UNIT 6 INFORMATION CONSOLIDATION AND REPACKAGING

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6.0 OBJECTIVES

After reading this Unit, you will be able to:

- highlight the impediments and difficulties associated with fruitful use of existing information;
- explain the concepts of information consolidation and repackaging;
- trace the origins of the concepts of information consolidation and repackaging;
- assess the need for such service and explain the processes involved in information consolidation;
- discuss how the concept of appropriate or consolidated information developed in conjunction with the concept of appropriate technology and technology transfer; and
- assess the value and benefits of consolidated information to different user communities or groups.
Special Products and Services

6.1 INTRODUCTION

You have studied in Unit 5 of this course how information analysis centres came up to meet the information needs of researchers and managers working in highly specialised areas of science and technology such as defence sciences, atomic energy, health and agriculture. The information products such as critical reviews, state-of-the-art reports, information briefs, etc. and services such as technical enquiry services, provided by these centres were mainly meant for the researchers involved in active research and for the decision makers like planners and policy makers.

Soon, it was realised that for social and economic development of any nation the benefits of the S&T research must reach the people at all levels of society including those at the grass roots level. However, it was observed that most of the literature in science and technology, health, business, education and related fields was written by experts for experts and fellow colleagues in the field. This literature could not be effectively used by the non-experts or potential users in its original form. Due to the highly technical nature of the presentation of information, non-experts who would have benefited from it, did not accept and use it. In other words information was not presented in a language and form that was understandable, readable and acceptable to the potential users who may have benefited from it. Another problem in the effective utilisation of information even by the experts was, too much of information on a particular topic. Sheer amount of information scattered over wide range of sources in diverse forms, which discouraged its use by potential users. The difficulties encountered by potential users in getting the required information, resulted in non-use of information.

Therefore, it is required to develop products which would make information reach different categories of users in accessible and usable forms, so that it could be effectively used by them. This would involve information analysis, consolidation and repackaging of information for well defined users. In this Unit, you will study in detail the evolution of the concept of information analysis and consolidation, basic objectives, processes and products of information analysis and consolidation and values and benefits of such specialised services.

6.2 BARRIERS TO THE USE OF INFORMATION

The concept of information analysis, consolidation and repackaging was evolved in response to the difficulties encountered by the users in the effective use of information. The difficulties or barriers in the effective use of information by the users are basically due to the following inherent nature of information:

- Exponential growth of information has led to information explosion, however, users have inadequate time to read and assimilate all the information that is available on a particular subject.

- Interdisciplinary nature of information (such as biotechnology, biophysics, biochemistry, etc.) leads to scattering and seepage of information in different disciplines. Users who specialise in one discipline cannot effectively use the information published in other disciplines.
• Information is published in different languages (for example, Chemical Abstracts monitors the literature published in 50 languages). Users who are not familiar with other languages cannot use the information.

• Information is published in wide range of sources in print as well as in electronic form. The reliability and quality of information also varies in these sources and users do not have time to evaluate and select the right information.

• Information is presented in a wide range of media and formats. Users who are not familiar with that particular media or format cannot use the information. The media can be print, microform, audio/visual, electronic or personal communication. Format is arrangement and presentation of information in any of these media.

• Information is published in documents with restricted circulation (such as technical reports, dissertations, etc.). This leads to inaccessibility of that information.

• S&T information is highly technical in nature with trade and technical jargons. Users with no technical background cannot understand and use it in its original form.

The above mentioned barriers led to the need to find solutions to overcome them and develop new kind of information products.

**Self Check Exercise**

**Note:**

i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1) What are the **barriers** to fruitful use of information?

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**6.3 EVOLUTION OF THE CONCEPT OF INFORMATION CONSOLIDATION**

The analysis of the barriers to the use of information and the attempts to find solutions led to the concept of information analysis, consolidation and repackaging of information. Further, the idea of consolidated information comes from the discussions on information problems in developing countries. A number of United Nations Organisations have been actively seeking solutions to the information problems in developing countries. UNESCO is the most active institution engaged in these types of activities. The following three meetings sponsored by PGI, UNESCO were mainly concerned with the barriers to the use of information. Information analysis and consolidation was suggested as viable solution to this problem.
The below mentioned meetings paved the way for the evolution and development of the concept of information consolidation.


The first meeting of the UNISIST Working Group was mainly centred on the need and importance of information analysis centres to support scientific research in developed countries. At the same time the Working Group recommended that due consideration should be given to the means for improving the existing situation in developing countries.

At the second meeting, the Working Group discussed in detail the term “information consolidation”. Information consolidation was defined as the process of compression of relevant documents in order to provide definite user groups in developing countries with reliable and concise information in usable form. The Working Group felt that information consolidation activities might not be restricted to information analysis centres and can be performed by individuals as well as other institutions. The Working Group defined the term “Information Consolidation” as “the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge”. The individuals and institutions or their components carrying out these functions were referred to as “Information Consolidation Units (ICUs)”. The second meeting in its Final Report listed a number of recommendations for action in the field of information analysis and consolidation including an Action Plan for implementation by UNESCO during the period 1979-1982. Following were the recommendations made by the Working Group:

- Support should be provided for the establishment and operation of information consolidation units (ICUs) in areas most important to social and economic development;
- ICUs should be linked to national focal points to ensure coordination of activities at national level; and
- ICUs should preferably be located within major research and technological institutions and should respond to the identified needs of the country or region expressed through the user community.

