## **Global Genome Biodiversity Network**

## **Terms of Reference**

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#### I. Introduction

The Global Genome Biodiversity Network (hereafter GGBN) is an international network of institutions that share an interest in long-term preservation of genomic samples representing the diversity of non-human life on Earth.

GGBN provides Members with the primary benefit of making genomic samples discoverable for research through a networked community of biodiversity repositories. In doing so, GGBN provides trusted and transparent access to genomic samples for all, through an access and benefit sharing framework.

GGBN also provides a platform for collaborating biological repositories to:

- Ensure consistent quality standards for genomic samples;
- Improve best practices for preservation and use of such collections; and
- Harmonize the exchange and use of material in accordance with national and international legislation and conventions.

The aim of this document is to describe establishment of a formal governance structure for GGBN. This document serves as a guide for Members as GGBN makes the transition from a concept created in 2011 to a formalized Member-driven organization. This transition is guided by GGBN's Steering Committee (hereafter Interim Executive Committee), which was established in January 2012.

Principal changes to GGBN's organizational structure are embodied within this text and include the following:

- Succession of the Interim Executive Committee by the Executive Committee;
- Establishment of a General Assembly;
- Establishment of procedures for membership of the General Assembly, Executive Committee, and Task Forces;
- Establishment of a contribution-based business model.

#### II. Definitions

<u>Biodiversity biobank:</u> A subset of biodiversity repositories that store DNA, RNA or tissue samples of biodiversity.

<u>Biodiversity repository:</u> A publicly accessible, curated collection of biological material (in general excluding contemporary human material). Examples include, but are not restricted to, natural history museums, herbaria, botanical gardens, biodiversity biobanks, seed banks, aquaria, and zoos.

<u>Contributions:</u> Monetary or in-kind contributions by Members for GGBN benefits as outlined in Sections <u>IV.D</u> and <u>IX.</u>

<u>Contributors:</u> Members making a monetary or in-kind contribution to the GGBN in order to receive benefits outlined in Sections <u>IV.D</u> and <u>IX</u>.

<u>Genomic Sample:</u> Any biological material preserved to keep all or part of its molecular properties (in general excluding human material). Examples include DNA, RNA and whole tissues.

<u>Members:</u> Organizations or institutions that have, by mutual agreement with the Executive Committee, associated with GGBN as an Observer, Associate, or Core Member, as outlined in the Section <u>IV</u>.

#### III. Mission and Activities of the Organization

GGBN's mission is to promote access to information about, and legal exchange of, the genomic samples maintained by its Member Organizations, as defined under GGBN Membership and Member Responsibilities.

GGBN will pursue this mission by:

- Contributing information on its respective collections to an online institutional registry of biodiversity repositories;
- Developing and maintaining the GGBN Data Portal through which standardized data about genomic samples can be shared;
- Using the information shared through the GGBN Data Portal to highlight taxonomic and geographic strengths and weaknesses in individual Member collections and across the network;
- Encouraging biodiversity repositories to contribute data to the GGBN Data Portal and so become Core Members of GGBN;
- Recruiting new GGBN Members, thereby expanding geographic and taxonomic coverage of the network;
- Gathering information on best practices for collection and data management that will:
  - o be of general interest to biodiversity repositories,
  - o support improved access to collections for research,
  - o serve as resources for professional training and education, and
  - o contribute to the improvement of public awareness and appreciation of genomic biodiversity;
- Documenting and acknowledge individual researcher and institutional contributions through the construction of a globally distributed database of genomic samples;
- Developing ethical standards for Member compliance regarding international access to biological samples, their subsequent use, and the sharing of the resulting research and/or benefits.

To achieve this mission, one of GGBN's principal activities will be the management of a globally distributed database of genomic samples linked to voucher specimens (herein referred to as the Data Portal). This networked database will act as a guiding resource for research across the Tree of Life. GGBN's Data Portal will be made available online under a Creative Commons license that prohibits its redistribution as a commercial product. Members can withhold selected data for any reason. Data displayed through the portal will

only be updated or edited by the Member providing the data. All data made available through the GGBN Data Portal will be the property of, and properly attributed to, the contributing Member.

