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Conditions and Functions of an Informal International Knowledge Network. Considerations for ICT Support.

1. Abstract

I present the International Knowledge Network for Sustainable Development (IKN), a network that consists mainly of informal, personal ties and single concrete projects. I discuss the network's conditions and functions. This leads to an understanding of the requirements and constraints that need to be considered for information and communication technology (ICT) solutions. In the end, consequences are drawn from the IKN's experiences with different strategies for ICT support.

2. The International Knowledge Network for Sustainable Development (IKN)

This paper is based on my 2005 diploma thesis research on the International Knowledge Network for Sustainable Development (IKN), and on our ongoing experiences and endeavors within the IKN for better using ICT.

The International Knowledge Network for Sustainable Development (IKN) is "a project for the advancement of sustainable development […] in the countries of the South. Exchange and cooperation in partnership among the South and the North are to make knowledge applicable for the creation of worthy living conditions." (IKN, 2005)
Today's IKN had its beginnings in 1999 when a group at TU Berlin, in cooperation with a professor in Cuba, developed a project to train community representatives from Nicaragua and Haiti at the University of Sancti Spiritus, Cuba, to become multipliers of applicable knowledge of renewable energies. The participants in Berlin where the Haitian-born professor Anthony Etienne and students and alumni, most of them also from Latin America, Africa, or Asia. They were natural experts of intercultural relations, and the group was very critical of existing North-South relations, northern perceptions of the countries of the South, and the traditional development cooperation. The sociology professor and later scientific director of the IKN, Werner Siebel, strongly influenced the network with his emphasis on the cultural dimensions of development. People are seen as 'experts of their own situation', and development should start from the 'endogenous resources', that is, the people's own

knowledge, traditions, and visions of a good life. Scientific research should be directed towards practical problems, and experiences in praxis be fed back into science. The IKN envisions exchange of experience and cooperation through equal partnership. It is sometimes also referred to as South-South-North-Network, emphasizing exchange among the countries of the South and a bi-directional South-North exchange.

In 2003 the Berlin group traveled to Cuba, visiting their partners at the University of Sancti Spiritus and other research and educational institutions. During this visit, the original renewable energies project idea was extended to an international project dedicated to all fields of sustainable development. Five 'columns' of activity were defined:
1. research,
2. education,
3. application in practice,
4. international exchange and network building, and
5. personal and institutional capacity development.

An original proposal for an European Center for Sustainable Development in Sancti Spiritus could not be realized, as no funding could be obtained. From late 2003 on, the strategy has been to develop an International Knowledge Network through single concrete projects that would be funded individually.

In the following years further fact finding missions (mainly by the coordinators) and networking activities of all members integrated more and more persons and institutions into the network. An increasing number of master and doctoral theses are conducted in the context of the IKN, many of them including a research visit to foreign partner institutions. Several attempts were made to set up large international academic cooperation projects within the EU program. Examples for practice projects of the IKN include a training of Nicaraguan community representatives in Cuba, to become multipliers of applicable knowledge of renewable energies; funded by InWent. Or the installation of a photovoltaic power plant at the university of Sancti Spiritus, Cuba, to ensure a continuous computer service; funded by DAAD.

Since 2005 the IKN is consortial partner of ARCA-Net, an international alumni network dedicated to the prevention of conflicts for natural resources, and funded by DAAD. ARCA-Net's International Summer Schools in Berlin and their regional conferences offered the IKN the opportunity to bring together its distant members and to meet potential new partners.

By today, the IKN has come to include scientists and practitioners from all continents. They all work in some field related to sustainable development, among others:
• renewable, decentralized energy
• water supply and settlement hygiene
• habitation and construction
• nutrition
• health
• sustainable tourism
• transformational economic models, strategies for social economy and financing
• organization and communication
• networking of social initiatives
• administration, acquisition of project funding

The IKN network is coordinated by Prof. Werner Siebel, Prof. Osvaldo Romero and Stefan Wolf. But networking – that is, bringing together people and ideas – is done by all involved persons. Formally, the IKN is a project of the Technical University of Berlin under the direction of Prof. Werner Siebel. This allows e.g. funding applications to DAAD, or the

creation of inter-university cooperation agreements. In 2005, Berlin IKN members founded AgEnt e.V., an NGO, as an institutional base for practice activities.

