PLANNING AN INFORMATION SYSTEM FOR BUILDING TECHNOLOGY IN INDIA

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A planning approach to establish an Information System for Building Technology in Indian context is given. The plan gives provision in phases to establish a National Information Centre for Building Technology (NICBT), a few Regional Information Centres and Information Centres for Building Technology (RICBT and LICBT) for a country-wide information flow of available information among building technologists, engineers, contractors, consultants and general public in India.

INTRODUCTION

Building or shelter has been one of the prime necessity of the mankind since the inception of human race. Efforts were made gradually and are still on to find out better dwelling facilities that may:

(a) Provide adequate space for dwellings, industry and other human activities,

(b) Resist the natural forces like dead or live loads-wind, cyclone, earthquakes, vibration, slides, etc.

(c) Look good and appeal aesthetically.

(d) Save cost of building (economy in man, material and time) without sacrificing safety, durability and comforts.

(e) Provide extra space vertically (multistoried) to save land space in view of population growth.

(f) Find out alternate use of the locally available man-power, construction techniques or building materials.

(g) Provide extra space in available buildings (better design).

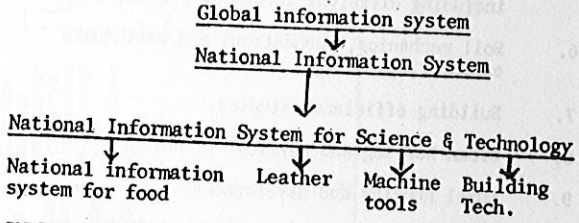
(h) Suit the local conditions particularly climatic conditions.

Need for an Information System

Information is essential for each and every human activity in the world. Proper information at the right time may certainly effect the developmental work of a society or a country. Providing information in a well organised manner is the duty of an information system. The use of information will only take place if it is stored, organised, disseminated and retrieved for its utilisation and application to further research and industry. If there is no well-established information system, there will be no information flow (no storage, or dissemination, utilisation and further generation of information) and so the industry will no more develop. Development is fully based upon the scientific research and research on timely supply of relevant information and information transfer on a well integrated information system.

Set-up of an Information System

For an overall development, the information plays a vital role in national life. But establishing an information system poses a number of decision making situations. For efficient working of a system, it must be broken down in small units (components) with a well defined coordination among each of them and in relation to their parent system. This may be illustrated as under:-



INDIAN ATTEMPTS TO ESTABLISH INFORMATION SYSTEM FOR BUILDING TECHNOLOGY

Govt. of India, Department of Science & Technology (DST) set up National Committee on Science & Technology (NCST) for development and planning of Scientific and Technological Research and its utilisation in India. NCST has approved the plan for the creation of National Information System for Science & Technology (NISSAT). For all round and balanced development, the NCST prepared a Science & Technology plan and also divided various activities into sectors, groups and sub-groups. The outstanding personalities in the field were chosen chairman and members of these groups to study in detail and submit their reports for execution under Fifth Five Year Plan and onwards.

Housing and Construction Technology has been recognised as one of the important activities of national importance and a sector on Housing, Urbanisation and Construction Technology was set-up. This sector consists of 2 groups to study (6, page 1-10).

(a) Group 1 - Housing and construction - to cover planning, design, construction technology and maintenance management.

(b) Group 2 - Urbanisation - to cover rural, urban and regional development including construction technology, infra-structure and the engineering services that are required for the same.

MAJOR PROGRAMMES OUTLINED IN THE SECTOR

1. Establishment of a national coordinating agency for the construction industry with the following tasks:

   (a) Planning, coordination, planned development of inputs and infrastructure for industry.

   (b) Execution of policy decisions so as to effectively utilise the national resources in terms of man, material, machinery techniques and finance, and

   (c) Providing interlinks between govt., R&D and extensive agencies, universities, professional bodies and building manufactures.

2. Setting up International Consultancy Bureau in Civil Engineering including structural, highway and public health engineering.

3. Planning and development of material industries and material standardisation.

4. R&D projects relating to construction equipment.

5. Structural design, construction techniques including different levels of prefabrication.

6. Soil mechanics, foundations and earthquake engineering.

7. Building efficiency studies.

8. Urban housing and physical planning.

9. Rural housing and development.

10. Industrial and institutional buildings.

11. Building practice and productivity management.

12. Setting up information and documentation system including training of manpower and extension services for building industry (6).

MAJOR IMPLEMENTING AGENCIES

The programme of establishing an information network for building technology will be implemented jointly by:-

(a) CSIR through its laboratories - CBRI, NEERI, SERC, CRI, CRRI, CMERI and RRL, Jorhat. The CSIR will also collaborate for this purpose with state engineering research institutes.

(b) All engineering universities including IITs, IISc and agricultural universities.

(c) National Building Organisation, through Ministry of Works and Housing.

(d) Indian Standards Institution for proper implementation of standards and code of practices.

DETERMINANTS IN PLANNING

For establishing National Information System for Building Technology, the following few points are to be considered:-

1. Type of users and their information requirement: (9) The type of users are the same as mentioned in fig 1 and the requirements are as follows:-

   A. Primary sources of information:

      1. Conventional books, manuscripts.
      2. Periodicals, articles, short communications.
      3. Research reports, reviews, progress reports.
      4. Thesis, lectures, proceedings of seminar, symposia, etc.
      5. Standards, patents, computer literature like utility programmes, manuals.
      6. Designs, drawings, tables, charts, etc.

