



LIVING KNOWLEDGE

The International Science Shop Network



ISSNET PROJECT: *IMPROVING SCIENCE SHOP NETWORKING*

Work Package 1

To be continued

**Recommendations for
structuring and funding
the Living Knowledge network**

Editor

Caspar de Bok

**Building partnerships for
public access to research**

To be continued

Recommendations for structuring and funding the Living Knowledge network

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Recommendations for structuring and funding the Living Knowledge network

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Preface

This paper is a deliverable of work package 1 of the EC project ISSNET (Improving Science Shop Networking). This work package was a cooperation of Henk Mulder (Chemistry Shop, Groningen University, Norbert Steinhaus (Science Shop Bonn), Andrea Gnaiger (Institut FBI, Innsbruck) and Eileen Martin (Science Shop Queen's University Belfast).

ISSNET was a 30-month thematic network funded within the programme Raising Public Awareness of Sciences and Technology of the Fifth Framework Programme of the European Commission, Directorate Research under contract number HPRP-CT-2002-00011. ISSNET was a consortium of 13 organisations from 9 countries. The consortium intends to strengthen Science Shops world-wide, by establishing improving an unique infrastructure that increases public access to science, the public awareness and understanding of the beneficial impacts of science, as well as the limitations and implications of science and technology on their daily lives. ISSNET will also raise awareness of scientists and policy makers of (research) issues that are of concern to the public.

This report couldn't have been published without the survey of Corstiaan Kuyvenhoven. It laid a base to structure thoughts about the future of the Living Knowledge network. The conclusions and recommendations from the survey have not been adopted but adapted after being discussed in the Living Knowledge network. The support and consultation of the ISSNET members and the members of the Living Knowledge network has been an important step towards the publication of this paper.

This paper describes options and ends with 9 recommendations but doesn't give final solutions. The network itself (so it members) and potential funders will have the find ways to move forward in a directions that offers opportunities for the Living Knowledge network to be continued.

Caspar de Bok

Utrecht, December 2005

Introduction

Over the last few years international interest in the Science Shop model has developed, and similar organisations have been established in a wide range of countries.

These international contacts developed into an informal network of organisations. In this draft paper options for structuring the Living Knowledge network will be described. This paper is part of the EC project ISSNET¹ (Improving Science Shop Networking) and a result of the input of the members of the Living Knowledge network (by a questionnaire), two workshops and the input of the members of the ISSNET consortium. A draft version of this report has been published on the Living Knowledge news and discussion group for discussion and consultation.

In 2000 the international networking of Science Shops and similar organisations received support through the first EC funded Science Shop project SCIPAS² ('Study and Conference on Improving Public Access to Science through Science Shops') The SCIPAS project led to seven reports and a conference.

SCIPAS collected information about operational options of Science Shops, stories about successes and failures to start a Science Shop and existing training materials. SCIPAS came across a lot of scattered information about Science Shops. Most of the information had not been published in the public domain.

From the SCIPAS project it became clear that there are several different approaches to Science Shop and community-based research. (SCIPAS report 1, Gnaiger and Martin, 2001). There is no structure of an organisation that can be seen as the ultimate construction for a Science Shop. How Science Shops are organised and operate is highly dependent on their context. It is not the name that links organisations but the activities that link them. In some countries the word 'science' or its translation is focussing too much on natural sciences only. In other countries the word 'Shop' is too much linked with selling activities. There are many organisations using different names instead of Science Shop, but acting as a Science Shop. The term Science Shop should be considered a brand name, including all kind of organisations that fit in the definition.

A Science Shop provides independent, participatory research support in response to concerns experienced by civil society.

When establishing a network of Science Shops new contexts may add new organisational structures. Therefore the definition of Science Shops is a working definition.

¹ ISSNET is a thematic network awarded financial support (2003-2005) by the Directorate-General Research of the European Commission through the contract HPRP-CT-2002-00011 under the 5th Framework Programme.

² SCIPAS was financially supported (2000-2001) by the Directorate-General Research of the European Commission through the contract HPV1-CT-1999-00001 under the 5th Framework Programme.