Neither IKN nor AgEnt have significant amounts of money. Before projects might be financed by some funding organization, their development is afforded through the involved people's own, or their institutions', resources, that is mainly working time, meeting rooms, telephone costs, printing and copying. As mentioned, a lot of research and networking is done as thesis work. As all expenses, international travel – crucial for the IKN activity – must find each time its financial solution.

3. The IKN's communication

The IKN is a network of personal, mainly informal ties. Its coordinators are engaged in other jobs and have only limited time for the IKN. The IKN consists of no clear group of participants, but many persons with different and changing degrees of commitment and participation. Many participants integrate persons from their own networks into the IKN. So only few people have an overview over all of IKN's participants and activities. Most participants do not know all other people involved in the IKN's discussions and activity, especially since they are in many countries.

The communication within the IKN resembles the network's informality, personal character, and project orientation. Communication is usually one-to-one or in small (local or project) groups, where these one-to-one-communications as well as groups come to be through personal contacts. There is hardly any unified communication of coordinators to all participants, and no one-to-all or all-to-all communication among all participants of the IKN.

Face-to-face communication is crucial for the development of the IKN and its projects. Nearly all personal relations that sustain a minimum of cooperation, trust, and commitment have evolved from meeting each other in person, face-to-face. Physical co-presence has often led to a boost in joint activities. It is the experience of the IKN that partners must meet face-to-face at least once a year in order to maintain a strong enough personal tie and the cooperation it sustains. As mentioned, meetings often involve long-distance travel and are thus expensive and difficult. But there are some local (project) groups that come together more regularly. An example is the Berlin IKN Project Workshop. It is formalized as a sociology seminar of Prof. Siebel at TU Berlin, but additionally to students who come for one semester, it is a weekly meeting of IKN members and their guests.

Other media for personal and project group communication are telephone (increasingly VoIP), e-mail, and instant messaging. Announcements and other (event) information are irregularly distributed through e-mail as well. Usually such mails are send by the coordinator Stefan Wolf, pasting all recipients' mail addresses into the 'To' field. That is, no mailing list or other tool is used. Only during the preparation for the trip to Cuba in 2003, and since 2005, such announcements and other contents are provided and retrieved through some internet groupware technology. Further below I will describe the IKN's internet use since 2005.

Until 2005, the IKN had no internet presence to the public. There are paper IKN information flyers in German, English, and Spanish language, written by the coordinators. To my knowledge, the last flyer is from 2005. It contains a programmatic description of the IKN and the history of its beginnings and initial projects, as well as contact information. Few up-to-date documents are available that give an overview of activities in a presentable form.

4. Functions of the network

In my analysis I came to distinguish between the broader IKN as an informal, personal, and somewhat amorphous network, and concrete activities of the IKN. As a personal network, the IKN has no clear limits regarding which people and activities are part of the IKN and which are not. This openness allows for the easy access of new persons and new ideas, for the integration of existing relations and initiatives, and for the exchange of experience and knowledge among many people.

On the other hand are concrete projects. Each project is individual, as far as its participants, its objectives, its financing, and its institutional base are concerned. These projects emerge within the network, and are possible through the network. The network itself is developed and maintained through these projects.

I see the IKN as a facilitator or incubator of project activities: discussions and activities emerge within the broad informal network. They begin as vague ideas in open-ended discussions that are open to everybody and without obligation. Over the time, the project's conception gets more concrete and a group of participants emerges that is characterized by individual commitment and clearer responsibilities. The exchange gets more confidential. As the IKN itself has very little own funds, most project conceptions include a funding plan, and at last contracts with funding organizations will make necessary formalized responsibilities. Each project has its own funding, its own formal-institutional arrangement (although often as IKN or AgEnt project), and its own group of participants (often including at least the IKN coordinators). For that reason I prefer to speak of projects *in the context of* the IKN rather than of projects *of* the IKN.

As facilitator of activities the IKN delivers certain functions: the brokering of trustful relations and other resources, the dissemination of information, and the provision of identity.

The network's most important function is to bring people together, thus creating trustful connections. A person interested in some activity concerning sustainable development might find in the IKN: partners for a common project; people with specific knowledge and experiences; people who can help with other types of resources. The brokering of relations is either specific – a participant of IKN brings together other people for a specific reason – or unspecific – people meet at some IKN event or get to know about each other through some sort of information.