Based on the recommendations of the Working Group, a Pilot Project on Information Consolidation was set up at Tata Energy Research Institute (Now The Energy and Resources Institute (TERI)) which produced following publications: *Wind Pump Handbook*, *Biogas Handbook and Cooking Stoves Handbook*. UNESCO also published a *Handbook on Evaluation, Restructuring and Repackaging of Scientific and Technical Information* by Tefko Saracevic and Judith B. Wood (PGI-81/WS/16) for providing guidelines for creation and operation of Information Consolidation Units.
In the third meeting a number of recommendations were made. One of the points discussed in depth was the linkages of information consolidation products to extension services in agriculture and health fields so as to ensure maximum application in the field. In order to have maximum impact, it was considered necessary that handbooks and manuals be done in close collaboration with respective extension services. The Working Group recommended that in promoting establishment of ICUs, focus should be on such areas which seem immediately useful to grass-roots development such as inland fisheries, off-farm employment, women’s studies, appropriate technology, kitchen garden cropping, approaches to organising rural people for participating in opportunities for development, etc. Guidelines for the establishment of Information Consolidation Units were brought out during the third meeting. The Working Group also brought out an Action Plan for implementation by UNESCO during the period 1984-1987.

Among the information analysis and consolidation (IAC) products that have emerged as solutions to the effective and more beneficial use of information are scientific and technical reviews, state-of-the-art reports, handbooks, business, commerce and market reports, technical writings, popularisation of science writings, extension services in agriculture for farmers and in health services for the general public. Each product that is developed is for a well defined user group. S&T reviews are meant for the specialists, business, commerce and market reports are produced for the people in business and industry and extension services in agriculture are for farmers and health services for the general public. In the development of these specialised products the concept of a well defined user group is always kept in mind. In developing these products, analysis, synthesis, consolidation and repackaging of information is carried out keeping the target users in mind.

### 6.4 DEFINITION OF INFORMATION CONSOLIDATION

UNESCO Symposium on Information Analysis and Consolidation (held in Colombo, Sri Lanka) was concerned with definitions and distinctions particularly of the terms ‘analysis’ and ‘information consolidation unit’ in relation to their particular function. It was observed that “information consolidation activities” can be performed within institutions or systems other than information analysis centres, even by individuals or groups of individuals. It was, therefore, decided that the term ‘Information Consolidation Activities’ should be used as follows to define information consolidation:

The term “Information Consolidation Activities is used to define the responsibility exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge. Individuals or groups of individuals performing information consolidation activities would each constitute an Information Consolidation Unit (ICU).”

A more comprehensive definition of consolidated information was formulated by Saracevic and Wood (1981):

“Consolidated Information is public knowledge specifically selected, analysed, evaluated, and possibly restructured and repackaged for the purpose of serving
some of the immediate decisions, problems, and information needs of a defined clientele or social group, who otherwise may not be able to effectively and efficiently access and use this knowledge as available in the great amounts of documents or in its original form. The criteria for selection, evaluation, restructuring and repackaging of this knowledge are derived from the potential clientele”.

Following is a more concise definition given by Saracevic and Wood (1981):

“Consolidated information is a text(s) or message(s) purposefully structured from existing public knowledge to affect the private knowledge and decisions of individuals who otherwise may not be able to effectively and efficiently access or use this public knowledge from the original amounts or in the original structure and form”.

In other words, consolidated information is concerned with providing right information to the specific user(s) in the right form and at the right time. The relation between the user and consolidated information is illustrated by Saracevic and Wood in the below given diagram (6.1).

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Diagram 6.1: Relation between Public Knowledge, Consolidated Information and Users

(Source: Saracevic and Wood, Page 17)
6.5 PROCESSES IN INFORMATION CONSOLIDATION

The basic processes associated with information analysis and consolidation activities are listed below:

1) Study of potential users to find their information needs and decide on the information product(s) to fulfil those needs;

2) Selection of information source(s) containing the most useful information for given user problems and information needs. The selection can be done using a variety of primary and secondary sources;

3) Evaluation of information contained in these sources for its merit, validity, and reliability;

4) Analysis of information to identify and extract the most salient features conveyed by the given source;

5) Restructuring (if necessary) of the analysed and extracted information as a new product, which differs from original presentation and can be understood and used more effectively by the target user. This process may involve synthesis, condensation, rewriting, simplifying, reviews, state-of-the-art presentation, etc.

6) Packaging and/or repackaging of restructured information in a form that will increase its use. (Restructuring deals with the contents or substance of information while packaging deals with the form of its presentation)

7) Diffusion or dissemination of information in ways that will encourage and promote its use. This may also involve educating users in the use of information and marketing of information;

8) Feedback from the users and improvement of the product based on the feedback.

The processes, elements and the relations involved in information consolidation activity are depicted by Saracevic and Wood (1981) in the following diagram (6.2).
Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

3) Discuss the important processes involved in information consolidation.

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Now, let us study each of the above listed processes in detail.
6.5.1 Study of Users for Information Consolidation

As it is evident from the definition of information consolidation, a user is the most important element in information consolidation activities. Perfect understanding of users and their needs is a must for any successful information analysis and consolidation (IAC) product.

