

Pabal Deployments Interim Technical Report
February 2005

Robust Network for Rural Areas: study of two of Nlogue's ICT projects and a compilation of the critical success factors for internet based data services in rural India (state of Maharashtra)

Project commencement date: May 1, 2004



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Robust Networks for Rural Areas: Interim Report

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1 Synthesis

This Interim report is the first part of a two-part report of the efforts at Media Lab Asia being submitted to the Pan Asia Committee.

The project assesses existing ICT deployments at Pabal and Rajgurunagar (Table 1.1) and studies its weakest links from both technical as well as business (service-delivery) perspectives. The findings have helped prioritize the action items for the managers at both Nlogue (private player) and Vigyan Ashram (vocational school assisting in providing local internet service). Some of the material on our assessment is included here for completeness (it also appeared in the September Interim report).

	Pabal/ Rajgurunagar*	Baramati
Number of active Kiosk connections	9	6
Number of Private Connections	25	85
Average Monthly Revenues	Rs 12000	Rs 50000
Village Public Telephones (VPT)	60	NA
Average Monthly Revenues from VPT	Rs 30000	NA

* For both Pabal and Rajgurunagar Local Service Providers

Table 1.1: Business performances of the projects (year 2 only)

Source: Report titled "[Critical Success Factors for Rural ICT Projects in India: A study of n-Logue kiosk projects at Pabal and Baramati](#)" by Vivek Dhawan, Anil Bahuman, Shantanu Indamdar, Rahul Swami and Bishnu Pradhan, Media Lab Asia, IIT Bombay

On the technical side, we are:

1. Compiling best practices in the area of content repositories and e-Agri-extension services and have been the catalyst in starting such a service through our online Q&A forum – Almost All Questions Answered (aAQUA).
2. Assisting the deployment by linking the Pabal and Rajgurunagar projects using an 802.11b wireless link.
3. Demonstrating how larger intranets can incorporate multiple servers and synchronize with one another so as to act as one consistent database. Large intranets servicing large number of people are also more likely to break even.

The following status reports have been prepared and are being submitted in the second part of the report available online: “White Papers from Pabal Deployments” (44 pages) at <http://10.129.187.10/gsd/cgi-bin/library>

1. Robust Intranets: Rajgurunagar-Pabal Point-to-Point Wireless Link using 802.11b Protocol (11 pages)
2. Robust Intranets: Focused Crawler for fetching web documents on a topic of interest (3 pages)
3. Robust Intranets: Caching and Profiling of aAQUA (2 pages)
4. Robust Intranets: Synchronizing distributed databases (4 pages)
5. Robust Intranets: Digital Library solutions for a content repository (18 pages)
6. Robust Intranets: Bhav Puchiye: Enhancing usability of Agricultural Price Information services (4 pages)

1.1 What is aAQUA? How is it being used currently?

We have developed a multilingual online question and answer forum – Almost All Questions Answered (aAQUA) which provides online answers to questions asked over the internet and has been deployed successfully in over 10 kiosks covering 30 villages around the Pabal area in the 3 talukas of Rajgurunagar, Shirur and Haveli. 60 farmers in Pabal and around use aAQUA forums on a regular basis in aAQUA clubs and over 250 users have sent about 400 questions (details in Table 1.2).

Topic	Number of Questions
Crop diseases	273
Animal diseases	29
New techniques, Renewable sources of energy etc	43
Farmer schemes	14
Market info	21
KVK recommendations	26
Total as on Feb 28, 2005	406

Table 1.2: Summary of aAQUA question topics

Kiosk operators charge farmers Rs 5 or Rs 10 per query for the consultancy. Almost all of the questions have been answered in the local language (Marathi). Local farmers trust the aAQUA service and are sensitive to the time it takes for the answers to arrive (current average is 2.5 days). The content of aAQUA is available to all at: www.aaqua.org

aAQUA caters to these needs of the farmer in more than one way, by:

- a) Providing a forum for a farmer to pose his question
- b) Having a panel of experts to view the problem and work out a feasible solution
- c) Feeding back the solution to the affected farmer
- d) Creating a cumulative archived database of questions and answers on various issues
- e) Allowing kiosk operators to provide answers from the database

- f) Allowing kiosk operators to receive questions from farmers and interact with experts to come back with feasible solutions

The screenshot shows the aAqua website interface. At the top, there is a navigation bar with the aAqua logo and the tagline "almost all questions answered". There are login and password fields, along with a "Login" button. Below the navigation bar, there are links for "Download Hindi Fonts", "Change Languages", and "Register New User". The main content area is divided into several sections:

- Forums:** A list of forum categories with their respective thread and post counts:
 - पौके (crops): Threads: 256, Posts: 553
 - पशु (animals): Threads: 24, Posts: 60
 - इतर (Others): Threads: 40, Posts: 82
 - के.वी.के. बारामती सल्ला (KVK Baramati Recommendations): Threads: 20, Posts: 20
 - बाजार ची माहिती (market info): Threads: 21, Posts: 32
 - किसान योजना / Farmer Schemes: Threads: 12, Posts: 13
- Recent Questions:** A list of recent questions with their dates and authors:
 - Planting any useful plants in mu teak plantation: Jan 20, 9:14 PM, shantanu
 - teak materials: Jan 20, 8:28 PM, arokde
 - teak materials: Jan 20, 8:24 PM, arokde
 - Methichi pane aakaslya...: Jan 20, 4:06 PM, vikas_kiosk
- My Questions:** A list of questions with their reply counts:
 - Information About Kendur, Retawdi, Pabal and Shikrapur Kiosks: 1Replies
 - pabal and rajgurunagar WLL network map पालेभज्यांच्या विविध जातीचे फोटोज / Photo Catalogue of Vegetable Commodities in Khed market: 1Replies
 - Sant Shri Gadqebaba - Gram Swachhata Abhiyan, Pabal: 0Replies

Above: aAQUA question answer portal at the end of 1 year of deployment

1.2 How useful can an Internet-based Agri-extension service be to farmers? Why do farmers keep coming back?

We have been running such a service for the past one year. The experts in our setup are located more than 200 kilometers away from the farmers and have never interacted with them. So why do farmers keep coming back?

The answer lies in our efforts in securing the trust of the local farmers. The farmers come to the aAQUA farmer clubs because they trust the computer operator and the quality of the answers from KVK Baramati. We are planning on adding additional services for the farmer and increasing the interaction with farmer to enhance the trust that we have built. What is important is to have other linkages between the experts and the farmer – value adding services such as soil testing, farmers visit to KVK etc.

A problem solving system alone using a prepaid subscription model – though useful – will have difficulty in scaling up commercially in India esp. in these early stages in the evolution of our farmers awareness of using the internet. Our studies have shown that many farmers pose ill-formed and very general questions but expect specific answers (to their context). This may explain why typical agricultural portals and agriculture websites have limited usefulness.

Our studies have also shown that most questions asked on the forum are curative, as opposed to preventive since farmers are approaching kiosks only after they have tried everything else. The value adding services have to be designed with this in mind – how do we encourage our farmers to adopt preventive practices that make them less vulnerable to the uncertainties of farming and the monsoon rain.

Below: Nlogue Access Center at Rajgurunagar



Above: aAQUA awareness campaign in the villages around Pabal

Below: Wireless equipment being installed in Retawdi; Vigyan Ashram (Right)



2 Research Problem

Our motivation was to study the Pabal and Rajgurunagar ICT deployments of information kiosks (run by Nlogue and Vigyan Ashram in 2 locations in Maharashtra) and (i) address the problems faced by them in providing an internet connection of reasonable bandwidth and (ii) look at ways of increasing the content on the local server so that more and more data transfers were within the intranet.

2.1 *How did the research problems stated at the proposal stage evolve?*

While (i) remained the same, our idea of adding content to a server closer to the project was modified since it required the consent of both Nlogue and Vigyan Ashram for every update. We realized that the bigger challenge was in collecting content relevant to the local population in Marathi. Thus we now have the content residing on a server in our labs. The Marathi content is on the internet and is in the public domain.

3 Research Findings

3.1 *What were the takeaways from the study of the existing CorDECT “last mile” wireless networks in Pabal and Rajgurunagar?*

1. Robust, affordable solution giving reasonable coverage in the hilly areas
2. The network is being underutilized; offline activities are better revenue generators than online revenues for the kiosk operators in the remaining kiosks (9 of 26 survived)
3. Telephony services – a major revenue earner – is absent in the Pabal network since the service providers do not have licensing rights.
4. The services offered over the local intranet are very limited. The mail server is the only useful service available. No useful content repositories or services on the local intranet.

5. The bottleneck in the Pabal network data rates is the shared BSNL leased line (64kbps shared by 4)
6. This line is also not reliable (down times have come down from 10 days to 5 days a month over a period of one year).
7. Managing the network is a challenge for the service providers. Batteries and radio equipment have been stolen, cables have been cut. The operators need to take conventional security measures to protect their towers and equipment (walled enclosures for towers, protection gear for cables etc). This has made the network very vulnerable. 60 telephone connections (a major revenue earner) have been closed for a month because safety measures were not taken in the Rajgurunagar project.
8. Equipment vendors (for computers, printers, batteries, software etc) are not fulfilling the obligations in their service level agreements. This frustrates the kiosk operators who blame the service providers.
9. The impact to the long term sustainability of the business due to these damages is severe. Many kiosks have been forced to close down and kiosk operators who have taken personal loans have been hit. The locals and operators are losing faith in the service providers.

