

Internet Usage among Indian Scientists

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Abstract

The purpose of this study was to examine the patterns of use by the scientists and other users in four libraries of Council of Scientific & Industrial Research (CSIR) located in Lucknow. The study also presents results regarding internet resources used and the problems faced by users. A questionnaire was used to collect data from the Scientists as well as other researchers in CSIR libraries. The investigator received back 150 questionnaires out of 180. A large population among the sample chosen use internet for research purpose. Notably, subject related web sites are highly used. Users, however, are in favour of having some training programmes to equip them more in the use of Internet. Slow speed is a common problem in all Laboratories. This is the first study related to the use of Internet in CSIR libraries of Lucknow. Findings should help CSIR to strengthen the infrastructure and improve the library services. At the larger level, the study could be beneficial for libraries, information centres that are still grappling with the basics of internet particularly in developing countries.

Keywords: Internet; Scientist; Special Library CSIR; CDRI; CIMAP; ITRC; NBRI; Lucknow; Uttar Pradesh; India.

Introduction

Computer technology has tremendous potential to increase the quality and usefulness of information services. One of the most popular offshoots of this technology is Internet which has revolutionized the entire communication world at unprecedented level. It is perceived as an essential part of today's world. Few people, notably, have almost become slave of IT and feel uncomfortable without Internet even for a short period. An adjunct Professor at Duke University, Durham, USA, revealed that he checks e-mail about 100 times a day with computer in study room, laptop in living room, a desktop in the bedroom and another in the basement. Kabra (2006). Though, Internet is being used by people from different walks of lives; however,

its use is most seen among scientists across the globe.

The present paper discusses use of Internet services by Scientists and Researchers of four important science laboratories libraries of Lucknow. The laboratories covered are Central Drug Research Institute (CDRI); Industrial Toxicology Research Centre (ITRC); Central Institute of Medicinal and Aromatic Plants (CIMAP) and National Botanical Research Institute (NBRI) in Lucknow, the capital city of Uttar Pradesh, the largest populated province of India. Historically, reputed as a city of culture, Lucknow has also a number of educational institutes. In a historic science conference recently, Lucknow was declared as a Science City.

Background Information

CDRI, CIMAP, ITRC and NBRI come under the umbrella of the Council of Scientific & Industrial Research (CSIR), established way back in 1942 as an autonomous body. Today CSIR is not only considered the premier industrial R&D organization but also recognized as one of the world's largest

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publicly funded R&D organizations. Its 38 laboratories spread across the country knitting India into a giant network. CSIR aims to provide industrial competitiveness, social welfare, strong S&T base for strategic sectors and advancement of fundamental knowledge. [1].

Central Drug Research Institute

Central Drug Research Institute (CDRI) was established under the Council of Scientific & Industrial Research and autonomous registered society of the government of India. Central drug research institute is one of the first and few laboratories that was established in India right after its independence and formally inaugurated, in 1951, by the then Prime Minister of India. Gradually, it had grown as a center of excellence dedicated to drug research. The inception of CDRI Library dates back to 1951. With a small collection of about two thousand Publications to start with, this Library has now 20000 Books, 65000 Journals (Back Volumes) and 300 Current Periodicals besides a large number of CD-ROM database. CDRI library was primarily established to cater to the information needs of the Scientific & Technical Staff of the Institute. With the passage of time the library grew with a remarkable pace. And, in order to meet the ever increasing scientific and technological information needs of the professionals, it systematically and gradually built up a specialized collection of reading materials such as specialized books, periodicals, reference works, serials and various macro & micro-documents in the areas of Biomedical Research and Drugs & Pharmaceuticals. Significantly, the wealth of this highly specialized library began to draw the attention of the academic and R&D workers of other institutions in the city like Lucknow University, King George's Medical College, Sanjay Gandhi Post Graduate Institute of Medical Sciences etc. and outside the city from the drug industry and research organizations. Erstwhile NISSAT (National Information System for Science & Technology), due to its rich collection of biomedical

literature in general and Drugs Pharmaceuticals in particular, decided to house NICDAP in 1977 (National Information Center for Drugs & Pharmaceuticals) a Sectoral Information Centre on Drugs & Pharmaceuticals in CDRI library. The establishment of NICDAP has also added a new dimension to the Information services generated from its collection & catered to the users from all over the country [2].