User groups can be categorised as follows:

1) Scientists, engineers and professionals engaged in R&D activities;
2) Managers and business people engaged in small and large businesses, commerce, marketing, etc.;
3) Policy and decision makers in government;
4) Technicians, supervisors and paraprofessionals working in government departments, industries and other business concerns;
5) Communicators such as extension workers, teachers and local leaders, communicating new technology or practices to the general public; and
6) Agricultural and industrial workers from rural and urban areas.

Education level of each group varies from highly educated to semi-literate to illiterate. It has been observed that information requirements of the first four groups have been systematically studied by the information workers in the field and there are wide range of information services and products available for these four groups. However, the last two groups have not been served by the majority of information services and products in both developed and developing countries.

Information requirements of these last two groups need special attention from information analysis and consolidation experts, if benefits of S&T knowledge are to reach them. Information needs of these two groups should be studied keeping in view their education levels. While studying their information needs, linkages should be established with extension service staff. This would provide better insight into their information requirements and the type of IAC product that will fulfil their needs. Let us take an example of a new technology, which has been developed by a research institution and the details of which are to be communicated to the common man or people at the grass roots level. The information product conveying this information should be simple, with less technical details and presented in a style and format which these people can understand and utilise without any difficulty. For example, for illiterate people a film can be made in their language describing the new technology, its applications and benefits. For farmers, extension workers can be trained on the use of new technology, who in turn can demonstrate the technology to the farmers practically in the fields.

6.5.2 Selection of Relevant Information Sources

Once information needs and type of IAC product have been identified, the relevant information sources should be selected. Information sources may range from documentary sources to non-documentary sources. Documentary sources comprise primary, secondary and tertiary sources, while non-documentary sources consist of institutions as well as human beings. Among documentary sources peer reviewed periodicals, publications of reputed publishers and publications
Special Products and Services

of prestigious R&D institutions in the subject field should be selected for consolidation purposes. Specialists in the subject field should be identified for consultation purposes. Such specialists help in providing information which is not yet published in formal sources. The persons involved in selection process should be information specialists/librarians as well as subject experts in the field.

6.5.3 Evaluation of Information

The next step is examining the merit, validity and reliability of information contained in information sources selected for consolidation. The merit of the selected source can be judged by examining if a particular source is covered by the review publications on that topic, the number of citations the source has received and the source has undergone peer review process prior to its publication. All these parameters point towards the reliability of the selected source.

Data provided in the selected sources should also be examined for its validity and reliability. Apart from experts’ opinion and general consensus, there are set procedures for evaluation of the data. Some of them are: i) testing of data (critical evaluation of the data); ii) comparison of data on the same aspect from different sources. These procedures, however, are time consuming and costly. Some information centres have come up which are testing the validity and reliability of S&T data. One such centre is the Centre for Numerical Data Analysis and Synthesis, Purdue University, USA.

6.5.4 Analysis and Synthesis of Information

In analysis of information, the contents of selected source(s) are studied to identify the most relevant information conveyed by the source(s). Then the relevant information is extracted, assessed and verified. After this the extracted information is organised and sorted into headings and sub-headings according to some pre decided scheme such as the table-of-contents, classification scheme or typology for the subject or mission.

This is followed by synthesis of information. In this process extracted information from many sources is merged and arranged. Then data from different sources are also compared and if there is any conflicting information, it is resolved through consensus. During synthesis the analysed information from one or more sources is condensed and presented in a new arrangement or structure with an interpretive or evaluative point of view. Condensation is derivation of short summary of information from a source or extraction of key statements from the source such as sentences, paragraphs, figures, etc.

6.5.5 Restructuring and Types of Products

After analysis and synthesis of information, decision is taken on the type of product or service to be offered to the target users. Results of user studies should be taken into account while determining the type of IAC product. In restructuring the evaluated and synthesised information is simplified, compressed or presented in a new form which differs from the original. Restructuring of information is also carried out to meet the comprehension levels of those target users who have no technical background. During restructuring care is taken to see that the product fits the comprehension level of the target user and also reliably presents the state-of-the-art knowledge on the given subject. During restructuring, information
is presented in language and form that is understandable, readable and acceptable to the target users.

There are a large number of IAC products. Some of them are listed below:

**Reviews**: critical reviews, state-of-the-art reports;

**Reports**: assessment, market and technical reports;

**Data**: data compilation and tables, critical data;

**Databases**: experts databases, subject knowledge databases;

**Technical Writings**: guides, manuals, instruction sheets, popular articles about a scientific and technical topic, explanation of a complex subject, written in style and language which can be understood by target users with no technical background;

**Handbooks**: compilation of essential data and information on a subject;

**Briefings**: on demand evaluative studies and compilations;

**Critical Studies**: comparisons of different practices and polices with merits and demerits;

**Brochures, Posters, Newsletters, News Stories, Translations** also come under IAC products.

Each of the above listed products have their own specific requirements, criteria and procedures for preparation. Many of these products require completely new form of presentation to make the product compatible with users’ needs and comprehension levels.

### 6.5.6 Packaging and/or Repackaging of Information

While restructuring deals with the contents of IAC product, packaging deals with the media and format in which information is to be presented. The media can be print, microform, audio/visual, electronic, as well as oral. Format is the arrangement and presentation of information in any of these media.

The methods of packaging of information were always influenced by the technology of the day. Printing technologies were used in earlier periods for the purpose. Later on, many technologies came to challenge print e.g. film, audio, video, cassettes and now computer and other electronic technologies have left their lasting imprint on information packaging. A number of media are now available and new areas are constantly developed presenting wide range of choices. The important media for information packaging can be categorised into:

- Print media,
- Audio-visual media,
- Electronic media, and
- Interpersonal contacts (as a medium).

