Case Study: Institution-Based Information Systems
PhilAgriNet - Philippines

EXECUTIVE SUMMARY

PhilAgriNet is a network that links agricultural knowledge generated in the Philippines to prospective end-users nationally as well as globally. It traces its roots to the international AGRIS initiative of the seventies. One of the first AGRIS nodes to be instituted was the Southeast Asian regional center at SEAMEO/SEARCA. A national hub for the Philippines was set up simultaneously at the University of the Philippines Los Baños Main Library. In the early-nineties, AGRIS activity within these two hubs waned. To revive participation, a new vision for AGRIS that mirrored current networking technology and protocols was crafted. In the Philippines, this vision has been operationalized in PhilAgriNet.

PhilAgriNet has been developed following the *online consortium* model. The online consortium is a formal network of institutions linked together electronically. Unlike the *community of practice* model, the major stakeholders in the online consortium are institutions bound by both formal organizational agreements and electronic networking ties. However, one feature that distinguishes PhilAgriNet from other formal networks is its spontaneity; it was established with little or no advanced planning involved. The main network initiators were information professionals from: The Food and Agriculture Organization Regional Office for Asia and the Pacific (FAORAP) in Bangkok; the International Rice Research Institute (IRRI) based in Los Baños; the SEAMEO Regional Center for Graduate Study and Research in Agriculture (SEARCA); the Department of Agriculture Bureau of Agricultural Research (DA-BAR), and the Agricultural Librarians Association of the Philippines (ALAP). A Memorandum of Agreement formally binds the aforementioned institutions together.

The process that led to the development of PhilAgriNet as an online consortium may be divided into five steps: confirmation of the need to network; formalization of the network; forging institutional links; operationalization; and capacity building. The online consortium model is a feasible strategy for agricultural information sharing and reuse at the sub-national, national and global levels. It taps the functional versatility of the World Wide Web within a formal organizational networking framework. Three advantages of this model have been observed in the case of PhilAgriNet. Firstly, it does not adopt a linear, centralized, hierarchical, and rigid network structure. Secondly, it may form spontaneously like all living networks. It does not require advanced planning. Thirdly, it will survive at least initially on inputs from its members without disrupting current financial allocations and procedures. However, this points towards its main disadvantage, the lack of a regular institutional budget endangering its sustainability.

The PhilAgriNet model has the makings of a widely acceptable and applicable best practice. However, it also underscores a few issues and challenges that should be addressed by networking and knowledge management specialists. First is the issue of technology. Second is the need to bring PhilAgriNet to the next level of network maturity, that is, a network that is not entirely dependent on its member institutions for infusions of resources. Third is the need to reach out and link up with other initiatives. Addressing these challenges would not only ensure PhilAgriNet's survival but would result in increased network fitness and integrity.

1. BACKGROUND

PhilAgriNet was established in 2003. However, it traces its roots to the Food and Agriculture Organization's AGRIS initiative of the seventies. AGRIS was created in 1975 as an international program aiming to build a common information system on agriculture and related subjects. This system employed a collaborative network of institutions composed of a global center in FAO Rome, regional centers, national hubs and sub-national nodes. The network structure may be characterized as hierarchical, centralized, and rigid. In this system, input sheets for bibliographic databases were filled-up by sub-national documentation nodes that sent these on a regular basis to the national hubs. The national hubs encoded the entries and sent the data to the regional center. The regional center, in turn, consolidated the data on a CDS-ISIS backend then transmitted these to the global center, which maintained a central repository of agricultural bibliographic information.

One of the first AGRIS nodes to be instituted was the Southeast Asian regional center at SEAMEO SEARCA. A national hub for the Philippines was set up simultaneously at the University of the Philippines Los Baños Main Library, literally next door to the regional center. Actually the Southeast Asian regional center and the Philippine national hub shared the same office for two years. In other words, the regional and national hubs enjoyed institutional as well as physical proximity at the very onset.