Networking

Before the start of SCIPAS, some Science Shops cooperated already on a local, regional or national level but there was no structural cooperation on an international level. One of the activities in SCIPAS was to explore the needs, opportunities and added value of an international network of Science Shops. In SCIPAS it was concluded that an international network can produce benefits in co-ordinating work, but also in the scientific research itself. However, the level of co-operation that Science Shops wish to achieve should be well-defined both qualitatively and quantitatively, in order not to become counterproductive (e.g. be a burden on the small Science Shops). Therefore an international network must be simple and supporting, thus a light structure is preferred (SCIPAS report 7, Lürsen and Sclove, 2001). The executive summary of SCIPAS report 7, *'Living Knowledge: The Network. Accomplishments and Further Opportunities for Developing an International Network of Science Shops'* can be found in Annex 1. The complete report can be downloaded from the Living Knowledge website (www.livingknowledge.org).

SCIPAS concluded that the main objective of a network should be to facilitate interactions among Science Shops, their client groups and other strategically important groups in order to increase the quality of their products and the effectiveness, stability, number, and geographic distribution of individual Science Shops. A network should also increase the visibility, accessibility and social impact of Science Shops and their products on all levels (from local to international).

SCIPAS was the base for a more structural cooperation among Science Shops. As a follow up to SCIPAS the project ISSNET started. ISSNET has been a good incentive for the international networking of Science Shop.

International cooperation and exchange of information became more structured and less ad hoc. ISSNET developed communication tools (the Living Knowledge listserv, newsletter and magazine) to support the network. Through the Living Knowledge network cooperations have been established on a practical and strategic level. Over 300 people subscribed to the Living Knowledge news and discussion group (including the newsletter) and in addition to that over 200 people subscribe to the newsletter only. Around 250 people from 30 countries participated at the Living Knowledge conference (Seville, 3-5 February 2005). This conference has been a meeting place for different actors in science and society relations in general as well as in community based research in practice.

From the Living Knowledge activities, the contribution of its members and the achievements of the network, it is clear there is a demand and a need for an international network.

The Living Knowledge network has strongly benefited from the projects SCIPAS, Interacts and ISSNET. SCIPAS documented basic information on Science Shops, Interacts gave insight in experiences and expectations of NGOs, university staff and students in relating to Science Shops. ISSNET continued the development of structural co-operations and joint activities, which are now continuing in various forms in

the Living Knowledge Network. The network cannot however be a funding source for the organisation or establishment of Science Shops.

To establish an active and effective network in the future it is necessary to develop an organisational structure as well as a funding structure for the network. This paper will describe options to organise and fund the network's additional costs.

The Science Shop of Economics, Management and Organization of Groningen University conducted research to analyse the needs, ideas and options to continue the network (Kuijvenhoven, 2005). It unravelled the web of Science Shops. The research included a survey among members of the Living Knowledge network and a survey on theories on networks.

The conclusions of the research have been discussed at the Living Knowledge conference in Seville. Options for the structure of the network have also been discussed in the Living Knowledge network and at a Science Shops workshop in Brussels (http://europa.eu.int/comm/research/science-society/scientific-awareness/workshops_en.html) with representatives from experienced Science Shops, new Science Shops and of organisations that considered starting a Science Shop or joining the Living Knowledge network.

Unravelling the web

The research of Kuijvenhoven intended to give recommendations to improve the effectiveness of the cooperation within the Living Knowledge network. An executive summary of the report can be found in Annex 2. The full report can be downloaded from the Living Knowledge website.

At first an inventory was made among the members of the Living Knowledge network by interviewing representatives of Science Shops and carrying out an on-line questionnaire on the Living Knowledge website. The questionnaire was announced on the Living Knowledge news and discussion group (the Living Knowledge listserv). In this way only organisations with international contacts, or who were aware of the activities of the Living Knowledge network were included. Organisations outside the scope of the members of the international network could not be reached. 77 Respondents (ca. 25% of the listserv subscribers) returned a complete questionnaire.

Almost three quarter of the respondents suggested that the continuity of the Living Knowledge network could be guaranteed only if there is some kind of central coordination. The most important advantages of the Living Knowledge network noted by respondents were the increase of visibility and accessibility of Science Shops, mutual learning of Science Shops and lobbying, fund raising and public relations.