The selection of media in information consolidation should be user-oriented. In user-oriented packaging it is helpful to think first about users, their background and requirements and then about appropriate media and formats.

Likewise, a number of formats are available to be used for arrangement and presentation of consolidated information in any of the media. Format for the
Special Products and Services

IAC product should be such that it not only enhances the use of the IAC product but also should contribute towards comprehension, assimilation, and recall of its contents by the user. For this, different media and formats are adopted for different groups of users. For instance, if similar type of IAC product carrying the same message (such as creating awareness of a new technology useful for all levels of users or a breakthrough in cure of some chronic disease) is to be prepared for different groups of users, the level of treatment of the subject, technical details covered, media and format will be different for each group, though the message to be conveyed will be the same. For instance, oral communication is preferred by rural people, children react positively if a message is conveyed through a story line and for illiterate people a message can be conveyed more effectively through audio/visual media or through personal communication.

While packaging of information is physical recording, arrangement, and presentation of information in a given medium and in a given format. The repackaging of information is rearrangement of physical media or forms to present the same information for another group of users so that it is appropriate and helpful to that target group. The rationale behind the term repackaging is making information available to illiterates and other groups for whom the usual formats used for conveying the information would pose a barrier to access.

For example in India, the Indian Council of Agricultural Research, engaged in research in the field of agricultural sciences, has brought out 44 documentary films for the farmers on the farmer friendly technologies developed by the Council. Films are on topics such as sheep rearing, honey production, shrimp culture, fodder production, hygienic milk production and milk processing and packaging, etc.

Repackaging is not a new idea, but changes in technology have enhanced the process, creating the potential for better service. Saracevic and Wood (1981) and Bunch (1984) were the first to use the term in their publications in describing how an information service selects appropriate material, reprocesses and packages the information, and arranges the material in a way that it is appropriate and helpful to the user. These studies mostly focused on scientific and technical information and community information.

6.5.7 Dissemination and Communication

After an IAC product is developed, the next step is its active and effective dissemination to the target users and its effective utilisation by them. Dissemination relates to transmission of information to users. It requires determination of the channels by which information products will be delivered to the users. Communication is closely related to dissemination, but it is a broader concept. Communication is a process by which information is transferred through a given channel (or channels) from a source or a sender to a destination or recipient. The process can be in both directions involving feedback from the recipient. Some of the important channels for dissemination of information consolidation products include:

- Interpersonal delivery: The product is delivered personally to the users.
- Group personal delivery: The product is delivered to a whole group of users in a meeting or through demonstration.
• Strategic placement: The product is placed in locations frequented by users to pick on their own.
• In-house dissemination: The product is circulated within the organisation.
• Local depositories: The product is disseminated through local information centres and libraries.
• Mass media: The product is delivered or announced through mass media such as newspapers and magazines as well as through broadcasting i.e. radio or television.
• Mail: The product is delivered through direct and mass mailing.
• Computer networks: The product is delivered through computers via telecommunication networks; online databases; electronic mail or computer conferencing.

6.5.8 Marketing of Consolidated Information Products

The work of an Information Consolidation Unit is not complete with the making of a product or provision of a service. Active and effective dissemination is needed to make the product reach the hands of the users. Otherwise, the product or service will remain unused. Conscious and deliberate efforts should be made to market the product and make users aware of its services and benefits.

In the information profession there is often an opposition to active marketing on the ground that it introduces an element of commercialisation in information work. The argument is that the commercial aspects have distorting effect on information products and services which should be appreciated on their own intrinsic merit. This philosophy may be good in cases where information services and products are fully subsidised on a continuous basis and where cost-effectiveness is not called for. This attitude needs to be changed in the case of non-subsidised IAC products.

Marketing involves market research and analysis, segmentation of users into groups with similar characteristics, values, needs and information benefits, development and targeting of information consolidation products to the given user segments, user education and evaluation.

6.5.9 Feedback

Regular feedback from the users of the IAC product and constant improvement of the product based on the feedback forms an essential part of information analysis and consolidation process.

Self Check Exercise

Note: i) Write your answers in the space given below.
   ii) Check your answers with the answers given at the end of this Unit.

4) What do you understand by the terms packaging and repackaging of consolidated information?

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5) Explain the need for dissemination and marketing of consolidation information services and products.

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6.6 VALUE AND BENEFITS OF CONSOLIDATED INFORMATION

The complexity of and the need for resources are the factors that discourage initiation of information consolidation activities either by groups of individuals or by organisations. What values and benefits should be stressed upon? This question is not considered often even though the answers are crucial for justification of information consolidation activities to fund providers and for communication and promotion to users.

On a general level, information consolidation is justified for its contribution to the processes of social and economic development. On a specific level it helps in problem solving and decision making. Let us try to understand these aspects. For instance, the process of development in an increasingly interdependent world requires an increase in sophistication and use of scientific, technical, commercial and related information. The value of such information does not lie in its existence but in its acceptance and use. The chances for acceptance and use of information are increased by it being more appropriate. In fact, consolidated information aims at being more appropriate to the users, their needs and levels, the capacities and time allotments given to information absorption and similar user-related factors.