Central Institute of Medicinal and Aromatic Plants (CIMAP)

It was setup on March 26, 1959 by the CSIR, Govt. of India, at the institute's headquarter in New Delhi with the objectives to carry out R&D work related to genetic improvement, efficient cultivation and chemical processing of economically important medicinal and aromatic plants; to detect, characterize and develop from plant new anti-microbial, anti-cancer and / or pesticide chemicals of industrial importance and to define and modulate yield determining steps of metabolic pathways concerned with medicinal and aromatic plants.

This institute have well equipped data processing unit, Library and reprography unit. CIMAP offers consultancy/technical service for cultivation and extraction of medicinal and aromatic plants and their material. CIMAP library is spread over only one floor. Library has patents, Botanical gazettes, microfilms, photocopies, rare books, reference books etc. Use of Internet was started in September, 2002 in CIMAP library which has 20346 books, 52894 bound volumes of periodicals. Moreover, library receives 345 journals medicinal and aromatic plants. The Bioinformatics center of CIMAP was established in the year 1998-99. It is a Distributed Information Center (Sub-DIC) sponsored by the Department of Biotechnology, New Delhi. Ongoing activities of the center includes soft and hard data access retrieval and analysis, online and off-line searches, publication of journals, farm bulletins, books, monographs, catalogues, directories, bibliographies, education and

training. On an average nearly 200 users from CIMAP and nearby institutions use this center. [3]

Industrial Toxicological Research Centre (ITRC)

Established in 1965, the Industrial Toxicological Research Center (ITRC), Lucknow, a constituent laboratory of CSIR is dedicated to provide health safeguards to industrial and agricultural workers through its rich knowledge base, created painstakingly over the years. Library and Toxicology Information Centre of ITRC serves as an excellent information resource in the field of toxicology in the country. About 30,000 books, journals, reports on varied scientific topics—from science and technology to microbiology, from biochemistry to environmental health are available along with 175 International and National Periodicals. Under the Electronic Information Facility, the access to full text e-journals over 3500 [4].

National Botanical Research Institute (NBRI)

NBRI is the premier national plant research center for India that has been brought under the umbrella of CSIR way back in 1953. NBRI, library is spread over on three floors and containing about 67,000 numbers of books and bound periodicals. Besides that library have patents, Botanical gazettes, microfilms, photocopies, rare books, botanical archives on life sciences. A Botanical archives, perhaps is only one of its type in the country, had been set up in the library of the institute. The Botanical Archive of the NBRI houses rare hand written manuscript in Persian and Arabic, illustration of plants dating back to 18th century and earlier beside a host of other botanical literature of derival value [5].

Previous Studies

Quite considerable numbers of studies related to the use of internet have been conducted in the recent past covering both developed and developing countries. Some of

the studies such as (Perry, 1995); Applebee et al. (2000); Houissa (2000); Teitelbaum (2002) covers surveys of Internet users among the general population. While some other studies like Lazinger et al. (1997); Maccuiusi et al (2000); Herring (2001); Gifty (2003); Al-Ansari (2006) deals with internet use among college or university faculty members. However, the studies of (Clausen, 1995); (Kovacs, Robinson & Dixon, 1995); (Croner & Johnson, 1994); Kebede (2003) explores the Internet use among Information Professionals in general as well as among special libraries and reference librarian. Yet another category of studies where the Internet use among Scientists from different disciplines has been surveyed could be seen in the works of Pal et al. (2001a); Pal et al. (2001b); Bid et al. (2006). Surprisingly, the number of published studies specifically on use of the internet in special libraries is small. Moreover, no study of Internet usage in CSIR Libraries has been conducted so far. Scientist community in developed world has been getting maximum benefits of IT by using Internet particularly in their research activities. Viewing this, it is imperative that internet use among the scientist in developing countries like India is investigated so that the findings of such a study may be taken into consideration by CSIR and other scientific institutes of developing nations.

