

Annual Progress Report
Virtual Library Services
C4D Thrust, ICT-KM Projects

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Target Audience:	Chief Information Officer C4D Thrust Coordinator C4D Team

Executive Summary

Considerable progress has been made in implementing the Virtual Library Service. Despite project delays early on resulting from examination of a different project approach, the project has moved forward quickly, mostly because it has a mature community of practice behind it, and, a significant number of resources and functionality were prepared in time for the CGIAR Annual General Meeting in December 2005. As of March 2006, over one hundred electronic resources have been selected and described and are searchable through the CGVLibrary. In terms of CGIAR catalogs, a change in strategy has meant that already 11 of the 15 CGIAR centres have been included in the overall service, though not all have been as integrated into the service as was originally hoped. The project is on track to meet its anticipated launch date of CGVLibrary in June 2006. Activities between now and then will include completing implementation of full text linking services, emphasizing training, documentation and marketing, and encouraging other organizations to adopt standards that would allow incorporation into the CGVLibrary.

1. Project Performance

Objective 1 Step 1	Project Review Meeting	Status : COMPLETE
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See previous report.

Objective 1 Step 2	Analysis and Selection of Specific Software	Status : COMPLETE
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Progress

As previously reported, in early 2005 the Virtual Library Services project undertook an unplanned but necessary examination of lessons learned in other organizations that have deployed VLS systems. This was deemed necessary because of differing opinions from the Content for Development (C4D) project coordinators concerning the technical approach to be taken in implementing a VLS. A consultant who is an expert in agricultural information systems was hired to conduct a number of brief case studies exploring approaches to Virtual Library Services in other organizations, both institutions using the preferred commercial Enterprise Information Portal software of the VRC Infrastructure activity (PlumTree) and institutions using a combination of an EIP system and a specialized VLS product.

The consultant found that there was no evidence of any organization using institutional portal software such as Plumtree for implementing a VLS service, but that many organizations had implemented specific VLS software; he also reported that new approaches to integrating VLS services within a larger institutional portal were promising. The report served to highlight the risks involved in adopting an untried approach such as implementing a VLS with Plumtree, and the benefits that could be gained by sharing technical development and support with other users of a standard VLS software.

On the basis of this report, a technical approach that favored a specific VL software solution - but did not exclude use of Plumtree if the cost/risk equation was promising -- was presented to a meeting of all C4D projects in Rome in May 2005 and was approved by that group. After this meeting, a Request for Proposal (RFP) for software was prepared and sent out to twelve different companies offering virtual library products or services. Plumtree was one of the companies included in this RFP process in order to evaluate fairly the possibility of using an institutional portal for virtual library services. Due to the early start on work of identifying resources (Objective 1 Step 4), a list of some 50 different resources of major interest to the CGIAR was included in the RFP.

Responses were received from 6 companies. Reasons for organizations not responding included geographic limits to marketing areas and time restrictions. Proposals were evaluated by the Project Manager, the Technical Advisor, a consultant and 2 members of the CG Virtual Library advisory group; other members of the Advisory Group had been expected to participate, but were not available at the time. A shortlist of three vendors was established based on a number of factors, including functional completeness of the solution offered, cost, number of current installations, amount of development required and whether access to the general public could be allowed. Each vendor on the shortlist was invited to make a presentation of their software over the web to staff members and consultants in Washington, Lima, Rome, and Brussels, and to answer a series of technical questions addressed to them by the group.

The proposals from the shortlisted vendors included vendor-hosted solutions (where the application resides entirely on the provider's site) and locally-hosted solutions (where the server is purchased and managed by the customer). A vendor-hosted solution in some ways would have been ideal for the CGIAR. However limitations in the flexibility of hosted solutions (particularly in terms of integration with the overall C4D portal) and high on-going costs argued against vendor-hosted approaches proposed.

