Seminar On Networking Technology Information Centres
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Canada Position Paper

ISSUE
For information in order to assess Canada's position and participation in the UNFCCC organized "Seminar on Networking Technology Information Centres" in Bonn, DE March 12-13, 2007.

BACKGROUND
In 2004, Canada was the first country to implement a 2-way data interchange project between NRCan's Clean Energy Portal (CEP) and the UNFCCC clean technology portal, TT:CLEAR. It allows users on either portal to search the database of the other without leaving the portal they are using.

By participating in the networking pilot program, Canada hoped to inform the process, prove the concept and develop best practices in the first implementation in order to facilitate and reduce costs for any subsequent implementation.

Going forward, our primary concern is whether this networking initiative is the best available tool to serve a need that exists on the ground in developing countries. It has been more than 6 years since TT:CLEAR was first conceived. We need to ensure that we have not been outpaced by rapidly evolving needs, technology and tools. We must also ensure that our initial objective of providing a simple, easy to use platform available to developing country policy makers and project developers is met to facilitate their access to information on clean energy technologies and implementation case studies. We need also to determine if the tool meets the need on the ground. We also need to define the TT:CLEAR/network target users. Before further building out the network or enhancing features, the basic goal of technology information sharing must first be met. The latest TT:CLEAR usage statistics would be helpful in this regard.

Software/Hardware Requirements
Already existing before the pilot project, the CEP itself uses a database (SQL 2000) and MS Windows Server. Also installed on the host server was .NET and FTP server. A standard computer/server suffices (in terms of memory, disk space, CPU, etc…).

For the pilot project, a fast/high-speed internet connection, antivirus/firewall software and support for administration of all the servers were required but are standard for most service providers in Canada. Web hosting by external service providers is desirable in order to manage costs (we dealt with Magma Communications). PHP application server was helpful. The developer needs a good text editor ($100) and Web Matrix (free at the time). Another option is MS development software ($500?).

Training Material

Any documentation that was needed was available on the Web through Google. Staff at the UNFCCC secretariat also provided guidance. Most technical information is in English, but may exist in other languages. The development/coding platform is English only in any case.

Implementation Challenges

The greatest challenge during the networking pilot project for Canada was the establishment of the data interchange protocols, standards and initial coding challenges, since this was the first implementation by a national portal. To facilitate the process, Canada invited a member of the secretariat to Ottawa to meet with the CEP developers and collectively lay the groundwork needed to support this and subsequent implementations.

The link between the CEP and TT:CLEAR involved modification of and existing "web-services" (WS) client to allow TT:CLEAR to access the CEP database and the creation of a client to enable CEP to access the TT:CLEAR database. Canada helped develop its own and the TT:CLEAR client in collaboration with the secretariat since this was a first implementation. A "presentation layer" was also scripted to create the web pages that interact with the end-user and format/present the data. To deal with slow performance, a "cache" script/application was also implemented.

A computer engineering coop (intern) student preformed most of the coding tasks. He did not have any direct experience with web-services but did possess a good general background in programming and was highly adaptable and quickly self trained. He was able to become familiar with the software tools within two weeks. Thereafter, it was a matter of incremental improvements. Development time was approximately 2-3 person weeks, excluding meetings and time to deal with non-technical issues. Some minor tweaks were made over the following few months.

Pilot Project Benefits and Lessons Learned

1. A standardized means for describing projects, technologies, etc… is needed to facilitate additional nodes and reduce their implementation costs. Canada helped to set these standards during its implementation of its portion of the network.

2. The programming skills needed to implement web services require previous programming experience. With this basis, a programmer should be able to learn the basics within weeks using material readily available on the web.

