



**CGIAR ICT-KM Support for the
Virtual Academy for the Semi Arid Tropics
(VASAT)**

Draft Second Annual Report: 2005-06

Presented by

International Crops Research Institute for the Semi-Arid Topics

In association with

International Livestock Research Institute, South Asia Office

International Water Management Institute, South Asia Office

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Summary

Virtual Academy for the Semi-Arid Tropics (VASAT) is a coalition of strategic coalition for information, communication and capacity building. It aims at empowering vulnerable rural communities to cope with recurrent droughts. VASAT envisages bringing about desirable behavioural changes in the rural communities and helping them to build resilience to fight droughts. The project aims to build a pilot model that would blend the advantages of contemporary ICT and KM with the power of non-formal, open learning, to develop a new approach for the delivery of agricultural and development information to rural communities vulnerable to droughts in the semi arid tropics. During the second year of the project that is since March 2005 the activities on this project made significant progress. The rural hub activities in Addakal region in South Central India were significantly strengthened. Much new capacity was built among the participants from the Adarsha Women's Association, a community-based micro-credit organization. They engaged with the rural families in different ways involving technology mediation, to enhance the quality of the extension and advisory processes. The active members of the Association were bestowed rare national honor for their contributions to improving learning and livelihood opportunities among the rural families. On another strand, agricultural university partners were engaged with VASAT in promoting an ODL-based, technology-mediated paradigm for extension education. A grid of online extension/education materials covering seven universities is in formation, facilitated by VASAT. The capacity developed in VASAT in the use of learning objects, and for customization of generic material in a local milieu is widely recognized now. A number of long duration partnerships have been established with a number of technological institutions. VASAT has been accorded the status of an Institutional Project on a long term, based on the CGIAR System Priorities. The activities have been on schedule, the outputs have been generated as projected, and a number of learning experiences have been documented.

**Significant outputs of VASAT Project during 2005-06:
(Relates to Monitoring and Evaluation Planning Worksheet for VASAT)**

- **ODL workshop was organized;** domain experts in agri and vet sciences were engaged in a week-long workshop and exposed to design and development of content for e-learning and learning content management systems.
- **Addakal Hub has been strengthened;** new capacity strengthening processes in relation to extension have been put on stream; a new infrastructure for video conferencing has been donated by two national agencies; the women volunteers in Addakal on this project have been honored with the Fellowship of the National Virtual Academy by the President of India
- **New Partnerships Developed;** with the well-known Indian Institutes of Technology System, in applying GIS at a micro-level, in the use of semantic web technologies and in the use of weather sensors; also with Microsoft Community Affairs to extend the hub operations.
- A roundtable consultation involving senior directors of outreach programs, deans and vice-chancellors of agri and vet universities was held for **Setting Up Online Grids of Educational and Extension Materials and for Capacity Strengthening in February 2006;** the universities agreed to pursue this by committing their time and resources. A pilot learning program on drought awareness in Maharashtra organized with a new, non-traditional partner (MKCL) had nearly 30000 registrants over six months.
- VASAT materials along with a significant volume of online materials were contributed to the CG-OLR repository.
- **The functional arrangement for inter-center coordination is in place;** VASAT actors in different CG centers met regularly on a monthly basis..
- NARES partnership strengthened by ensuring their participation in rural hubs work and farmer interaction involving new tools such as the Internet and videoconferencing.
- A number of invited presentations were made in national and international meetings; young scholars presented some of these.

Progress of Project Activities Measured Against the Original Timelines Proposed

Tasks 2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WG on IA&Evaluation												
Second RRA-PRCA				★								
Meta-material addition												
First Annual Report				★								
E-Training for ODL partners												
ODL workshop								★				
E-Training for extensionists												
Extension workshop										★		
Report on rural hubs												★
LO repository consultation												
LO repository report											★	

First Annual Report: Submitted

E-Training for ODL Partners: Carried out for four agricultural universities

ODL Workshops: Jointly with E-training activities; report attached

E-Training for Extensionists: Training courses organized at the rural hub

Extension workshop: Conducted for the newly inducted rural leaders of the National Virtual Academy; multiple stakeholders joined in.

Report on rural hubs: Attached

LO Repository Consultation: Senior Directors, Deans and Vice-Chancellors participated in the Consultation; organized with the COL.