In the end, ExLibris's MetaLib product, the Knowledge Base (for resource directory and cross-database search), and SFX product (for the OpenURL link resolver) was the unanimous choice of the evaluation group. ExLibris has a worldwide presence and excellent reputation, offered a robust and flexible software solution at a very attractive cost, and has the largest installed customer base for VL software, allowing the CGIAR to benefit from database connectors

already developed and tested by other organizations. A contract was signed by IFPRI on behalf of the CGIAR ICT/KM program with ExLibris concerning these two products in early September 2005.

Reflection and Learning

Evaluation and selection of software was carried out successfully, even in an environment where the participants in this phase of the project were widely distributed, and working in different time zones. Electronic communications and a mature community of practice played an important role in ensuring all members of the group had the same information and were able to communicate easily.

The principal difficulty during this phase of the project was the time pressure under which the group was working, given the need to present a substantive prototype for the GGIAR meeting in December 2005. A longer time for vendors to respond to the proposal might have resulted in a larger number of responses; however the responses were sufficient to represent different approaches in the current marketplace and included the main market leaders in this product area.

Objective 1 Step 3	Implementation of virtual library services	Status : ON-GOING
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Progress

The actual implementation of the VL was the main focus of the project through the second half of the reporting period. Implementation involved obtaining and setting up the server, training staff in the use of the software and actual implementation of a number of data services and providers.

The issue of obtaining and setting up the server was an unexpected challenge. Server hardware and associated costs such as computer operating system had been included in the original drafts of the VL project proposal; however during the development process, these costs were removed from the VL proposal on the grounds that the Virtual Resource Center Infrastructure project would be providing the server and server support required for the VL. However this arrangement was evidently not well understood, communicated, or documented. When in August 2005 the VL project was in a position to communicate its hardware and operating system requirements based on the responses to the RFP, the VRC Infrastructure project was only able to provide the server hardware; they were unable to provide operating system installation support. They also indicated that they would even charge a hosting fee for the server. As a result, the VL project found itself technically and financially responsible for a number of server and operating system related tasks only days before the date required for installation of the software and the beginning of training.

Fortunately CGNet was able to assist with the server setup and hosting. On very short notice, the Technical Advisor identified and purchased a server and had it shipped to CGNet where their staff quickly setup the hardware and installed the operating system. Configurations had been carefully checked with VL software vendor, but there was a brief scare when it appeared that one of the purchased packages was incompatible with the server hardware. This proved to be only a minor difference in the operating system supplied, one version was exchanged for another and the problem was resolved quickly and to general relief. However it is an indication of the pressure that people were working under with the deadline of the December AGM looming ahead.

Once the server and software were successfully installed, a number of CG staff were trained in the use of both the Metalib and SFX software:

- Staff from 6 Centers (CIP, CIAT, IFPRI, IITA, World Agroforestry, WARDA) were trained online in the use of SFX in September 27 –28 and on Metalib September 29. These SFX and Metalib "webinars" (web-based seminars) were video recorded. The video recordings of the Metalib and SFX webinars were shared with the CGIAR Information Managers during the IMs' meeting in Syria in September 2005.
- Staff from 4 centers were trained on site at IFPRI in Washington DC in the MetaLib software from 11 to 13 October 2005.
 - Aamir Quresh (IFPRI)
 - Carlos Saa (CIAT)
 - Indira Yerramareddy (IFPRI)
 - Mulugueta Bayeh (IFPRI)

- Luz Marina Alvaré (IFPRI)
- Jean Pierre Carre (CIP)
- Danielle Lucca (CG Secretariat)

Staff from ICARDA and CIFOR were also invited but could not attend. The VRC Infrastructure project were also invited to send staff to the training, but expressed that they did not have time to attend.

- Staff from three centers participated in a one hour online seminar on Creative Uses of SFX on December 1, 2005.

In order to meet the deadline imposed by the CG AGM in December, additional resources for implementing the system were provided under separate contract with the ExLibris, the software vendor, using the services of a Metalib and SFX consultant based in Canada.

Currently some 109 electronic resources are available through the Metalib software, allowing a user to select resources to be searched simultaneously via a simple, single interface. Most of the work on this part of the project is now complete. We foresee some additional resources to be added if a second phase of the VLS is approved.