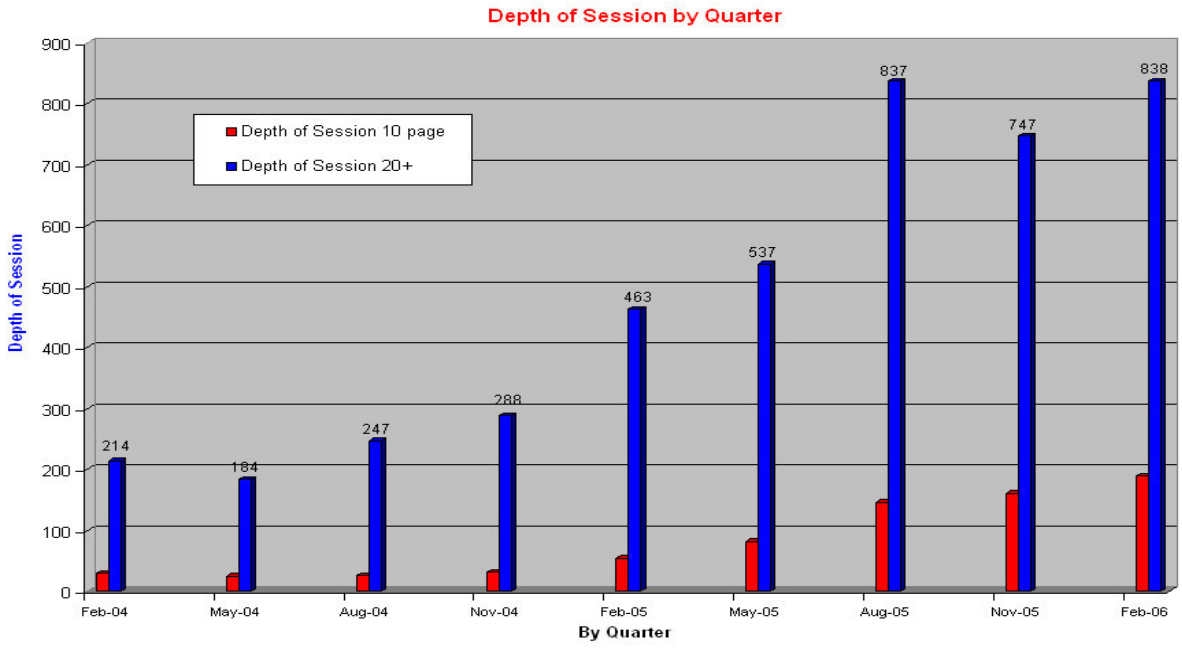
3. There were no major technical compatibility issues between the CEP and TT:CLEAR platforms, other than deciding what data to "expose" and defining some XML formats. No unexpected costs were encountered for hardware maintenance, service fees, software patches, etc…. Minimal ongoing financial/human resource needs are anticipated, other than those required for routine server administration. As long as there are no changes to the TT:CLEAR web services, the CEP code does not require modification. Of course, to be able to access data on other portals, development of new clients would be required. In terms of succession planning, standard procedures for information technology documentation should be followed.

4. Although web services increases the amount of data that a user defined search can query, the ease of using the search interface remains a critical concern. For simple and routine searches, there should be a simplified search interface. A separate interface from which more sophisticated users can perform more complex searches (labelled as "Advanced Search" on most websites) could also be provided on a separate webpage.