This arrangement worked perfectly for almost twenty years. However, in the early-nineties, AGRIS activity within these two hubs waned. The advent of the Internet, the increasing popularity of the World Wide Web as a platform for information exchange, and the possibility for decentralized encoding and uploading may have been responsible for the disruption of the system.

This trend was true not only in the Philippines but in other countries as well. Thus, to revive regional, national and sub-national participation, the first Consultation on Agricultural Information Management (COAIM) conducted in 2000 suggested a new vision for AGRIS that mirrored current networking technology and protocols. The revival of the AGRIS initiative would go far beyond creation of bibliographical databases, and would aim to reach new partners beyond the traditional documentation centers. This necessitated migration from CDS ISIS to WebISIS, thus improving back-end and front-end accessibility as well as enabling a less rigid, more decentralized collaborative framework.

There are several main principles in this new approach. Firstly, FAO foresees the creation of a collaborative network of collections of resources and publications, working with web-enabled technologies for the Internet and CD-ROM. Instead of

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identified national hubs and sub-national nodes, participation in this network will be open to any organization able and interested to participate in AGRIS, which will be known as "Resource Centers," actively moving away from the centralized national hubs. FAO aims to facilitate the creation and maintenance of collections of agricultural information resources, documents in full text and other types of information (e.g. maps, images, etc), at a national and sub-national level, and focusing in particular on unconventional (grey) literature.

In the Philippines, the vision for a new AGRIS has been operationalized in PhilAgriNet, an online consortium cum database that links agricultural knowledge generated in the country to prospective end-users. PhilAgriNet does not have a regular funding source and, like most institutional networks at their initial stages of development, subsists on occasional contributions from its members. This paper documents the processes and experiences in establishing PhilAgriNet, the national AGRIS network in the Philippines.

2. STAKEHOLDERS

The strategy or model employed in the development of PhilAgriNet is the *online consortium* model. The online consortium is a formal network of institutions linked together electronically. In other words, unlike the COP (community of practice) model, the major stakeholders in the online consortium are institutions bound by both formal organizational agreements and electronic networking ties. However, one feature that distinguishes PhilAgriNet from other formal networks is its spontaneity. PhilAgriNet was established with little or no advanced planning involved.

Network Initiators
The main network initiators in the PhilAgriNet development process were information professionals from: The Food and Agriculture Organization Regional Office for Asia and the Pacific (FAORAP) based in Bangkok; the International Rice Research Institute (IRRI) based in Los Baños; the SEAMEO Regional Center for Graduate Study and Research in Agriculture (SEARCA); the Department of Agriculture Bureau of Agricultural Research (DA-BAR), and the Agricultural Librarians Association of the Philippines (ALAP).

The Philippines was the first to institute a capacity building initiative on WebAGRIS. The workshop, entitled *Capacity Building for Automation of Philippine Libraries and for Broadening the Base of FAO AGRIS* was organized by ALAP, with support from FAO and IRRI. It was held in July 23-25, 2003 at the IRRI campus in Los Baños, Laguna, Philippines. The need for a central source of Philippine agricultural literature was emphasized by the participants in this workshop. This workshop, plus a series of discussion meetings among librarians and information managers representing the DA-BAR, IRRI, ALAP, and SEARCA, led to the creation of the Philippine Agricultural Libraries and Information Services Network or PhilAgriNet

It may be noted that although international initiators outnumbered national stakeholders, ALAP represented the entire institutional base of the Philippine agricultural information sector. However, DA-BAR at this time was playing a de facto leadership role in the Philippine agricultural information sector, having taken the initiative to operationalize the Department of Agriculture National Information Network (DA-NIN).

Stakeholders in the Implementation of the Strategy

The membership of PhilAgriNet expanded to include other members of ALAP. However, two of the original members, SEARCA and PCARRD, have become inactive. Shifts in program priorities exacerbated by staff movements led to SEARCA's current status. Furthermore, the new decentralized non-hierarchical vision for WebAGRIS had made regional centers obsolete. On the other hand, other factors that will be discussed later caused PCARRD's inactivity.