The responsibility for the actual implementation has involved a wide range of people from different centers and demonstrates the extent to which projects such as the VL can be successful in a network level. In addition to Nancy Walczak, the Technical Advisor and Luz Marina Alvaré, the Project Manager, the following have made particular contributions to this stage of the VL.

- CGIAR Information Managers, who were involved in establishing lists of resources and organizing meetings, and whose practical experience was very useful in this regard.
- Aamir Quresh (IFPRI) -- loaded Exlibris information updates and implemented authentication with Active Directory
- Jean- Pierre Carre (CIP) and Cecilia Ferreyra (CIP) -- implementing the SFX link resolver
- Carlos Saa (CIAT) – implementing the Metalib resource database and cross-search, including development of scripts to implement INMAGIC catalogs (see Objective 2) as well as other networked resources such as CAB.
- Indira Yerramareddy (IFPRI) and Elinor Dumont (IFPRI), responsible for adding and updating new resources when Exlibris provides the updates. These updates are run by Aamir.
- Mulugueta Bayeh (IFPRI) who did the web design of the CGVlibrary interface
- Alexander Jerabek, a consultant hired to assist in the implementation of Metalib

Implementation will continue in the period from March 2006 to project launch. Some additional resources already identified will be implemented. The dynamic link resolution service, based on the SFX software, will be implemented with separate instances for each CG Center allowing access to be customized to the particular electronic resources that that Center has licensed.

Among the very interesting possibilities for the future include configuring INASP's PERI services (online journals free of charge to developing country researchers) so that NARS researchers with free access to PERI journals can be directly sent to the journal content after performing a search in the CGVLibrary. Discussions have also taken place with the FAO about including AGORA resources (resources similarly free of charge to developing countries). However current resources will not stretch far enough to cope with the technical and political issues involved.

Reflections and learning

Lack of continuity in program personnel and detailed documentation can lead to difficulties in inter-project communication. Without full documentation of inter-project agreements, the way in which commitments are perceived can shift over time. Particularly when projects are working under tight time deadlines (as all projects were from May to December 2005), these issues are difficult to resolve and increase the pressure on all concerned.

The benefits of sharing information and expertise with other organizations using the same software have already become evident. It was easy to identify a consultant experienced in the software to assist in the implementation of the software and the integration of

authentication services. A number of the connections that have been implemented have come from the library of software developed by or for other users of the VL software.

Competing projects launched while the VLS was being developed, diverted the attention of the Information Managers. This situation resulted in the need for a significant chunk of the work to be done by staff based at IFPRI. Great efforts have been made to involve, accommodate, and work with staff at other centers, but a variety of issues serve as important barriers, including the extremely tight deadline for the project, competing demands on staff at all Centers, different perceptions of the activity on the part of management in the Centers, and the difficulty of travel and geographic dispersion.

Some resources are not as tightly integrated into the CGVLibrary as users would like. A user can search these resources through the CGVLibrary, but then needs to link out to see the information retrieved. The most important databases in this category are CAB Abstracts and AGRIS. In the future, the CGVLibrary needs to take a more active role in explaining the benefits of using international XML-based search-and-retrieval standards and in helping and encouraging organizations to implement them. The benefits of implementing a standards-based interface to a hugely important resource like AGRIS is not just to users of the CGVLibrary, but also to users of any number of the hundreds of similar search services available at universities and research centers throughout the world.

One of the important questions to be resolved in the immediate future is the specific architecture for the SFX link resolution service. Separate instances can be created for each CG center, or different groups of users can be defined within a single instance. Deciding which approach to take will depend upon administrative issues as well as technical features and ease of management.

Objective 1 Step 4	Selection and description of basic resources	Status : ON-GOING
Objective 3 Step 11a	Selection of resource center content	

Progress

These two steps (selecting a basic and an extended set of resources) have been combined since the option of having a larger set of resources as proposed in the VLS proposal was approved. This step involved the selection and description of the information resources at the heart of the VLS.