Connections arranged through the IKN are generally trustful, reliable and cooperative. One reason for that is the personal mediation of contacts. For example, a German student wants to conduct a research concerning bio gas use in a tropical country. The Berlin IKN coordinator puts him in contact with a close colleague who is professor in Cuba. Both the Cuban professor and the German student have commitment with the IKN coordinator, which will make them act more responsibly with one another as well. Furthermore, the embedding of personal relations in the social group of the IKN makes trust and cooperative behavior more likely. Even if the group is diffuse, it exercises social control, and there is a chance of future encounters between any participants. Additionally, the IKN provides a general frame of shared understandings concerning goals, ideology, and its way of cooperative work. Without such a frame, these shared understandings would have to be slowly established before cooperation takes place. In this paper I am not going deeper into the questions of how trust is created, destroyed and maintained, and their consequences for communicative behavior.

It is mainly through personal contacts that the IKN can provide other resources. This could be a meeting room, a place to stay for a visiting scientist from Cuba, or any expertise, e.g. in funding acquisition.

A second major function of the network is the dissemination of information. I don't refer here to the more disciplinary or practical 'knowledge' for sustainable development, which is produced, disseminated, adapted, and applied mainly through more concrete projects. Rather I have in mind information about upcoming events, general trends, new contacts, the latest activities of IKN participants, about opportunities for participation or requests for support of some sort. Such information circulates through all meetings and communication. It is the breeding ground for comments, ideas, discussions and ultimately, projects. ICT should provide means to support this circulation of information. (See below)

The IKN provides an identity. Towards the outside, this means a name and a growing reputation in the field of development and academic cooperation, as well as a legal identity as university project or NGO. Towards the inside, identity means a feeling of belonging together, of solidarity, of working for the same ends. As explained, the IKN provides common understandings of goals and ways of cooperation that serve as a basis for all activities.

5. Functions of communication

Given the IKN network's way of work, and the functions the broad network provides for its members and projects, the following types of communication are needed and ought to be supported by ICT:

External communication: Presenting the IKN in an attractive way to potential participants, partners, funding organizations, and any other interested public. A short but comprehensive presentation of the IKN, its goals, ideology, projects, history. Provide contact info. A more professional external presentation of the IKN would support the integration of new members and projects, the acquisition of funds, and a feeling of identity among its participants.

Open internal communication, concerning ongoing and potential projects, ideas, experiences, useful information, et cetera. This communication involves all interested IKN members as well as new / potential participants, so it is not confined to any specific group of people, but open. The IKN's information dissemination function could be improved if additionally to personal communication, more broad one-to-all or all-to-all communication took place within the network. Various internet media seem useful to support such broad communication. Internet media can also help to enable and facilitate contacts among members and between members and non-members. Personal web pages or a participant database would allow to search for persons with specific knowledge or interests, and provide contact info. To be more trustful, the contact to such persons could still be arranged through personal mediation. In that way, a broad one-to-all or all-to-all communication within the IKN is to complement, not replace, the personal brokering of connections.

Confidential group communication: This concerns activities that have come to be more concrete. Such communication is usually confined to a clearly defined group of participants, with greater personal commitment and (sometimes even formally) distributed responsibilities. Information and communication concern here discussions, collaborative work on project documents, and a shared data collection.

6. Conditions of ICT use

The characteristics and way of functioning of the IKN imply certain conditions concerning the use of information and communication technology:

- The IKN has no money to charge professionals with the creation of ICT solutions. The IKN participants have only very limited programming knowledge. This restrains opportunities to publicly available, easy-to-use technologies.
- Some participants, especially in poor countries, have old computers and a very slow internet connection. Internet solutions should be simple to be usable by these persons as well.
- The IKN has no coordinator or other person with enough time to continuously edit and update the web site. This makes necessary shared or distributed responsibility for the site and its sub-pages.
- The IKN has no single common language. There are no resources for extensive translations. But most participants speak two or more languages, so common work has been possible and language problems have always found some (ad-hoc) solution. In my opinion an internet tool should not impose some language policy on the participants, but maybe a content management system could help e.g. with a sort-by-language functionality.
- Due to the openness and gradual limits of the IKN communication sphere, content should be as public as possible, but as confidential as necessary. Different degrees of confidentiality make necessary different levels of accessibility. There are contents accessible by all public. Group contents should either be public or allow for an easy and non-bureaucratic access for new participants. Sites with individually assignable access rights require a personal user account system.
- All participation in the IKN is voluntary, and this holds for any ICT use as well. No communication practices can be commanded. Instead, solutions must convince people by being useful to them. This usefulness of an ICT solution should become apparent in a short time, as participants might only give small advances of trust and time to explore a newly proposed internet tool.
- The IKN has been existing for years. Communication and cooperation are already happening, and participants are already using various ICTs and enacting different communication practices. New solutions must be non-exclusive with regard to other solutions. My idea is to offer a communication tool kit rather than an integrated single solution that attempts to solve all communication tasks and problems.