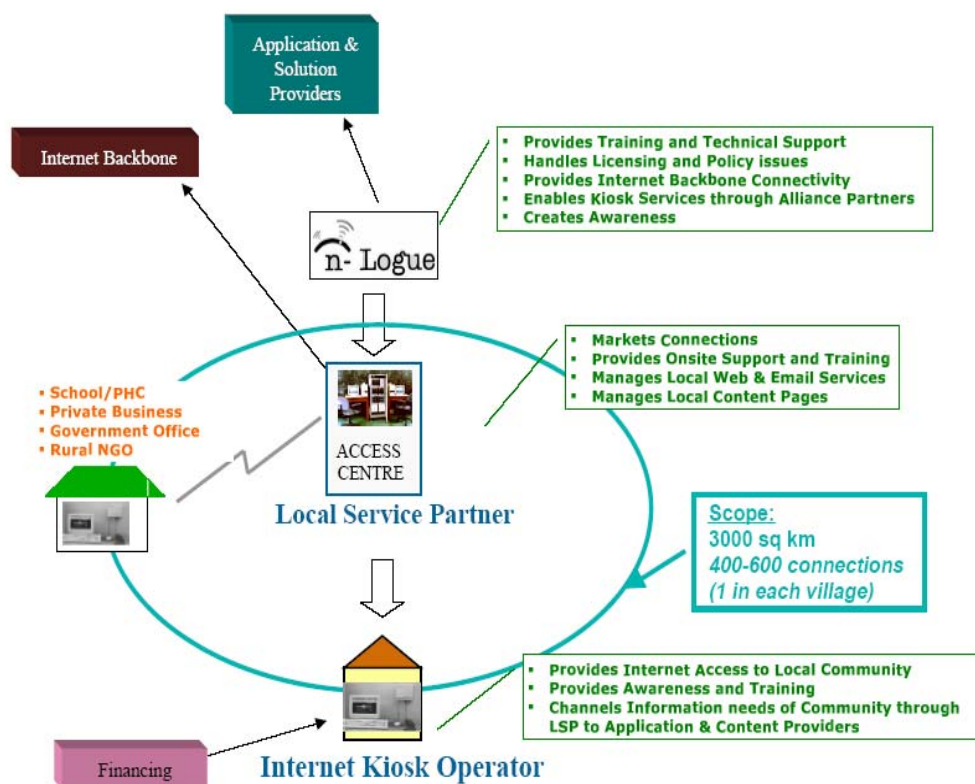
The annexure has more details regarding investments made by kiosk operators (Table 12.1), kiosk services (Table 12.2), revenue distribution (Figure 12.1), LSP revenues (Table 12.3) and response times for aAQUA Q&A by month (Table 12.4) are provided in the Annexure (Section 12).

3.2 Which of the above issues has this project addressed?

This project addresses the leased line problems (points 5 and 6 above) and the lack of online services (point 4 above) relevant to the community which is expected to use the kiosks.

We have demonstrated that the Pabal project can be linked with the Rajgurunagar project by using a point to point wireless link between the two centers. Thus the Pabal project does not have to depend on its leased line (the weakest link in the delivery of data from the internet)

We have also demonstrated that locals in the rural area will come to the kiosks to use online services and are also willing to pay for it by being the catalyst in implementing an agri-extension service in 6 kiosks covering 30 villages.



Above: Nlogue Business Model

4 Fulfillment of Objectives

What is the degree of fulfillment of each objective? Were any objectives modified?

The status at the end of September 2004 from the previous report has also been duplicated for reference:

4.1 Status as on end February 2005

Original Objective	Status in end February 2005	Ongoing activities
Provide a localized subset of information pertinent to Pabal so that any Pabal kiosk can receive at least some information when the internet is down	Content repository/Digital library for agriculture (localized subset of relevant information) created with 2 collections (Documented in the white paper titled “ Digital Library solutions for a content repository ”)	<ul style="list-style-type: none"> • Metadata identification and information architecture • Organizing a collection of crop diseases for use by farmers • usability testing • Roadmap for integration with aAQUA
Add a wireless link	20 kilometers wireless link	<ul style="list-style-type: none"> • signal reception being improved