Work on this stage had already begun by March 2005 and is now largely complete. Many CGIAR staff members worked on this part of the project:

- The CG Information Managers suggested resources and provided input into prioritizing the different lists that were prepared
- Srinivas S. (ICRISAT) collected suggestions and drew up the initial draft list of resources
- Mila Ramos (IRRI) identified the CGIAR catalogs and bibliographic databases
- Elinor Dumont and Indira Yerramareddy (IFPRI) developed categories and wrote the descriptions for the resources based on the CGIAR Discussion Group feedback

While most of the work involved in this phase is complete, identification and description of new resources is ongoing, and will continue up to and beyond project launch.

Reflections and learning

Initial suggestions indicated that some staff did not have a clear grasp of the kind of resources that the VL would integrate and how that integration would take place. This is inevitable in the process of introducing a technology which has only existed for three or four years, even one with such a rapid take-up as VL services. However the progress made in developing the demonstration version for the CGIAR AGM has had the practical effect of providing a concrete example of the kind of services that can be provided, and has gone a long way to making the VL concept better understood.

Objective 1 Step 5	Integration with authentication services	Status : ON-GOING
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Progress

Authentication is the process whereby a user identifies him or herself to a computer system and subsequently gets access to the resources. With the assistance of a consultant identified by ExLibris, the VL was able to implement authentication using the Active Directory Services that lie at the heart of CGIAR network services. This means that CGIAR staff can use their own network identifier and password when logging in to the VLS, avoiding the need for a separate user name and password.

Additional work is still required to apply information concerning the specific center that a staff member belongs to. This work will be necessary to provide individually tailored links to document text using the SFX software and to ensure that contract terms are respected for resources that have been licensed only to some CGIAR centers.

Additional work in close cooperation with the VRC Infrastructure team -- and adherence to the AD profile naming conventions -- will also be required to implement single sign-on, whereby a user only needs to authenticate once (to the CGIAR network, to the Virtual Resource Center, or to any other of the C4D services) and can be recognized and welcomed seamlessly into any of the other sister services. It is not clear that this will be fully realized within the time frame of the C4D project; this remains a difficult goal even for organizations that are less geographically distributed than the CGIAR and have considerably more resources.

Reflection and learning

Single sign-on requires a high degree of expertise, a firm grasp of overall system architecture and commitment on the part of the managers of different systems to make it work. It may be an activity that is best tackled at a CGIAR-wide level, perhaps as a separate project with the Chief Information Officer's office leading in terms of providing infrastructure, expertise and implementation assistance.

Objective 1 Step 6	Graphic design of the VLS interface	Status : ON-GOING
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Progress

Originally, considerable effort had been planned for implementation of the graphic design of the VLS interface but the selection of the ExLibris software allowed us to modify the scope of this activity. ExLibris invested considerable resources to completely re-design the 'out of the box' interface, using extensive testing and user evaluation. The result was an interface delivered with the product that required considerably less adaptation than had been the result with earlier versions of the same product or with some of the competitor's products.

The basic graphic design has been done by IFPRI web staff using design elements and guidelines provided by the C4D Marketing group. As the project nears completion, there may be an opportunity to revise and refine the graphic elements based on feedback from a larger group of test users.

Reflection and learning

The participation of the Marketing group in the graphic design has proven to be very beneficial to the group, and key to ensuring a consistent look and feel to the different components of the CGXchange, even though services may be using different software and running on different servers many thousands of miles apart.

Objective 1 Step 6	Documentation and help material	Status : PLANNED
Objective 1 Step 8	Training of trainers	Status: ON-GOING

Progress

Documentation and help material has not yet been developed. However the experiences of the VLS project team in terms of training have led to some re-thinking of this particular aspect of the project, particularly in terms of shifting resources from documentation to training support materials that will assist others in training. The improved interface delivered with the selected VL software requires less in terms of the documentation than, for example, earlier versions of the same software.