LO Repository Report: Joint activity with the CG-OLR project; report Attached

Tasks 2006	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Trials on rapid production												
NARES hub mgmt training												
Second annual report				★								
Impact assessment process												
Report on new model							★	★				
Final report preparation												
Report submitted												

Trials on Rapid production: Continuing, using two LMS

NARES hub management training: Organized in combination with the extension workshops

Second Annual Report: Attached

Project Management and Organization

Project Coordination Group:

V Balaji, Head of Knowledge Management and Sharing, ICRISAT (overall responsibility for reports to ICRISAT and the CIO)

Rex L Navarro, Director for Communication, ICRISAT

Michael Blummel, Team Leader of ILRI-South Asia Programs

Celio Mattia, Associate Expert - Water Management and Policies, IWMI, South Asia

Project Managers:

Sreenath Dixit, South Asia (on deputation from the Indian Council of Agricultural Research)

Marie-Julie Menard, West and Central Africa (on leave during July-Dec 05; resigned in February 06)

Content Advisor:

B Diwakar, ICRISAT

Research Associates:

Cecilia Abraham, IWMI-SA

D Thirunavukkarasu, ILRI-SA (left in December 2005)

Graduate Students:

G Dileep Kumar, ICRISAT (doctoral student)

Ritesh Sahu, ICRISAT (doctoral student)

Special Partners:

- Desert Margins Program, ICRISAT Sahelian Center (NRM linkages)
- Commonwealth of Learning, Vancouver, Canada (Advice on Repository Design)
- Project on Extension Toolbox, ILRI, Nairobi.

Introduction:

In the following pages, a concise report on activities on the VASAT project during 2005-06 is provided. The project objectives are:

1. Build and facilitate a consortium of Communities of Practice in drought coping and mitigation using the expertise of CG centers, particularly those submitting this proposal.
2. Develop non-formal instructional material and corresponding courseware for drought coping and mitigation.
3. Pilot a repository of learning objects relevant to the sector and develop a model for their transformation into learning materials.
4. Design and test an ICT-based knowledge and information exchange model that links rural families and their organizations with international/national centers of excellence in combating drought and desertification; assess the sustainability factors.
5. Assess the impact of knowledge sharing on the capacity of rural families to cope better with drought and desertification; and study the impact on agricultural extension.
6. Evolve a common approach, with relevant CG ICT-KM projects, especially the CG-OLR, to promote virtual learning in agriculture.

During the year, activities to fulfill all these objectives were carried out. The rural hub connected to the Internet was a key actor in many activities, especially those that relate to extension. A separate report on this hub has been written because of its importance in the project activities. Sustainability issues are also considered in this report (it is attached as Annexure 2). The hub activities reveal that international organizations, in partnership with NARES, are able to bring about rural information empowerment in innovative ways. New partnerships in support of Objective 3 above have been developed with internationally reputed institutes of technology such as the IIT system in India. Vibrant communities of practice have been formed with a wide range of partners active in them. One of them is on LMS while active communities work towards creation and validation of content.

Activities on the Project (chronological order, following the charts submitted to the CIO)**Engaging the ODL Partners: a preliminary workshop**

During late 2004-05, VASAT was engaged with the emerging ODL programs of Indian agricultural universities. In a workshop in January 2005, the universities

expressed the need to train their ODL faculty in the use of Learning Management Systems (LMS). VASAT agreed to organize such a training workshop. The COL came forward to extend additional support in terms of human resources.

As a forerunner to the workshop for the ODL partners, a 5-day training workshop on *Instructional Design and Learning Management Systems* was organized on pilot basis in April 2005 for the scientists and communicators of the National Institute of Hydrology, partner in the VASAT coalition. This course aimed to orient the scientists and communicators to the field of technology-mediated self-instructional learning modules. The course also exposed them to learning content management systems (LCMS). Experts in multimedia design, instructional design theory and pedagogy were invited as resource persons. Dr B Diwakar, Consultant, VASAT facilitated sessions on Instructional development system and learning objects. VASAT doctoral scholars working with various learning management systems helped the participants in their hands-on sessions. Feedback obtained from the participants showed that the workshop has introduced them to a new world of learning. Participants included four scientists of the National Institute of Hydrology, Ministry of Water Resources, Government of India, Roorkee, Uttaranchal. Five scientists and communicators of ICRISAT, ILRI and IWMI also participated in the workshop.

