and Open Street Maps; commercial software products like ESI's WebEOC® and Microsoft's Share Point Server; Corporate Social Responsibility programs of Google, Microsoft, Yahoo or IBM; sector specific solutions such as AidMatrix for supply chain management and emergent systems developed on demand by groups such as Crisis Commons or Random Hacks of Kindness.

4 CUSTOMER ANALYSIS

4.1 Customer Identification

The Sahana Software Foundation's primary customers are:

- **Governments and Government Agencies** at the national, regional/state and local level (the Local Emergency Management Authorities or LEMAs. These may be direct customers or, more typically, are indirect customers of SSF, working with a professional services company. Governments define needs for disaster information in advance of a disaster and issue Request For Proposals for solutions. Sahana software is increasingly known and sometimes specified in these RFPs due to a reputation for flexibility, low cost, and scalability. This is the case with the adoption of Sahana software by the City of Los Angeles, which issued an RFP for Sahana customization and support services in 2011.
- **UN and other International Organizations.** These customers need to define their approach in advance of a disaster, but be prepared to rapidly adjust to unexpected realities which are inherent in a disaster. They have similar needs to government agencies but have more diverse models for adoption. UN and International Organizations are more likely to request to work with SSF directly due to concerns about commercial interests, as occurred in 2010 when the UN World Food Programme elected to contract with the Sahana Software Foundation directly to support its operations in Haiti. These organizations may sometimes follow the model above. The International Federation of the Red Cross Asia Pacific Regional Office issued an RFP for commercial services to support the adoption of Sahana software throughout the region last year.
- **International and National Voluntary and Non-Governmental Organizations.** Less well-funded organizations may be more restricted in their ability to pay for customization services and rely more on volunteerism and donations in order to support their organization's needs and requirements. Professional Services companies may introduce Sahana Software to organizations as part of Corporate Social Responsibility programs (at reduced or donated cost). This is the model followed by the Philippine Red Cross who adopted Sahana software through an IBM CSR funded project.

4.2 Customer Needs Analysis

For all humanitarian agencies helping disaster victims, some of the biggest challenges involve effective coordination and management of requests for assistance and information. Lifesaving decisions need to be made quickly. Without access to information needed to make good decisions, relief may not get to those who need it most, aid dollars are wasted, and lives may be lost. The Sahana Software Foundation was established to directly address these needs.

The most effective means of supporting disaster response activities is to get systems adopted in advance of a disaster. A disaster response operation, where lives are at stake, is no time to be introducing new systems. That said, there are existing gaps in the tool kits of humanitarian

agencies in their capabilities for managing disaster information, and where needs are identified, it can be worth the effort to try to assist. One of the main advantages of the ease of customization of Sahana software is its ability to be brought into alignment with an agency's existing business processes. So rather than asking humanitarian agency staff to change the way they are doing things, we are able to provide them with a consistent means of continuing their work with minimal disruption and training required.

But we recognize that sometimes even this is not enough. Major efforts are required to manage the otherwise unmanageable, as we saw with Haiti. For crisis response, it is critical for SSF develop an ongoing “deployment team” capability to be able to partner with UN/International Organizations, and Governments/Agencies and key coordinating NGOs in the rapid adaptation of capabilities to on the ground needs. This ability will enable SSF to formalize partnership models and “standby agreements”, tightening the relationship of SSF to its key customers.

4.3 Partnerships

The Sahana Software Foundation leveraging key partnerships with existing customers and other interested parties in order to meet the needs of its customers.

- Existing users of Sahana software are the best advocates and references we have to convince humanitarian organizations to adopt Sahana software for themselves. These organizations also typically want other agencies to be able to benefit from the resources that they put into developing Sahana software's capabilities. This is particularly true of the City of New York's Office of Emergency Management, and the National Library of Medicine. The capabilities to be developed for the City of Los Angeles's specific needs will be able to be reused by the Red Cross Chapters of Los Angeles and Ventura Counties. For this reason, the Sahana Software Foundation maintains strong partnerships with the users of Sahana software even if not involved directly in the project work supporting them.
- Academic Partners such as the International Conference on Information Systems for Crisis Response and Management (ISCRAM), Healthscapes at the University of Wisconsin-Madison, and the HFOSS Project at Trinity College are key partners that help the Sahana Software Foundation meet its customer's needs. These partners provide vital research to track usage data and measures of effectiveness of our deployments (whether virtual or in the field), contribute code and even provide volunteer software development capabilities for jurisdictions and organizations unable to contract with commercial companies.
- Volunteer Organizations dedicated to applying technology solutions for humanitarian purposes, such as Humanity Road and the Standby Crisis Mappers Task Force. Trained in how to use Sahana software for, for example, the tracking of hospital and medical facility data, they provide a ready force of data-entry and systems management staff. During disaster response activities, they help fast-track the adoption of Sahana software by removing the training and labor requirements and allow humanitarian organizations to

immediately benefit from the situational awareness and analysis that Sahana software can provide.

5 COMPETITIVE ANALYSIS

5.1 Addressing Competition

Competitors to the adoption of Sahana software include:

- Commercial Professional Services and Corporate Social Responsibility Programs. The biggest threat to Sahana Software Foundation's work is the resources that a commercial software or technology company like Google, Yahoo, IBM or Microsoft could direct to similar efforts if they chose to actively participate in disaster response information management.

However, there is no indication that commercial companies have an interest to dominate this marketplace. There are many indications that they favor communities having robust options for disaster management solutions, which allows their engagements to be more selective. While Google, Yahoo, IBM and Microsoft have created capabilities used in major disasters, they have been selective in their response and generally support a marketplace of solutions for humanitarian purposes. They have supported the Sahana Software Foundation and other Humanitarian FOSS projects through in kind and other support. For example, IBM provides professional services leveraging Sahana Software amongst its commercial offerings and solutions and makes donations of Sahana software through its Corporate Social Responsibility program. Google is an important funder of the Sahana Software Foundation through its Google Summer of Code program and through other in kind and financial contributions.

- Spreadsheets and Documents. An important challenge to adoption of Sahana Software is the tendency of organizations to cling to current ways of doing things. This is especially the case with United Nations agencies, larger humanitarian organizations and in government practice/policy. And this typically involves the extensive use of spreadsheets and documents for collecting and managing information.

This “competitor” is probably the most critical to address and our approach to do so is subsumed by our marketing plan which includes advocacy for the use of open source, database driven solutions with potential customers.

- Humanitarian Free and Open Source Software Projects and Organizations: The Sahana Software Foundation is part of a group of organizations using open source technologies to improve disaster response by systematic collection and dissemination of information. This landscape primarily includes Ushahidi, InSTEDD, Open Street Map, FrontlineSMS, Google Crisis Response, the Crisis Mappers Network and OpenMRS.
- Commercial Emergency Management Information System Software. These command, control and communications systems are sold to emergency management agencies and large companies alike. The leaders include: ESI's WebEOC® , NC4's E Team, and Microsoft's Share Point Server as the basis of E-Sponder and other solutions.

Challenges from other HFOSS and Commercial Software systems is addressed in the following section on the Sahana Software Foundation's competitive advantage.

- Sector Specific Solutions. There are both commercial and free software alternatives for many of Sahana's modules, such as Shoreland's Travax system for hospital management, AidMatrix for supply chain management, or SendWordNow as an emergency notification system.

None of these solutions have the breadth of capabilities offered by the Sahana Software Foundation's products or its focus on bridging information gaps across diverse organizations, required in management of a humanitarian crisis.

- Disaster Specific Solutions: emergent systems developed on demand in advance or in the aftermath of an event by individuals or organizations such as Crisis Commons or Random Hacks of Kindness.

These solutions are expensive and difficult to sustain, they lack the starting point framework, and opportunities to leverage and re-use others' enhancements, though start-up efforts will continue wherever there is a perception of need. We are working with partners who coordinate volunteer communities such as Crisis Commons and Random Hacks of Kindness to direct new volunteers to existing solutions. This is addressed in our operations plan.

Finally, no competitor has the Sahana Software Foundation's unique focus and mission.

5.2 The Sahana Software Foundation's Competitive Advantage

The Sahana Software Foundation governs several humanitarian free and open source software (HFOSS) projects that address the information-coordination challenges of disaster management. Sahana software fills a unique niche in the toolkit of emergency and disaster response agencies because it facilitates critical information sharing and coordination of efforts across all types of organizations and individuals involved, and is readily flexible to the needs that arise from any particular disaster.