In terms of training, CG Information Managers are considering holding a meeting in Nairobi in late May 2006 to coincide with the IAALD conference. If agreement is reached to meet at this time, this will provide an important training opportunity shortly before the planned June launch of the CGVLibrary. It will also provide an opportunity to decide arrangements for the future, such as assigning responsibility for certain subject categories of resources to the center or centers with expertise in those specific areas.

However even if the Nairobi meeting does go ahead, training needs for the VLS are already being re-considered in the light of new technologies. The success of the various web-based demonstrations during the evaluation of the RFP responses, and the web-based training provided by the vendor prior to software implementation showed the team that web-based training can be highly effective. A subscription for a very modest fee has been taken out with a web-based hosting service (GoToMeeting), and experiments are on-going in how to deliver training via this exciting new technology.

VLS project staff have already conducted a web-based "training the trainer" session with CGIAR Information staff in Nairobi, Lima, Rome, and Colombia that has proved to be very successful. Maria Garruccio (IPGRI) conducted web-based training in March for colleagues in Africa (March 8) and Asia (March 10). As a result of these positive experiences, it may prove more useful in the long term to produce training materials and guides, and the technical infrastructure support for web-based training than to produce extensive end-user documentation and hold one-day courses in different regions. Evaluation of this part of the project will be on-going in 2006.

Reflection and learning

Web-based training tools have proved to be very effective, available at very low cost, and well adapted to the training required for a Virtual Library Service. But these will supplement, not replace, face-to-face training that is now planned to coincide with the upcoming CG Information Managers' meeting in Nairobi in May 2006.

Objective 1 Step 6	Publicity and communications	Status : ONGOING
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Progress

While the main effort in publicity and communications cannot take place until the CGVLibrary is operational, significant efforts have already been made to inform others about the VLS.

- A name was selected for what had previously been known as the Virtual Library Service. The service will now be known as the CGVLibrary. A meaningful and mnemonic domain name was also registered for the service: vlibrary.cgiar.org.
- The Project Manager made a presentation at the international Expert Consultation meeting for International Information Systems for Agricultural Science and Technology in Rome from 19 – 21 October at which she explained the rationale and approach of the VL.
- The Project Manager developed examples based on the implemented resources, captured screens and developed a presentation of the CGVLibrary. This formed the basis for a presentation by the Chief Information Officer at the CGIAR Annual Meeting in Morocco in December 2005. By means of this recorded presentation it was possible to show in concrete terms the capabilities of the system as it had been developed to that date. The CGVLibrary as demonstrated included basic Quick Searches of networked resources and a core collection of CGIAR consortium databases and online journals.

Since then the CGIAR Chief Information Officer has made a number of presentations on C4D projects that feature in part the Virtual Library Service.

Recently the VLS software vendor, ExLibris, has asked permission to write up the CGVLibrary as a case study, to show others this exciting and innovative application of their software. Via this case study, the VL will gain valuable additional exposure, as well as some additional training offered by the company.

Publicity and promotional material still needs to be developed in coordination with the Marketing group, and announcements placed in professional publications. Further papers are planned for various professional gatherings that will discuss the implementation process as well as the services that are now offered.

Reflection and learning

The efforts made so far to raise awareness of the VL have been successful. However because the VLS is not yet fully implemented, demonstrating a service while it is under construction has led to questions and occasional complaints or negative comments from CG staff. Despite assurances that the VL is still in development, CG staff want to know more or to understand better the functions and the resources. While this can be seen as beneficial, the Project Manager has had to spend a considerable time on this kind of query, adding to the her management burden and taking time away from other project activities.

Objective 2 Step 10	Implementation of a common catalog search	Status : ON-GOING
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Progress

Currently catalogs from 11 CGIAR centers have been implemented within a common catalog search. These catalogs are from the following centers:

- CIAT
- CIFOR
- CIP
- ICARDA
- IFPRI
- ILRI
- IPGRI
- IRRRI
- IWMI
- WorldFish
- World Agroforestry

The four centers and the CG Secretariat are expected to be added by June 2006.