More specifically, the value of consolidated information can be stressed upon in relation to its role in decision making and problem solving. It may be stated that information is required for making decisions and solving problems, even those encountered in simple day-to-day work. It must be noted that as complexity of decisions or problems increases, the necessity for information intensifies. Also, as the amount of available information proliferates, it becomes difficult to get and use relevant information. It is also true that as complexity and technical sophistication of available information increases, less of it can be used by decision makers and problem solvers as presented in its original form.

The above discussion points to the need for consolidated information. It must be noted that the value of consolidated information changes with the type and amount of information. For example, a pile of documents on a given topic on a decision maker’s table or a list of relevant documents in a worker’s hand have little value in relation to the decisions they have to make on that topic or problems they have to solve, even though the documents may contain all the information that is needed, on the other hand, summaries may have a bit more value. Integration of excerpts from a number of documents may have still more value. Obviously, evaluated information further increases the value while studies addressing the topic such as reviews, state-of-the-art reports, market studies, statistical summaries and correlations, etc. further enhance the value considerably. The highest value
Information Consolidation and Repackaging

of information is in a set of alternative choices summarised from all the other sources mentioned and recommendations for decisions or resolution of problems. Saracevic and Wood (1981) have depicted these relations in the diagram (6.3) given below.

**Self Check Exercise**

**Note:**

i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

6) Briefly explain the value and benefits of consolidated information.

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**Diagram 6.3: Value of Information in Decision Making and Problem Solving**

(Source: Saracevic and Wood, Page 51.)
In other words, from the foregoing discussion the following inferences can be drawn.

- As the amount of information presented to a decision maker is increasingly consolidated, its value increases;
- As the information is increasingly expressed in the everyday language and the social / cultural framework of the user, its value increases for that user;
- As the information is increasingly packaged in a way that will make its use easier, its value increases.

The values relating to consolidated information are recognised as well as clearly understood by information workers. The same cannot be said about users and potential users. It is observed that users with high levels of education and responsibility are not aware of the benefits of consolidated information for them or for their organisations. Information workers need to take special interest in explaining to users and potential users the values and benefits of consolidated information. This may be done in many ways such as user education. Otherwise, good products and services may remain unused. It would be a better idea to present in a tabular form a list of benefits which could be derived from usage of consolidated information. Such efforts may help Information Consolidation Units (ICUs) in promotion of their products and services.

**Table 6.1: Potential benefits that may be derived from use of consolidated information**

<table>
<thead>
<tr>
<th>General Activity or Area</th>
<th>Potential Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decisions</td>
<td>Better informed about alternatives and consequences. Improved decision making process. Reduction of uncertainty.</td>
</tr>
<tr>
<td>Knowledge, Competence</td>
<td>Increase in level, depth, breadth by individuals or groups. Higher sophistication in drawing relations between seemingly unconnected facts.</td>
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<tr>
<td>Adaptation</td>
<td>More appropriate and adjusted responses by individuals, groups or organisations to demands of and changes in the environment and a complex world.</td>
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<tr>
<td>Productivity</td>
<td>Higher levels and outputs in work and other activities. More contacts. Increased capacity and effectiveness.</td>
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<td>Resources</td>
<td>More efficient and economic use of resources. Increased capacity and/or effectiveness. Better economy.</td>
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<tr>
<td>Success</td>
<td>Contribution towards attaining aims of individuals, groups and organisations. Better or wider spread and acceptance of results. Direction of necessary adjustments.</td>
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<tr>
<td>Specific Areas</td>
<td>Benefits</td>
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<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Science</td>
<td>Keeping up with research front. Judging own position and advances. Making appropriate decisions on policy and allocations. Searching for related works and/or ideas for further work or methodology.</td>
</tr>
<tr>
<td>Education</td>
<td>Keeping up with advances in given fields and in education research, methods, and approaches. Providing for educational planning and assessments or comparisons.</td>
</tr>
<tr>
<td>Individuals</td>
<td>Providing for self fulfilment and advancement in their given area of work or interest. Providing for wider opportunities in employment, self help and adjustments to changing environments and conditions. Increasing sophistication towards higher quality of life.</td>
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</tbody>
</table>

### 6.7 SOME EXAMPLES OF IAC PRODUCTS FROM INDIA

In India many R&D institutions are bringing out IAC products in their area of research for different levels of users. Let us study these institutions and their products.

**The Energy and Resources Institute** commonly known as TERI (formerly Tata Energy Research Institute) is engaged in research activities in the field of energy, environment and sustainable development.

TERI brings out research periodicals, research newsletters, many reference titles, popular periodicals, general interest books as well as audio/visual material in the form of films, CDs in the areas of energy, environment and sustainable development.

Some of the IAC products of TERI are listed below:

**TERI Information Digest on Energy and Environment**: The digests are for policy makers, scientists and technologists to keep them abreast of latest developments in energy, environment and sustainable development.
TERI Policy Briefs: Briefs are brought out on specific areas for members of parliament, policy makers, regulators, area experts, civil society and media.

Popular periodicals: *Terra Green* (monthly) and *The Solar Quarterly* (quarterly) on renewable energy.

Terravision Series: Under this series TERI brings out documentary videos/CDs on various energy, environment and sustainable issues. The CD on “ABC of Water Pumping Efficiency” highlights the basics of many pumping systems, methodologies of energy audits and opportunities for energy saving. “TERI Uttam Urja” - a documentary film highlights the benefits of the spread of renewable energy technology. It describes energy efficient biomass based tools for small enterprises and smoke free cook stoves that reduce the consumption of fuel wood. The film on “Global Warming” - focuses on the challenges and threats of climate change and creates an awareness for immediate action. “Learning to Dream Again” - this film traces the relationship communities have with their forests, the way to protect and nurture them. “Water Ignites Life and Hope” - is a documentary film of two imaginary stories of community efforts of managing water judiciously.

