Building Open Knowledge Networks: India

**Implementing Institution:**
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**Implementation Period:**
The initiative began in 2002 and is ongoing.
The M.S. Swaminathan Research Foundation (MSSRF) is a major partner in the organization of the Open Knowledge Network, which builds on the ongoing “Information Village Research Project” that was initiated by MSSRF in 1998.

The Open Knowledge Network was created in response to the fact that, although more and more people are able to access the Internet, few people in rural India were doing so mainly because there was little useful information available to them in their own language. The Open Knowledge Network, therefore, was conceived as “the Internet for the world’s poor”. It provides a space to communicate, to express ideas and to voice opinions. Its aim is to empower the poor by providing them with the tools and the skills to input, at no cost, their own local content in their own local language and to help them to provide the information services that will actually make a difference in their lives. As the Open Knowledge Network has expanded, there is now the possibility of sharing their local content with other communities around the world. The principal focus of the Open Knowledge Network, therefore, is people and, in particular, what they want and what is relevant to their lives. This knowledge-sharing is assisted rather than controlled or ruled by technology.

The Open Knowledge Network was designed around several principles:

- building on the experience of others;
- building capacity in communities to support knowledge-sharing;
- working offline for free but synchronizing with the Internet;
- developing the peer-to-peer networking of existing knowledge workers;
- agreeing standards for metadata using extensible markup language (XML);
- agreeing open content copyright licences; and
- developing sustainable business models adapted to different contexts.

**SUMMARY**

Costs:
Costs for the MSSRF parts of the scheme implemented by the M.S. Swaminathan Research Foundation amount to some US$110,000 (2002-2005). This funding has been obtained mainly from the Department for International Development, Government of the United Kingdom, and supplied through OneWorld and OneWorld South Asia.
BACKGROUND AND JUSTIFICATION

Peter Armstrong of United Kingdom-based OneWorld International first conceived the idea behind the Open Knowledge Network and discussed it with representatives from OneWorld International, MSSRF, Harvard Law School, Accenture (a global management consulting and technology services company) and other stakeholders during a two-day workshop held in London in October 2001. Having received a positive response, OneWorld International piloted the scheme through the Digital Opportunity Task Force of the Group of Eight (G8 DOT Force) under its Local Content Programme. Then, in February and March 2002, OneWorld International and MSSRF tested the Open Knowledge Network concept in a short pilot in a cluster of villages in Pondicherry in southern India, where MSSRF was already running a local-level knowledge-sharing initiative, the Information Village Research Project. Following this trial run, in May 2002, the Open Knowledge Network concept was refined and presented to an international workshop held at MSSRF. The workshop was attended by more than 40 participants representing grass-roots information initiatives from Africa, Asia and Latin America as well as international organizations, international non-governmental organizations (NGOs) and the private sector.

At the time, the knowledge centres involved in the MSSRF Information Village Research Project needed to expand their services. Instead of providing need-based information in only a few villages, for example, incorporating the new Open Knowledge Network system would enable many more villages and needy communities in India and around the world to participate in sharing their indigenous knowledge.

To begin the implementation of the Open Knowledge Network at villages selected by MSSRF, Peter Armstrong worked with the MSSRF team for a month in early 2002. Other members of the team were also involved in these early stages.

Building on the MSSRF Information Village Research Project at Pondicherry, the Open Knowledge Network has introduced a clear focus to the collection and dissemination of indigenous knowledge. Several volunteers received training in how to gather and edit useful content, and many villagers, especially women, came forward to provide valuable information pertaining to indigenous practices, such as the preparation of medicines from local plants, cures for cattle diseases and recipes for ethnic cuisine. The Open Knowledge Network also brought in new and innovative technology. Content is now uploaded to a WorldSpace satellite via an uploading station in the United Kingdom, while village communities receive the content using a WorldSpace radio connected to a personal computer. They can then download whatever they require from the computer.
DESCRIPTION

Prior to the establishment of the Open Knowledge Network, MSSRF was operating its Information Village Research Project in ten villages near Pondicherry through a network of village knowledge centres. These centres had originally been established to gather useful information from, and to provide it to, the local people. Among the subjects covered were agriculture, including information pertaining to crop and cattle diseases, the availability of inputs such as seeds, fertilizers and pesticides, farm implements and market prices as well as education, employment and training opportunities, health, government entitlements and local weather reports. Indeed, the knowledge centres hosted some 90 databases, almost all of them in the local Tamil language, which were updated regularly.

While local volunteers trained by MSSRF staff gathered much of this information, valuable information was also obtained from other sources such as agricultural universities and research centres. Indeed, harnessing the power of partnership is a key component of the Information Village Research Project.