- ICRISAT : a script to interface their SQL Server database with Metalib has been prepared; this requires testing the passing of credentials.
- IITA : They also use INMAGIC. Awaiting a response concerning the .ini file in the CGVlibrary server.
- CIMMYT: they use a much older version of INMagic and their database is not hosted at CGNet. Awaiting a reply to see if they are upgrading to a more recent version which would allow integration into the CGVLibrary.
- WARDA: They use a different software, Micro CDS/ISIS, and is not available online. Another center has offered to host a copy of their records. Awaiting reply.
- CGSecretariat: They use Lotus Notes. Administrative steps have been taken to get access to the database within the World Bank firewall and to get information about the database structure. Since the database is in SQL, the interface scripting should be similar to what is being developed for ICRISAT's database.

While great success has been made in this part of the project, it is worth noting, however, a significant shift in strategy took place over the reporting period in relation to implementation of this common search. Originally only one CGIAR catalog (the only one which supported standard Internet search protocols) was to be searched via a real-time, dynamic cross-database search. The plan was that most of the CGIAR catalogs would be made searchable by collecting that data from the local catalogs using standard Internet harvesting protocols and then consolidating the harvested data into a single database. This single database would then be made searchable as one resource in a broader cross-database search.

However this strategy was modified in the light of three factors: the need to produce a working prototype in time for the December 2005 CGIAR AGM, the increasing adoption of InMagic software throughout the CGIAR, and the concern expressed by some CGIAR Information Managers about long term maintenance. As a result of these factors, a decision was made to implement dynamic cross-database searching for any CGIAR catalogs that were available over the Internet and that used the InMagic software. InMagic supports a proprietary protocol for cross-database searching and it proved possible to implement an interface to an InMagic database using the Metalib VL software. While the data structures vary from one Center library catalog to another, only a simple field matching was required to integrate each site into a broader cross-database search. This approach was also made easier by the fact that all of the InMagic databases currently included were located on the same central server managed by CGNet.

This change in strategy had a number of implications. First, it allowed the VL to advance development sufficiently to meet the new, demanding time schedule imposed at the May 2005 C4D meeting in Rome and to have a working prototype ready for the first week of December. Second, the effort required to maintain process to update automatically the central database from those centers with an InMagic, internet-accessible catalog is replaced by the simpler process of ensuring database and network availability, thereby reducing the burden on local CG center IT and IM staff.

However this change in strategy also has some less positive effects. In cross-database searching, it is not feasible to search more than about 8 to 10 databases at one time, due to the time required to transmit messages over the Internet and local response time. Therefore, it means that searching **all** 16 CGIAR (including the Secretariat) catalogs at once will probably not be feasible, now or in the future. To mitigate against this, however, CGIAR catalogs are being grouped together according to themes (water, nutrition, and so on) that will search at one time those catalogs most likely to have useful information on that particular broad topic.

This change in strategy also puts increasing pressure on CGIAR centers to standardize their library systems to use software used in other centers, and to make their catalogs available over the Internet. For some centers, particularly those under financial pressure, or with weak local infrastructure support, it may be some time before they will be able to participate in the VL by offering their documentation resources through the VL.

Reflections and learning

Objective 4 Step 12	ICT/KM2 visioning process for integrated information provision	Status : COMPLETE
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Progress

In early March, 2005, members of the VLS Project Team and a number of Information Managers participated in an electronic discussion forum discussing issues related to the ICT/KM2 strategy under the leadership of the CGIAR Chief Information Officer. While it is difficult to determine the total resources that were devoted to this exercise, it is estimated that some 20 person-days were spent by IMs and others on this activity. This represents a contribution in kind by their respective centers. The on-line consultation confirmed that there is a need to make that data and information more readily accessible and easier to use both for CGIAR researchers and a broader community including NARS researchers and other actors in the agricultural and development communities. The interaction during the consultation is expected to lead to greater understanding and to a better community feeling and to greater buy in to the strategies currently being developed for ICT/KM2. It is hoped that the VL will play a role in showing how integrated and unified access to CGIAR publicly-available information can help in the development, dissemination and application of agricultural research.