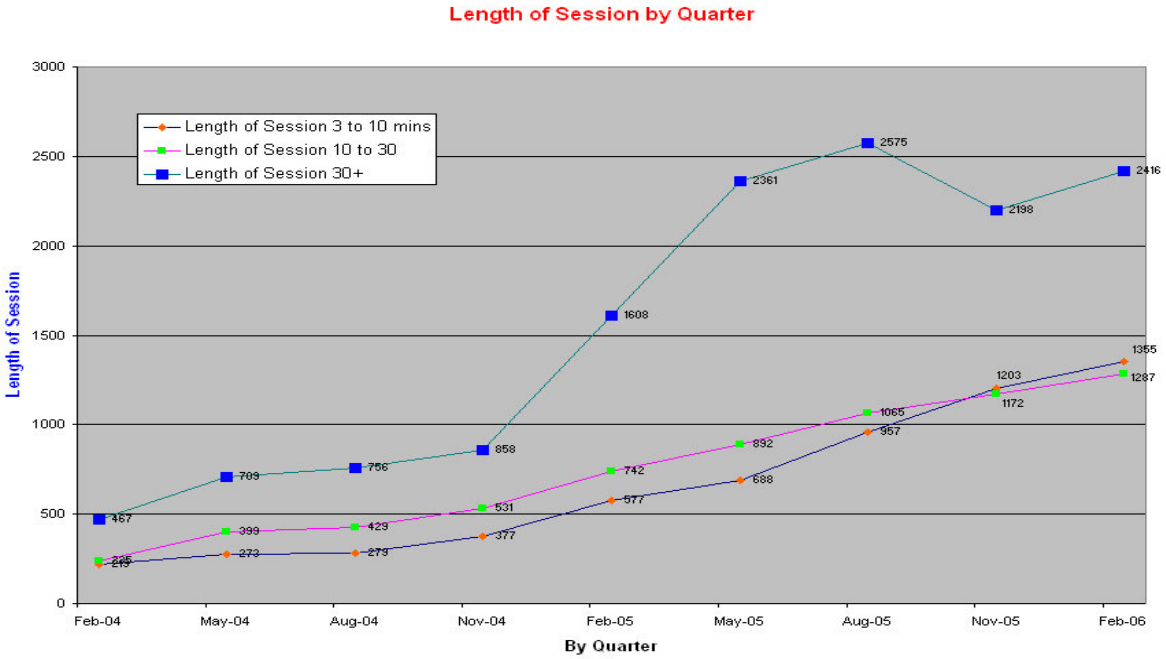
5. The use of web services vs. direct hyperlinks has been discussed. Each has its advantages and disadvantages. Although hyperlinks are easy to implement at relatively no cost, they may lead to user frustration as the same search would have to be repeated several times at each portal, greatly extending internet access time, which may be very limited and expensive in some locations. Although web services allow users to search several databases from one search interface, there is a development cost to implement web services. Search interfaces may also become more complex and intimidating for users with only basic computer skills. However, an advantage of web services is that the administrative cost of maintaining and updating information in databases is shifted to the individual portals in the network, so overall costs are spread over a larger base. In summary, the choice of hyperlinks vs. web services depends greatly on the target user profile. It is therefore important to define and assess the users of TT:CLEAR - their needs, resource constraints and skill gaps.

Clean Energy Portal Traffic Statistics (Source: CETC-Ottawa)