It fulfills critical needs to enable organizations responding to disasters to share information across organizational lines and to track and effectively manage disaster efforts. These needs are substantial and growing because of climate change and urban population growth which are leaving increasing numbers of people vulnerable and susceptible to the effects of disasters.

Sahana software projects are some of several new technologies changing disaster response by providing better situational awareness through **systematic collection and dissemination of information**. Many of these systems provide visualization and maps from static sources of disaster information. Sahana is unique in two ways: First, Sahana software is the only system designed to provide management tools that allow responding agencies to work with the large

amounts of data available to them; it allows them to assign individuals to tasks and facilitates management of people, places, and things that are important in disaster relief. Second, it provides a powerful platform for interoperability such that other tools and users can use Sahana software to share information efficiently. For example, By pulling data from Ushahidi, Open-StreetMap, Google Person Finder, and other sources, Sahana software aggregates it in one place, and redistribute it via open data standards such as EDXL, KML, or RSS. This allows Sahana to bridge information gaps across the diverse organizations and individuals responding to an emergency, each seeking to manage and maximize the impact of their efforts.

By facilitating relevant information sharing across the diverse set of individuals and organizations that need to communicate with each other, the Sahana Software Foundation is fundamentally transforming the chaos of information from a hindrance to an asset - enabling more self-sufficient responses on behalf of communities. And stopping haphazard and unneeded relief efforts because people understand the needs; people are able to report the needs; and people are able to act effectively to the needs.

Free and open source software like Sahana software allows for the distribution of the source code without cost, which is in keeping with humanitarian principles of disaster relief organizations such as the Red Cross²¹ as well as a Humanitarian Free and Open Source Code of Conduct²² that our own community has written and promoted for adoption by other organizations seeking to apply technology solutions for disaster relief.

Open source software allows for organic growth, flexibility, responsiveness to local needs, while always continuing to build the core. Turning the chaos of a post-disaster environment into a systematic, effective response requires that humanitarian organizations, volunteers, and the victims themselves have efficient ways to communicate what is needed and where quickly and consistently over time. Without effective information management, countless more lives and billions of dollars are lost, and resources are wasted. Sahana software has proven itself to be a solution to this challenge.

Ten days after the 2010 Haiti earthquake, those coordinating the relief effort for the US Government did not know the location of all of the operating hospitals and medical facilities in Haiti, what services they offered, their status, and how many beds were available. This information was needed so relief workers would know where they could send the injured or ill, and for those hospitals already overflowing with patients, where they could transfer non-critical patients so they could continue to receive needed medical care. It is hard to imagine how this is possible. The Haitian Ministry of Health had a database of all hospitals and medical facilities in the country; the UN Humanitarian Information Center in Port-au-Prince had mapped the location of several hospitals and made their maps available to anyone who wanted them. Other organizations working to provide medical assistance to the earthquake victims certainly knew where several of this critical facilities were located. But there was no place to go to that integrated all of these sources of data to give relief workers a complete operational picture of the working medical infrastructure of the country. The 2011 UN Foundation report Disaster Relief 2.0 commented:

“What happened next is critical to lessons learned from the response. Sahana made the data available in open data formats via several feed formats, including XML, KML, GeoRSS, and the XML schema designed for tracking hospital data, EDXL -HAVE. This resource became one the best resources for health facility data for the next month. Over 8,000 unique individuals visited the site or pulled from these feeds. Crowdsourcing had taken a responsibility that would have taken OCHA days to complete and reduced it to a little more than a day of work. In the process, a group of V&TCs had built a process for locating health facilities—a process that is now being revised for the next disaster.”²³

6 **MARKETING PLAN**

The Sahana Software Foundation will focus on creating a Brand Architecture of the organization and its projects that will clarify its overall purpose through its core programs: Advocacy & Partnerships; Software Development; and Deployment & Training.

To build our volunteer base, it is critical to develop an effective marketing of our organization and its purpose through social and digital media, educational and technology and volunteer organization partnerships, and targeted speaking engagements at professional industry and academic conferences targeted at an emergency management and humanitarian uses of technology audience.

6.1 Products and Services

Products

We have three main products:

Eden: Emergency Development ENvironment for Rapid Deployment Humanitarian Response Management. Eden is a flexible humanitarian platform with a rich feature set which can be rapidly customized to adapt to existing processes and integrate with existing systems to provide effective solutions for critical humanitarian needs management either prior to or during a crisis. Its main capabilities are:

- **Logistics Management** - Manage Requests, Donations and Warehouses.
- **Staff Management** - Manage staff & volunteers by capturing their skills, availability and allocation.
- **Organization Registry** - Creates database of organizations to help facilitate coordination.
- **Assessments** – Supports needs assessments.
- **Project Tracking** – Provides status and visibility on projects and organizations needs
- **Hospital Management System** - Hospitals can share information on resources & needs.
- **Shelter Registry** - Tracks the location, distribution, capacity of Shelters and provides a breakdown of the People inside them.
- **Person Finder** - Report and search for Missing Persons
- **Disaster Victim Identification** - Supports management of the recovery of dead bodies and the identification of the deceased.
- **Mapping** - Provides mapping solution to support situational awareness and geospatial analysis.
- **Messaging** - Sends receives Alerts and other messages via Email & SMS.
- **Document Library** – Enables a library of digital resources, such as Photos & Documents.

Eden is designed for most organizations and agencies engaged in humanitarian activities, including UN agencies, NGOs and government agencies, and provides solutions to challenges

involved in resource management, information management, coordination, decision support and stakeholder communications.

Eden software was first deployed for disaster responses purposes following the 2010 Haiti earthquake for public use and also to support a the food distribution programs of the UN World Food Programme. Since the Haiti earthquake, Eden has been used for the following disasters by individuals, organizations and governments:

- Earthquake and Tsunami in Japan – 2011
- Flooding in Colombia – 2011
- Flooding in Venezuela – 2010
- Flooding in Pakistan – 2010
- Hurricane in Veracruz, Mexico – 2010

Eden has also been adopted by such organizations as the Asian Disaster Preparedness Center (ADPC) for its Disaster Risk Reduction Projects Portal (<http://drrprojects.net>), the IFRC Asia Pacific Disaster Management Unit, Sahana Taiwan (Academia Sinica) and supports Healthscapes (<http://www.healthscapes.org>) at the University of Wisconsin-Madison.

Vesuvius: Hospital Triage and Lost Person Finder Capabilities. Vesuvius is focused on the disaster preparedness and response needs of the medical community, contributing to family reunification and assisting with hospital triage. Its main capabilities are:

- **Missing Persons Reporting** - Contributes to family reunification through multiple means of accepting reports and providing advanced search and filtering capabilities
- **Hospital Triage Management:** Provides tools to assist in local and remote hospital triage management, including photo capture and electronic notifications of patient intake records to hospitals and the person locator registry.

Vesuvius's development is led by the US National Library of Medicine as part of the Bethesda Hospitals Emergency Preparedness Partnership to serve area hospitals, medical facilities and jurisdictions with a need to tie victim intake records with missing/found persons reports submitted by the public.

While their primary mission has been to support the Bethesda Hospitals Emergency Preparedness Partnership (BHEPP), NLM has also supported the public use of the [Vesuvius People Locator](#)²⁴ system for the Haiti earthquake (2010), Christchurch Earthquake (2011), and Japan Earthquake and Tsunami (2011).

A pre-release version of Vesuvius was also used by NLM as part of BHEPP's October 15, 2009 participation in CMAX 2009 (Combined Multi-Agency eXercise). CMAX is an annual joint civilian-military exercise in the Washington, DC area, involving simulated disasters with first responders and medical providers²⁵.

Mayon: Emergency Resource Management Capabilities for Municipalities. Mayon is currently in development with a public release planned for late in 2011. It provides an emergency personnel and resource management solution that is highly scalable to manage large numbers of events, persons and resources. Its main capabilities are:

- **Emergency/Disaster Scenario Management** - Allows users to set up several scenarios with different resource pools, staffing requirements, shift patterns, and deployment strategies and seamlessly implement these plans during an emergency.
- **Facility Management** - Manages facilities such as shelters and attached resources that used in emergency and disaster response.
- **Staff Management** - Manages automatic shift generation and deployment with distance-based staff assignment, scaled to handle up to 160,000 staff and 400,000 shifts generated per month per event with no event limit.