Terrapin Series: To spread awareness among children on environmental issues TERI brings out large number of books under this series for children to educate as well as entertain them. The books are available at three levels: Key Stage 1: 5-7 Years; Key Stage 2: 7-11 Years and Key Stage 3: 11-15 Years.

GREEN Olympiads and TERRA QUIZ: These are the series of knowledge books for children in 5 volumes.

Soldiers of the Earth: It is a global environment awareness programme for children. It is a joint initiative of TERI and ONGC (Oil and Natural Gas Corporation) to involve children in conservation activities. The tools used are books, workshops and learning modules. The aim is to educate children and make them conscientious and responsible individuals when they grow up.

CAMPS (Community Adoption Monitoring Programme in Schools): CAMPS is a unique programme that involves students and local communities in its national endeavour for a cleaner and greener environment. (http://www.teriin.org/)

National Institute of Science Communication and Information Resources (NISCAIR): NISCAIR came into existence on 30 September 2002 with the merger of National Institute of Science Communication (NISCOM) and Indian National Scientific Documentation Centre (INSDOC), two premier institutes of Council of Scientific and Industrial Research (CSIR) devoted to dissemination and documentation of S&T information. NISCAIR collects/stores and publishes S&T information and develops information services and products in the fields of S&T.

NISCAIR communicates scientific knowledge through various publications such as primary research periodicals, abstracting periodicals (*Indian Science Abstracts and Medicinal* and *Aromatic Plant Abstracts*) and newsletters (*CSIR News* in English and *CSIR Samachar* in Hindi). At the same time to reap the benefits of scientific research, scientific knowledge is communicated to the masses through different publications. Some of them are listed below:
**Wealth of India: A- Raw Material Series** (11 Volumes, and 1 Supplement), **B- Industrial Products Series** (9 volumes). Wealth of India is in a true sense information analysis and consolidation product. It is an encyclopaedia on India’s raw material resources covering plants, animals and minerals. One can freely download the Wealth of India Brochure from the NISCAIR website. The brochure also contains an EXTENSION BULLETIN on “Killer Plants for Dengue Fever Mosquito”.

Popularisation of science is a major programme of NISCAIR. Under this programme NISCAIR brings out various publications such as popular science periodicals, popular science books, etc.

**Popular Periodicals:**
- Science Reporter (monthly in English)
- Vigyan Pragati (monthly in Hindi)
- Science-ki-Duniya (quarterly in Urdu)

**Popular Science Books:**
NISCAIR has published 60 popular science books under different series in English. About 28 of these books have been brought out in Hindi as well. Following are the book series under which it has published these books:

- CSIR Golden Jubilee Series (25 books)
- Science-Fun-Series (7 books)
- Q-Series (3 books)
- Vistas of Biotechnology Series (6 books)
- Foundation of Biotechnology Series (6 books)
- AIDS
- Science and Society in 21st Century
- IT for All (7 books). These 7 books cover topics like Microsoft for Beginners, C++ for Beginners, Build your Web Home, etc. Apart from English all 7 books are available in Hindi, Punjabi, Urdu, Kannada, Marathi, Gujarati, Tamil, Bengali and Malayalam.

(http://www.niscair.res.in/)

**Indian Council of Agricultural Research (ICAR):** ICAR is the apex body for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. Agricultural Extension Division of ICAR has a mandate to take the technology developed at various agricultural research centres to the people at the grass roots level such as farmers. For this it provides:

- Vocational training to the farmers,
- Training to extension personnel to update their knowledge and skill,
- Single window delivery system of technology, products, services and information through Agricultural Technology Information Centres, and
• Through Institute-village-linkage-programme (IVLP) it assesses the newly developed technology and carries out necessary refinement to make the technology location specific under various farming systems.

With 97 ICAR institutes and 47 agricultural universities spread across the country, ICAR is one of the largest Agricultural Systems in the world.

**Publications:** ICAR publishes 7 research journals, 2 abstracting journals (*Indian Agricultural Science Abstracts* and *Indian Animal Science Abstracts*) and 2 newsletters (*ICAR News* and *ICAR Reporter*).  

**Popular Periodical:** *Indian Farming* is a popular magazine for people interested in farming. The aim is to present scientific information in a popular style to the progressive farmers and people interested in application of science in day-to-day problems in farming.

**Books:** ICAR has published over 95 books in English on various aspects of agriculture such as crop sciences, horticulture, animal sciences and fisheries. The Council has also published 63 books in Hindi on various aspects of agriculture.

**E-Books:** ICAR e-books are available free on its website.

**Agricultural Films:** ICAR has brought out 44 documentaries on farmer friendly technologies for the benefits of the farmers. (http://www.icar.org.in/)

## 6.8 SUMMARY

This Unit explains the concepts, problems and requirements of specific practices referred to as information consolidation. The main objective of information consolidation is to increase the effectiveness of information usage and to widen the circle of users served.

Information consolidation is an effective approach to the fulfilment of specific informational needs for evaluative and synthesised information services for the existing and potential users. It should be noted that information consolidation is on one hand useful to sophisticated users like engineers, scientists, managers, policy makers and on the other hand also useful to users of lesser sophistication such as workers, villagers, etc.