GGBN's activities will be guided by the following convention and protocol:

- Convention on Biological Diversity (CBD), <a href="http://www.cbd.int/convention/text/">http://www.cbd.int/convention/text/</a>,
- Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (ABS), <a href="http://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf">http://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf</a>.

GGBN's activities will contribute to the goals of the <u>Global Taxonomy Initiative of the Convention on Biological Diversity</u>.

#### IV. Member Roles and Responsibilities

Membership in GGBN is open to biodiversity repositories and organizations that have an interest in biodiversity biobanks. Institutions, government agencies, and other scientific organizations that own and manage collections of non-human genomic samples, along with other organizations involved in genomic biodiversity may apply to the Executive Committee to become new Members or can be nominated by a GGBN Member at any time. Membership in GGBN is by mutual agreement between the prospective Member and the Executive Committee. Prospective Members are expected to have interests in:

- Genomic research and research infrastructure connected to non-human biodiversity;
- Interacting with other Members and the GGBN Secretariat;
- Contributing to the achievement of GGBN's goals.

GGBN has three Member categories: Observer Members, Associate Members, and Core Members.

#### A. Observer Members

Institutional biodiversity repositories and organizations that have an interest in biodiversity biobanks and biodiversity informatics and/or:

- a. Collect and contribute material to Core and Associate Members in compliance with relevant national/international laws and regulations;
- b. Support the goals of GGBN;
- c. Provide technical expertise to GGBN;
- d. Participate in GGBN activities and Task Forces.

#### B. Associate Members

Institutional biodiversity repositories that have initiated the process of becoming Core Members, and therefore:

- a. Have made a commitment to long-term preservation of genomic collections and associated data, for the purpose of providing access for research;
- b. Have an enterprise level data system that can provide data on a reliable basis;

- c. Are represented in an institutional registry of biodiversity repositories;
- d. Intend to prepare and contribute data to the GGBN Data Portal in compliance with the standards established by the relevant GGBN Task Force.

#### C. Core Members

Institutional biodiversity repositories that fulfill all the requirements of Associate Membership and are also actively contributing data to the GGBN Data Portal in compliance with the standards established by the relevant GGBN Task Force.

#### D. Monetary or In-kind Contributions and Associated Benefits

Contributions and associated benefits for Members are outlined in the table below. Contributions by Members may be made in-kind or in-cash, based on the institution's biodiversity biobank specimen and collection staff size, as outlined in Section IX.

In-kind contributions will be reviewed and approved by the Executive Committee annually based on the needs of the GGBN's annual operating budget.

### Monetary or In-kind Contributions and Associated Benefits

	Core	Associate	Observer
Contributions	Required	Optional	Optional
Eligible to serve on General Assembly	Yes	Yes	Yes
Eligible to vote in General Assembly elections	Yes	Contributors Only	Contributors Only
Eligible to serve on Executive Committee	Yes	Contributors Only	Contributors Only
Eligible for technical support for making tissue and genomic collections discoverable for research	Yes	Contributors Only	No
Access to the GGBN Data Portal	Yes	Yes	Yes
Access to the GGBN Document Library	Yes	Yes	Yes
Eligibility for participation on Task Forces	Yes	Yes	Yes
Eligible for reduced registration rates for GGBN Conferences	Yes	Contributors Only	Contributors Only

#### V. General Assembly

The General Assembly represents the entire GGBN Membership, including Core, Associate, and Observer Members, and is the ultimate decision-making body for GGBN.

A quorum consisting of at least half of the Contributors is required for all decisions. Contributors may send more than one representative to meetings of the General Assembly, but Contributors will have one vote only.

A Contributor may cast its vote *in absentia* or may delegate its vote to another Contributor that will be present at the General Assembly meeting.

*In absentia* votes and a delegation of voting rights must be provided in writing to the Secretariat one week prior to the beginning of a General Assembly meeting.

Members that are not Contributors will not vote.

#### A. Membership

The General Assembly is made up of individuals representing GGBN Member organizations.