Methodology

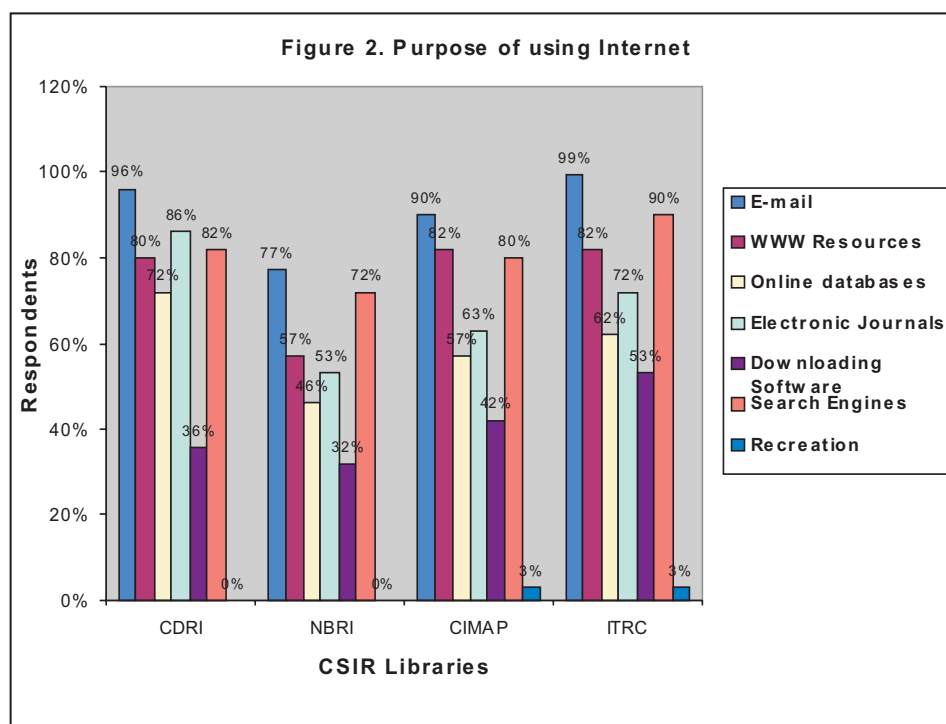
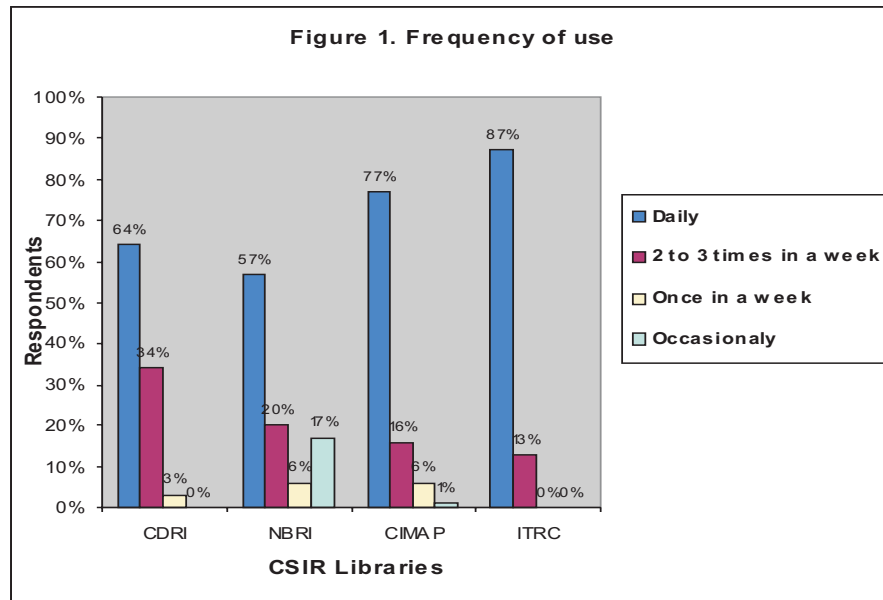
This study is designed to investigate the patterns of internet use by the scientist of four CSIR libraries of Lucknow. A questionnaire was designed and distributed among 180 users. Out of which 150 filled-in questionnaires were selected for analysis of the data. Thus the response rate was 83.3%.