Mayon's development is led by the City University of New York's School for Professional Services for the City's Office of Emergency Management. Its intended to serve professional emergency management organizations in large municipalities and jurisdictions charged with preparedness, response, recovery and mitigation responsibilities.

Legacy Products: There are several other versions of Sahana software, but while none of these are currently supported or being actively developed, they remain an important part of our history. These systems were used in the response to many disasters and adopted by government agencies and humanitarian organizations for disaster preparedness programs – many of which are still in use today. Krakatoa was the most mature of the legacy systems. Written in PHP, it is the direct descendent of the original Sahana software project. Most of the features of Krakatoa have been replicated and improved upon in either **Eden** or **Vesuvius**, or will be included in **Mayon**.

These legacy versions of Sahana software were used in the response to the following disasters:

- Cyclone Nargis in Myanmar – 2008
- Chengdu-Sitzuan Province Earthquake, China – 2008
- Bihar Floods, India – 2008
- Ica Earthquake, Peru – 2007
- Cyclone Sidr in Bangladesh – 2007
- Yogyakarta Earthquake, Indonesia – 2006
- Landslides in the Philippines– 2005
- Kashmir Earthquake in Pakistan – 2005
- Indian Ocean Earthquake and Tsunami in Sri Lanka – 2005

They have also been used for the following pre-disaster deployments.

- Philippines Red Cross – 2010-present
- Sahana Taiwan (Academia Sinica) – 2010-present
- National Disaster Relief Services Center, Sri Lanka – 2010-present
- National Coordinating Agency for Disaster Management (BNPB) in Indonesia – 2009

- National Disaster Coordinating Council in the Philippines – 2009-present
- LIRNEAsia, Bio-Surveillance, Sri Lanka and India - 2008-2010
- Sarvodaya (NGO), Sri Lanka – 2008-present
- Office of Emergency Management in New York City – 2007-present

Services

The Sahana Software Foundation will offer the following services to support the promotion and adoption of its products:

- **Training:** The SahanaCamp program serves to orient software developers in how to support Sahana software and users in how to effectively deploy and user Sahana software. This service will be offered to commercial companies as part of a certification program on a fee-for-service basis, and also as part of humanitarian and charitable efforts to support the adoption of Sahana software by governmental and humanitarian organizations.
- **Software development and support services:** For humanitarian organizations who prefer to contract with a non-profit organization, we will offer customization, support and hosting services.

6.2 Promotion and Positioning

The Sahana Software Foundation will fully develop and leverage our “brand” based on the integrity and experience of our organizational leadership, our existing reputation, and the flexibility and effectiveness of our software. We are defining the product portfolio within that brand architecture to enable customers to better understand the value of our solutions and ensure SSF focus on critical needs.

We plan to position Sahana Software Foundation with attributes of leadership, innovation, and bridge building. SSF is more than about software solutions; it is about fostering the information and communication and social networks that save lives. Possible tag lines include: Make Chaos Manageable.

Market positioning will address the distinct needs of four types of stakeholders critical to organizational success:

- *Customers* (both decision makers for procurement and end users): Our key messages are to advocate the value of better information management and coordination, the Foundation's purpose, product strengths and direction. We will build formal stakeholder engagement to ensure product capabilities meet needs, address policy momentum for open source usage where it is an issue, and develop procurement models for customer support needs.

- *Partners*: A critical amplification mechanism, we will articulate the commitment to professional services, academia, non-governmental, governmental and strategic partners to create an ecosystem to promote better management of disasters. We will promote distribution through certified and capable partners that can deliver localized solutions support.
- *Volunteers & Members*: We will recognize and provide incentives for high value contributions (both technical and non-technical), create training, tools and a stewarded engagement model to increase the potentially exponential impact that SSF can make using these networks of skills and influence. We will build partnerships with academia, corporate/technology groups, and volunteer movements for recruitment of volunteers.
- *Board Members, Sponsors and External Advisers*: We will build ongoing consultative engagement with corporate, foundation, academic research institutions and government sponsors through advisory and other board relationships to enable vital feedback loop on organizational strategy and effectiveness.

Currently, the Sahana Software Foundation uses speaking opportunities and workshops at numerous industry events and publications (the press, and blogs) involving primarily disaster, technology and social innovation industries as the primary marketing vehicle²⁶. SSF Directors and Members participate in highly visible events such as the Open World Forum, Tech@State, ISCRAM and the Aid and International Development Forum, and publications such as the Open Source Business Resource, ICT for Disaster Risk Reduction Case Studies, plus advocacy and support from the community has directly supported marketing the Sahana Software Foundation to potential customers, partners and sponsors.

The Sahana Software Foundation plans to re-invigorate our branding and communication through digital and print media in order to amplify the impact of these contributions, and create tailored messages and presentations to distinct segments. This will include web and social media (e.g. Facebook, Twitter, YouTube, Flickr) in support of public and community relations. SSF will promote and support two distinct community advocates: Stakeholders/Users (Customers and Partners) and Volunteer Communities . Sahana will be promoted in Technology/Open Source, Disaster Response & Development/Humanitarian Response, Academic, Governmental, Social Innovation and Business Social Responsibility communities.

For the effective engagement and development of an active Sahana contributor community, the Foundation intends to use social media and targeted events to engage potential contributors not only in code development, but also including translation, Emergency Management domain expertise, documentation, artwork, quality assurance and other valuable fields. Mediums for this engagement include the Google Summer of Code, Twitter, Facebook, the Grace Hopper Celebration of Women in Computing, Random Hacks of Kindness, IBM's Centennial Celebration of Service, other coding events and engagement channels, and also developing an active community support system to engage interested parties and help them contribute with maximum efficiency.

6.3 Price

The software is free but it typically needs some level of professional services to customize and configure it to serve the customer's needs and then to maintain and host it. A core team of developers and the deployment team as specified in the Operations Plan will be able to assist humanitarian organizations address any barriers to entry. In addition, SSF will offer its services on a non-profit cost-recovery basis with a minimal markup for administration and overhead. These might be able to be funded by the organization seeking to adopt Sahana software, or as the basis of a funding proposal to a third party.

6.4 Place

Sahana software is available for free download from our hosting account at <http://launchpad.net/sahana>. The deployment team and commercial companies may also assist customers to acquire Sahana software.

6.5 Customer Retention

There are many built-in incentives to continue to use Sahana software once it has been adopted.

Most costs for adoption of open source are up front – for developing custom capabilities and configuration required and training local support team; costs decrease over time. The resources of the Sahana Software Foundation and its global community will provide surge capacity to support the needs of adopting agencies during disasters and emergency response operations.

There is also a strong built-in incentive for government and other humanitarian agencies to see their efforts reused by others. This has been a huge motivating factors for the City of New York – they are glad to see their sheltering system able to be reused by City of Los Angeles and other jurisdictions. The Red Cross is able to reuse City of LA's capabilities. Volunteer management capabilities developed for the Chicago CERT (Community Emergency Response Team) team will also be reusable by other CERT chapters, the City of Los Angeles, and the American Red Cross.

As customer base grows, all customers benefit from improvements and enhancements made by and for other organizations that they can benefit from.

6.6 Partnerships

Our partnership strategy is the cornerstone of our marketing plan. Much of the Advocacy and Partnership program described in our Operations plan is designed to further the following partnership goals:

- Disaster Response Agencies/Governments: Work to support policy support for use of open source solutions like Sahana Software. Formalize preparedness “standby” and

preparedness agreements and ensure independent evaluation **to penetrate disaster response protocols**

- Build Professional Services Partnership Model: Promote professional services organizations who certify with SSF, and increase product and support efficacy with training and feedback/monitoring **to increase preparedness deployments using SSF products/services**. *Virtuous circle... support the core capabilities of Sahana Software through the Foundation; in return, able to build capabilities on top of that and win contracts.*
- Universities/Technology Companies/Disaster Information focused NGOs: Formalize partnerships that benefit partners through development of open source technology innovation/skills, while providing volunteer community base for the Sahana Software Foundation **to create sustained model of innovation and excellence in solutions, industry and community advocacy base to increase adoption.**

7 OPERATIONS PLAN

7.1 Program Design

We will pursue building sustainable organizational capacity of the Sahana Software Foundation for *successful professionalization, and usage of Sahana software as a requisite part of disaster response and preparedness globally* via three main programs:

Software Development Program: The core activity of the Sahana Software Foundation is to support software development by hosting the infrastructure and tools used by software developers, leading core framework development to ensure quality, consistency and security, and maintaining the code base. This program will expand the utility of capabilities of Sahana software based on robust user/stakeholder feedback, written procedures and documentation, and maintenance of the overall quality of the product

We will focus on the following measures of performance and effectiveness:

- The growth of the community in terms of number of individuals and contributions (measured in lines of code or modules written) made to the software.
- Track against targets outlined in our project's release road map.