#### B. Authority and Duties

The General Assembly is to make decisions by consensus whenever possible or by simple majority, unless specified otherwise. The General Assembly has the authority to:

- a. Modify the Governance Model and GGBN Memorandum of Understanding (MOU) (two-thirds majority required);
- b. Alter the rates of the annual monetary Contributions by Members (two-thirds majority required):
- c. Elect Members of the Executive Committee;
- d. Nominate members of standing Task Forces;
- e. Nominate and/or renew the terms of the Secretariat and Technical Management hosts;
- f. Identify strategic activities and partners;

- g. Identify new Task Forces and propose issues, ideas, and new Task Forces for consideration by the Executive Committee;
- h. Approve GGBN's strategies as proposed by the Executive Committee to include policies, budgets, and work plans;
- i. Consider any matters pertaining to GGBN or its operations submitted to it by the Executive Committee Chair, the Secretariat Host, the Technical Management Host, or by any Member.

#### C. Meetings

Meetings will coincide with annual or biennial GGBN Conferences. An annual vote to approve the operating budget, work program, and other essential decisions recommended by the Executive Committee will take place at meetings or by electronic ballot if no meetings are scheduled to take place within the calendar year. Conferences are preferably held each time in a different geographical location and hosted by a Contributor.

#### D. Leadership

The General Assembly will be chaired either by the Executive Committee Chair or a meeting chair specifically elected at the meeting.

#### VI. Executive Committee

The Executive Committee is a working committee responsible for overseeing the operations of the Secretariat and Technical Management Offices in implementing the work program and budget.

#### A. Membership

The Interim Executive Committee established during the transition phase will present a slate of candidate Members for approval by the General Assembly. Henceforth membership is by election by the General Assembly.

Executive Committee membership shall be in accordance with the following requirements:

- a. The Executive Committee shall consist of a maximum of 11 members, which shall include the Chair, Vice Chair, and up to nine Members representing the General Assembly or Standing Task Force Chairs.
- b. The Program and Technical Managers shall serve in a non-voting *ex-officio* capacity. The Program Manager shall act as secretary to the Executive Committee.
- c. Executive Committee members may include those institutions or organizations that have signed the GGBN MOU and are making a monetary or in-kind contribution to GGBN.
- d. No more than two non-collection holding organizations can hold a seat on the Executive Committee at any one time.
- e. The Executive Committee can invite observers with specific expertise or knowledge to join discussions at any time.
- f. Membership is through election by the General Assembly. New members are nominated by a Nomination Committee of GGBN Members appointed by the Executive Committee.
- g. The Nomination Committee will seek to nominate candidates that represent a balance among geographic regions and between Core, Associate, and Observer Members. Nominees will preferentially reflect the distribution of Contributors among size categories and disciplines.
- h. The Chair is nominated by the Executive Committee and confirmed by the Members of the General Assembly.

#### B. Authority and Duties

The Executive Committee shall be responsible for:

- a. Setting strategy, policy, direction and budgets;
- b. Developing and implementing work plans;
- c. Evaluating progress and producing yearly reports;
- d. Raising funds;
- e. Reviewing applications for Membership.

Nominations and proposals made by the General Assembly will be confirmed by the Executive Committee and resubmitted to the General Assembly for final approval.

#### C. Term

To create staggered terms of membership on the Executive Committee, one third of the initial terms will be for one year, one third will be for two years, and one third will be for three years. The duration of these terms of membership will be by a random process agreed to by the members of the Executive Committee following their election.

The term of membership for the Chair, Vice-Chair, Program Manager and Technical Manager will last three years. During the implementation phase the Executive Committee members will be nominated and elected by the General Assembly at its first meeting.

#### D. Meetings

The Executive Committee shall meet at least one time per calendar year and at other times as deemed necessary by the Executive Committee. In-person Executive Committee meetings shall coincide with annual or biennial GGBN Conferences. The Chair, Vice-Chair, Program Manager and Technical Manager shall meet as deemed necessary to monitor operations and work program implementation.

#### E. Leadership

The GGBN Executive Committee will have a Chair and Vice-Chair. The Chair and Vice-Chairs will be elected by the General Assembly, following nominations by the Executive Committee. The Chair and Vice-Chair are elected for three years.

#### VII. Task Forces

Task Forces were established in 2011 to address:

- Data Standards and Data Access for Genomic Samples;
- Policies and Practices Related to Management and Stewardship of Genomic Samples;
- Marketing and Outreach (hereafter Communications and Outreach).

New Task Forces may be proposed and identified by the General Assembly.