Currently, the stakeholders in the implementation of PhilAgriNet are:

International Rice Research Institute. Although a global facility within one of the future harvest centers of the Consultative Group for International Agricultural Research (CGIAR), the IRRI Library and Documentation Service serves as the technical hub of this national documentation center. For reasons still undetermined, the installation of WebAGRIS in the other resource centers has encountered technical problems. However, WebAGRIS has been successfully installed in IRRI and is running relatively trouble free. In March 2005, the first batch of inputs to the AGRIS database from PhilAgriNet was uploaded by IRRI signaling the Network's bona fide status as an AGRIS resource center. The IRRI Librarians serve as key players in capacity building during formal workshops and provide free consultation upon request from PhilAgriNet members. Part of the PhilAgriNet database is hosted by IRRI. This will be merged with the one at the UPLB Main Library as soon as technical problems are solved.

FAO Regional Office for Asia and the Pacific. FAO'S regional node in Asia has been providing technical assistance in terms of capacity building, expertise and software to PhilAgriNet from its very inception. With its responsibility over AGRIS in Asia, FAORAP will continue to assist PhilAgriNet within its capacity.

Bureau of Agricultural Research, Department of Agriculture. DA-BAR provides the institutional leadership for PhilAgriNet. The Network's Chair and Coordinator are based in DA-BAR. The PhilAgriNet Website is also hosted by DA-BAR.

Association of Librarians in Agricultural Colleges. ALAP continues to be the training arm of PhilAgriNet. At the moment, proceeds from training programs conducted in the past constitute the latter's sole source of income.

University of the Philippines Los Baños. The operational hub of PhilAgriNet is found in the University of the Philippines Los Baños. The institutional commitment of UPLB to the Network involves the UPLB Main Library and the various unit libraries on campus: the libraries of the National Institute of Biotechnology and Molecular Biology (BIOTECH), the College of Economics and Management (CEM), the College of Engineering and Agro-Industrial Technology (CEAT), the College of Forestry (CF), the College of Veterinary Medicine (CVM), and the Post Harvest Horticulture Training and Research Center (PHTRC). The Vice-Chair, Secretary, Auditor and Treasurer are all based in UPLB. The Main Library hosts the PhilAgriNet office as well as its database server and funds the salaries of two indexers assigned. Input sheets are sent to two part-time encoders for inputting into the database. Furthermore, preparations have been made to upload the PhilAgriNet database maintained by UPLB to the PhilAgriNet Website hosted by BAR. An unexpected staff turnover in UPLB has delayed this move.

Other Colleges, Universities and Research Agencies. Libraries of other state colleges, universities and institutes such as: Benguet State University (BSU); Central Luzon State University (CLSU); Don Mariano Marcos Memorial State University (DMMMSU); Isabela State University (ISU); Leyte State University (LSU); Silliman University, and the Philippine Rice Research Institute (PhilRice), are all members of PhilAgriNet.