[This section still to be built out with job descriptions and the roles and responsibilities of the core development team].

Deployment Program: We will develop a formal program to support the deployment of Sahana software before, during and after emergencies, including organizing a deployment “team” available to travel to sites of emergencies and work directly with responding agencies on how to make best use of information management tools like Sahana. The goal of this program is to increase disaster preparedness and a standby disaster response capacity. This deployment team will also be the lead our training and education efforts when not engaged in supporting organizations deploying Sahana software for active disaster responses.

[This section still to be built out with job descriptions and the roles and responsibilities of the deployment and training team].

Advocacy Program: An important purpose for the Sahana Software Foundation is to promote the adoption of Sahana software and the principles of HFOSS and collaborative open source approaches to disaster information management. The goal of this program is to fundamentally transforming the way disaster response occurs through innovative solutions to coordination challenges. This involves active leadership/participation at relevant meetings and conferences with key stakeholders, an orientation and training program for customers, and Sahana certification program for quality control. This program also is responsible for managing the Sahana Software Foundation's many partnerships.

The organizational outcomes and successes of our deployment and advocacy programs will be measured by the number and importance of:

- Partnerships with humanitarian organizations to use Sahana as a part of their official response plan;
- Government jurisdictions that have adopted and deployed Sahana in advance of, or in response to, a disaster. We will aim to support between 9-12 such deployments over three years;
- Deployments in response to major disasters;
- Trainings conducted for Sahana stakeholders.

Over the course of three years, we will grow the Foundation to support several full time staff, as well as part-time staff, contractors and volunteers. A summary of the progressive growth of our organizational plan follows:

Year 1: Core capacity and professionalization

- Bring on CEO, part time support for the Finance and Marketing officers, and additional roles to be filled by a combination of volunteers and contractors based on assumption of successful fund raising of ~\$300,000 to provide core capacity for fund raising, development, deployment support, training, advocacy and management;
- Establish core team of software developers and trainers to support development and deployment capabilities who will begin the transition from community maintenance of the code base and provide support for deployments;
- Establish and operationalize Executive Committees for Board Development, Development (Fund Raising), and the Strategic and Technical Advisory Committee.

Year 2: Growth

- Continue to transition staffing support in key roles from volunteer to part- and full-time positions, including full-time leads for software development and deployment and training programs.
- Promote preparedness and provide some emergency standby capacity;
- Establishment of emergency deployment team support for international agency partnerships;
- Bring on additional staff to lead software development and deployment support and training teams.
- Establishment of training program for users and software developers;
- Launch of professional certification and training program.

Year 3: Strategic developments and partnerships

- Strategic development of new capabilities based on Stakeholder and user group input;
- Scale development and deployment and training teams to meet service and project commitments.
- Provide active support for pre-disaster deployments from core and deployment team.
- Focus on growth of community and preparedness to achieve long-term sustainability through additional growth of full-time staffing in Year 4.

7.2 Management Plan

The programs of the Sahana Software Foundation will be managed by the following organizational structures, which are all codified and described by governing bylaws of the Sahana Software Foundation²⁷.

The Board: The Sahana Software Foundation Board is responsible for all activities and affairs of the Foundation and all Foundation powers are exercised by or under the direction of the Board.

Offices and Staff of the Foundation: The Officers and staff of the Sahana Software Foundation have the day-to-day responsibilities for the operations of the Sahana Software Foundation. Officers include:

- **A Chair of the Board:** who presides over the Board of Directors;
- **A President:** who serves as Chief Executive Officer of the Foundation and has general and active management of the business and affairs of the Foundation;
- **A Secretary:** responsible for keeping accurate records for the Foundation;
- **A Chief Financial Officer/Treasurer:** who has custody of all Foundation funds and financial records and is the corporate officer primarily responsible for managing the financial planning for the Sahana Software Foundation.
- **A Chief Technical Officer:** who provides technical direction, guidance and advice to the Foundation and Foundation projects.
- **A Chief Operations Officer** (*proposed*): who is responsible for the management of the Foundation's program activities
- **A Chief Marketing Officer** (*proposed*): who is responsible for the various marketing activities of the Foundation.
- **PMC Chairs:** In addition, all Chairs of PMCs are appointed as Officers of the Foundation by the Board, serving in the equivalent capacity of a "Vice-President"

During year one, these may start as volunteer positions with clear job descriptions and understood roles and responsibilities, later transitioning to part-time or full-time roles based on measured organizational growth and the financial stability of the organization. Additional part-time and full-time support staff would be responsible for fund raising/development, finance and administration. The Foundation will also be staffed by a core development team and a deployment and training team, who will be responsible for the implementation of the Foundation's programs, as well as supporting the core responsibilities of the Foundation's Technical and Coordination Projects (such as bug fixing, core feature development, QA and User Acceptance Testing (UAT), documentation, and release management.

Members: Members of the Sahana Software Foundation Board are responsible for sustaining and promoting the adoption and growth of the Sahana and serve on many of its Executive and Project Management Committees. Persons who contribute in a meaningful way for a duration of time to the Sahana Software Foundation may be elected as Members of the Foundation.

Executive Committees of the Board: Executive Committees have and may exercise all the power and authority of the Board in the management of the business and affairs of the Foundation. Executive Committees are key places for Members of the Foundation to contribute to the running of the Foundation. There are currently two Executive Committees of the Board and three more proposed as part of this Strategic Plan of the Sahana Software Foundation.

- **Financial Oversight Committee:** The Financial Oversight Committee serves as a disinterested panel to oversee the Foundation budget, contracts and expenditures. The role and powers of this Committee are limited to providing feedback to the SSF CEO on contracts, service contracts, approval of budget and payments, and legal, insurance and other governance issues related to the finances of the Foundation.
- **Community Development Committee:** The Community Development Committee is responsible for coordinating Foundation efforts to foster relationships with organizations and institutions that produce new Sahana developers and active community members. This includes managing the Foundation's participation in programs such as the Google Summer of Code, Google Code In; events such as the Grace Hopper Celebration, Random Hacks of Kindness and Crisis Camps; as well as contributions from other programs like HFOSS Project. It is also legally responsible for the Foundation's Non-Discrimination Policy²⁸ and will have an increasing role in recruiting new volunteer contributors to our organization - both developers and non-developers. The membership of this Committee to include greater representation from SSF Members as well as expanding its mandate for general volunteer coordination and the appointment of a Chair will make this a key enabling mechanism for much of the Sahana Software Foundation's volunteer and community programs.
- **Strategic and Technical Advisory Committee (*Proposed*):** This Committee will document and build consensus around the principles of architecture, framework, infrastructure and sustainability and the development path for features, capabilities and usability for all Sahana Software Foundation technical projects, to interpret and clarify these principles when necessary and to provide direction to all Sahana Software Foundation technical projects in these matters. This Committee will manage and organize a user/stakeholder group to connect end-users with developers, and be responsible for ensuring that proper documentation of blueprints and specifications is completed, and assist the technical projects to assign blueprints to release milestones. It is not proposed to operationalize this Committee until such time as funding for code development will allow for the priorities identified by stakeholders to be addressed.
- **Development Committee (*Proposed*):** This Development Committee will assist the Officers of the Foundation in the drafting of proposals, providing feedback on the fund raising strategy and identifying funding prospects and leads. This Committee provides a crucial means for Members to contribute to the financial health of the Foundation. This committee might initially be more hands on until such time as professional development staff can be brought into the organization.

- **Board Development Committee (*Proposed*):** The Board Development Committee would be led by the Chair and CEO, and include other members of the Board and seats for Members interested in participating in the interview and vetting process of board candidates. All Foundation Members or Directors can propose nominees to the Committee, who would then be responsible for actively recruiting and evaluating thoroughly potential Board candidates for their ability and commitment to support and sustain the organization. The selection and engagement of a Board Member should be more like a job interview (where the Directors confirm that this is a good fit) and based upon job descriptions for the Board that would be used as the basis of recruiting and identifying the best candidates. Committee Members would participate in interviews to understand if what we are seeking and what they would commit to bring to the Foundation is a good match, and if they really can interact well with this culture (virtual, globally dispersed, etc.). The strongest candidates would then be presented by the Committee (via a phone call) to the entire Board for consideration and for everyone to confirm that it is a good fit for that person to join the board.