#### A. Membership

Task Force membership shall be in accordance with the following requirements:

- a. Task Forces will be composed of nominated GGBN Member representatives plus the Task Force Chair.
- b. Task Force members shall have capabilities and resources specifically applicable to the Task Force.
- c. The GGBN Program Manager serves in an *ex-officio* capacity on each of the Task Forces.
- d. Members may include those institutions or organizations that have signed the GGBN MOU and strategic partners. Membership is through nomination by the GGBN General Assembly and serves a three-year term that may be renewed indefinitely.
- e. Chairs are nominated by the Members of the General Assembly and confirmed by the Executive Committee. Chairs hold a three-year term that may be renewed by the General Assembly.

#### **B.** Authority and Duties

Task Forces shall be responsible for achieving goals outlined by the Executive Committee and approved by the General Assembly.

## C. Meetings

Task Forces shall meet in person and/or by teleconference as needed in order to accomplish the goals of GGBN. In-person meetings will coincide with annual or biennial GGBN Conferences.

### D. Leadership

Each Task Force will be led by a Task Force Chair (see above).

#### VIII. Secretariat and Technical Management Offices

GGBN's Executive Committee will oversee the Secretariat and Technical Management Offices.

#### A. Secretariat Office

Subject to available funding provided by the GGBN, the Secretariat Office performs day-to-day operational management for GGBN, coordinates Member activities, and provides administrative support and communication services for the General Assembly, Executive Committee, Task Force chairs, Technical Management Office, and GGBN Members.

#### B. Technical Management Office

Subject to available funding provided by the GGBN, the Technical Management Office performs day-to-day operational management of the GGBN Data Portal, GGBN Registry, and GGBN Document Library, coordinates further improvements and provides technical support for GGBN Core and Associate Members.

#### C. Composition

The Secretariat Office and Technical Management Office will consist of a Program Manager and Technical Manager, respectively, and any additional staff members whose positions will be approved by the General Assembly. Members of the Secretariat and Technical Management Offices will be employed by the NMNH and the BGBM, respectively, on term appointments subject to the availability of monetary or in-kind support from the GGBN. The Program and Technical Managers will report formally to their respective employers with input from the Chair of the Executive Committee.

#### D. Term

The Secretariat and Technical Management Offices are run by volunteer institutions for three-year terms that may be renewed by the General Assembly. A new Secretariat and Technical Management Office host may be nominated by the General Assembly every three years.

#### IX. Contributions by Members

Any GGBN Member can make a contribution to the network. These contributions will be inkind or monetary based on the Member's biodiversity biobank specimen and collection staff size as outlined in the table below. In-kind contributions will be reviewed and approved by the Executive Committee annually based on the needs of the GGBN's annual operating budget.

Expected Annual Contribution to GGBN by Biodiversity Biobank Specimen and Collection Staff Size							
Category Specimen Size Collection staff size Expected Contribution (US dollars/year							
Large-A	>200K	>10	10,000				
Medium-Large-B	100-200К	5-10	5,000				
Medium-C	50-99K	3-4	2,500				
Medium-Small-D	20-49 K	1-2	1,200				
Small-E	<20 K	<1	250				

Member institutions fall within one of the five categories listed above based on a simple matrix using the institution's biodiversity biobank specimen size against the biodiversity biobank collection staff size as outline below. Both specimen size and collection staff size estimates are based on information made available to the network from GGBN Member institutions.

Specimen Size							
		<20K	20-49K	50-99К	100-200K	>200K	
Staff Size	<1	\$250	\$250	\$1200	\$2500	\$2500	
	1 to 2	\$250	\$1200	\$2500	\$2500	\$2500	
	3 to 4	\$1200	\$2500	\$2500	\$2500	\$5,000	
	5 to 10	\$2500	\$2500	\$2500	\$5,000	\$10,000	
	>10	\$2500	\$2500	\$5,000	\$10,000	\$10,000	

#### X. Activation and Deactivation

The implementation phase takes place as a transition period after the activation of the GGBN Terms of Reference. The activation and deactivation of the GGBN Terms of Reference will be enacted in accordance with the following:

#### A. Activation

This document was activated on April  $7^{th}$  2016 when the 11th Contributor organization submitted a letter of intent to make an annual monetary contribution to GGBN and signed the original 2013 GGBN MOC.