The conclusions of Kuijvenhoven on the advantages of a network support the recommendations for networking given by Lürsen and Sclove (2001). They indicated as main advantages of a network:

- Increased visibility and accessibility
- Collaboration
- Quality control
- Shorter learning curves and greater stability
- Dissemination of results

Perceived advantages of international networking were both practical and strategic. Eighty percent of respondents to the questionnaire indicated that they would join an international network of Science Shops if it would carry out the assigned tasks and realize the advantages mentioned above. Twenty percent of the respondents were prepared to pay an annual membership fee of between €100 and €200, 17% would pay more than €300, and the majority would be willing to pay a fee of between €0 and €100.

The question is however how responsibilities to carry out the tasks should be organised.

The number of respondents and the scope of the survey are limited. It focuses on Science Shops that are already participating in the network and do know each other. Of course the results of the analysis of the relationships between respondents are highly dependent on the interpretation of the relevant questions in the questionnaire and the bias of the respondent. From the questionnaires it became clear there have been different interpretations of 'contact'. Respondents could only select a limited number of their contacts and will have used different arguments for the selection of those contacts. The results of the

questionnaire cannot be interpreted without any background information about the respondents. The results and the graphical presentations in the report give a biased indication of relations between those respondents and how tasks and responsibilities are shared by the time of the research. It is not representative for the relations in the network. It makes clear there are some nodal points in the network but it does not give a complete and representative overview of the nodal points.

From the survey and literature on networks, Kuyvenhoven concluded, Living Knowledge could be described as a network organisation. A network is to some extent a collective of organisations that pursue repeated, enduring exchanges with one another that are based on trust and shared norms, while at the same time there is no organisational authority to arbitrate and resolve disputes that may arise during the exchange. Kuyvenhoven concludes this definition of a network applies to Living Knowledge.

One can distinguish different types of network organisations. These range from flat, flexible structures, easy to access, and with high information access, enabling learning, to hierarchal structures enabling allocating responsibilities and tasks. Kuyvenhoven analysed the properties of different formal network organisation types and their organisation design.

From the research it becomes clear the Living Knowledge network is vulnerable. Only a small group of Science Shops is active to very active in the network. They have numerous ties to other members of the network and can be recognized as the nodes in the network. The loss of one of these highly linked Science Shops would disrupt connections and harm the network's continuity. Because of different interpretations of the questionnaire by the respondents the network chart drawn by Kuyvenhoven gives a biased impression of the existing relations between Science Shops. It doesn't allow conclusions about the position of the individual organisations in the network. The conclusion about the vulnerability of the network is valid however.

Kuyvenhoven concludes that a small group of active members of Living Knowledge does have substantial access to the network benefits, compared to less active members of the network. Therefore, these active members (the spiders in the web) do have reason to stay active or to become even more active, while the opposite is true for the less active members. Living Knowledge would need to stimulate a more active involvement of the Science Shops that are not yet very active in the network. In addition to an improved network structure, which should result in an increased cooperation between the members, Living Knowledge should:

- inform the members about the advantages the network as an organisation offers, like legitimization and status, access to information, potential economic benefits, and learning;
- enhance solidarity, by adopting a communication programme that highlights the achievements of Science Shops that are related to, or a result of, the network
- enhance mutuality, by stressing that the focus should be on the benefits derived from the ongoing relationship as a whole, rather than from each individual transaction.

Keeping these recommendations in mind, once again the questions can be raised as to which members should take the responsibility to stimulate this process and to coordinate this activity.

New responsibilities

The Living Knowledge network depends on a few active members and thus has a rather centralized organisation structure. A more decentralized organisation structure might stimulate active participation of more members. Living Knowledge is an informal and non-hierarchical cooperation of organisations. It has a more or less spontaneous organisational form, which develops in a natural way. Changes in the organisational structure have to be based on the actual structure of the network and the input of its members. If the network wants to develop into a more decentralized organisation structure members that want to become more active members have to take responsibilities. The active members have to share responsibilities.

For Living Knowledge Kuyvenhoven draws a network with primary and secondary contacts (Kamphuis and Kuyvenhoven, 2005). A primary contact is defined as a Science Shop that receives and sends information to all Science Shops – the secondary contacts – in its national cluster. To select the primary contacts, Living Knowledge can apply criteria that define actors in control of a substantial number of information flows through the network. These actors are able to filter and select useful information, subsequently (translating and) distributing it among other Science Shops within the cluster.