<p>between Pabal and Rajgurunagar so that Pabal has a reliable, redundant route to internet</p>	<p>between Pabal and Rajgurunagar established</p> <ul style="list-style-type: none"> • Link tested and dataspeeds documented • Pabal-Dhamantek link optimized <p>(Documented in the white paper titled “Rajgurunagar-Pabal Point-to-Point Wireless Link using 802.11b Protocol”)</p>	<p>between Dhamantek and Rajgurunagar</p> <ul style="list-style-type: none"> • Training of Vigyan Ashram team • leased line to be routed over link
<p>Reduce dependency of users on the leased line condition</p>	<ul style="list-style-type: none"> • Database synchronizing issues studied and solution being implemented • Database to Client caching implemented • Database to database synchronization design ready <p>(Documented in the white papers titled “Caching and Profiling for aAQUA” and “Synchronizing distributed databases for aAQUA”)</p>	<ul style="list-style-type: none"> • Database to database synchronization implementation • Profiling strategies for caching • Performance studies of synchronization and caching • Optimize the caching so that only the changes from the last update are brought in to economize use of bandwidth • Resolving database conflicts • Time synchronization
<p>Implement at least 3 services that demonstrate our approach</p>	<ul style="list-style-type: none"> • Agri-documents are being fetched from the internet <p>(Documented in the white paper titled “Focused Crawler for fetching web documents on a topic of interest”)</p> <ul style="list-style-type: none"> ○ <i>Question and Answer service in Marathi on Agri-topics to build locally relevant content has 300 live Q&A</i> ○ <i>aAQUA version 2.0 with user interaction improvements done</i> <ul style="list-style-type: none"> ■ Agri-produce market information is being collected from the internet ■ Plot tool for trends 	<ul style="list-style-type: none"> • Clustering of Agri-pages fetched <ul style="list-style-type: none"> ○ <i>aAQUA version with virtual fora and modified screens for moderator, expert and kiosk operator</i> ○ <i>Employed a full-time expert for aAQUA at KVK</i> <ul style="list-style-type: none"> ■ Performance test; optimize for low speeds ■ Study other visualization aids

	application (Documented in the white paper titled “ Bhav Puchiye - enhancing usability of Agricultural Price Information Service ”)	
Involving local youth and Vigyan Ashram students	3 locals hired, and some student activities at Vigyan Ashram were conducted. 4 Vigyan Ashram staff and 8 kiosk operators have received technical help and guidance	<ul style="list-style-type: none"> • Survey of kiosks in progress • aAQUA Training in schools • Looking for aAQUA helpdesk staff

4.2 Status as on end September 2004 for comparison

Original Objective	Status in end September 2004	Ongoing activities
Provide a localized subset of information pertinent to Pabal so that any Pabal kiosk can receive at least some information when the internet is down	Content repository/Digital library for agriculture (localized subset of relevant information) is being created	<ul style="list-style-type: none"> • Open source platform identified • Seed URLs being collected • Agri sites are being cached (status in end Sep for comparison)
Add a wireless link between Pabal and Rajgurunagar so that Pabal has a reliable, redundant route to internet	20 kilometers wireless link between Pabal and Rajgurunagar established	<ul style="list-style-type: none"> • Link being tested • signal reception being improved • leased line to be routed over link (status in end Sep for comparison)
Reduce dependency of users on the leased line condition	database synchronizing issues studied and solution implemented	<ul style="list-style-type: none"> • Increase redundancy by implementing Oracle and MySQL database servers where either server can be updated independently • Simulate condition in lab (status in end Sep for comparison)
Implement at least 3 services that demonstrate our approach	<ul style="list-style-type: none"> • Agri-documents are being fetched from the internet ○ <i>Question and Answer service in Marathi on Agri-topics to build locally relevant content has 160</i> 	<ul style="list-style-type: none"> • dynamic pages are being converted to static pages • organizing the pages into clickable keywords on a browser • usability testing ○ <i>aAQUA version 2.0 with user interaction improvements</i>

	<p><i>live Q&A</i></p> <ul style="list-style-type: none"> ■ Agri-produce market information is being collected from the internet 	<p><i>interaction improvements</i></p> <ul style="list-style-type: none"> ■ visualization for showing market rate information across the country (status in end Sep for comparison)
Involving local youth and Vigyan Ashram students	<p>Job value addition of the locals hired. 5 Vigyan Ashram staff has been trained to test the WiFi link. The number of kiosk operators that have received technical help and guidance has gone up to 10.</p>	<ul style="list-style-type: none"> ● Plan to involve local agriculture college students in collecting questions from farmers on a regular basis (status in end Sep for comparison)

5 Project Design and Implementation

5.1 Were any research partners involved? What was their contribution?

- 1 Vigyan Ashram field staff is now trained to maximize the wireless signal strength and are aligning the antenna themselves.
- 2 Krishi Vigyan Kendra, Baramati employs the experts who are answering the queries of farmers on a pro-bono basis over aAQUA. They have appointed one expert (Mr Parab) to look at aAQUA full time.