ODL Workshop for the University Partners:

ICRISAT partnered with the COL in organizing a training workshop on Learning Management Systems for four state agricultural universities in India, who are partners in the technology mediated open and distance education (TechMODE) initiative. The workshop events took place in three phases: (a) Planning (meeting in Chennai on 2nd Nov); (b) LMS Workshop (multiple institutions as resources persons; 6-10 Dec); (c) Online forum to use LMS and provide support, and to develop an investor-oriented proposal for adoption of TechMODE more extensively. The workshop was effective, and has catalyzed the formation of an active group among the SAU's in India, and more universities have expressed interest in partnership. There were twenty two participants in the workshop, with resource persons coming from VASAT, ARI's as well as the Indian Institutes

of Technology. Audio and video conferencing systems were used extensively to facilitate the participation of ARI resource persons. Erik Duval, advisor to the CG-OLR project, served as a resource person via video. Feedback from the participants overwhelmingly rated the workshop experience as superior. The online discussions hosted with about thirty participants from India, Canada, the USA and Belgium are continuing (workshop details in Annexure 1).

A follow up workshop organized in February 06 led to the setting up of a taskforce comprising VASAT and SAU leaders to develop a grid of extension and education materials from seven universities. It was attended by Vice Chancellors and Deans/Directors from seven universities in India, and was chaired by the DG of ICRISAT with the CEO of the COL as a key participant. A global specification such as the FAO AGROVOC will be used in the core and the emerging practice of semantic web would be adopted. The taskforce is expected to develop a comprehensive proposal. The intended learners are two-fold: rural information hub operators linked to the India Mission 2007 process, and rural learners registering for certificate and diploma courses to improve chances of a better career or business opportunity in agriculture.

Extension Workshops and Hub Management training

Dialogue and interactions with the formal as well as non-formal extension sector is an important component of the project activities. The emphasis is on helping partners reach a wider audience, especially the poor and the assetless in the rural areas. Three kinds of interactions took place on the project during the year, and they were on different planes and to different degrees of technology mediation. The rural hub (or, the village resources centers as some partners called it) was the center piece in all these efforts.

The first kind of interaction on extension bordered on the traditional. There was no technology mediation, and the audience received a direct exposure to a new practice with an expert facilitating that process. Two such conversations, one on micronutrients and another on improved practices in pigeonpea cultivation were carried out for farmers from the Addakal hub region in the second half of 2005.

They were organized in quick response to strong demands from the field because the area experienced unusually good rainy season. These are described in some detail in the rural hub report (annexure 2). The experts were from ICRISAT and one visit was organized with about 30 farmers to ICRISAT for a thorough exposure to a new practice. The response was positive from the participant families. We were aware of the limitations of this process and carried it out only because the local demand was substantial and immediate.

The second one involved some technology mediation. We had experimented with the use of an online content management system (Acado, described in last Annual Report, accessible via the Internet) to support interaction of farmers with experts. The hub operators and village level network assistants played an important role. The approach we adopted was to enhance the “peripheral intelligence” which reduces the burden on the “central intelligence” (an analogy is with the rapidly increasing adoption of the voice-over-IP practice, where “intelligent” PC’s at the periphery have reduced the demand for high power centralized switches for routing the calls!). The farmers posed questions seeking practical solutions and these were conveyed by the village network operators into the CMS via the Web. Experts would study and provide the answers to these queries. In the experiment, we first strengthened the capacity of these intermediaries (all women) to get the very basic science of cultivation so that the farmers queries were supplemented adequately with much agronomic and environmental data. The expert time needed to provide a satisfactory answer was reduced from seven days (included the waiting period for supplementary information) to a low of 14 hours on an average, leading to almost immediate yet exhaustive solutions. This showed the viability of the approach to capacity strengthening we have followed. (Details in Annexure 2).