Project Management Committees: The role of the Project Management Committee (PMC) is to ensure that the community is behaving and governing itself in a manner that is consistent with the objectives of making Sahana a successful open source project. This includes operational, legal and procedural oversight on Sahana releases. The Foundation has established three types of projects to be organized as PMCs and established multiple PMCs to manage its projects:

- **Technical Projects:** Sahana Technical Projects produce deliverables (e.g., standards, software, language packs, etc.).
 - **Agasti:** The Agasti PMC is responsible for the Vesuvius and Mayon PHP-based projects of the Sahana Software Foundation. Based a long-term preparedness for disaster management, Agasti aims to provide scalability; whether for major cities or micro event response.
 - **Eden:** The Eden PMC is responsible for the Eden python/web2py open source humanitarian platform which can be used to provide solutions for disaster management, development and environmental management sectors.
- **Coordination Projects:** Coordination projects have responsibilities for deliverables across multiple Sahana projects and be responsible for managing dependencies and facilitating communications with other projects, both within the Sahana Software Foundation, and with external parties.
 - **Standards and Interoperability Project:** responsible for issues of interoperability between Sahana Software Foundation technical projects, standards compliance, and support for Open Standards both within Sahana Software Foundation technical projects and with external projects.

- **Localization (L10n) Project** (*proposed*): would support translation and localization resources for all Sahana Software Foundation technical projects and look at supporting more generally localization requirements for humanitarian free and open source software.
- **Incubator Projects:** Incubator Projects foster rapid development, on a time scale of a year or less, of new Sahana-related concepts. This might include, for example, new frameworks, innovative ideas for specifications, guidelines, and applications that are not (or not yet) clear candidates for development and more thorough scrutiny. From there the Board will set some criteria to manage the migration from Incubator to Project, or alternatively, to dissolve Foundation support for the effort after review. Incubator Projects might be managed as a subproject of a Technical project, or be a wholly independent effort.

Volunteer Working Groups: To assist the officers in supporting the operations of the Foundation, the following volunteer-supported working groups were established:

- **Admin Team:** to provide user and sysadmin support for the Foundation google apps account, website, wiki, and domain names administration.
- **Security Team:** to coordinate the response to reported security vulnerabilities in Sahana applications.

While these teams are also places where Members can be expected to contribute their time, they should be supplemented with or wholly replaced by funded core team staff of the Sahana Software Foundation.

Other Contributors: All of our Committees, Projects and Working Groups are supported by two other groups of contributors:

- **Community:** The largest group of Sahana contributors consists of the unique global community of over 200 people helping to promote, provide feedback, develop and apply Sahana. This community includes a diverse group of skills: emergency managers, relief workers, ICT specialists and researchers, experienced open source software developers, humanitarian activists, public health experts, academic researchers and students.
- **Sponsors** : The organizations and groups that keep us operational and running by donating funds, infrastructure and resources. This group includes many technology companies, private Foundations and other charitable organizations.

7.3 Partnerships

The Sahana Software Foundation's partnerships are critical to our ability to implement our programs. There is a need to formalize many of these relationships through the exchange of Memoranda of Understanding (MOUs) in order to best be able to leverage the resources that

these partnerships bring to the work of the Sahana Software Foundation. Key partnerships include:

- **CUNY (City University of New York) & NLM (US National Library of Medicine)** – are both developing Sahana applications for a specific government agency customer (NYC Office of Emergency Management and the National Institutes of Health for the Bethesda Hospitals Emergency Preparedness Partnership). This creates a symbiotic relationship with the Sahana Software Foundation. For the Sahana Software Foundation, we benefit from these partnerships by getting code developed for our Agasti project, leadership of the Project (most of the Agasti Project Management Committee is composed of developers from CUNY and NLM, stakeholder reference (US Government agency and big US City OEM using our software). In return, CUNY and NLM gain a reputation advantage of associating with our brand; seeing their systems used by others through SSF's distribution network; getting support from SSF infrastructure (wiki, web site, blog, mailing lists, demo sites), internship programs (HFOSS, GSOC) as well as volunteers that contribute code towards their customer deliverables.
- **ISCRAM:** The Sahana Software Foundation is formalizing their partnership with the International Conference for Information Systems for Crisis Response and Management. ISCRAM has been providing a meaningful venue for SSF's annual meeting. SSF will support the ISCRAM summer program (1 week of coursework in Tilberg, the Netherlands each August) with instructors; SSF Members help organize sessions at annual conference; in return SSF gets access to their Membership and attendees for our events (such as the disaster workshop and simulation which is open to ISCRAM and other attendees freely) that provides a marketing opportunity to reach new users; we also gain access to ISCRAM PhD student researchers who will partner with us on deployments to track usage data and measures of effectiveness of our deployments (whether virtual or in the field) – this is something ISCRAM also gets out of it. SSF also gets reputational advantage from associating with a prestigious academically oriented conference.
- **Humanity Road:** Humanity Road is a non-profit volunteer organization whose mission is to help collect and disseminate information during a disaster response using social media and the internet. They focus primarily on hospitals and medical facility information and use both their web site as well as Sahana software to track and record the location and status of hospitals and medical facilities. They are increasingly recognized for their contributions in this space as partners with Crisis Commons, the Standby Crisis Mappers Task Force, Ushahidi and others. SSF hosts and supports the instance of Sahana Eden that they use. SSF needs to leverage an official partnership to get funding to support the support given to them (so we can offer a professional SLA as part of a service program). We also gain reputational advantage from standard exchange of logos.
- **Crisis Commons:** This partnership should also be formalized through an MOU. We support problem definitions – give their volunteers meaning projects to work on. This takes lots of time to coordinate tasks, develop and provide training, serve as filter for

contributors. Crisis Commons also provides a fertile ground for recruiting volunteers to SSF with diverse and scarce skills – not just coders, but other technologists with skills we need, as well as graphic designers, UI specialists, documentation experts and testers. Managing this relationship should be the responsibility of a member of the Community Development Committee who takes on this role.

- **Standby Crisis Mappers Task Force** – The Standby Crisis Mappers Task Force provides surge capacity geospatial data gathering and analysis to UN OCHA and other humanitarian organizations on request. They have offered to partner with the Sahana Software Foundation which would make Sahana software also available to these organizations and be an important inroad to the UN system. This partnership should also be formalized through an MOU. Training team support is required for Standby Task Force's large number of volunteers as well as support from a volunteer coordinator. As Humanity Road is also an active partner of the Standby Task Force and already trained in the use of Sahana software, they provide a natural means of enabling this partnership.

8. MANAGEMENT TEAM

8.1 Leadership Team

Our leadership team has dozens of years of experience in disaster response and the application of technological solutions in austere environments:

Brent Woodworth (Chair): Brent is an world renowned International Risk and Crisis Management expert with over 30 years experience working with government agencies and private sector companies in preparedness, mitigation, response, and recovery efforts. He has responded to over 70 major crisis events in 49 countries. Brent is currently the President and CEO of the Los Angeles Emergency Preparedness Foundation, and sits on the Board of Directors of the National Earthquake Hazards Reduction Program, the National Institute of Building Sciences, and serves as Chair of its Multi-Hazards Mitigation Council.

Mark Prutsalis (President & CEO): Mark has over 18 years of operational disaster response and emergency management experience following major natural and man-made disasters in the United States and over 20 other countries. He has experience working a consultant to the US Department of Defense, USAID, the Center of Excellence in Disaster Management and Humanitarian Assistance, UN agencies UNICEF and UNHCR, IBM, Refugees International and other international charitable organizations. Since 2000, Mark has applied his experience in disaster relief towards improving disaster response capabilities through the application of collaborative information management technologies. The Founder and President of Globalist Inc., an emergency management and disaster response consulting company, he is also a member of the International Association of Emergency Managers (IAEM), the National Emergency Management Association (NEMA), and the Humanitarian Logistics Association (HLA).

Martin Thomsen (Secretary): Martin is a Lieutenant Colonel within the Danish Emergency Management Agency, Danish Ministry of Defense. At present he is the Deputy Head of College at the Emergency Services College in Denmark. He also serves as a consultant to the United Nations, Office for the Coordination of Humanitarian Affairs (UN/OCHA) as a member of the United Nations Disaster Assessment and Coordination team (UNDAC) since May 2003. He is a trained EU High Level Coordinator at the European Commission within the European Commission, Community Mechanism for reinforced Cooperation in Civil Protection Assistance Interventions (EU/MIC) since March 2004, as well as a Civilian Response Team (CRT) member of the same organisation since March 2006. He has contributed to Sahana as a member of its leadership team since 2005 and served on its Board since its inception.