5.2 How were the ultimate beneficiaries involved? What was the contribution?

Vigyan Ashram has been closely associated with our lab for the past 2 years. We have opened a field office for monitoring our deployments in the area. They have helped us hire competent people. They have shared information on the operation of the 2 ICT projects and thereby helped us in assessing the strengths and weaknesses of the network.

Now, local kiosk operators have an online service on agriculture Q&A and this is the only relevant online service besides email and browsing. They are now looking at additional services can be provided to local farmers ready to harvest. They are also being provided with technical guidance by our field personnel.

5.3 Were gender issues considered?

We have not had to consider gender issues since we are addressing the technical and managerial challenges faced by existing projects. While hiring people for our field activities – surveys, help-desk, training etc. we follow the principles of equal opportunity.

6 Project Outputs and Dissemination

6.1 What are the planned project outputs? Have they evolved?

1. An operational WiFi wireless link between Rajgurunagar and Pabal
2. aAQUA Q&A forum providing online agri-extension services to Pabal and whereabouts
3. Content repository for agri-related documents
4. Source forge entry for aAQUA
5. Agri-produce price details application – Bhav Puchiye text edition
6. Publications (WiFi link, aAQUA, kiosks)

While most of the outputs proposed have remained the same, one was modified:
> Content pages of villages in the Pabal region

We found that in the Pabal ICT project, there were very few customers who visited the kiosks due to a lack of relevant services. Since the Q&A service sourced content directly from the farming community in the form of questions asked, it gave us a better tool to understand the needs of our beneficiaries in comparison with a set of web pages written about the local villages.

6.2 Where can we read more about these activities?

The following reports have been prepared and are available on our web site:

1. aAQUA: online question answer service for agri-extension services (publication)
2. 802.11b as a last mile leased line solution (white paper)
3. Critical Success Factors for Rural ICT Projects in India: A study of n-Logue projects at Pabal and Baramati (MBA Student Project Report)
4. ICT for Socio-ec <http://www.it.iitb.ac.in/~it625/>
- 5.

In addition, the following status reports have been prepared as the second part of this report, titled “*White Papers from Pabal Deployments*” (44 pages) available at <http://10.129.187.10/gsd/cgi-bin/library> :

1. Robust Intranets: Rajgurunagar-Pabal Point-to-Point Wireless Link using 802.11b Protocol (11 pages)
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5. Robust Intranets: Digital Library solutions for a content repository (18 pages)

6. Robust Intranets: Bhav Puchiye: Enhancing usability of Agricultural Price Information services (4 pages)

7 Capacity Building

What capacity-building impact did the project have on our organization?

2 Research Associates and about 10 research assistants (all permanent staff) help implement the technical solutions. They have learnt more about (i) networking technologies (802.11 b, CorDECT), (ii) adapting open source applications for our needs (content repository, aAQUA Q&A forum) and (iii) monitoring field deployments (in a project site which takes 6 hours to reach). An MBA student was involved in studying the business models of these projects and assessing our own efforts in implementing the Q&A service. Our team is now extending this work to document the critical success factors for internet services in rural areas (some of which is included in our recommendations: section 11.3).

Our field personnel (hired from small towns or villages) are excited with our project that applies technology for the use of rural people. They see that it is possible to work with latest technologies while still living in the rural areas (where expenses are lower than in cities).

8 Project Management

8.1 Were certain aspects of project management particularly important to the success of the project?

1. Hiring field engineers who are stationed at the project site has been vital to the project. They come to IIT, once a month, for 3 days for reporting and salary purposes.
2. Vigyan Ashram employees and students were involved in setting up of the wireless network from the initial stages, thus giving them a sense of ownership of the network
3. An MBA student was given a project to assess the services being offered at the info kiosks (including our aAQUA service)
4. An experimental license for 802.11b has been sought for our testing purposes. Once the reliability of the link is established, we will guide the service providers to upgrade to a commercial license.
5. Important decisions on preferred futures are taken in conjunction with practitioners and experts in agriculture.

9 Impact

Our study and reports will be of significance to rural ICT deployments looking at providing internet based services. The knowledge and experience gained from the project will be documented and may be disseminated (via website, email, available to all) to a wider audience, viz.:

- (i) Network operators who plan to offer data services in rural areas.
- (ii) Agri-extension centers: We have demonstrated how the internet can be used to make better use of the experts' time at these centers.
- (iii) Government officials in the ministry of Agriculture and ministry of Information Technology
- (iv) NGOs studying the sustainability of online services
- (v) Private sector enterprises that desire to understand the business potential of rural ICT services

On the technical side, we are:

1. Compiling best practices in the area of content repositories and e-Agri-extension services and have been the catalyst in starting such a service through our online Q&A forum – Almost All Questions Answered (aAQUA).
2. Assisting the deployment by linking the Pabal and Rajgurunagar projects using an 802.11b wireless link.
3. Demonstrating how larger intranets can incorporate multiple servers and synchronize with one another so as to act as one consistent database. Large intranets servicing large number of people are also more likely to break even.