To assess the information and instructional needs of rural ICT hub managers and informal extension functionaries, we joined in and supported a national level Participatory Knowledge Management Workshop. It was formally organized by the Jamsetji Tata National Virtual Academy with about 155 individuals from 12 linguistic regions of India as participants. In this workshop we discussed the indigenous knowledge and successful experiences of the participants and their community-based organizations, linkages with the exogenous knowledge derived

from formal research and carried out an analysis of felt needs for functional science literacy. Issues like information support and successful and sustainable hub management were discussed.

Both the programs were organized and supported by MSSRF, ISRO, ICRISAT/VASAT, OneWorld South Asia, the MANAGE, the Tata Trusts, SDC, IDRC, ITC, Microsoft, GKP, MCX and the 93rd Indian Science Congress. Experienced extension professionals and information leaders from across the partner organizations were facilitated by Dr N K Sanghi, well known Indian expert in participatory development. MANAGE, the technical and extension training wing of the Ministry of Agriculture, Government of India, hosted the workshop. The proceedings are to appear shortly.

The third kind of interaction involved significantly more of technology mediation. We used two-way satellite-based video-conferencing systems to interact with several rural hubs in different linguistic regions. This is carried out in association with two national organizations: the M S Swaminathan Research Foundation and the Indian Space Research Organization. These two organizations have set up a pilot system for rural video conferencing in 2004-05 and VASAT partners have organized rural extension activities using this arrangement (reported in the last Annual Report). Encouraged by the value of combined information that VASAT partners were able to provide to the rural users, the MSSRF-ISRO project leaders decided to establish a permanent expert center at ICRISAT that would serve to deliver new information and information to rural hub users. This facility was formally launched in January 2006 by the President of India in the presence of the Directors General of FAO and ICRISAT. New facility is now used to hold daily interactions in a non-formal class room setting to strengthen the capacity of the hub managers to add supplementary information to farmers' questions. The research questions for us relate to inclusiveness (can the assetless and the poor make good use of these opportunities?) and the quality of interaction (does it make sense to people who have been outside the class room milieu for years?).

LO repository and Trials on Rapid Production of Content:

The VASAT scholars have been working on the use of three different LMS online and have been assessing their use for two purposes: for their use in creation of locally relevant extension materials; and to strengthen the capacity of rural hub operators in supporting farmer-expert interactions. A tool for rapid localization of relatively complex online material was designed and developed in 2005 (described in the last Annual Report; also appeared in a peer-reviewed publication of the IEEE). Further work on rapid localization resulted in the development of a blend of online tools and procedures that use a global specification such as SCORM and the freeware, Reload Editor. A number of tests have been carried out in the ODL workshops with this blend. The trials were successful as evident in the way the participants in these programs were able to use it (see the section on feedback in Annexure 1). A detailed publication on this set of procedures and tools is under way.

The VASAT project has developed much expertise in creating the Learning Objects, but has not created a repository of its own. We use the LO repository designed on the CG-OLR project. Over a period of four weeks in Sep-Oct 2005, a large quantum of online learning materials from VASAT as well as from ICRISAT's collection has been uploaded to the repository, following the procedure developed by the CG-OLR group. Moodle, which is the LMS adopted on the CG-OLR project, is also used for uploading course materials in ICRISAT, and a number of individuals from NARES have also been trained on the Moodle. A list of learning materials uploaded to the CG-OLR repository is provided in Annexure 3. VASAT leaders are also active in the processes associated with the CGIAR Global OU for Agriculture and Food (GOAFU), and have pointed out the availability of the CG-OLR as a significant resource for GOAFU and partners.

The process of meta-material addition to VASAT learning materials is an ongoing process. The earlier approach of using the SCORM is now changed to increase the use of CGOLR application profile. A collaboration involving the VASAT, the FAO and the Indian Institute of Technology is premised on the use of AGROVOC as the ontological basis for the design of new web sites across Indian institutions that deliver extension education in the ODL mode.

Communication:

The inter-center communication on this project is active, and monthly meetings are taking place regularly with project personnel from the participating centers. A number of events such as the Indian Science Congress were used to showcase the progress on VASAT activities. Focus in 2005 was on building strong partnerships with NARES organizations, and the VASAT staff made 11 presentations in various NARES meetings in South Asia. Significant international presentations (outside the C4D meetings of ICT-KM) include the FAO-RAPA in Bangkok, in the Philippines and at the headquarters of the Commonwealth of Learning in Canada. Two papers were accepted in international conferences in South Africa and the USA. A monthly newsletter brought out by IWMI-South Asia on behalf of VASAT is our main channel with the partners. The VASAT web site is undergoing extensive revision to reflect the strong partnerships developed and the technological advantages gained.