Louiqa Raschid (Treasurer): Louiqa is a professor at the University of Maryland. Her research has made significant contributions towards solving the challenges of data management, data integration, and performance for applications in the life sciences, Web data delivery, health information systems, humanitarian IT applications, financial information systems and Grid computing. She has published approximately 140 papers in the leading academic conferences and journals. Her work has received multiple awards including over 25 grants from the NSF and

DARPA. She is member of the Sahana Software Foundation and serves on the Board; she was the Founding Chair of the Sahana Board (2007-2009).

Chamindra de Silva (Director and Chair of Standards & Interoperability Committee): Chamindra is the Head of Strategic Initiatives at Virtusa, a software engineering company serving many Fortune 500 firms. He contributes to multiple FOSS projects and forums including One Laptop Per Child (OLPC), Apache, UNDP IOSN and AsiaOSS. He is a member of the Open Source Initiative (OSI). He has been in the Sahana leadership since the Tsunami. He also co-founded the Humanitarian-ICT and a W3C group on Emergency Interoperability standards. He is the concept founder of H-FOSS and is on the advisory board of the H-FOSS project. He also on the of IEEE-CS and ISSA chapter boards in Sri Lanka. He is a recipient of the MIT INDUS Technovator award. He graduated from Oxford University.

Chad Heuschober (Chair of the Sahana Agasti Project Management Committee): With over a decade in the non-profit IT sector, Chad has a wide range of practical experience including work as a developer, data architect, project manager, systems administrator, security consultant, and community manager. Throughout his tenure with the City University of New York, he has been an IT lead on such federal, state, and locally funded projects as GEAR UP, College Now, the New York City Office of Emergency Management (NYC OEM) Coastal Storm Plan, the NYC Department of Homeless Services Hope Street Survey, and the NYC OEM Sahana Project.

Francis Boon (Chair of the Sahana Eden Project Management Committee): Fran Boon has spent 15 years working for Oxfam GB, providing technology solutions for their international operations. This included work in Haiti, Iraq, Yemen, Jordan, Pakistan, India, Indonesia, Kenya, Thailand, Sudan, Ethiopia, Tanzania, Uganda, Senegal, Ghana, Burkina Faso, South Africa, Zambia, Malawi, Zimbabwe, Cambodia, and Vietnam. He has also done work with NetHope, Tactical Technology Collective, Inveneo and Asterisk. Fran is the founder of Sahana Eden and chair of the Project Management Committee. He is also a member of the Humanitarian OpenStreetMap Team.

8.2 Board Development Plan

Board development is a key aspect of SSF's organizational strategy to provide oversight for an organizations activities: establishing broad policies and governance: reviewing performance; ensuring funding and reviewing budgets; accounting to the stakeholders for the organization's performance. We have begun discussions with individuals who can establish linkages to significant external networks and sustain funding. We are seeking “scarce skills; core funding resources, and “Doers” who actively plan events, build networks. Developed Board job descriptions establish will establish each Board Member on specific skills and specific commitments and reflect diverse skills across management and functional expertise for comprehensive advice and oversight.

The Board Development Committee will have primary responsibility for board development through recruiting and interviewing prospective candidates and presenting the strongest candidates to the entire Board for consideration and for everyone to confirm that it is a good fit

for that person to join the board. This strategy will position the organization to recruit the best possible Directors for its Board.

9 FINANCIAL PLAN

9.1 Summary

Funding and financial support for the development and deployment of Sahana software has come from a variety of sources over the years. After the initial development of Sahana software following the Indian Ocean Earthquake and Tsunami, the Lanka Software Foundation received funding from the Swedish International Development Agency, IBM, Google and the National Science Foundation for Sahana software. But since the founding of the Sahana Software Foundation in 2009, the only funding we have had has come in small amounts from the Sahana Software Foundation's participation in the Google Summer of Code and small projects for the World Food Programme and the US Naval Postgraduate School.

The Sahana Software Foundation has managed to continue to be incredibly successful over the past two years while operating with minimal funding and on a volunteer basis. This is not sustainable. ***The challenge before us is to be able to deliver the support that is now expected.*** We need capacity to respond to new requests to have Sahana software adopted at national levels and locally by numerous jurisdictions as part of disaster risk reduction programs.

The Sahana Software Foundation is seeking to raise \$300-600K per year over the next three years to support the development of the core capacity of the organization to develop partnerships and community resources to enable key program areas. We plan to double our budget after the third year.

The Sahana Software Foundation is seeking **donor support** in the form of direct and in-kind contributions and grants from Foundations, Corporations, Governments and Government Agencies; International Organizations, Individuals and University partners. The Sahana Software Foundation's **direct sources of revenue** will include: Professional Services, both Training/Certifications and Consultation Services. The Sahana Software Foundation also is sustained by significant **in-kind donations** of human and material resources.

9.2 Revenue

Donor Support

Foundation and Individual Donor Contributions: SSF will seek the support of Foundations and Individuals with an interest in mitigation of disasters, transformational usages of technologies, technology education, and support of community volunteerism. This is the single most important source of funding for supporting the core capabilities of the Foundation.

Government, International Agency, Non-Profit or Academic Grants/Partnerships: SSF will support specific objectives in partnership with Government, International Agency (eg. UN), or Non-Governmental Organizations (NGOs). Academic Partnerships provide a basis for pursuit of grants that benefit the mission and academic goals.

Direct Sources of Revenue

Certification and Training Program: This program will enable SSF to ensure consistency, quality and effectiveness in the delivery of emergency management information capabilities. To address the scale of the need, and feature key partners with strength in delivery, a training and certification program will generate revenue and support for the Sahana Software Foundation's overall training and deployment program while expanding the numbers of those qualified and capable of supporting Sahana deployments for governments and humanitarian organizations²⁹.

Professional Services Engagements: The Foundation experiences partner or governmental requests for direct guidance in the best ways to deploy, use and enhance capabilities for their particular needs. This is particularly relevant for those organizations who wish to develop internal capacity optimize the use of and manage their own set of capabilities, or because of urgent need/approach do not wish to use a standard commercial services.

Corporate Sponsorship Program: Seeking Technology, Banking, Insurance and other sector sponsors who seek to take positive action with SSF to mitigate the human and financial risk and impact of disasters through preparedness and response that leverages information, technologies, and the powerful contributions of volunteers. This may also entail the creation of official SSF partners who donate a percentage of revenues received for commercial Sahana branded contracts to the Foundation, as has already voluntarily been implemented by AidIQ.

9.3 In-Kind Contributions

The Sahana Software Foundation continues to seek and receive significant in-kind contributions: donations of technology & services; academia supported research & development contributions to Sahana events; internship programs (e.g. Google Summer of Code and HFOSS Project at Trinity College which provide code in exchange for mentoring); cluster-supported code development (e.g. from the City of New York and Taiwan who are developing new features and enhancements); donations from deploying organizations; and our global community of volunteers (a unique asset of Sahana with over 400 active members of our developer's discussion list representing dozens of countries around the world); and a Stakeholder Group to be formed within the next year to provide direction into the road map for feature development). We expect to be able to sustain and grow this support over time.

9.4 Pro-Forma 3-year Budget Projection

The following tables summarize our 3-year projected budget identifying the sources of funding and how it will be spent. A more detailed expense budget is provided in the Appendix.

