

DISHA: Digitization of Indian Scientific Heritage for Access

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Abstract

The concept of digitization is in an embryonic stage in our country. There is a need to create greater awareness among concerned professionals about the importance of digitization projects. The scientific research institutes are maintaining herbariums, museums and libraries since their inceptions. Most of the resources housed in these have unique scientific value. These resources are the scientific heritage of the institute. To gain free access to all such resources is a problem, faces by researchers all over the world. Digitization of all such resources is one of the ways to provide access to them. However, it is a mammoth task, and virtually impossible to complete it by few individuals. In view of this, it is appropriate to lay down the responsibility and accountability of such scientific heritage to the concerned institute and also that of digitization. The institutional digitization project is termed here as "disha" (digitization of institutional scientific heritage for access). DISHA is to evolve as a network of all such institutional projects i.e. dishas.

Key Words: DISHA, Digitization, Scientific Heritage, Herbarium, Museum, Digital Library

Scientific Heritage

The term Scientific Heritage has very wide- ranging scope and diversity. It includes nearly all the resources acquired, collected and preserved for the purpose of research, as well as generated out of research. In order to have meaningful discussions on the topic here, its scope is limited to herbarium, museums and libraries. These are maintained in all the scientific research institutes. To gain free access to all such resources is a problem, faced by researchers all over the world. In fact, these carefully preserved resources can be further studied in the lights of new development and can provide solutions to problems currently faced. Digitization of natural history collections in museums – the capture of data from specimen labels- is an essential first step in transforming these vast amounts of data into accessible, usable and useful information products. With access to compressive, interoperable databases, scientists and other users of taxonomic information will be able to rapidly compile biodiversity catalogues, study biographical patterns, and assist in both long- term conservation planning and crisis conservation management. It is evocative to cite an example associated to paleontology, from one of the website available on the internet. To learn and apply paleontology require many hours of handling specimens- drawing them, comparing them, labeling them, and so on. Gaining access to important specimens presents a huge problem for a paleontologist. A digital library of significant fossils, a virtual paleontology museum- will not only mitigate this problem, but it will provide unexpected new

opportunities to study fossils quantitatively and in great detail. A series of new digitizing technology, including laser surface scanners and digital video cameras, can provide detailed visualizations and quantitative information on the external form of fossils. Studying the taxonomy requires availability of all relevant literature, including earlier publications. No research paper becomes outdated in taxonomy. The digitization of available literature is one of ways to provide wide access to it. Similar examples exist in other areas of life sciences.

Digitization:

The scope of the term digitization is not limited to develop digital collections. However, it is anticipated to build a digital library of such a collection. A digital library is conceived as an organized collection of information, a focused collection to digital objects, including text, video, audio, 3D objects, simulations, dynamic visualization and virtual – reality worlds, along with methods for access and retrieval and for selection, organization and maintenance of the collection. Digitization projects can be approached in a number of ways and one can always learn lessons from those who have successfully attempted it. It seems that developed countries have taken the digitization projects as a task and have launched a number of such projects. However their philosophy, professionalism, availability of technologies, funds and attitude towards digitization projects makes a difference between them and rest of the world. It is technologies, funds and also of our professional attitudes. Inventory of Indian biodiversity in the

broadest sense is a mammoth task, and it will be virtually impossible to complete it by few individual specialists placed far and wide. This is equally valid for DISHA as well. It is vital not to lose our own identity while going global. The scientific research institutes who are making efforts to preserve all such resources need to be duly recognized and supported. Digitization of such resources is a need of time, which warrants preparation of a plan for its execution. An attempt has been made here to propose the notion of DISHA (digitization of institutional scientific heritage for access).

DISHA: Institutional Responsibility and Accountability

To be successful in any digitization project, one needs to identify a proper organization that will undertake the responsibility and accountability of such a project. Further, it will also guarantee that the activity will be continued in future. There are several professional associations, private agencies, NGOs and like, who may be interested in undertaking such projects. However, it may be more promising for a research institute to undertake such a project as one of its missions. It is fundamental to initiate the action at institute level to accomplish 'digitization of institute's scientific heritage for access' i.e. 'disha'. Then DISHA will form a network of all dishas. In view of this, DISHA primarily needs to be attempted at the institute's level. In most scientific research institutes museums, herbariums are maintained in a conventional way. The basic indexing, labeling of specimens are up-to-date. The institute authorities, scientists, technical staff are expected to be aware of their resources. In such a state of affairs, it is appropriate

for the institute to undertake such projects as its own activity. The other agencies may take time to develop understanding about the existing resources. Finally, they have to depend upon institute's staff for initial work. For the purpose of gathering, acquiring and maintaining these resources, institutes have been spending considerable amount of money over a long period of time. Government funds are usually utilized for such activities. It is interesting to cite views of Smith et al., the taxonomists should bear in mind that their salaries and project running costs are often paid from public funds and therefore they need to be prepared to make their data accessible to interested and affected parties. It is therefore appropriate to lay down the responsibility and accountability of such scientific heritage on the concerned institute and also that of digitization.

Framework of 'disha'

In view of this, scientific research institutes are appealed to seriously consider the following:

- It is an appropriate time for the scientific research institute to add in their mission statement, digitization of scientific heritage for access as one of the new activities. It will help enhance their image in the society.
- A formation of statutory committee, like the bio-ethical or safety committees of the institute will be very helpful for guidance, facilitation and to monitor the progress of the project.

- If the existing facilities in the institute are made available freely, then the project costs can be considerably reduced (like computers, scanners, digital camera, etc.)
- There are some scientific and technical professionals, who are always interested to work for the institute voluntarily. In fact, most scientists operate additional projects without expecting any monetary benefits. It is not difficult to form a project team of such scientific and technical staff interested to work voluntarily for the institute.
- It is customary to invite retired scientific and technical staff to get the benefits of their experience. Such staff may be invited to work for the project on honorary basis.
- The funds required for the project may be collected from all the possible sources like the Government, NGO, Industries, Corporate Houses, Scientific Associations/Bodies, and private bodies, to support and continue the project lifelong.

Finally, convergence and merging of all such 'dishas' will evolve DISHA, which is the ultimate goal digitization. DISHA will be then leading to EAST (Electronic Availability of Scientific Treasure).

Conclusions:

It is necessary to harness the Information Technology revolution, particularly digital technology, in the present context. A shift to digital environment seems to be the only option in the days to come as computers have an impact on all spheres of human activity. The National Bioresarches Development Board under the

Department of Biotechnology, Government of India has set the priorities in the preparation of digitized inventories of plant, animal, microbial, and marine resources. However, it is important to note that the scientific research institutes have a vital role to play and to initiate digitization projects as their own activities. The digital technologies have a lot of potentials that need to be explored for preservation and access, speeding up research, modernization; publishing, and so on. DISHA is one of them.

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