10 Overall Assessment

10.1 What are the views on the value and importance of the project relative to investment of time, effort and funding involved?

The project assesses an existing ICT deployment and studies its weakest links from both technical as well as business (service-delivery to be more accurate) perspectives. The findings have helped prioritize the action items for the managers at both Nlogue and Vigyan Ashram.

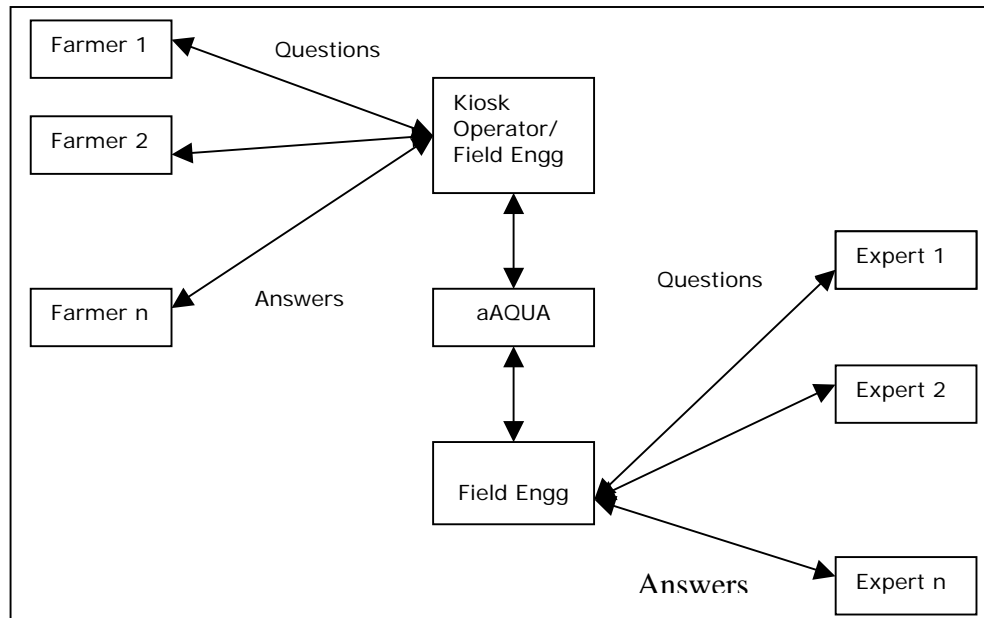


Figure 10.1: Role of field personnel in the aAQUA Service

The project also helped deploy the aAQUA service on a larger scale by employing field personnel who link the beneficiaries to the computer operators. Another field person helps in the data entry of aAQUA answers given by the experts (as they do not have the time to spend their time typing out each answer). The efforts that went in scaling this service to a small number of 30 villages very clearly demonstrates that too much is being expected from the kiosk operator in the ability to provide agricultural services that are locally relevant. For the above reasons, we state that the project has been very valuable and important to the future of the Pabal and Rajgurunagar ICT deployments. The trust restored in these services in the minds of kiosk operators and the local people is another intangible that our efforts have helped bring about.

The CorDECT projects are among the larger projects in the country run by a private player Nlogue, a company that was a spin off of the TENET lab at IIT Madras in India. They have started mushrooming more than 40 projects around the country (Figure 10.1). The Pabal project (2 years old) is among the oldest in the Maharashtra region. It is also challenging since the terrain has some hilly parts and covers rural as well as semi-urban small towns. We are sharing our experiences with the CEO of Nlogue, CEO of Drishtee (another player in this area) and are working with them in creating best practices in the area of content repositories and services.