Outcomes:

The outcomes are presented through an analysis of significant changes in the organizations partnering with VASAT.

Boundary Partner 1: Adarsha Mahila Samaikhya (Adarsha Women's Association), is a community-based, non-government federation of village level women micro-credit societies. The AMS operates in 37 villages (total population of approximately 45000) and has a membership of 5225 women (as of September 2005). This is a legal body with an elected executive that has a fixed term. Since 2004, the AMS has partnered VASAT in setting up and operationalising a rural information hub connected to the Internet. The project contributed the basic hardware, connectivity and strengthened the capacity of AMS members identified by the executive. (Details in the report on the rural hub in Annexure X).

Description of change: Capacity of AMS members to deliver complex information and training to rural clients enhanced.

Contributing Factors and Actors: Capacity Strengthening activities carried out by VASAT; local availability of hardware such as PC's; internet access locally available; information modules locally made available by VASAT. The actors are the AMS members identified for capacity strengthening, the VASAT research scholars, and the project manager.

Sources of Evidence: Hard copy records maintained by the AMS members at the hub and in three villages; these records contain information on information accessed by a user, source of information provided and the (voluntary) satisfaction rating by the user. Secondary evidence is in the form of local databases designed and maintained at the hub on locality-specific information such as wages, input prices, weather and on local government welfare programs. These are rated by users as accurate and reasonably updated.

Unanticipated Changes: Three of the individual members of the AMS who joined the VASAT capacity strengthening processes have gone to become Fellows of the National Virtual Academy for Rural Prosperity during 2005-06. A total of 1100 nominations of rural young leaders known for contributions to improving local capacities was considered in a multi-tier review at the national level, and identified 155 individuals eligible for induction as Fellows. The three Fellows were inducted by the President of India ceremonially. This level of national honor for our partners was not anticipated in the earlier stage of the project. Evidence for it is in the form of Fellowship certificates provided by the National Academy. This has led to a very large number of young members seeking to join the VASAT activities at the village level.

Lessons Learned/ Program Adjustments Needed: The capacity strengthening process is successful when it is specific to the local milieu. This is almost a necessary condition to make a partner derive advantages from new capacities. This has implication for learning material development, which is a generic process. Following our experience with AMS volunteers, we have developed greater appreciation for the design of educational materials in such a way that they can be easily localized. This is a lesson we have shared in various forums and with our content creation partners such as the agricultural universities.

An instance of change management: The political leadership in the State Assembly was changed in 2004 because of the state general elections. Over the year 2005, when elections to the AMS Board were due, the state-level changes had an influence on the new alignments and campaign. One of the VASAT actors was perceived as being associated with an “old guard” faction of the executive which had been neutralized with support from local political activists. The emerging group was keen to reduce the importance of the actor. In a series of group meetings, the VASAT staff made it clear that the person had been identified by the AMS which was free to effect a change. The training given should not be rendered useless. The AMS board then approved the continuation. After the AMS elections, a new board took over, reviewed the link with VASAT and affirmed interest in continuing the partnership. To make the commitment more formal, the AMS Board passed a resolution ratified in the general body, and formally delivered it to ICRISAT. This was used by VASAT to treat the matter as closed, and the partnership continues.

Boundary Partner 2: The Maharashtra Knowledge Corporation (MKCL), Pune, India

The MKCL (www.mkcl.org) was established in 2001 by the State of Maharashtra through a special act for universalization and integration of IT in all the institutions dedicated to Higher and Technical Education in the state. MKCL is implementing the Community learning and information centers (CLICs) Project through networking and partnership strategy for providing learning services and governmental and non-governmental information services to especially rural, remote and disadvantaged communities. MKCL is spearheading an initiative in design, development and delivery of e-Learning, e-Governance and e-Empowerment technologies, solutions and services to its rural clients.