7. Solutions

In 2005, my investigation and many discussions led to the conclusion that the IKN needed and wanted an internet platform with the following functionalities and tools. Four areas were defined: 1. a public and general presentation of the IKN. 2. group and project sites with an individual access management and responsibilities . Each group / project site should contain a general description, news, a forum, mailing tools, and a shared file storage. 3. thematic sites providing a forum, mailing tools, a link collection, and a shared file storage. 4. personal pages of the IKN members. Furthermore, the platform should provide a mailing tool for the IKN coordinators and maybe a chat room, instant messaging or voice over IP functions.

I was glad to have my thesis finished. It was based on, and had thus fostered a broad discussion about communication practices and support within the IKN community. Quite a few people read my work and agreed with the proposed concept. There was awareness for communication topics and a motivation to improve its practices. Yet, there was nobody to implement the concept and create the internet platform.

Since 2005, the IKN has been looking for various ways to implement an internet platform or come to some other tangible improvement of its communication. One strand has always been to look for money to order a professional, paid solution. But until to today, no funds could be

acquired. Other efforts were directed towards finding someone who would help us for free, e.g. as internship or thesis work. And there has been some experimentation with other, easier technologies.

In 2005, a free Yahoo! Group was created and soon actively used by Berlin IKN participants. It had a forum, mailing list, file storage, and member database. Yet registration was problematic, file storage limited, and it had too much advertisement.

Parallel to the Yahoo! Group, Anja Mocker set up an IKN internet presence in 2005. This was a static HTML site that provided no editing comfort of content management systems. The provided information was never completed and the site remained unfinished.

In the summer of 2006, the ARCA-Net Summer School made possible a six week stay in Berlin of Guido Garcia, system administrator and web developer from the University of Sancti Spiritus, Cuba. In a metaplan session, the IKN group updated its requirements and ideas for an internet platform. Guido started working on a platform using his technology of choice, Drupal, a PHP-based content management system. The cooperation was problematic due to disciplinary and cultural differences that were difficult to address and impossible to overcome in this occasion. At the end of Guido Garcia's stay in Berlin, a very unfinished web site and content management system was online and in function. Users were invited to the new platform, and some were very active in submitting blog entries and uploading files. The new platform thus replaced the old Yahoo! Group. The many submissions into the unfinished platform led to a great disorder and made the system work extremely slowly. Access through slow internet connections became impossible altogether. Also Guido, back in Cuba, could no longer access the platform – or work on it. The current unfinished state of the platform has frustrated those who had submitted a lot of content, and is hindering the ongoing work.

As a consequence of these experiences, we have come to think of a 'solution' more as a continuous process of improvement and experimentation, and not so much as a state or one integrated platform. Such a process of trial and error and – hopefully – overall improvement is characterized by overlapping, recursive activities:

- Discussions among the IKN participants: what are information and communication problems and potentials? What could be solutions?
- Individual or small group experimentation with technologies. Implementing technologies for use in the IKN.
- Motivating IKN participants to use new technologies. Developing new information and communication practices. Making experiences with technologies in practice.

Turning away from the idea of one integrated information and communication platform, customized to the specific needs of the IKN, the new attempt is to use a variety of technologies. These include those tools that have been in use in the IKN already, just as new tools, provided through simple and openly available technologies:

- E-Mail.
- Instant Messaging and VoIP through Skype, MSN Messenger et cetera.
- The old Yahoo! Group.
- The unfinished Drupal content management system.
- The old HTML website.
- Free blogs, e.g. on blogger.com.
- File storage and exchange systems, e.g. BSCW.
- Simple content management system, e.g. Joomla.
- …

We hope that this will be a more successful strategy, leading to tangible results for concrete needs.