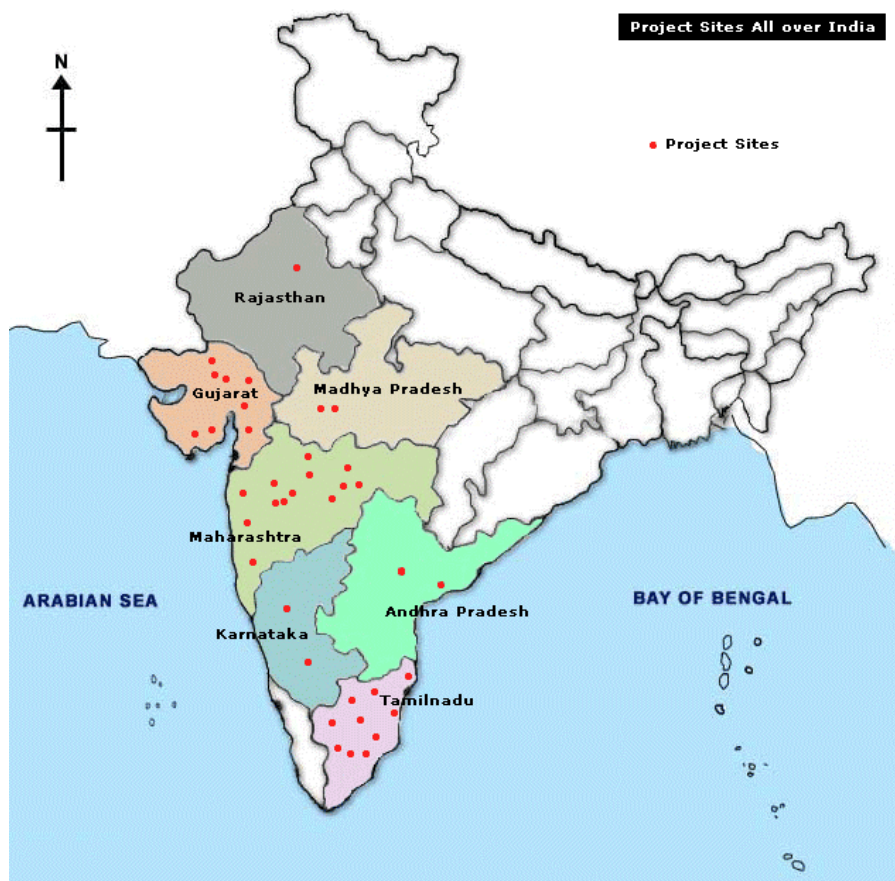


Figure 10.2: Nlogue deployments in India

10.2 What are the strengths and weaknesses and what steps are being taken to increase credibility?

The project's strength is that it is a good model of academia-NGO-private partnership for reflecting on the limitations of the existing internet technologies and trying to address them in context of meaningful services in rural areas.

The limitation is that the geographical distance from Mumbai city places constraints on the involvement of all lab members.

Plans for increasing credibility include publications, a workshop for NGOs and kiosk operators and additional surveys for measuring farmer satisfaction. An interview with our lab members has appeared in the Agriculture and Industrial Survey Magazine (February 2005 edition, pages 36-37).

11 Recommendations

11.1 What are the recommendations for the funding agencies?

Some ICT telecentre projects in Asia are struggling. They find it difficult to find satisfied users who keep coming back, are unable to scale beyond a few successes and are struggling to find a sustainable business model. New projects that assess such existing projects and help find solutions for them as well as compile best practices will be very illuminating. What follows are our insights on some of these projects that we have compiled so far from our observations in the Pabal and Rajgurunagar projects.

11.2 Why are such projects in rural areas struggling?

The assumption that low bandwidths are sufficient in rural areas.

If kiosk businesses have to be viable in rural areas, we need more, not less, bandwidth. Services relevant here such as distance education, videoconferencing, multimedia services, digital library services, VoIP services, etc. need data speeds comparable to urban areas.

The assumption that building a network is enough and someone else can create the content and the services.

It is vital to bring in partners who will back the content and services even before starting such a project by means of a market survey. The service providers are not always the best people to provide the kind of online services mentioned above that are localized and in a form that can be exploited by kiosk operators. Most services need linkages with government institutions, private companies, content providers etc. Kiosk operators are unable to create these linkages.

The assumption that rural areas cannot provide sustainable business models and the assumption that urban business models will work in rural areas.

While the purchasing power of rural people vary from area to area, a little known fact of life is that rural people end up paying a premium for services that their urban counterparts take for granted i.e. they actually pay more than urbanites for many services (after accounting for travel costs, costs of delays, costs borne due to weak infrastructure and amenities). We believe that there is no doubt that there is a huge demand for urban-like amenities and services. The challenge for the business is aggregating demand. Rural area networks being sparsely populated have to find ways of connecting more people over larger areas than the urban projects; population served is an important criterion.

11.3 What are the ingredients for successful deployments by internet service providers in rural areas?

1. Build wide area networks and connect a larger number of potential users
2. Address the security and maintenance of equipment lying in remote areas

3. Ensure that vendors of all the equipment are adhering to their maintenance contracts
4. Provide relevant services by partnering with other service providers (“channel partners in the eChoupal parlance”) making each service sustainable independently.
5. In case of eGovernance services ensure that the kiosk operator is given the necessary statutory powers
6. Choose project sites on the basis of results of market surveys for assessing demand and the success of finding partners (who also do their own homework independently) ready to back the services.
7. Partner with local organizations (self help groups, NGOs and the like) who can help train operators and spread the awareness of computers and the internet and (and possibly help with collecting payments).