Findings

Results of the present study indicate that not much difference exist among four libraries surveyed. The data collected shows that more than scientists, Research scholars use internet

services in the libraries of CSIR. On comparison, CDRI tops the list with 97%, followed by ITRC, CIMAP and NBRI 93%, 73% and 67%. Notably, scientists reported having used the internet from the chambers. It is obvious, unlike research scholars; scientists of these prestigious laboratories are busy with other pressing engagements. They are supposed to attend meetings related to policy-

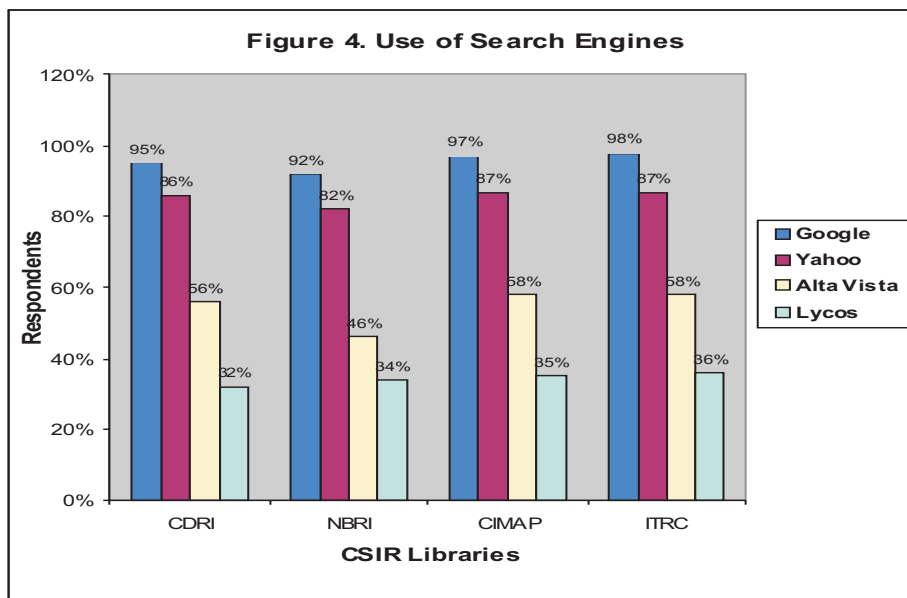
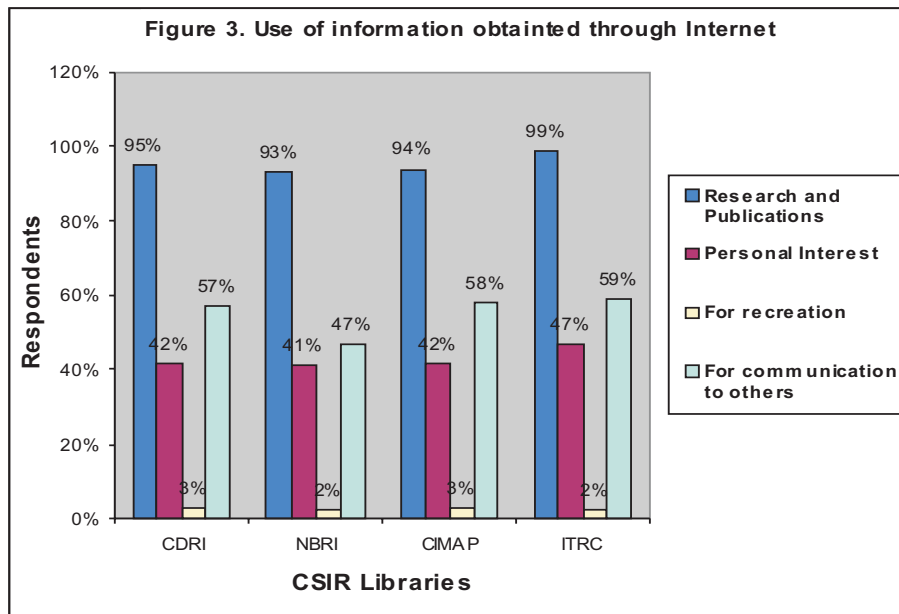
maters of their respective institute. It was also observed that Scientists over 50 years of age were not that much keen to use internet. The present study substantiate the study of Pal, et al as 87% of the scientist in ITRC serf the net daily followed by CIMAP (77%); CDRI (63%) and NBRI (57%). As far as purpose of using internet service is concerned, not surprisingly, a high majority in all four institutes uses the