Description of change:

During December 2004, the VASAT group engaged with the MKCL in a series of discussions on making use of their technical capabilities in building a paradigm of drought-related mass education in India. The MKCL leaders, who reviewed the various “literacy” modules of VASAT on NRM and drought, decided to make use of a sub set of them in delivering an awareness course on drought matters to students affiliated to the National Service Scheme in various colleges of the

University of Pune. Three drought-prone rural districts (Pune, Ahmednagar and Nashik) were covered and 150 colleges joined the program. VASAT content advisor helped the MKCL in customization of the generic drought-literacy module to suit the milieu in Maharashtra, and the MKCL's multi-media group added its own voice-over audio-track in Marathi to the module. The customized module was expected to be of four learning hours in duration. Starting in January 2005 the awareness course was delivered to the NSS learners during their rural camps, and by late July 2005, the MKCL recorded the participation of 32,000 learners. Here is an example of how a partner organization with an IT-education focus was able to harness its network and capability to foster awareness on drought among a large number of learners.

Contributing Factors and Actors; The MKCL learning delivery infrastructure; VASAT content; MKCL capability in rapid adoption of new learning material; MKCL's leadership at the CEO level; VASAT project manager and content creation advisor.

Evidence: The records maintained by the participating colleges with access provided to the MKCL; independently organized visits by the VASAT project manager (participated in three trainers' training programs in three months); formal document from the MKCL CEO to ICRISAT's DDG-Research.

Boundary Partner 3: M S Swaminathan Research Foundation, Chennai, India

The MSSRF (www.mssrf.org) was registered in 1988 as a non-profit Trust. The basic mandate of MSSRF is to impart a pro-nature, pro-poor and pro-women orientation to a job-led economic growth strategy in rural areas through harnessing science and technology. Its work on use of ICTs is particularly very significant and has done pioneering work in establishing and running community owned village knowledge centers (VKCs). From what began as small experiments in Information Village Project started in Pondicherry in 1998, MSSRF's initiative in the use of ICT for information and poverty alleviation in rural areas has evolved and expanded over the years.

Description of the Change: The M S Swaminathan Research Foundation and the Indian Space Research Organization have experimented with the use of satellite-based two-way video conferencing to organize village information resource centers (VRCs). During March-July 2004, the VASAT partners, ICRISAT and the CRIDA, organized two special sessions, one on groundnut diseases and another on fodder management with three village resources centers covering about 30 villages. The MSSRF assessed the usefulness of such expert participation with the rural families, and found that the rural users received it as a high-value interaction. Based on this assessment, the MSSRF and the ISRO reorganized the VRC configuration, and created a new network topology that included an expert center among the VRC's. ICRISAT has been made the expert center since January 2006. The expert center has additional and special network privileges enabling autonomous scheduling of sessions between the expert center and multiple VRCs. This is an example where the partner effected far-reaching changes in their basic network to ensure that VASAT partners were able to contribute to mass learning in rural areas. The network covers today five states of India each with a population in excess of 25 Millions.

Contributing Factors and Actors: Satellite based two-way video conferencing facility; VASAT content; VASAT project manager; CRIDA experts in groundnut and livestock management; MSSRF director of informatics; MSSRF Board chair.

Evidence: records of the MSSRF VRC program; design diagrams of ISRO supplied to MSSRF in December 2005; Proceedings of the multi-institutional launch on 5th January 2006 (available with MSSRF).

Evaluation:

The activities on the project have been on schedule except for minor date variations, and all the committed outputs for the second year have been delivered. The significant challenge during the year was the long absence and subsequent separation of the manager in West and Central Africa which resulted in a slow down in the activities in Kahe and Gabi hubs. This will be rectified in the coming months. The participation of the rural partners and NARES have been up to the expectation, while the donation of expensive video conferencing facility by Indian organizations is a welcome development. The institutional

sustainability of VASAT is now guaranteed in the new project structure of the ICRISAT under the new System Priorities. The feedback collection has been continuous, and in the "impact" assessment processes, we plan to make use of non-involved third party experts in rural development to assess the usefulness of the VASAT hub model in improving drought preparedness among the assetless and the poor in the rural areas. VASAT will be reviewed by a panel of external experts in Oct-Nov 2006 as part of the Center-Commissioned External Review, mandated by the ICRISAT Governing Board for the Knowledge Management and Sharing Group which implements the VASAT project in ICRISAT.