12 Annexure

Source: Report titled “[Critical Success Factors for Rural ICT Projects in India: A study of n-Logue kiosk projects at Pabal and Baramati](#)” by Vivek Dhawan, Anil Bahuman, Shantanu Indamdar, Rahul Swami and Bishnu Pradhan, Media Lab Asia, IIT Bombay

12.1 aAQUA Kiosk Details

Manned Computer Kiosks information running the aAQUA Question and Answer agri-consultancy service by KVK Baramati

Table 12.1: Details of Kiosk operators

Name of Kiosk operator	Address	Profession	Distance from KVK in Kilometres	Starting Date	Investment			Total investment
					Computer, Peripherals, S/W	Equipments	Furniture	
Bharat Pachange	Kendur	Photography	200	01/03/2003	30,000	85,000	7,000	1,22,000
Prakash Pansare	Katewadi	Fabricator shop owner	18	26/03/2003	26,500	-	12500	39,000
Prashant Tambe	Pimple Jagtap	Farming	210	01/03/2003	26,350 + 6,000	10,000	5,000	47,350
Babasaheb Sawant	Uralikanchan	Accounting Tuition	190	23/11/2003	1,50,000	50,000	35,000	2,35,000
Rajendra Patil	Shikrapur	Medical shop	230	1/03/2003	28,000 + 40,000	3,000	4,000	75,000

Figure 12.1: Revenue break-up from various services

12.4 Business performance of the Pabal/Rajgurungar and Baramati Projects

Table 12.3: Business performances of the projects (year 2 only)

	Pabal/ Rajgurungar*	Baramati
Number of active Kiosk connections	9	6
Number of Private Connections	25	85
Average Monthly Revenues	Rs 12000	Rs 50000
Village Public Telephones (VPT)	60	NA
Average Monthly Revenues from VPT	Rs 30000	

* For both Pabal and Rajgurungar LSPs

Source: LSP Management

12.5aAQUA Q&A status (March 04 – February 05)

Table 12.4: Details of questions using the aAQUA service

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Forum name										
Crop	7	10	13	12	25	45	31	32	44	13
Animal	0	2	2	2	3	0	0	0	2	2
Others	0	7	2	1	1	5	2	1	2	1
Market									2	0
Total	7	19	17	15	29	50	33	33	50	18 *
Posted by										
field Eng	1	11	10	4	4	15	7	5	4	4
Kiosk operator	6	2	6	9	12	18	16	18	31	2
Users	0	6	1	2	13	17	10	9	15	12
Total	7	19	17	15	29	50	33	33	50	18 *
Response by expert										
Avg. Response Time (days)	2	2.2		2.5	3.6	2.4	2.2	3.88	2.68	2.27
Min Response Time	2.5 hrs	8 min	7 min	20 hrs	2 hrs	9 min	2 hrs	1 hr	10 min	4 min
Max Response Time (days)	4	6	5	6	16	22	14	5	17	7

- The number of queries is less in the month of February (and March) because its harvesting time. The next sowing season is June.

12.6 Personnel working on the project

Table 12.5: Project Personnel

aAQUA deployment team	
Anil Bahuman	Manager
Yogesh Kulkarni	Director, Vigyan Ashram
Dr Parab	aAQUA expert at KVK
Rahul Swami Shantanu Inamdar Devendra Shrisath	aAQUA moderator Kiosk marketing aAQUA experts moderator
Rural youths involved from Vigyan Ashram	
Maruti Kailash Jadhav Laxman Jadhav Sachin Ashram students	Antenna setting, testing (Rajgurunagar and Retawdi) Antenna setting (Pabal) Welding and structures Communication Assistance

10 Kiosk operators

IIT Research Staff

Krithi Ramamritham
Subhasri Dasgupta
Anil Bahuman
Varun Chandrasekhar
Chaitra Rao
Hari Krishnan
Chandrasekhar
Sreeju
Nisha Mehadale
Vivekanada Tadala

aAQUA kiosks

Principal investigator
Research Associate
Research Associate
Research Assistant
Research Assistant
Research Assistant
Research Assistant
Accounts
MTech Student

12.7 Key Dates

1. Receipt of Funding April 20, 2004
2. Project Commencement May 1, 2004
3. Interim Report at end of 6 months Sent to Ms. Nanditha Raman on Oct 14, 2004
4. Interim Report at end of 9 months Sent to Ms. Nanditha Raman on March 4, 2005