In extending the Information Village Research Project into the Open Knowledge Network, basic principles, including community participation and ownership, gender equity (fig. 1) and an emphasis on local knowledge in the local language, were continued and some new features were added. For example, greater emphasis was placed on collecting and organizing local knowledge. In particular, a large number of elderly people in the villages, especially women, knew of herbal remedies for ailments of humans and animals, while others came up with culinary notes and recipes for traditional snacks and other food items. Indeed, villagers were amazed at the storehouse of knowledge that was available within their community but that had not previously been tapped.

Figure 1 | From the outset, providing women with equal access to digital information was a priority of the Open Knowledge Network programme.

For the operation of the Open Knowledge Network, knowledge centre volunteers or “community reporters”, each of whom receives a small honorarium and produces up to ten news items a day, were trained to interview people and gather relevant information. An incentive of five rupees (US$0.12) was provided to those whose submissions were accepted. The community reporters also play an important role in the Open Knowledge Network, serving as “infomediaries”, linking the community with the Open Knowledge Network and vice versa. In addition, they carry out content needs...
analyses in their communities and link the Open Knowledge Network system to other community media, including the community newspaper and the weekly radio programme, as well as to key people and organizations in the community. A senior professional (Ramasamy Thiagarajan, a retired veterinarian) has also been appointed as a “content coordinator”.

Once the information has been collected and edited, the Open Knowledge Network uses a wide range of tools, including radio, news-sheets and simple drawings, to disseminate it throughout the area. News-sheets, for example, are posted at the village access points, staffed by community reporters, which villagers visit to obtain the information that they need (fig. 2). In Africa, Open Knowledge Network centres use drama and puppetry. Figure 2 | A village knowledge centre where local people can come to read bulletins posted on the walls or printed news-sheets.

The use of radio, in particular, has allowed the Open Knowledge Network to reach a much wider audience. The centres in Pondicherry, for example, now produce radio programmes based on local content. Information collected by the volunteer reporters is collated and edited by the content coordinator and turned into a 15-minute audio programme that is broadcast once every week to hundreds of villages within a 150-kilometre radius, thus markedly increasing the impact of the original village knowledge centres. As NGOs are not permitted to operate community radio in India, the programmes are transmitted from the Pondicherry broadcasting station of the Government-run All India Radio. These programmes have thousands of listeners, many of whom provide feedback by mail and the content coordinator sends out suitable replies to all correspondents.

This network of traditional journalism and reporting is assisted by the novel innovation of the Open Knowledge Network, a system for connecting all the village access centres to a central hub that is able to send and receive information to and from a satellite. Initially, the Open Knowledge Network was tested in six villages: Embalam, Kalitheerthalkuppam, Kizhur, Thirukanchipet, Veerampattinam and Villianur, which acts as the hub for the five Pondicherry knowledge centres (fig. 3). Indeed, since the project’s inception, ten villages have been connected to the Villianur hub. Local content is uploaded to a WorldSpace AfriStar satellite via a link from Pondicherry to MSSRF and then to London, United Kingdom, and can be downloaded in any of the village access points using a WorldSpace radio receiver. This system helps to keep costs to a minimum, as
access points are not online on a regular basis. Instead, information exchange between the hubs uses short bursts of e-mail or Internet connectivity.

To facilitate knowledge-sharing across India and with the rest of the world, it was necessary to introduce a standard format for the metadata tags that “envelope” the information when it is being transmitted. The OneWorld International team in London developed the system using Dublin Core standards, which are widely used for transmitting large volumes of information, and extensible markup language (XML). Within the Open Knowledge Network, each item of information has its own metadata tags that identify the author of the material and provide the title, subject and several keywords. Each knowledge centre has also been supplied with specially written software that allows items to be collected in the local language, tagged with metadata (which is written in English) and stored in XML on the computer’s hard disc or on the local-area network. This system was tested and refined at Villianur and is currently in use.

As well as receiving training in how to gather local content, the local volunteers were trained in how to package information using appropriate metadata tags, how to upload it to a WorldSpace satellite and how to download it in another village using a WorldSpace radio receiver. The use of metadata tags also permits the reporters to generate Tamil-language news-sheets automatically, including photographs and graphics. Such news-sheets can even be customized to suit the needs of fishing or farming communities, for example. In addition, in order to make local content more widely accessible, anyone interested in a particular item can, by checking the title and keywords in the metadata tags, ask for a translation of the article, perhaps written originally in Tamil, into another language such as English, Hindi or Swahili.