Next, the primary contact should be connected to all other primary contacts, so that each primary contact can function as a liaison between foreign Science Shops and Science Shops within its national cluster. Therefore, each primary contact should inform the Science Shops within its cluster of the importance of passing certain types of information to him or her: namely, information that might interest either the other Science Shops within the cluster, or all Science Shops in the network. Primary contacts in Living Knowledge will be responsible for the dissemination of information at a national level.

This suggested network structure implicates the primary contacts as the national contact points of Living Knowledge. It also suggests a national cooperation of Science Shops, like in the Netherlands, Belgium or Romania.

Kamphuis and Kuyvenhoven also conclude the number of clusters should be increased in order to increase the effectiveness of Living Knowledge.

Differentiation

The suggestion to have more primary contacts in the network might be useful. In the European context networks are more organized along thematic lines rather than along national lines. Therefore it might be useful to have primary contacts in the network based on thematic expertise. This contact point can function as a 'front office' or the node, without being a real office. It is the first contact on thematic or national/regional issues for newcomers, of people searching for specific information in the network. Since Living Knowledge intends to be an informal network, contact points do not have any formal responsibility.

Science Shops cover a wide range of research themes. In the ISSNET project a study has been conducted on thematic transnational research cooperation (Teodosiu et al, 2005). In the summer of 2005 on the Living Knowledge news and discussion group an informal inventory has been made on options for international research cooperation of Science Shops. From this inventory it has become clear there is a wide variety in subjects for cooperation (Steinhaus, 2005).

The study and the inventory on research cooperation give support to thematic primary contacts in the Living Knowledge network. Thematic and national primary contacts both have an important function and responsibility. Thematic primary contacts will be responsible for research cooperations and thematic information. National primary contacts will have a stronger focus on national aspects of community based research policy in general. They will be responsible for the visibility of the Science Shop concept at national level.

Because Living Knowledge doesn't have a hierarchical structure, the selection of primary contacts as well as the selection of the type and number of primary contacts will be an open and self-selecting process. All Living Knowledge members can opt to become primary actors. In order to avoid chaos and ongoing competition there should be some kind of structuring. The network will have to give clear guidelines of tasks and expectations for primary contacts. The structure with primary contacts will only be effective if there is a mutual understanding of the advantages of all Living Knowledge members.

Facilitating and funding

Facilitating

Despite the structure of a network with several primary contacts there is a need for the coordination of the contacts in order to create an effective and efficient communication inside the network and outside the network, preventing the network from fragmentation.

Until now the coordination of the network has been carried by an informal contact point, on a project basis (as part of EC funded projects) and with support from the hosting organisation and the individual willingness and possibilities of some Science Shops. There is an increasing need for the Science Shop network to be represented at the international level and to support Science Shops to co-operate in research projects and to make the best use of the available expertise.

From the discussions within the network and the conclusions of the research of Kuyvenhoven it becomes clear there is a need to share activities in the network among a larger group of members. Nevertheless an international contact point (e.g. the executive office of the network, with a physical address for the coordination of the network) will be necessary to continue the basic aspects of networking, as started by the EC funded projects. It will provide on a permanent basis services of the network distributed in different locations (the thematic and national contact points). The executive office (and the linked contact points) needs to be a structural part of the network and therefore needs structural funding. This will prevent the network coordination to become an ad hoc activity and based on individual commitment from some network members only. Of course, certain tasks of the international contact office can be done by members physically located elsewhere.

Funding

The Living Knowledge network is an open network with public information. It intends to build partnerships for public access to research. From this point of view services of the network should be public. Not all services the network can offer are of the same type. The services of the network can include:

0. services also for non-members (website with information)
1. services for all members (e.g. policy, lobby, e-mail listserv, website, database)
2. services for a specific group of members (e.g. materials, training)
3. services for individual members (e.g. training, mentoring)

This clustering of services offers opportunities to differentiate between types of membership. General services of the network (cluster 1) will be offered for free. Organisations can subscribe to the network and become a member for free. Services of cluster 1 and 2 will be offered to associated members.