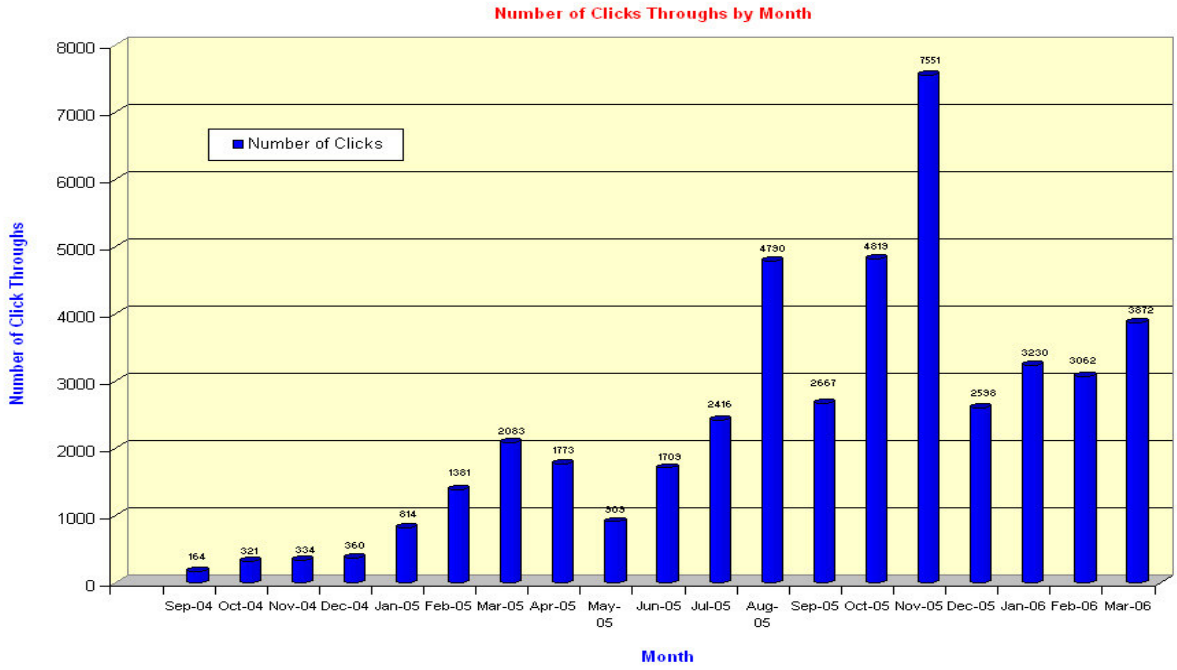
The following graphic shows the increase in the "depth of the session" (how many pages were viewed once the visitor entered the site) over the period Feb 2004 to Feb 2006. Note the substantial increase in the 20+ page sessions demonstrating that the visitors are increasingly venturing further into the site once they enter.



The chart below shows the length of time a visitor remains on the site once they have entered. Again note that the largest increase over the period Feb 2004 to Feb 2006 is shown for visitors who are spending 30+ minutes on the site once they enter it.



The chart below shows the number of click-throughs (traffic sent to companies listed in the portal) that occurred from Sept 2004 to March 2006. It is clear from this view that we are sending a substantial amount of traffic to the companies that have chosen to list themselves on the site.



Points for Consideration

1. What is the objective for TT:CLEAR and the network? Is it to provide a platform to share information about technology implementations? Or is it to be a more focused and proactive approach aimed at matchmaking between project developers in developing countries seeking technology solutions and/or financing? In either case, there are ongoing resource implications to keeping information current and relevant. Furthermore, are we working toward something that will actually be used by project developers on the ground today, or do they already have other effective tools at their disposal? Perhaps they have all the technical information they need, but just need better ways of applying the information to get the job done.

2. Is an online discussion board or "coaching platform" that allows users to post messages to seek guidance on financing, project proposal preparation or other business or technical matters related to their project useful? Such a messaging system would also be useful to those seeking advice/best practices on technologies for adaptation, which are often in use in neighbouring countries and regions. Is this a more appropriate direction for TT:CLEAR?

3. Does the web services solution implemented during the pilot phase meet the need for which it was intended? Should the need be reassessed/redefined after 6 years (a long time in the ever-changing internet world)?
   - As an example, a Canadian project developer in Nigeria thought that a portal that consolidates lessons learned and reduces the time required to research technologies across several portals/databases is useful to development workers on the ground where internet time is at a premium and local research reference materials aren't always available. However, to make such sites useful to locals in developing countries, capacity building may be necessary in order to address skills needed to do computer based research. In general, it was felt that such a consolidated portal would be useful for the worker's clean energy development work. This person was not aware of the existence of any such portals.

4. Who is the target user? What is the profile – characteristics, resource needs/constraints, skills gaps, etc…? What are the most recent user statistics for TT:CLEAR? What will the target user want from TT:CLEAR and the network – do they have all the technical information they need, but just need better ways of applying the information to get the job done? Do these tools already exist? How could the network leverage existing tools such as RETSCREEN, the UNFCCC *Guidebook on Preparing Technology Transfer Projects for Financing* or the CTI/PFAN exercise? Are there other technology information portals within the UN system, via UNEP, UNDP, UNIDO, or other agencies (other than SANet)? What are their strengths/weaknesses?