A facility for advertising was also built into the Open Knowledge
Network. As soon as the system was up and running, people started announcing services and the sale of such items as old roof tiles and bricks from houses being renovated, herbal medicines and other home-made products such as pickles and crisps. A posting by a woman offering knitted goods for sale led to a number of requests and now the woman is earning a regular income executing orders and conducting knitting classes. Other advertisements have included a search for farm labourers, the offer of a bicycle for sale and the buying and selling of dairy cows. Such announcements are included in a two-page newspaper (“Open Knowledge Network News”) that is added as a supplement to the regular twice-monthly four-page “Our Village News”, produced by knowledge-centre volunteers. This newspaper has a circulation of 7,500 copies and is distributed free of charge in some 30 villages. Other categories included in the news-sheets are local news, events, government announcements (such as the announcement of a new employment scheme) and a suggestion box where local people can air their opinions (table 1).

The Open Knowledge Network initiative will be sustained mainly because the village communities and the volunteers find it useful. If the funding agencies withdraw, local communities will devise

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>NUMBER OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General knowledge*</td>
<td>1,387</td>
</tr>
<tr>
<td>Employment opportunities</td>
<td>81</td>
</tr>
<tr>
<td>Government announcements</td>
<td>207</td>
</tr>
<tr>
<td>World news</td>
<td>6</td>
</tr>
<tr>
<td>Local news</td>
<td>373</td>
</tr>
<tr>
<td>Sales</td>
<td>40</td>
</tr>
<tr>
<td>Wanted</td>
<td>25</td>
</tr>
<tr>
<td>Market prices</td>
<td>65</td>
</tr>
<tr>
<td>Events</td>
<td>43</td>
</tr>
<tr>
<td>Questions</td>
<td>59</td>
</tr>
<tr>
<td>Answers</td>
<td>24</td>
</tr>
<tr>
<td>Suggestions</td>
<td>623</td>
</tr>
<tr>
<td>Complaints</td>
<td>2</td>
</tr>
<tr>
<td>Weather</td>
<td>97</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,032</strong></td>
</tr>
</tbody>
</table>

* Includes items concerning women and children’s health, nutrition, native remedies and treatments for humans and animals, agriculture and animal husbandry.
alternative ways of finding the necessary funds. Recently, for example, panchayats (village-level governments) have started to show great enthusiasm for establishing knowledge centres and it is likely that, in many parts of India, panchayat institutions will play a key role in setting up and maintaining both knowledge centres and Open Knowledge Network centres.

**Patenting and Commercialization**

A business model commissioned by OneWorld International has been developed that shows that, with initial seed funding of US$25 million over six years, the Open Knowledge Network could become self-sustaining in some 20 countries. The business model also shows that, as the private sector scales up the network in each developing country, sustainability should be achieved by the fifth year. Stakeholders are currently seeking funds from donors that will allow the expansion of the system that will enable it to become a self-sustaining operation for public good.

**Partnerships**

The key partners of MSSRF in this initiative have been OneWorld International and, more recently, OneWorld South Asia. Other local partners include those from which the programme either obtains information or those that validate information. Among these are the Aravind Eye Hospital, the local veterinary college at Pondicherry and various government departments and NGOs.

The Open Knowledge Network North India, launched in 2004, was established in collaboration with OneWorld South Asia and various NGOs, including the Datamation Foundation, The Energy Resources Institute (TERI), Drishtee and TARAhaat, each of which is implementing knowledge-sharing programmes in its respective areas. In Sri Lanka, partners include the Information and Communication Technology Initiative of Sri Lanka and OneWorld South Asia.

Furthermore, in 2004, an ambitious project, Mission 2007, was launched with the aim of spreading the knowledge revolution to every one of the more than 630,000 villages in India by 15 August 2007 by establishing a knowledge centre in every village. To achieve this, a National Alliance of some 150 organizations representing the government, private corporations and civil society has been created; this is one of the largest multi-stakeholder partnerships in any development initiative. The Mission 2007 National Alliance is chaired by M.S. Swaminathan, founder and chair of MSSRF.

**Replicability**

The Open Knowledge Network, which was pioneered in the Pondicherry region of southern India, has now been replicated in other areas.
The first African pilot began in East Africa in July 2003. Today there are Open Knowledge Network centres in Kenya, Mali, Senegal, Uganda, the United Republic of Tanzania and Zimbabwe.

MSSRF has been working with a variety of partners (see above) in northern India, who, in November 2004, launched the Open Knowledge Network in several urban and rural communities in and around Bikaner, Bundelkhand, Madhubani, New Delhi and Sirsa. Through the partnership of OneWorld South Asia (OWSA) and the Information and Communication Technology Initiative of Sri Lanka, the Open Knowledge Network has been extended to Sri Lanka, where it operates in the local Sinhala language. In addition, operations are under way in Nepal.

Indeed, as these examples show, the Open Knowledge Network initiative is relevant to the poor and rural residents of the entire world.