All clusters of services will be offered to full members only. Associate members and full members will have to pay a membership fee. A fourth category of members can be the members that support the network with a financial donation. These members will be notified and listed as 'supporting members' or 'sustaining members'. Besides the services for paid memberships, reductions for network events and activities or services of other organisations can be offered (e.g. workshops, conferences, publications).

There is a growing international interest in the Science Shop concept and the activities of the network and its members. Coordination activities continue to increase. Based on the activities of the core group that took responsibility for the coordination of the network since 2000, and the future development of Living Knowledge, there is a need for structural funding of the network coordination. This structural funding should include a budget for staff (executive office, primary contacts), travel, communication, organisation of events, overheads for hosting the executive office. Based on the experiences of coordinating the international Science Shop network, 2 fte (full time equivalent) might be sufficient as base funding for the coordination of the basic network activities (on international, national and thematic levels).

Of course ICT technologies offer great opportunities to turn the network into a more self-organising structure. With the use of these technologies, like web logs, wikis and web fora, the network members can participate and communicate based on needs and interest. The network can create its own tools for discussion and exchange. Nevertheless, the consultation of the Living Knowledge members made clear there is a need for a basic infrastructure and a nodal point to guarantee continuity of network activities and an initial place for enquiry, where information can be handled, transferred and redirected efficiently and effectively.

Because budgets of most potential members are low, fees need to be low as well. Kuyvenhoven (2005) made clear that full funding of the network by memberships fees is not a realistic option. Science Shops are often small local bodies with limited financial means that cannot afford funding of activities that are not related to their core activities at the local level. The limited financial means of the network members cannot guarantee a structural funding of coordination of network activities. There is a need for additional funding of the organisation of the network.

The executive office or the primary contacts do have specific expertise in community-based research. They can be involved in the development and coordination of international projects of the network members. This can be budgeted for in the project bids.

In order to start a structure for the coordination of the network, with an executive office and thematic and/or national primary contacts, there needs to be initial funding, besides funding through membership fees and projects.

The benefit of Science Shop networking has been proved by the projects that have been funded by the EU. This funding has been project funding. Without this funding the position of Science Shops in community-based research would not have been recognized at an international level. Science Shops have proven to be a unique and cost effective tool to bring research closer to citizens. It's a fact that Science Shops are small local bodies with a local focus and limited financial means. Due to the local situation and focus of Science Shops the international networking activities cannot be realised without additional funding. Their activities do very well meet some of the goals of the EC Science and Society programme. This justifies European funding for an infrastructure that facilitates the international dimension and impact of Science Shops.

Recommendations

Based on the conclusions of the network research, workshop and consultations nine recommendations can be made. Since the Living Knowledge network is an informal network recommendations are no directives that can be forced. It is the network itself that has to implement the recommendations. The last two recommendations are not directed to the network itself but to its potential funders.

1. Create a network with national and thematic contact points, supported by an executive office for the network.
2. National and thematic contact points should function as an advisory committee for the network and the executive office.
3. Develop different levels of services to be offered by the network. Free services might include general information, paid services might include specific targeted or on demand support.
4. Offer additional paid services on demand at not-for profit rates.
5. Use the funding of the network for coordination of national and thematic cooperation by the contact points and for general public relations, lobbying for the network and general network services by the executive office.
6. Avoid fragmentation of funding for network coordination, by coordinating this funding through the executive office.
7. Any group of members can still submit any proposal for funding, without the involvement of the (inter)national contact point(s).
8. A base funding of € 200.000 (approximately 2 full time equivalents and office costs) is needed for the contact points to coordinate the general network activities and contacts.
9. Since the network activities support the EC Science and Society policy, the EC should fund a base infrastructure that facilitates the international dimension and impact of community based research in Europe.

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All references below are available as pdf--documents at the Living Knowledge website, in the section 'Reports and archives' (<http://www.livingknowledge.org/>)

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Executive Summary of:

LIVING KNOWLEDGE:

THE NETWORK. ACCOMPLISHMENTS AND FURTHER OPPORTUNITIES FOR DEVELOPING AN INTERNATIONAL NETWORK OF SCIENCE SHOPS

Maaïke Lürsen and Dick Sclove

SCIPAS report nr. 7 (July 2001)

Science Shops offer citizen groups free or low-cost access to scientific and technological knowledge and research across all disciplines in order to help such groups achieve social and environmental improvement. Science Shops use the term “science” in its broadest sense, incorporating the social and human sciences, as well as natural, physical, engineering and technological sciences. From a European perspective, Science Shops can help expand participation in scientific research and it benefits to all levels and segments of societies, thus contributing to social justice, social and civic integration, mutual understanding, collaboration, and mutual benefit.