#### **B.** Implementation phase

The period of time between the activation of the GGBN Terms of Reference and the establishment of the General Assembly.

#### C. Deactivation

This document may be deactivated with a two-thirds majority vote in the General Assembly.

#### XI. Budget

It is expected that approximately 10-12 new Members will join GGBN each year over the course of the next three years (2016-2018). The number of new Core Members is expected to grow at an increased rate (presumably five new Core Members per year) due to the development of the GGBN Data Standard and the new GGBN Data Portal. The need for workshops and training will also increase as a result. In light of this growth, full operation that ensures a consistent delivery of services will require a higher operating budget and dedicated staff time than is allotted for in 2016. The estimated cost of fully operating the Global Genome Biodiversity Network is approximately \$400,000 USD/year. This figure is based on the budget and experience of the preceding five years.

	GGBN Budget Requirement (Projected)
Equipment and supplies, domains, hardware, software, marketing and press, printing	\$5,000
Full-time Program Manager (Secretariat Office)	\$107,453
Full-time Program Assistant/Funds Manager (Secretariat Office)	\$60,576
Full-time Technical Manager (Technical Office)	\$89,772
Full-time Scientific Developer (Technical Office)	\$80,471
Executive Committee Chair	\$10,000
Conference (every 2 <sup>nd</sup> year)	\$61,720
Outreach, Meetings and Technical Support	\$24,000
Total Requirements	\$438,992

Appendices I, II and III are supplementary material only and not part of the Terms of Reference.

#### **Appendix I: GGBN Operational Budget**

The GGBN Operational Budget for years 2016-2018 is outlined below and in the following table.

- The Global Genome Biodiversity Network is partially supported by grants and inkind support through December 2018.
- The GGBN should be partially supported through contributions from its Members starting on January 1<sup>st</sup>, 2017 with the goal of supporting GGBN operations through an increasing number of contributions over time.
- The estimated cost of operating the Global Genome Biodiversity Network is approximately \$400,000 USD/year. This estimate is subject to change.
- If GGBN's financial goals are not met by November 1<sup>st</sup> of the previous calendar year, then GGBN will revert to a restricted budget, set by the Executive Committee and approved by the General Assembly, for the upcoming calendar year until GGBN's goals are met.

	GGBN CY16 Budget	GGBN CY17 Budget (Projected)	GGBN CY18 Budget (Projected)
Income			
In-Kind E.g. BGBM, NMNH, NHM Denmark, QCAZ	\$155,477	\$90,631	\$90,631
In-hand Grants	Grants \$67,856 \$0		\$0
Expected  Monetary contributions <sup>1</sup>	\$9,600	\$54,016	\$54,016
Expected Conference registration & Vendor support	\$22,000	\$0	\$22,000
Total Income	\$254,933	\$144,647	\$166,647
	GGBN CY16 Current Operating	GGBN CY17 Goal (Projected) <sup>3</sup>	GGBN CY18 Goal (Projected) <sup>3</sup>
Equipment and supplies, domains, hardware, software, marketing and press, printing	\$3,000	\$4,000	\$5,000
Full-time Program Manager (Secretariat Office) <sup>2</sup>	\$52,037	\$107,453	\$107,453
Full-time Program Assistant/Funds Manager(Secretariat Office) <sup>2</sup>	\$28,394	\$60,576	\$60,576
Full-time Technical Manager (Technical Office) <sup>2</sup>	\$67,956	\$89,772	\$89,772
Full-time Scientific Developer (Technical Office) <sup>2</sup>	\$8,226	\$80,471	\$80,471
Executive Committee Chair	\$10,000	\$10,000	\$10,000
Conference	\$61,720	\$0	\$61,720
Outreach Meetings and Technical Calls	\$23,600	\$24,000	\$24,000
Total Requirements	\$254,933	\$376,272	\$438,992

<sup>&</sup>lt;sup>1</sup>Contributions for a given budget year will be received in the proceeding calendar year.

<sup>&</sup>lt;sup>2</sup>Program staff on part-time salary for calendar year 2016.

<sup>&</sup>lt;sup>3</sup>Expected requirements for the cost of full operations are based on the budget and experience of the preceding five years. Full operations will ensure consistent delivery of services with network growth, an increase in collections online, and community outreach and engagement through workshops and conferences.