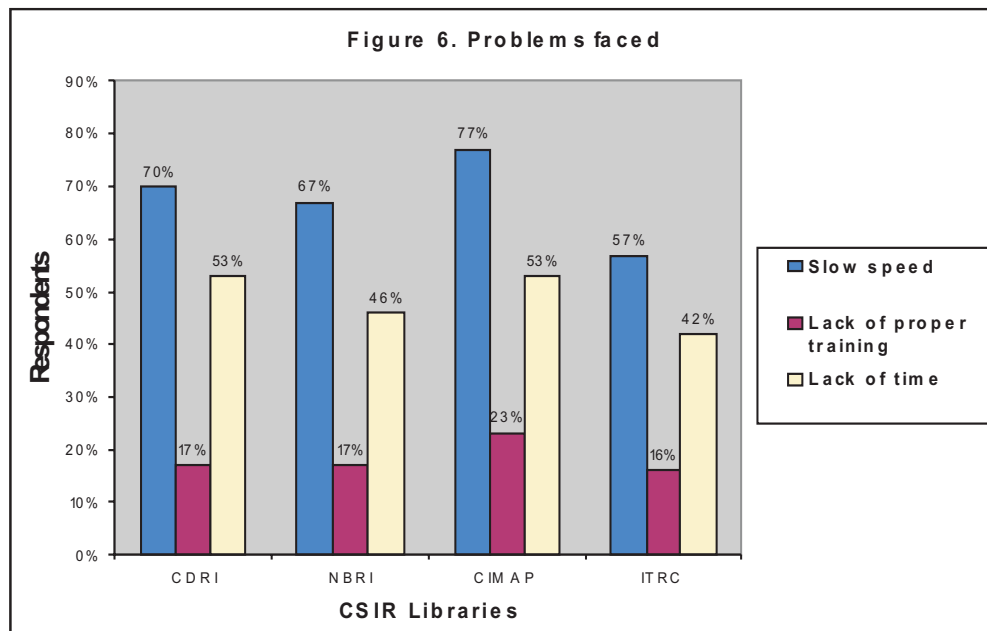
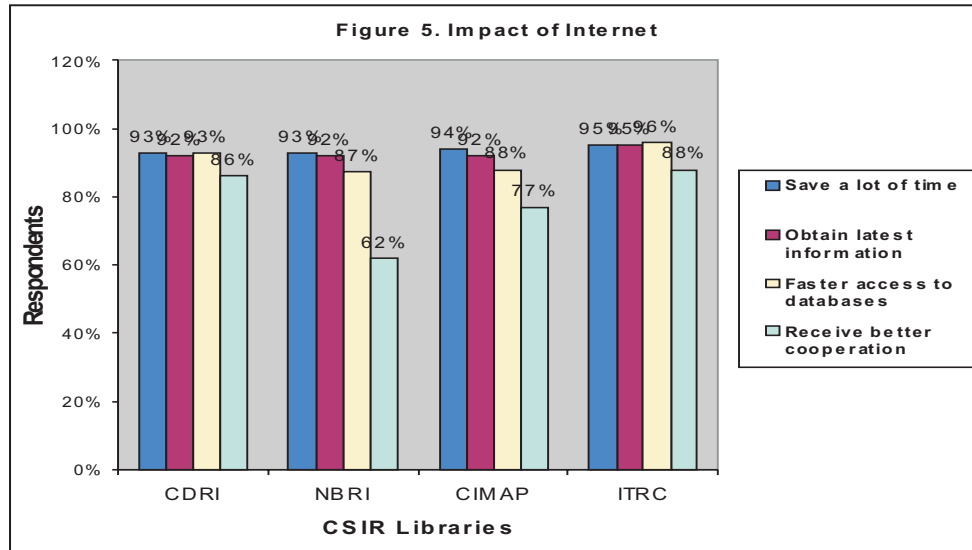


internet for research. One interesting finding is that in ITRC, 100% user surf the internet for research purpose. However, this is consistent with that of Paul et al (2001) work.