Model of Governance

A Memorandum of Agreement formally binds the aforementioned institutions together. The MOA is signed by the heads of agencies concerned. However, they are not directly involved in the governance of PhilAgriNet. A Management Committee composed of representatives of these institutions manages the Network. The following organogram represents the management structure of PhilAgriNet:
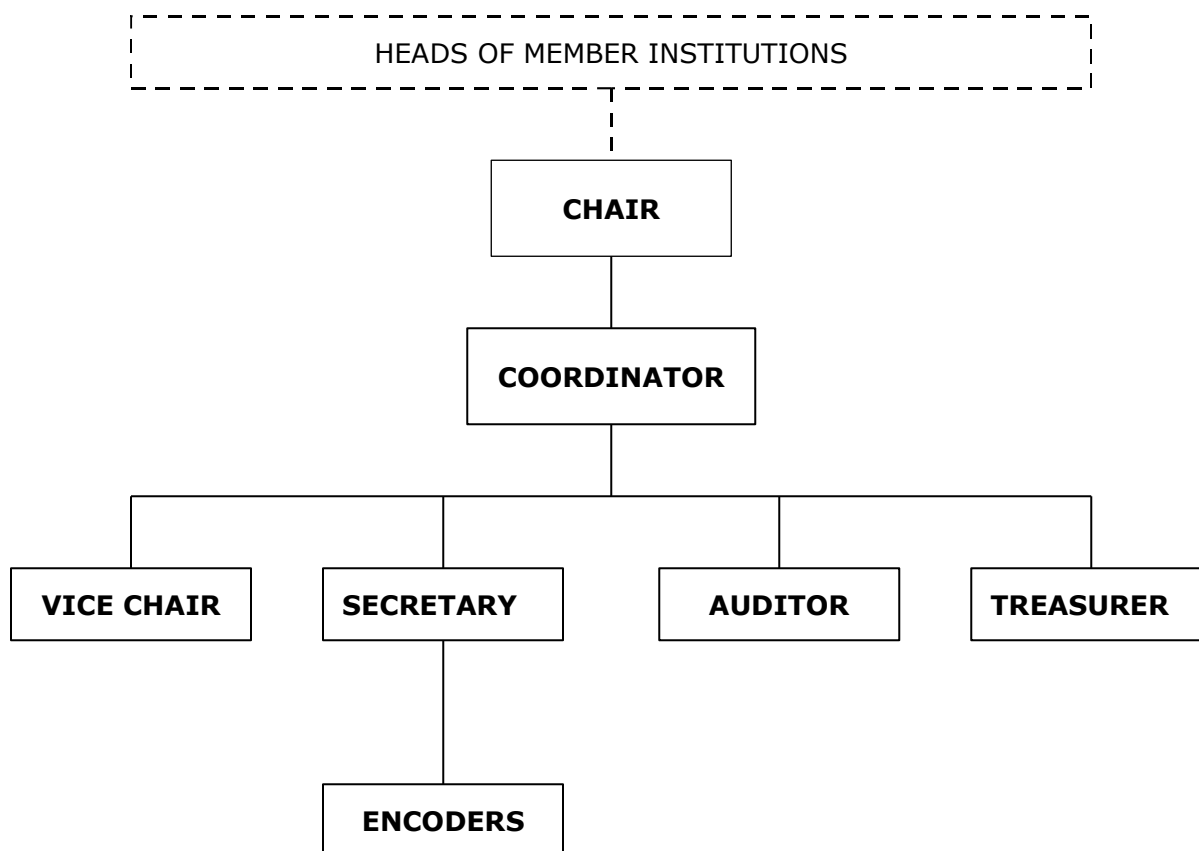

FIGURE 1. ORGANIZATION STRUCTURE

The Chair of the Management Committee is no less than the Director of DA-BAR. However, it is the Coordinator who directs the Committee. The current Coordinator is also the Research Coordinator of DA-BAR.

The UPLB Main Library acts as the Secretariat. The Former University Librarian serves as Vice Chair and her associate serves as the Management Committee's Secretary. The Auditor and the Treasurer are from DA-BAR and UPLB, respectively.

3. THE PROCESS

The process that led to the development of PhilAgriNet as an online consortium may be divided into five steps: confirmation of the need to network; formalization of the network; forging institutional links; operationalization; and capacity building