POLICY IMPLICATIONS

The Millennium Development Goals (MDGs) cannot be achieved without the large-scale participation of grass-roots communities around the world, and these communities cannot contribute to achieving the MDGs unless they are informed and skilled. In much the same way that the Internet is a network for the educated, the Open Knowledge Network can become a worldwide network for the poor, helping to inform and empower them.

The Government of India has also offered to support the National Alliance and Mission 2007. The finance minister has announced a grant of one billion rupees for Mission 2007 and indicated the readiness of the Government to allocate a further US$1,500 million. Many of the new knowledge centres are also likely to become Open Knowledge Network centres as well. While neither MSSRF nor the Open Knowledge Network can claim all of the credit for these developments, the knowledge centres established by MSSRF and the Open Knowledge Network are important factors contributing to the support of the Government.

LESSONS LEARNED

As the project involves a complex network of institutions, ideas and interactions, it took longer than anticipated to establish. However, once everything was in place, its simplicity means that it is relatively easy to manage and build upon the project. Also, at the beginning, village communities came forward to work with MSSRF based largely on trust and not because they understood the full implications of the exercise. Once they realized the value of the project, their enthusiasm increased rapidly. Even so, it is important to work with local people and to earn their trust before starting such a project.

In addition, the mere provision of information at the knowledge centres is not enough; it is important to reach out to people proactively. Once information
started to be distributed through the fortnightly community newspaper, the value of the programme was enhanced. Again when radio broadcasts began, its value became even greater. The more people who can receive and share information through the network, the more effective it is.

**IMPACT**

Many success stories relating to the Open Knowledge Network have been collected and such anecdotal evidence suggests that the village communities in Pondicherry are happy with the network and that it is benefiting them.

Among these successes is the story of Amirtham Dhamalingham, who currently works at the knowledge centre in Embalam. In the first issue of the centre’s newsletter, she wrote an article about her home-made pickles. After publication, sales reached as high as 500 rupees (US$11) a week. Moreover, she has had orders for her pickles from hoteliers, caterers, shopkeepers and even government departments. Likewise, Amirthavalli Chinnathambi, also from Embalam, who is illiterate, joined a self-help group at her local knowledge centre and learned about better ways to look after her five cattle. By mixing fresh fodder with their diet, which consisted mainly of bran and wheat chaff, she has managed to increase the yield of milk from her cows and thus her income.

Anandhi Sundararajan learned about a tailoring course through an Open Knowledge Network newsletter produced in the village of Thatanchavady. She applied for the year-long course and, once accepted, received a monthly stipend of 750 rupees (US$17). She now owns her own sewing machine and runs a tailoring business from her home. There are many other such individual stories that have combined to raise the general level of income in the areas served by the Open Knowledge Network.

Another example provides evidence of a wider benefit of the Open Knowledge Network. Information on wave heights around the coast of Pondicherry is gathered from a United States Navy web site by staff at the hub in Villianur. This information, including predictions looking 36 and 48 hours ahead, is transmitted to the knowledge centre at Veerampattinam, a coastal village, as a multimedia file consisting of a colour weather chart, a written advisory and a voice announcement. The volunteer at the coastal village posts the picture and the written statement on the notice board and broadcasts the voice announcement over a public address system several times a day. Thanks to the six loudspeakers in the village, everyone hears these announcements and fishermen are warned of impending storms and do not put out to sea. Ever since this service was started in 1999, there has not been a single fishing-related death in the village.
Knowledge centres also organize occasional training programmes in such areas as animal husbandry, herbal medicine and microenterprises, and the Open Knowledge Network has sensitized rural communities to such issues as intellectual property rights and business planning and has provided them with a more global perspective on many issues.

The consequences of the Open Knowledge Network go far beyond the provision of information: it has the potential to promote the greater inclusion of people in the South and fuller participation in their own future development.

**Future Plans**

OneWorld South Asia is planning to extend the Open Knowledge Network to 40 to 60 other centres in India. MSSRF, as the pioneer, has the responsibility to provide a good model for other partners who joined later. It also has a role in the expansion of the network and in training new entrants. Besides, MSSRF should integrate the Open Knowledge Network with Mission 2007. It also needs to work closely with partners on other continents and try out new technologies.

It is heartening to note that the local people in Pondicherry have shown great enthusiasm and willingness to adopt the new programme. MSSRF should reward them by showing them that what was started with their cooperation has grown into a mighty worldwide network.

**Publications**

For more information on the Open Knowledge Network, visit [www.openknowledge.net](http://www.openknowledge.net)

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S. Senthilkumaran, Informatics Division, MSSRF: Provided technical support and day-to-day management.

Ramasamy Thiagarajan: Content coordinator for the Open Knowledge Network in Pondicherry.