#### **Appendix II: Task Force Programs of Work**

There are currently four GGBN Task Forces. Each program of work is outlined below.

#### A. Data Standards and Data Access for Genomic Samples Task Force

The program of work for the Data Standards and Data Access for Genomic Samples Task Force includes:

- a. Development of a data standard for sharing DNA and tissue information by:
  - Using basic standards that exist;
  - Developing controlled vocabularies.
- b. Development and subsequent expansion of a global data platform for aggregating relevant data sources of genomic samples, vouchers, molecular analysis, publications, and images that:
  - Expands to an exposure of richer data and links all derivatives back to the original voucher;
  - Updates channels among samples;
  - Develops data sheets of standardized formats to be used in the field for easy incorporation into existing databases.

## B. Practices Related to Management and Stewardship of Genomic Samples Task Force

The program of work for the Practices Related to Management and Stewardship of Genomic Samples Task Force includes:

- a. Defining best practices and assisting Members towards achievement by:
  - Holding workshops on collecting and preserving tissues for molecular analysis in the field;
  - Holding workshops on topics related to collections management, other elements of biorepository management, operations and disaster planning;

 Developing standard templates for capturing and reporting information on testing technologies.

# C. Policies Related to Management and Stewardship of Genomic Samples Task Force

The program of work for the Policies Related to Management and Stewardship of Genomic Samples Task Force includes:

- a. Supporting Member organizations' work on Access and Benefits Sharing by:
  - Creating Member awareness on the Convention on Biological Diversity and the Nagoya Protocol as benefits to provider countries and society;
  - Expecting Members to respect the Convention on Biological Diversity and the Nagoya Protocol by maintaining transparency, and working towards goals of mutual benefit sharing;
  - Creating Member awareness on the fact that biodiversity-rich countries are the legal owners of their biodiversity, and that those countries consider their biodiversity as a national asset;
  - Encouraging Members to work with biodiversity-rich countries towards mutual benefit sharing;
  - Taking a proactive role in implementing, sharing and encouraging the use of appropriate genetic material tracking systems.

#### D. Communications and Outreach Task Force

The program of work for the Communications and Outreach Task Force includes:

a. Recruiting new Members and disseminating information to raise awareness of the importance of genomic sample information and biodiversity repositories by:

- Encouraging the use of best practices and helping to raise the awareness of access and benefit sharing;
- Encouraging the use of references to the location of samples in record keeping and publications;
- Developing communications material on the importance of genomic sample information and exploring existing journals and websites where GGBN would get the greatest exposure;
- Actively engaging genomic collections-based partners, biodiversity-rich countries and marginal communities in GGBN, as an element of outreach;
- When appropriate performing outreach through media.

## Appendix III: 2016-2018 Work Plan

Goals	To be Achieved	Task Forces			Members and Collaborators	
		Data Standards	Practices	Policies	Communications & Outreach	
Identify and expand data portal	Gaps in GGBN data portal functionality and reporting defined. Portal functionality					
functionality and reporting.	expanded based on user needs.	X				X
Identify gaps in standards for	Gaps in GGBN data uses defined, standard data					
sharing genomic samples.	dictionary updated, white papers published.	X				x
Identify gaps in best practices related to management and stewardship of genomic samples.	Recommendations for Members to track and report on genomic sample use and ABS completed and available. A strategy for engaging with ABS clearing house identified					
Develop and strategically expand GGBN	and implemented.  GGBN requirements identified and implemented, gaps in content identified and		X	X		X
Document Library.	uploaded.		X			
Enable gap analysis on Member	Gaps on all families and half the genera filled through collections-generating					
collections. Expand GGBN	startups, e.g. GGI Gardens.  24 GGBN Member collections	X	X		X	v
online collections.  Raise awareness of ABS and the importance of genomic	made available online.  Awareness raised through strategic publications and media.	X				X
collections.				X	X	X
Recruit new Members and partners.	Communications and outreach plan reviewed and updated. Marginal Members (e.g., zoos, aquaria, seedbanks) and biodiversityrich countries engaged strategically through GGI Gardens-like activities, publications, newsletters, website, surveys, e-mail, and					
	workshops.				X	X