Confirmation of the Need to Network. The initial step was a mutual reinforcement of the realization among the stakeholders that the former Philippine nodes of AGRIS and other agricultural libraries in the country had to link up for purposes of sharing and reuse of Philippine agricultural information. Furthermore, there was a need for an alternative to the rigid, hierarchical and centralized flow of information that characterized AGRIS 1.0.
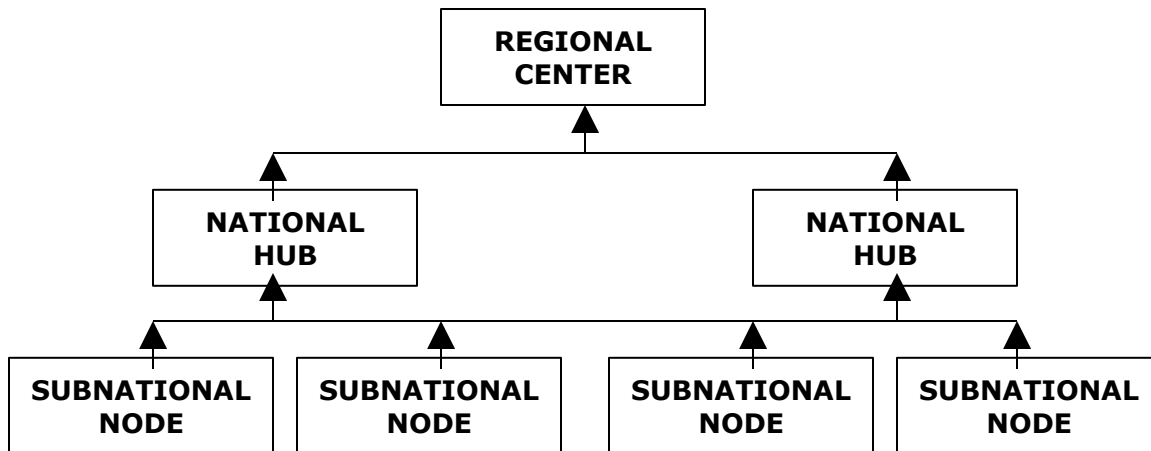

FIGURE 2. AGRIS 1.0 NETWORK

In fact, there were a variety of other reasons for institutional networking apart from the need to strengthen the AGRIS database and to introduce WebAGRIS software. These were: the proliferation of current agricultural research literature without the concomitant awareness; current advances in ICT and increased library capability for knowledge dissemination and sharing; the *digital divide* among agricultural libraries in the country; and changing user needs (Ramos, 2005).

The process involved began with dissatisfaction on the current circumstances and a realization that the inadequacies experiences may indeed be addressed by pooling resources and outputs. The product of this process was a shared need that prompted the network initiators to act. Mutual reinforcement of this realization was achieved by stakeholder consultation both to shape the strategy and to ensure ownership of the Network.

Formalization. The next step was the formalization of the online consortium. This was achieved through a series of meetings that followed the Los Baños workshop in July 2003. The product of this step was a motion put on the table by ALAP with the endorsement of FAORAP, for the creation of a Philippine AGRIS Network. As mentioned, it was more of a spontaneous development resulting from the action planning of the ALAP-AGRIS workshop.

Forging Institutional Links. Since libraries are merely part of established institutions within the agricultural research and development sector, the next step entailed obtaining institutional clearance as well as support to participate in the network. Among the network initiators were prestigious international organizations such as FAO, SEARCA and IRRI. Thus, institutional endorsement from the other institutions was not difficult to obtain. Memoranda of Agreement between and among the stakeholders were drafted and signed.