Another interesting finding is related with the frequency of use of internet tools and resources and here www resources are on the top in all four libraries. Moreover among these libraries CDRI users make up 83% followed by ITRC with 80%, CIMAP with 77% and NBRI having 57%. These variations among

libraries may be due to varied infrastructure and bandwidth in these libraries. Next most frequently use service is e-mail which is obvious also as scientists in developing countries were not closely connected either within their own country or outside. E-mail is an easy and cheap medium to get connected with their counterparts. The third most used tool is e-journal. Disparities in use of these resources vary among the libraries but are not generally large. Results are consistent with the





findings of Sooryamurthy (2005) study that scientists in developing world use internet for a variety of reasons.

Results of the study also indicate that high majority of users in all four libraries are not at all satisfied with the speed of internet. This problem is seen in a majority of developing countries. Findings substantiates Ynalvez et al (2004) study that showed Africans and Indians face significant problems such as too much time to connect, waiting time for a page to appear, loss of connection etc. Significantly, the majority of CSIR libraries are improving

their tele-communication infrastructure. Nevertheless, the prevalent small bandwidth (for instance CIMAP has 512 kbps) imposes serious limitations on speed of Internet. It is recommended for all libraries to go for at least 2 Mbps line for faster access.

In response to the question, whether training programs is needed to be organized? Around, 50% or the total respondents are in favour of it. However, the number of respondents varies among four libraries. While highest number is in case of NBRI library, it is least in ITRC. Results substantiates the work of Pal et

al (2001) that mentioned ,internet has become a major resource for toxicologists. Moreover,findings are also consistent with those of Al-Ansari (2006) and Lazinger et al (1997). Yet another interesting finding is that almost 50% of the study population suggested that their efficiency in using internet services can be improved with the help of library staffs. Therefore, it is important for librarians to have more knowledge and skills to use the internet services and then only they will be able to provide better help to the end users.

Of the 120 respondents who answered the questions about the behaviour of library staff, 85% found it co-operative. This could be partly owed to the fact that these libraries are located in Lucknow, a city which is famous for its culture and civilization all over India and partly that library staff of these premier laboratories of CSIR are not placed in high grade as far as salary structure is concerned. In most of these libraries, usually senior scientist is in-charge of library or called as group leader. Surprisingly, in one of these libraries, a retired library professional has been hired on a fixed monthly salary which is too meager even from developing nation's stand point. It is obvious where the big gap in salary structure exists, the staff of library will feel subdued and perhaps no signs of arrogance are expected from them. In no way, one is tempted to conclude that the very intention of the institutes of having recruited library professionals entitled for better emoluments is due to this reason. However, CSIR which is an apex organization with no dearth of funds should pay special attention to appoint library staff of high caliber. This is also necessary as the data collected reflects with only 6% of the population as having full satisfaction with the library staff. More so, among the library staff of surveyed libraries, 60% expressed the need for Internet training. Apparently, they need not to be trained in the use of e-mail but required to receive training in "advanced interfaces" of internet.

Conclusion

The internet coupled with traditional library services can best be suited for information needs of scientists and other academic community. Fortunately, India, like many other countries has realized the importance of IT. Policy makers, industrialists, entrepreneurs and even common man believe that development of the country is associated with the adoption in IT. However, with millions of shelter less people and hundreds of thousands of those having no access to clean water, electricity or basic education, India has been facing numerous challenging problems.

Also digital divide within the country is too much in India. There are metro-politan cities such as Bangalore, Hyderabad considered as hubs of IT. On contrary, thousands of villages are still without basic amenities of life. Lucknow, comes somewhere in the middle of the above scenario.

Scientists, as a whole in developing countries find themselves at disadvantageous position vis-à-vis their counterparts residing in developed nations. For instance, the largest institutional science library in India at the Institute of Science, Bangalore, subscribes to less than 1600 journals. When we compare with universities in developed countries such as the USA, the UK, Canada, Australia this number is far too less.

In technology though India had been making steady progress but still poor communication infrastructure and inadequate library facilities hampers the research activities particularly in the field of science and technology. Many universities still do not have internet facilities and those have this facility, the users often get frustrated with low bandwidths. Even in CSIR laboratories which are considered the premier institutes in India, as the results suggests, scientist are marred

with poor communication infrastructure. They are still getting, in one lab, 512 kbps connection which can at best be used for sending or receiving e-mails but not for surfing internet in a desirable way. On account of that, this is recommended that not only the libraries of the institutes covered in the present study but also all the laboratories of CSIR should be equipped with the state-of-the-art technology. And then we can hope more from the scientist community of the country.

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