This report considers the potential social benefits in developing *an international network for Science Shops*, as well as such a network’s possible goals, organisational structure, activities and membership. The report is the output of work packages 7 and 8 of the project called SCIPAS (Study and Conference on Improving Public Access to Science through Science Shops), which has been awarded financial support by the European Commission.

Why build a network?

Knitting individual Science Shops into an interactive, international network promises to produce substantial efficiencies and added social value. Some of the principal benefits will be:

Increased visibility and accessibility

once comprising an interactive network, Science Shops become more accessible to potential client groups and thus the benefits they provide become more generally available.

Collaboration

Collaboration among Science Shops draws upon a broader base of previous experience and yields synergy. It also becomes more practicable to undertake citizen group-driven studies on transnational issues.

Quality control

A network enables standardisation in documenting, evaluating, archiving and retrieving Science Shop research results.

Shorter learning curves and greater stability

more systematic and standardized documentation of Science Shop activities, coupled with higher levels of interaction among Science Shops, will facilitate the creation of new Science Shops, shorten their learning curves, and stabilize and strengthen the performance of established Science Shops.

Dissemination of results

Research results become more widely disseminated, including internationally. Successful research models can be replicated and further developed.

Some Science Shops and community research centres already cooperate on a local, regional or national level (for instance the Dutch national Science Shops network and the Community Research Network that started in the U.S.). There is currently, however, virtually no structural cooperation among or concerning Science Shops on an international level.

Network mission

Based on surveys conducted among experienced Science Shop staff members in Europe and North America, we conclude that an international Science Shop network should have the following missions:

“Facilitate interaction among Science Shops, their client groups, and other strategically important groups in order to increase the quality of their products and the effectiveness, stability, number, and geographic distribution of individual Science Shops. Increase the visibility, accessibility, and social impact of Science Shops and their products on all levels (from local to international).”

Network membership

We foresee the network being organised as an association with members. Membership can be on a personal basis or on organisational basis, open to any organisation that satisfies the basic definition of a Science Shop. A membership fee can be calculated on the basis of each member organisation’s yearly budget or on the income of the individual members. Based on the budgets of the current Science Shops, fees should be set relatively low.

The network needs to have reasonably low administrative overhead costs and a lean operating structure. Even so, additional funds will almost certainly be necessary to make membership possible for the target group: existing Science Shops and individuals interested in starting a Science Shop.

Proposed organisational structure

Members will choose a managerial board for the network. The managerial board will be bound to operate within the framework of the network’s agreed mission and goals. The board will propose strategies and policy options for the network, the members will decide on whether to adopt these proposals. Day-to-day execution of the network’s administrative functions will be the responsibility of an International Science Shops Office (ISSO).

The managerial board will oversee and coach the ISSO, specifying the office’s activities and responsibilities. All activities – both structural as well as temporary projects carried out by the network – should be coordinated by the ISSO. The activities themselves can be delegated to other persons and organisations (e.g., to ad hoc consortia of individual Science Shops).

The network also needs a broader advisory board composed of representative Science Shop clients, scientists, policymakers and other strategic persons.

Living Knowledge Europe

“Living Knowledge” is the proposed name of the international Science Shop network. A regional approach to organizing the network can help achieve the desired light structure. Thus the already-established Community Research Network (CRN) could operate as the American network. The erection of Living Knowledge Europe with a European Science Shop Office (ISSO Europe) is a logical next step.

Since no regional Science Shop offices yet exist in, for instance, Africa or Asia, organisations or persons in those areas interested in joining the Living Knowledge network can connect via Living Knowledge Europe and/or the CRN. But eventually regional networks in other parts of the world may form themselves, and they would then be welcome to join the broader Living Knowledge Network if they choose.

Living Knowledge Europe can initially include the four dozen Science Shops that currently exist within the European Union (EU), other existing organisations that meet the Science Shop definition, and newly interested persons or organisations that want to start a Science Shop. The EU network can also directly facilitate the creation of new Science Shops throughout Europe and, if feasible and permissible, abroad. The EU network should also develop collaborative relationships with Science Shop-like institutions and networks outside of Europe.