Operationalization. The next step was to operationalize the online consortium. The process is currently in the operationalization stage. The resource documentation centers are now functioning in a relatively less centralized, less rigid, nonlinear and flat network structure.
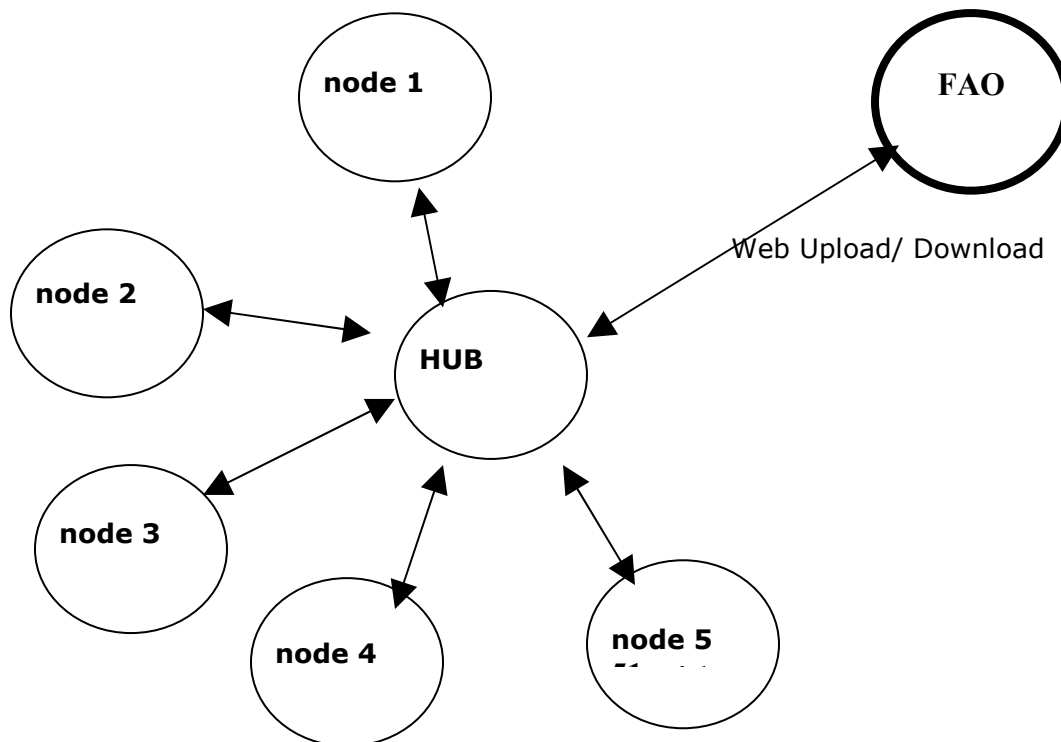
FIGURE 3. PHILAGRINET CONFIGURATION

At this point, the level of ownership of the Network among the stakeholders is high and strong. In fact, the strength of PhilAgriNet lies in the commitment of its stakeholders resulting from a heightened sense of network ownership.

Institutional Strengthening and Capacity Building. The step that needs to be implemented now is institutional strengthening and capacity building. Although training activities have already been conducted, PhilAgriNet needs to be nurtured from this initial phase of development into a mature, self-sustaining network with a

regular budget of its own. This requires organizational development, additional technical assistance, and concrete institutional support from its members, and internal policies that would sustain the Network.

4. FINANCIAL ASPECTS OF PROCESS

The advantage of the online consortium model is that it requires relatively little costs to operate. However, this may also result in the difficulty to acquire a regular operating budget.

Currently, PhilAgriNet subsists on contributions in man-hours, equipment time, travel allocations and supplies from its member institutions as per the Memorandum of Agreement. Other sources of funds are training fees generated by ALAP.

Institutional strengthening interventions for PhilAgriNet are now necessary to establish appropriate mechanisms that would enable institutional commitment to be translated into contributions to a regular budget for the Network.

5. CONTENT OF STRATEGY

Overview
The online consortium strategy is a hybrid of the institutional networking model and the conventional community of practice (COP) or Web-based work group model. The consortium's principal goal is guided by shared institutional goals of the consortium members. Since its members are academic and R&D institutions, it may be surmised that the primary shared institutional goal is knowledge sharing and reuse.

PhilAgriNet's mission is to provide, in an equitable, cooperative, cost effective manner, enhanced access to printed agricultural knowledge sources generated by public and private institutions engaged in agricultural research and development in the Philippines. It shall also serve as a venue for exchanging the best practices in information storage and dissemination among its members.

This mission will be accomplished through the establishment and management of a central database to be sustained by data inputs from members and through capacity building activities aimed at upgrading the knowledge and skills of members and prospective members.