It should be emphasised that information consolidation provides great scope and opportunity for the effective use of non-print dissemination channels and packaging media especially in relation to information for a broad group of users in both the urban and rural areas. Information consolidation involves complex processes. It may also be emphasised that while information consolidation involves complexity in processes, it also offers simplicity and appropriateness in products. The potential benefits derived in using consolidated information are very high. It is possibly the most effective tool for transferring appropriate technology to developing countries and also most effective means for ensuring use of information.
6.9 ANSWERS TO SELF CHECK EXERCISES

1) The concept of information consolidation evolved in response to the difficulties posed by a number of factors in the optimum use of information, specially scientific and technical information. Following are the barriers to fruitful use of information:

- Exponential growth of information has led to information explosion. At the same time, users do not have enough time to read and assimilate all the information that is available.

- Interdisciplinary nature of information (such as biotechnology, biophysics, biochemistry, etc.) leads to scattering and seepage of information in different disciplines. Users who specialise in one discipline cannot use the information published in other disciplines.

- Information is published in different languages (for example, Chemical Abstracts monitors the literature published in 50 languages). Users who are not familiar with other languages cannot use the information.

- Information is published in wide range of sources in print as well in electronic form. The reliability and quality of information also varies in these sources and users do not have time to evaluate and select the right information.

- Information is presented in a wide range of media and formats. Users who are not familiar with that particular media or format cannot use the information. The media can be print, microform, audio/visual, electronic as well as oral. Format is the arrangement and presentation of information in any of these media.

- Information is published in documents with restricted circulation (such as technical reports, dissertations). This leads to inaccessibility of that information.

- S&T information is highly technical in nature with trade and technical jargons. Users with no technical background cannot understand and use it in its original form.

2) The idea of consolidated information comes from discussions of information problems in developing countries. Many of these problems relate to lack of information infrastructure and low propensity of users to use information. It was also recognised that mere possession of information – having it available and accessible – is not a guarantee of its use. The barriers for use must be removed. Information consolidation has been suggested as a solution to the problem of barriers to use of information.

At the second meeting of UNESCO Working Group the term “Information Consolidation” was defined as the process of compression of relevant documents in order to provide definite user groups in developing countries with reliable and concise information in usable form. The Working Group felt that information consolidation activities might not be restricted only to information analysis centres; these can be performed by individuals and other institutions as well. The Working Group defined the term “Information
Consolidation” as “the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge”. The individuals and institutions or their components carrying out these functions were referred as “Information Consolidation Units (ICUs)

A more elaborate explanation may be offered in these terms: “Consolidated information is public knowledge specifically selected, analysed, evaluated, and possibly restructured and repackaged for the purpose of serving some of the immediate decisions, problems and information needs of a defined clientele or social group, who otherwise may not be able to effectively and efficiently access and use this knowledge as available in the great amounts of documents or in its original form. The criteria for selection, evaluation, restructuring and repackaging of this knowledge are derived from the potential clientele”.

In other words, the basic purpose of information consolidation can be summarised as under:

- To increase the effectiveness of information transfer;
- To encourage more intensive use in a wide range of developmental activities; and
- To increase the circle of potential users particularly by fulfilling specific information needs for evaluated and synthesised information.

3) The important processes in most information consolidation activities are: selection, acquisition, evaluation, analysis and synthesis of information. These processes are performed with a view to the provision of a product or service and their dissemination and marketing. It must, however, be stated that study of potential users is a pre-requisite for all the other processes. It may be noted that the definitions provided for the concept information consolidation mentions prominently definite user groups to which information is provided. The crux of the problem is not how effective or efficient the processes involved in information consolidation are but what an information consolidation service can do to assist an information user in identifying, clarifying or solving a problem and what such a service can do to raise the probability that a user will find useful information with minimum effort.

These two questions form a framework on which to build information consolidation services. The other processes are summarised below:

a) Study of potential users to find their information needs and decide on the information product(s) to fulfil those needs;

b) Selection of information source(s) containing the most useful information for given user problems and information needs. The selection can be done using a variety of primary and secondary sources;

c) Evaluation of information contained in these sources for its merit, validity and reliability;
d) Analysis of information to identify and extract the most salient features conveyed by the given source;

e) Restructuring (if necessary) of the analysed and extracted information as a new product, which differs from original presentation and can be understood and used more effectively by the target user. This process may involve synthesis, condensation, rewriting, simplifying, reviews, state-of-the-art presentation, etc.;

f) Packaging and/or repackaging of restructured information in a form that will increase its use (Restructuring deals with the contents or substance of information while packaging deals with the form of its presentation);

g) Diffusion or dissemination of information in ways that will encourage and promote its use. This may also involve educating users in the use of information and marketing of information; and

h) Feedback from the users and improvement of the product based on the feedback.

4) Packaging deals with media and format in which consolidated information is to be presented. The media can be print, microform, audio/visual, electronic, as well as oral. Format is the arrangement and presentation of information in any of these media.

Format for IAC product should be such that it not only enhances the use of IAC product but also should contribute towards comprehension, assimilation and recall of its contents by the user. For this different media and formats are adopted for different groups of users. For instance, if similar type of IAC product carrying the same message (such as creating awareness of a new technology useful for all levels of users or a breakthrough in the cure of some chronic disease) is to be prepared for different groups of users, the level of treatment of the subject, technical details covered, media and format will be different for each group, though the message to be conveyed will be same. For instance, oral communication is preferred by rural people, children react positively if a message is conveyed through a story line, and for illiterate people a message can be conveyed more effectively through audio/visual media or through personal communication.