Year One Budget (Amounts in Thousands of USD)

INCOME/SOURCES	AMT	EXPENSE/USES
Donor Support		General Operating Support
Foundation & Individual Donor Contributions	215	Salaries & Fringe Benefits – Full time Staff
Government, International Agency, Non-Profit or Academic Grants/Partnerships	15	Salaries – Part Time Staff/Contractors
Direct Sources of Revenue		Professional Services
Certification & Training Program	10	Other Direct Costs
Professional Services Engagements	50	Travel
Corporate Sponsorship Program	10	Annual Meeting
In-Kind Donations		Marketing Materials & Supplies
Hosting/Meeting Space/Equipment	15	Technology Costs
		Professional Organization Memberships
		Communications Costs
		In-kind Expenses
TOTAL INCOME	315	TOTAL EXPENSES
		NET INCOME

Year Two Budget (Amounts in Thousands of USD)

INCOME/SOURCES	AMT	EXPENSE/USES	AMT
Donor Support		General Operating Support	
Foundation & Individual Donor Contributions	325	Salaries & Fringe Benefits – Full time Staff	219
Government, International Agency, Non-Profit or Academic Grants/Partnerships	75	Salaries – Part Time Staff/Contractors	205
Direct Sources of Revenue		Professional Services	10
Certification & Training Program	20	Other Direct Costs	
Professional Services Engagements	50	Travel	30
Corporate Sponsorship Program	50	Annual Meeting	15
In-Kind Donations		Marketing Materials & Supplies	10
Hosting/Meeting Space/Equipment	20	Technology Costs	10
		Professional Organization Memberships	5
		Communications Costs	3
		In-kind Expenses	20
TOTAL INCOME	540	TOTAL EXPENSES	527
		NET INCOME	13

**Year Three Budget
(Amounts in Thousands of USD)**

INCOME/SOURCES	AMT	EXPENSE/USES	AMT
Donor Support		General Operating Support	
Foundation & Individual Donor Contributions	325	Salaries & Fringe Benefits – Full time Staff	219
Government, International Agency, Non-Profit or Academic Grants/Partnerships	100	Salaries – Part Time Staff/Contractors	230
Direct Sources of Revenue		Professional Services	5
Certification & Training Program	20	Other Direct Costs	
Professional Services Engagements	50	Travel	35
Corporate Sponsorship Program	50	Annual Meeting	15
In-Kind Donations		Marketing Materials & Supplies	10
Hosting/Meeting Space/Equipment	25	Technology Costs	10
		Professional Organization Memberships	5
		Communications Costs	3
		In-kind Expenses	25
TOTAL INCOME	570	TOTAL EXPENSES	557
		NET INCOME (income less expense)	13

Revenue

The budget projections are based on the assumption that financial support for the Foundation will grow over time based initially on multiple foundation grants that may take months to develop. As the capacity of the organization grows, additional sources of revenue, such as from a certification and training program, project-based grants, and an effective corporate sponsorship program will grow. As the organization's board development plan brings in significant donors and credibility, individual and Foundation funding is expected to grow as well.

Expenses

Given the assumption that the amount of funds available to the Sahana Software Foundation will grow over time, initial spending will need to be extremely limited. Most senior roles in the organization will initially be filled by volunteers, but with clear job descriptions; most of whom will transition to part-time and a few to full-time positions. The initial priority will be to establish funding for the Foundation CEO, the core development team and training and deployment team members in order to address the fundamental priorities of maintaining a quality of product and services. Other priorities will be funding for part-time and contract positions that require scarce skills for which it is difficult to find volunteers – such as marketing, finance, administration and fund raising expertise. It is possible that multiple part-time positions might be combined to fund a full-time individual with the skills to fill both roles until the organization grows into these becoming full-time positions themselves. (An example would be the possibility of combining the CMO and CFOs roles into a single full-time position if a qualified candidate could be identified.)

10 APPENDICES

10.1 Detailed Financial Information

3-Year Projected SSF Expense Budget

		Amount (1000s USD)			
		Year 1	Year 2	Year 3	
Executive:	<i>CEO (FT)</i>	40	80	80	
	CMO: Marketing/Fundraising/Business Development (PT)	15	30	30	
	CFO: Budget/Administration (PT)	15	20	30	
	COO (PT)	0	15	30	
	CTO (PT)	0	20	20	
	Admin/Finance/Development Assistants	20	20	20	
Program:	Development Program				
	<i>Stakeholder Program & Project Manager (FT)</i>	15	50	50	
	Core Team Software Developers	50	50	50	
	Training & Deployment				
	<i>Resource (Volunteer) & Program Manager (FT)</i>	15	50	50	
	Core Team Training and Deployment	25	50	50	
	Benefits	For FT Salaries Only (Est 30% of Salary)	16.5	39	39
		<i>SUB TOTAL SALARY & BENEFITS</i>	86.5	219	219
		<i>SUB TOTAL- PART TIME STAFF/CONTRACTORS</i>	125	205	230
		<i>PROFESSIONAL SERVICES</i>	20	10	5
Expenses	Travel	25	30	35	
	Annual Meeting	15	15	15	
	Marketing Materials & Supplies	10	10	10	
	Technology Costs	10	10	10	
	Professional Organization Memberships	5	5	5	
	Communications Costs	3	3	3	
		<i>SUB TOTAL – OTHER EXPENSES</i>	68	73	78
	TOTAL	299.5	507	532	

Sahana Software Foundation 2010 Profit & Loss Statement

Ordinary Income/Expense

Income

Direct Public Support	
Corporate Contributions	\$11,665.98
Other Contributions	\$2,488.21
Total Direct Public Support	\$14,154.19
Government Contracts	\$31,000.00
Total Income	\$45,154.19

Expense

Business Expenses	
Bank Fees	\$477.97
Business Registration Fees	\$850.00
Total Business Expenses	\$1,327.97
Contract Services	\$24,550.00
Operations	
Domain Registration	\$107.04
Hosting	\$1,564.87
Supplies	\$296.70
Telephone, Telecommunications	\$911.12
Total Operations	\$2,879.73
Travel and Meetings	\$17,014.71
Total Expense	\$45,772.41

Net Income **-\$618.22**

Sahana Software Foundation 2010 Balance Sheet

ASSETS

Current Assets	
Checking/Savings	
JP Morgan Chase Bank Checking	\$5,581.93
Accounts Receivable	
Total Current Assets	\$3,057.37

TOTAL ASSETS **\$8,639.30**

LIABILITIES & EQUITY

Liabilities	
Current Liabilities	
Accounts Payable	\$2,658.58
Other Current Liabilities	
Loans Payable	\$100.00
Total Current Liabilities	\$2,758.58
Total Liabilities	\$2,758.58

Equity	
Unrestricted Net Assets	\$6,668.54
Net Income	-\$787.82
Total Equity	\$5,880.72

TOTAL LIABILITIES & EQUITY **\$8,639.30**

10.2 Partnerships

The Sahana Software Foundation enjoys formal and informal partnerships with many organizations. This includes:

Government:

- City of Los Angeles
- City of New York Office of Emergency Management
- US National Library of Medicine

Humanitarian Organizations:

- American Red Cross
- Asia Disaster Preparedness Center
- International Federation of the Red Cross and Red Crescent Societies (IFRC)
- Pan American Health Organization
- World Food Programme

Academia:

- Carnegie Mellon University
- City of New York School for Professional Studies
- Healthscapes, University of Wisconsin-Madison
- Humanitarian FOSS Project, Trinity College
- International Conference for Information Systems for Crisis Response and Management (ISCRAM)
- MIT Lincoln Labs
- Naval Postgraduate School
- National Defense University / Star-Tides
- Project Epic, University of Colorado

Technology Companies:

- AidIQ
- Cisco
- FortiusOne
- Google
- IBM
- Microsoft
- Respere
- Yahoo

Humanitarian Free and Open Source Software Organizations:

- FrontlineSMS
- InSTEDD
- OpenMRS
- Open Street Maps
- Ushahidi

Volunteer and Technical Communities:

- Crisis Commons
- Crisis Mappers Network
- Geeks Without Borders
- Humanitarian OpenStreetMap Team (HOT)
- Humanity Road
- Random Hacks of Kindness
- Standby Crisis Mappers Task Force

10.3 Customers and Deployments

Disaster Deployments:

- Earthquake and Tsunami in Japan – 2011
- Flooding in Colombia – 2011
- Flooding in Venezuela – 2010
- Flooding in Pakistan – 2010
- Hurricane in Veracruz, Mexico – 2010
- Earthquake in Chile – 2010
- Earthquake in Haiti – 2010
- Cyclone Nargis in Myanmar – 2008
- Chengdu-Situan Province Earthquake, China – 2008
- Bihar Floods, India – 2008
- Ica Earthquake, Peru – 2007
- Cyclone Sidr in Bangladesh – 2007
- Yogyakarta Earthquake, Indonesia – 2006
- Landslides in the Philippines– 2005
- Kashmir Earthquake in Pakistan – 2005
- Indian Ocean Earthquake and Tsunami in Sri Lanka – 2005

Pre-Disaster Preparedness Deployments:

- City of Los Angeles – 2011-present
- IFRC Asia Pacific Disaster Management Unit – 2011-present
- Philippines Red Cross – 2010-present
- SahanaTW, Academia Sinica, in Taiwan – 2010-present
- Disaster Risk Reduction Project Portal (<http://drrprojects.net>), Asia Disaster Preparedness Center, Bangkok, Thailand – 2010-present
- Healthscapes (<http://www.healthscapes.org>), University of Wisconsin-Madison – 2010
- National Disaster Relief Services Center, Sri Lanka – 2010-present
- National Coordinating Agency for Disaster Management (BNPB) in Indonesia – 2009
- National Disaster Coordinating Council in the Philippines – 2009-present
- People Locator (<https://pl.nlm.nih.gov/>), US National Library of Medicine – 2009-present
- LIRNEasia, Bio-Surveillance, Sri Lanka and India - 2008-2010
- Sarvodaya (NGO), Sri Lanka – 2008-?
- Office of Emergency Management in New York City – 2007-present

10.4 Awards and Industry Recognition

Awards:

- Gartner Inc. Cool Vendor in Risk Management and Compliance – 2010³⁰
- Best Practices Award from Public Private Businesses, Inc. – 2010³¹
- Sourceforge Community Choice Awards Best Project for Government Finalist – 2009³²
- Free Software Foundation Award for Social Benefit – 2006³³
- Sand Hill Group Good Samaritan Award – 2006³⁴
- Sourceforge Project of the Month – June 2006³⁵
- User Award from Redhat Summit – 2005³⁶

Case Studies and Articles:

- UN Foundation: Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies, 2011³⁷
- World Bank Global Facility for Disaster Reduction and Recovery (GFDRR) Lab, “Volunteer Technical Communities: Open Development”, 2011³⁸
- Mark Prutsalis, “Developing a Service Industry to Support the Sahana Disaster Management System”, Open Source Business Resource, December 2010³⁹
- Chamindra de Silva, “Humanitarian Free and Open Source Software”, Open Source Business Resource, December 2010⁴⁰
- Ralph Morelli, Allen Tucker and Trishan de Lanerolle, “The Humanitarian FOSS Project”, Open Source Business Resource, December 2010⁴¹
- Gordon Gow, Chamindu Sampath, Ganesan M., Janakiraman N., Mifan Careem, Damendra Pradeeper, and Mahesh Kaluarachchchi, “Sahana Alerting Software for Real-Time Biosurveillance in India and Sri Lanka”, Proceedings of the 1st IEEE International Conference on Computer and Information Applications (IEEE-ICCIA 2010), December 03-05, 2010, Tianjin, China, p 37-373.
- Anderson, P., Careem, M., Damendra, P., Gow, G., Samarajiva, R., and Waidyanatha, N., “Common Alerting Protocol All-hazards All-media for saving lives: two case studies”, Symposium on Disaster Impact and Assessment in Asia – Centre for Research on the Epidemiology of Disasters, August 25 – 27, 2010, Hue City, Vietnam.
- US Department of State Humanitarian Information Unit, “Haiti Earthquake: Breaking New Ground in the Humanitarian Information Landscape”, July 2010⁴²
- “NLM Offers Technology to Locate Loved Ones During Disaster”, NIH Record, July 9, 2010⁴³
- ICT for Disaster Risk Reduction 2, Asian Pacific Training Centre for Information and Communications Technology for Development, 2010⁴⁴
- Gartner Inc.: Sahana: Humanitarian Disaster Management and Collaboration System, June 16, 2010.
- ISCRAM: The Sahana Software Foundation response to the 2010 Haiti Earthquake – 2010⁴⁵

- Ralph Morelli, “Open Source and Computer Science Education”, Open Source Business Resource, April 2010⁴⁶
- “Students use computing skills to hasten Haiti relief efforts”, University of Wisconsin-Madison News, February 1, 2010⁴⁷
- “Open Source Platform Assisting in Haiti”, Federal News Radio, January 20, 2010⁴⁸
- UNESCAP Technical Paper: A Case Study of the Sahana Disaster Management System of Sri Lanka – 2009⁴⁹
- “Weathering IT”, Tech&U, December 10, 2009⁵⁰
- “Open-Source-Based Disaster Mitigation Applied”, Vivanews, November 4, 2009⁵¹
- Communications of the ACM (CACM): Revitalizing Computing Education Through Free and Open Source Software for Humanity – 2009⁵²
- “Sahana Disaster Management System as a Disaster Management Solution in the Philippines”, AUSL Technology & The Law, September 12, 2009⁵³
- “Governments Turn to Open Source Tool for Disaster Relief Management and Planning”, Ocstatic.com, August 12, 2009⁵⁴
- “Disaster Management Software Sahana gets Wings” ITPro.lk, April 1, 2009⁵⁵
- Disaster Resource Guide Quarterly: New Open Source Software Could Greatly Improve Federal and State Disaster Relief Operations – 2008⁵⁶
- Asia-Pacific Development Information Programme ePrimer: ICT for Disaster Management – 2007⁵⁷
- CMI Peace IT publication with H-FOSS concept chapter - 2007⁵⁸
- CACM: Open Source Software for Disaster Management - 2007⁵⁹
- UNDP IOSN Case Study on Sahana – 2006⁶⁰
- BBC Documentary, The Codebreakers – 2006⁶¹

Notes

- 1 <http://www.reliefweb.int/rw/RWB.NSF/db900SID/KHII-6J93HT?OpenDocument>
- 2 <http://www.newscientist.com/article/dn9931-facts-and-figures-asian-tsunami-disaster-.html>
- 3 <http://www.theage.com.au/world/haitians-angry-over-slow-aid-20100204-ng2g.html>
- 4 http://www.gfdrr.org/gfdrr/sites/gfdrr.org/files/nhud/files/NHUD-Report_Full.pdf
- 5 From **Wikipedia**: “Free and open-source software... is software that is liberally licensed to grant the right of users to use, study, change, and improve its design through the availability of its source code.... [And i]n the context of free and open-source software, *free* refers to the freedom to copy and re-use the software, rather than to the price of the software. The Free Software Foundation, an organization that advocates the free software model, suggests that, to understand the concept, one should 'think of free as in free speech, not as in free beer'.
- 6 http://en.wikipedia.org/wiki/Free_and_open_source_software
- 7 <http://www.ifrc.org/publicat/conduct/>
- 8 http://humanitarian-ict.org/wiki/h-foss_code_of_conduct
- 9 <http://en.wikipedia.org/wiki/HFOSS>
- 10 <http://davesields.wordpress.com/2007/05/21/a-brief-history-of-sahana-by-sanjiva-weerawarana/>
- 11 <http://www.opensource.lk>
- 12 http://wiki.sahanafoundation.org/doku.php/deployments:start#deployments_and_pre-deployments
- 13 a full list of deployments of Sahana software, along with some case studies can be found at <http://www.opensource.lk/about-us>
- 14 <http://wiki.sahanafoundation.org/doku.php/deployments:start>
- 15 <http://tinyurl.com/25jqfp7>
- 16 https://hiu.state.gov/Products/Haiti_EarthquakeHumanitarianInformation_2010Jul_HIU.pdf
- 17 <http://www.unfoundation.org/global-issues/technology/disaster-report.html>
- 18 http://humanitarian-ict.org/wiki/h-foss_code_of_conduct
- 19 United Nations, World Urbanization Prospects: The 2007 Revision;
- 20 http://www.un.org/esa/population/publications/wup2007/2007WUP_ExecSum_web.pdf
- 21 http://www.strategy-business.com/media/file/sb60_10303.pdf
- 22 <http://www.reuters.com/article/idUSTRE6AA4NT20101111> full report at:
- 23 http://www.gfdrr.org/gfdrr/sites/gfdrr.org/files/nhud/files/NHUD-Report_Full.pdf
- 24 <http://www.ifrc.org/publicat/conduct/>
- 25 http://humanitarian-ict.org/wiki/h-foss_code_of_conduct
- 26 <http://www.unfoundation.org/global-issues/technology/disaster-report.html>, p. 29
- 27 <https://pl.nlm.nih.gov/>
- 28 http://wiki.sahanafoundation.org/doku.php/deployments:bethesda_2009#iii_how_sahana_was_used_-_october_2009_drill
- 29 See <http://www.slideshare.net/SahanaFOSS/presentations> for a list of recent presentations.
- 30 <http://wiki.sahanafoundation.org/doku.php/foundation:bylaws>
- 31 <http://wiki.sahanafoundation.org/doku.php/foundation:policies:nondiscrimination>
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