In as much as using EU money to support an international network with many non-EU members can be difficult, any available EU funding should be used to strengthen the EU network and to maintain contacts with other regions. As was done during the SCIPAS Project, it is also possible to fund strategic partners from other regions, in general or for specific projects, through the EU. Both the general and structural basis of a new European Science Shop network require and appear eligible for EU support. For instance, the EU Raising Public Awareness program could potentially award two years of support to a Living Knowledge Europe project, covering:

- A secretariat (ISSO Europe, supported by a management board and advisory board)
- Publicity, public relations, and dissemination activities by the secretariat
- An international Science Shop journal
- An international Science Shop database (construction + maintenance)
- An international, annual or biannual conference

Complementing this core support, the active partners (i.e. those organisations carrying out specific projects or tasks for the network) need to receive funding for these activities. These specific activities can be presented as work packages in a funding proposal to the EU.

Network activities

Proposed structural (i.e., core, ongoing) activities within the network include: basic administration (of memberships, finances, etc.); expanding the network’s membership base; developing systematic

methods for documenting and evaluating the quality of Science Shop research; organizing a bi-annual international conference; building and maintaining an online public database of information about Science Shops; moderating online discussion forums; publishing a *Living Knowledge* journal; developing strong media relations on behalf of Science Shops; conferring an annual award for Science Shop work; developing training manuals and mentoring new Science Shops; facilitating the exchange of staff and students among Science Shops; facilitating thematic networks (e.g., in such areas as the environment, health, minorities, gender issues, Central/Eastern Europe, etc.) and transnational research cooperation among Science Shops; undertaking advocacy and lobbying on behalf of Science Shops; and enhancing Science Shops' proactive capabilities, including their awareness of pertinent developments in international policy.

Examples of proposed one-time projects to be carried out within the network include: preparing an inventory of Science Shop training programmes; conducting studies of existing and possible options for Science Shop organisation, methods and projects in various EU countries; and periodically assessing the social impact of Science Shop research activities.

Appendix 2

Executive Summary³ of:

UNRAVELING THE WEB:

HOW TO IMPROVE THE INTERNATIONAL NETWORK OF SCIENCE SHOPS

C.J. Kuijvenhoven (2005)

The project ISSNET (Improving Science Shop Networking) aimed to achieve an active network to exchange experiences and expertise between Science Shops.

The research question of this report is, *how can the effectiveness of cooperation within the international network of Science Shops be improved?*

To answer this question, first, a questionnaire was held among 66 Science Shops and 200 organizations subscribed to a mailing list of ISSNET. The response rates of these target groups were, respectively, 89% and 10%. Next, the literature concerning networks was studied and, finally, the data obtained by the questionnaire were visually and statistically analyzed. The report concluded with a proposal to improve the network structure of ISSNET.

Questionnaire

The main conclusions drawn from the questionnaire were that 86% of the respondents had national and 52% international contacts. The most indicated reasons for the absence of foreign contacts were: 'regional function is more important', 'no priority' and 'no time'. The most important activities for an international network to carry out were according to the respondents: a database for Science Shops, lobbying and a knowledge database. Almost three quarters of the respondents thought that the continuity of the international network of Science Shops would be guaranteed only by the coordination of some kind of central organ. The most important advantages of international network for the respondents were: increase visibility and accessibility of Science Shops, learning among Science Shops, and lobbying, fund raising, public relations. Because of these advantages almost 80% of the respondents indicated that they would become a member of such an international network. The majority of these respondents were prepared to pay an annual fee between €0 and €100 for this membership.