While packaging of information is physical recording, arrangement and presentation of information in a given medium and in a given format, the repackaging of information is rearrangement of physical media/ or forms to present the same information for another group of users so that it is appropriate and helpful to that target group. The rationale behind the term ‘repackaging’ is making information available to illiterates and other groups for whom the usual formats used for conveying the information would pose a barrier to its access.

5) The work of an information consolidation unit is not considered complete with the making of a product or provision of a service. Active and effective dissemination; that is, a choice of dissemination channel (channels) appropriate to a given group of users with an eye towards effective communication and fruitful use must be included as an integral part of the whole unit. Otherwise,
the products and services will remain unused. The tragedy is that, often, the dissemination aspect does not receive adequate attention.

It is, therefore, worthwhile to consider information marketing as a concept that may be of help in effective communication of information consolidation products and services. It may be noted that there is often a philosophical opposition to active dissemination and especially marketing on the ground that they introduce an element of commercialisation in information work. The argument is that commercial aspects have a distorting effect on information products and services, which should be appreciated on their intrinsic merit. This philosophy may be applicable to consolidation of information services and products which are totally subsidised and without necessity for any accounting regarding costs, cost-effectiveness and cost and user benefits. But for non/subsidised services this policy does not hold good.

Marketing is not to be equated with pushiness and high pressure selling of products and services. In fact, marketing is the reverse of the selling concept. Even products and services which are not priced require marketing. In other words, an information consolidated unit without active dissemination and marketing integrated with products and services offered might inevitably fail.

6) Information consolidations activities are not only associated with complex processes, but also involve cost factors. In other words, these activities require financial resources and committed specialised manpower to accomplish the task. Hence, any such activity needs sufficient justification before it is organised.

On a general level, information consolidation is justified for its contribution of the processes of social and economic development. On a specific level its benefits can be justified as a contribution to problem solving and decision making.

The process of development in an interdependent world involves and requires use of scientific, technical, commercial and related information. Unfortunately, the value of such information does not lie in its existence or accessibility but in its acceptance and use. The chances of information use are increased only when that information is appropriate. The main purpose of consolidated information is to make it suitable and appropriate to the users, according to their needs and levels and capacities to the information absorption and similar other user-related aspects. Besides, this consolidated information may contribute to information sophistication of a population, which in turn contributes to quality of life. For example, the value of consolidated information that helps to improve sanitation surely leads to decrease in diseases and thus, helps the prevention of diseases.

The value of consolidated information has a great role in decision making and problem solving. In other words, making decisions and solving problems, even those faced in day-to-day work requires information. In fact, as complexity of decisions and problems increases the need for information intensifies. Also, it becomes difficult to get relevant information as information proliferates and distributes itself in many sources. The
interdisciplinary and sophisticated nature of information presents problems to users and they are not in a position to use it in its original form and format. To obviate users from these difficulties and provide solutions to their informational problems consolidation of information is necessary. Evaluated, summarised and repackaged information is more valuable to decision makers and problem solvers. Very often values and benefits of consolidation information are not obvious to the clientele. They must be made aware of these benefits by user education and other efforts.

### 6.10 KEYWORDS

<table>
<thead>
<tr>
<th><strong>Analysis of Information</strong></th>
<th>It is a process of determining and isolating the most salient information conveyed by a given information source and separating this information into its constituent elements on the basis of predetermined evaluative and other criteria.</th>
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<tbody>
<tr>
<td><strong>Consolidated Information:</strong></td>
<td>Public knowledge specifically selected analysed, evaluated and possibly restructured and repackaged for the purpose of serving some of the immediate decisions, problems and information needs of a defined clientele or social group, who otherwise may not be able to effectively access and use this knowledge available in great amounts of documents or in its original form.</td>
</tr>
<tr>
<td><strong>Information Consolidation Activities</strong></td>
<td>These are used to define the responsibilities exercised by individuals, departments or organisations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge. Individuals or groups of individuals performing information consolidation activities would each constitute an Information Consolidation Unit (ICU).</td>
</tr>
<tr>
<td><strong>Information Consolidation</strong></td>
<td>Involves selection, evaluation, analysis, synthesis, possibly, restructuring and repackaging of information as well as dissemination and marketing of resulting products and services.</td>
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<tr>
<td><strong>Package Formats</strong></td>
<td>The arrangement, shape and layout of information on a given product in a given medium.</td>
</tr>
<tr>
<td><strong>Package Media</strong></td>
<td>The physical substance on which information is recorded, displayed or presented.</td>
</tr>
<tr>
<td><strong>Packaging of Information</strong></td>
<td>It is a physical recording arrangement and presentation of information in a given medium and in a given form.</td>
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</tbody>
</table>
**Repackaging of Information:** It is rearrangement of physical media and/or forms in which information has been presented (or a presentation in a given medium and form of restructured information) which is tailored to the requirements of a specific clientele. The aim of repackaging is to enhance the acceptance and use of information products and the assimilation and recall of their contents.

**Synthesis:** It is a process of condensation and distillation of analysed information from one or more sources and presentation of information in a new arrangement or structure with an interpretative or evaluative point of view.

### 6.11 REFERENCES AND FURTHER READING