Relationship to National and Institutional Policies and Strategies
As a matter of national policy, the Government of the Philippines has been supporting ICT4D initiatives since 2001 when the Commission on Information and Communications Technology (CICT) was formally established. The Department of Agriculture has created the National Information Network (DA-NIN) that electronically links all agriculture related databases in the country. In 2001, the DA-BAR has assumed leadership in operationalizing the DA-NIN through the Agriculture and Fisheries R&D Information Systems (AFRDIS). It is an information system for institutions that are engaged in research and development in agriculture and fisheries. AFRDIS's primary goal is to provide a coordinated and proactive environment for cooperation and partnership on information exchange and dissemination on a global basis. This led the Bureau to draft a comprehensive plan for the sharing and reuse of agricultural information among government agencies

and R&D organizations. It saw in PhilAgriNet, another opportunity to formally link the DA-NIN and AFRDIS to global agricultural information documentation via the WebAGRIS platform.

Relationship to Other Ongoing Initiatives
The proliferation of networks in the Philippines somehow poses a hindrance to the growth of PhilAgriNet. For example, the Philippine eLibrary involves various government agencies including the Department of Agriculture.

The Philippine eLibrary, however, is an initiative of another line agency, the Department of Science and Technology (DOST). It has its own institutional network and runs its own platform tapping the Philippine Research and Education Government Information Network (PREGINET) infrastructure. The Philippine Council for Agriculture and Resources Research and Development (PCARRD) is a DOST organization with a mandate for agricultural information management similar to DA-BAR. Using the Philippine eLibrary platform, it has established an online agricultural information database for farmers, extension workers and researchers, the K-AgriNet. Although PCARRD was a founding member of PhilAgriNet, there has been no initiative taken for the metadata interface of these two systems.

In fact, if the strength of PhilAgriNet lies in the high levels of commitment exhibited by its stakeholders, its weakness lies in its relationship with other ongoing initiatives. However, this constraint has been identified and is gradually being addressed by PhilAgriNet through strengthening its efforts to complement not duplicate in any form current government programs on agricultural information service provision.

6. SUMMARY OF LESSONS LEARNED

The online consortium model is a feasible strategy for agricultural information sharing and reuse at the sub-national, national and global levels. It taps the functional versatility of the World Wide Web within a formal organizational networking framework.

Three advantages of this model have been observed in the case of PhilAgriNet. Firstly, it does not adopt a linear, centralized, hierarchical, and rigid network structure. Secondly, it may form spontaneously like all living networks. It does not require advanced planning. Thirdly, it will survive at least initially on inputs from its members without disrupting current financial allocations and procedures. However, this points towards its main disadvantage, the lack of a regular institutional budget endangering its sustainability.

7. ISSUES AND CHALLENGES

The online consortium model exemplified by PhilAgriNet has the makings of a widely acceptable and applicable best practice. However, it also underscores a few issues and challenges that should be addressed by networking and knowledge management specialists.

First is the issue of technology. The Network's dependency on the WebAGRIS platform requires more responsive technical support services from the WebAGRIS

developers and systems specialists. Technical problems seem to be the norm rather than the exception among WebAGRIS users in PhilAgriNet. Furthermore, a few veteran users within PhilAgriNet seem not to have progressed from the manual filling-in of index sheets.

Second is the need to bring PhilAgriNet to the next level of network maturity, that is, a network that is not entirely dependent on its member institutions for infusions of resources. Networks are living systems. Like all living systems they must perform three critical functions in order to survive: the exchange of materials with their environment and other systems; the exchange of energy with their environment and other systems; and the exchange of information with their environment and other systems. PhilAgriNet must have its own materials and run on its own energy.

However, this leads us to the contradiction that PhilAgriNet's member institutions should increase its support to the Network to empower it, enabling it to be less dependent on its member institutions. Specifically, a time bound seed funding mechanism should be established. *This can only be made possible if a PhilAgriNet champion at the highest levels of each institution is identified and mobilized.* These strategies of internal advocacy and the provision of a time-bound seed funding mechanism must be accompanied by the development of organizational policies and operations procedures, all of which can only be realized through an institutional strengthening and capacity building technical assistance undertaking.

Third is the need to reach out and link up with other initiatives. Again, networks are living systems. As a living system, PhilAgriNet should connect with existing initiatives in the current environment as well as provide for uplinks and downlinks with future initiatives along the planning horizon. These moves would not only ensure its survival but would result in increased network fitness and integrity.