Theory

Networks are particularly well suited in an environment with a highly skilled labour force, where participants possess knowledge that is not limited to a specific task but applicable to a wide range of activities. Therefore, networks are most likely to arise and grow in fields in which knowledge and/or skills do not lend themselves to either monopoly control or confiscation by the highest bidder. Network relations are based on trust, and, therefore, are particularly suitable for circumstances in which there is a need for

³ Note (not included in report Kuyvenhoven): This executive summary is an extract from the text in the report. It does not include the graphical presentation.

reliable information. The types of exchanges that are like to occur in networks are the exchange of distinctive competencies, such as knowledge or skills (Powell, 1990). This exchange of these kind of intangible goods typifies the kind of contact between Science Shops. The advantages of a network are that they allow participants to gain legitimacy and status, improve economic performance, and learn new skills or acquire knowledge (Podolny & Page, 1998). Hence, organizations whose employees are members of a network would learn more efficiently than organizations whose employees are not members of a network, because the quality of the formers information would be higher. Theories on network structures demonstrate that actors with well-structured networks do better than others (Burt, 1992, 200, Uzzi, 1997). Such networks are structured to maximize the information benefits that can be derived from a network. The information benefits of a large, diverse network are larger than the information benefits of a small, homogeneous network. However, increasing network size, without considering diversity can have negative side effects.

Analysis

The analyzed network consists of 85 actors: all 66 Science Shop of which nine did not fill in the questionnaire and 11 subscribers to the mailing list. Of the actors 11 were involved in the SCIPAS project, the so-called partners, and another 11 were, for several reasons, isolated. The analysis consisted of a visual and a statistical part. The visual part demonstrated that the main use of the network was for information exchange. This occurred frequently between national clusters of Science Shops in The Netherlands, Belgium, Denmark, Austria, Ireland, and Romania and within four sub-clusters of Science Shops in The Netherlands. In general, it revealed that most contacts of the participants took place on a national level and that the 'partners' had the most foreign contacts. Finally, the analysis showed that the actors with the largest amount of ties in the network were the actors. The two principal actors were NL8 and NL11. NL8 was very important for the Dutch cluster of Science Shop, while NL11 had the most international contacts. The statistical analysis aimed to indicate which actors are important in the network. It seemed that the actors NL11 and NL8 were the most prestigious and the most influential actors in the network. Of the partners eight scored within the top-ten of most influential actors and six in the top-10 of the most prestigious actors. The betweenness centrality measure indicated again that NL8 and NL11 were the two actors that control most information and are most influential. A more refined version of the betweenness centrality measure, the flow betweenness, indicated also that the actors NL8 and NL11 were the most important mediators. However, now another actor appeared also to be rather important.

Proposed improved network structure

The analysis showed that coordinators of the ISSNET project were the most active actors in the network in the sense that they had most ties to other Science Shops. The removal of one of these important actors would disconnect the network to a certain degree, which harms its continuity. To decrease the vulnerability of the network and increase cooperation between Science Shops, ISSNET should select a primary contact for each cluster of Science Shops, including the Dutch sub-clusters. The relationships with other Science Shops in the cluster should be diverted into indirect relations that are reached only through the primary contacts. A figure⁴ illustrates the basic structure with the identified primary contacts for each national cluster as well as the primary contacts of the Dutch sub-clusters. The actors well suited to function

⁴ Not included in this annex because it can only be read properly with background information of the respondents. Without this information it can not be interpreted correct.

as primary contacts are the ones with high betweenness and flow betweenness scores, because they control a substantial amount of information flows through the network, so that they can filter the information and select what information is useful to distribute to the other Science Shops within the cluster. Each primary contact should, first, be connected to all other primary contacts. Second, it should inform the Science Shops within its cluster that it is important to pass through information to him or her, that can be of interest for either the other Science Shops within the cluster, or for all Science Shops of the network. Third, the primary contacts should keep in mind that arm's-length ties are good devices for fast and simple communication transfers and that embedded ties are reliable sources of information well suited for the transfer of knowledge and skills. Finally, the amount of clusters should be increased.

Because a small group of actors in the network were active to very active, compared to a large group of rather inactive actors, the differences in access to the network benefits were substantial. Therefore, the active actors have reason to stay active or get even more active, while the opposite is true for the rest of the actors. Thus, the challenge for ISSNET is to get the inactive Science Shops more involved. In addition to the improved network structure, the following activities could help to increase the cooperation between Science Shops as well:

- inform the members about the advantages the network as an organisation offers, like legitimacy and status, access to information, potential economic benefits, and learning;
- enhance solidarity, by adopting a communication programme that highlights the achievements of Science Shops that are related to, or a result of the network
- enhance mutuality; by stressing that the focus should be on the benefits derived from the ongoing relationship as a whole, rather than from each individual transaction.

Appendix 3

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