   B. Secondary sources of information:

      1. Abstracts.
      2. Digests, reviews.
      3. Bibliographies, documentation lists.

   C. Reprographic services:

      xerox, photocopies, microfiche, microfilms, etc.

   D. Publication services:

      Publication of articles, reports, research in progress.

   E. Service training:

      Short term courses, refresher courses, organisation of seminars, lectures, etc.

   F. Computing aids:

      Slide rules, computers, data processors.

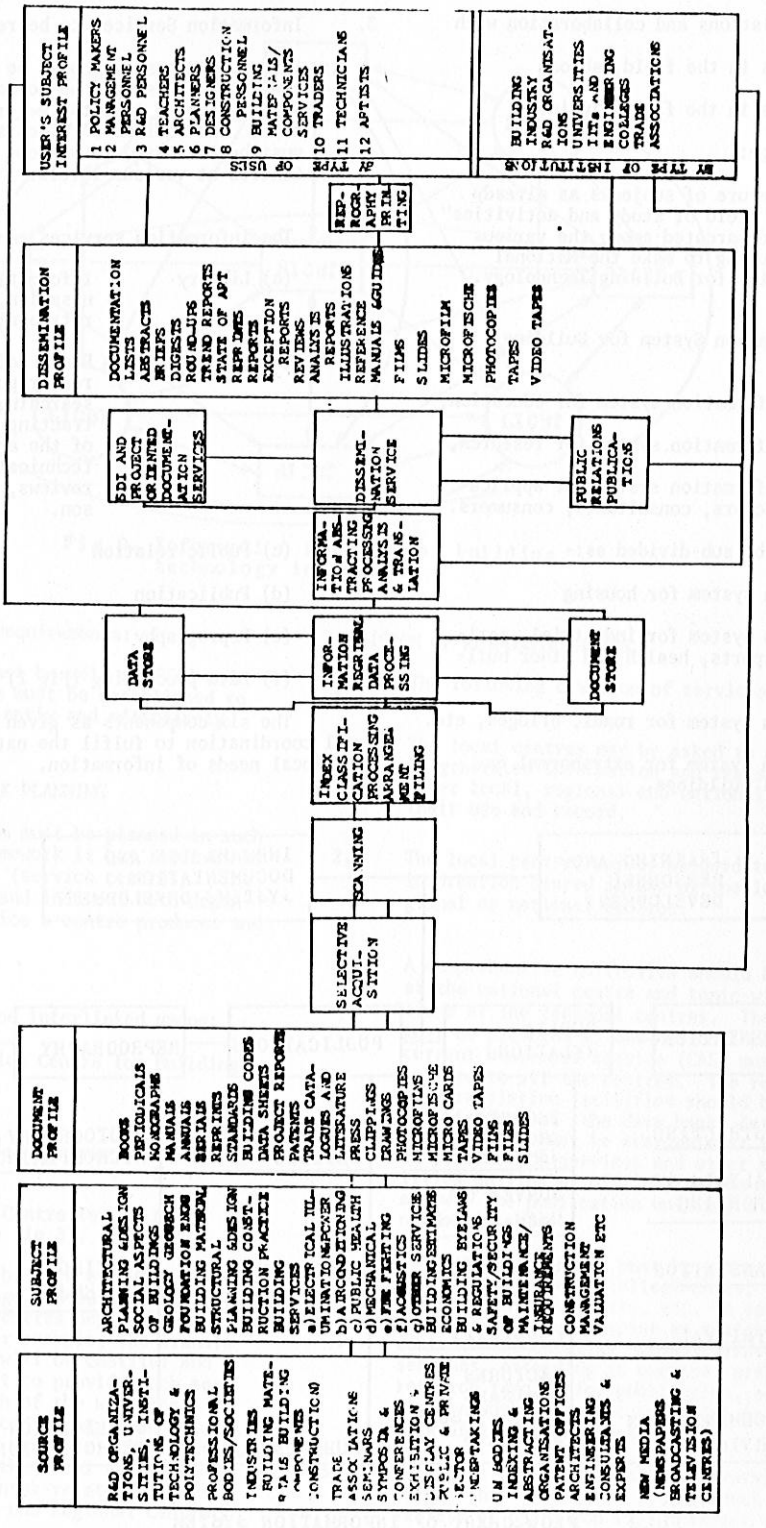


Fig.1. Flow-chart of information system in building technology

G. Exchange relations and collaboration with

1. Agencies in the field, abroad

2. Agencies in the field, India.

2. Subjects Coverage:

The divergent nature of subjects as already detailed under "Field of study and activities" should be well demarcated among the various centres contributing to make the National Information System for Building Technology. It may be like:

National Information System for Building Technology

(a) National information system for education,

(b) National information system for research,

(c) National information system for application-contractors, consultants, consumers.

It may further be sub-divided as:-

(a) Information system for housing

(b) Information system for industrial, agricultural, sports, health and other buildings.

(c) Information system for roads, bridges, etc.

(d) Information system for extranormal environmental buildings.

3. Information Services to be rendered:

Information system should be designed in such a way that it should be competent to avoid duplication of efforts in serving the clientele. The various services as given hereunder must be entrusted to various contributing Centres at various levels.

The information services can be given through:

(a) Library — Information storage, organisation, dissemination and retrieval services.

(b) Documentation — Ready reference, referral, reader guidance, literature searching, CAS, SDI, abstracting data service, state of the art, trend report, technical notes, critical reviews, translation, liaison.

(c) Public relation

(d) Publication

(e) Reprography

(f) Data processing (Fig 2)

The six components as given above must have well coordination to fulfil the national, regional and local needs of information.

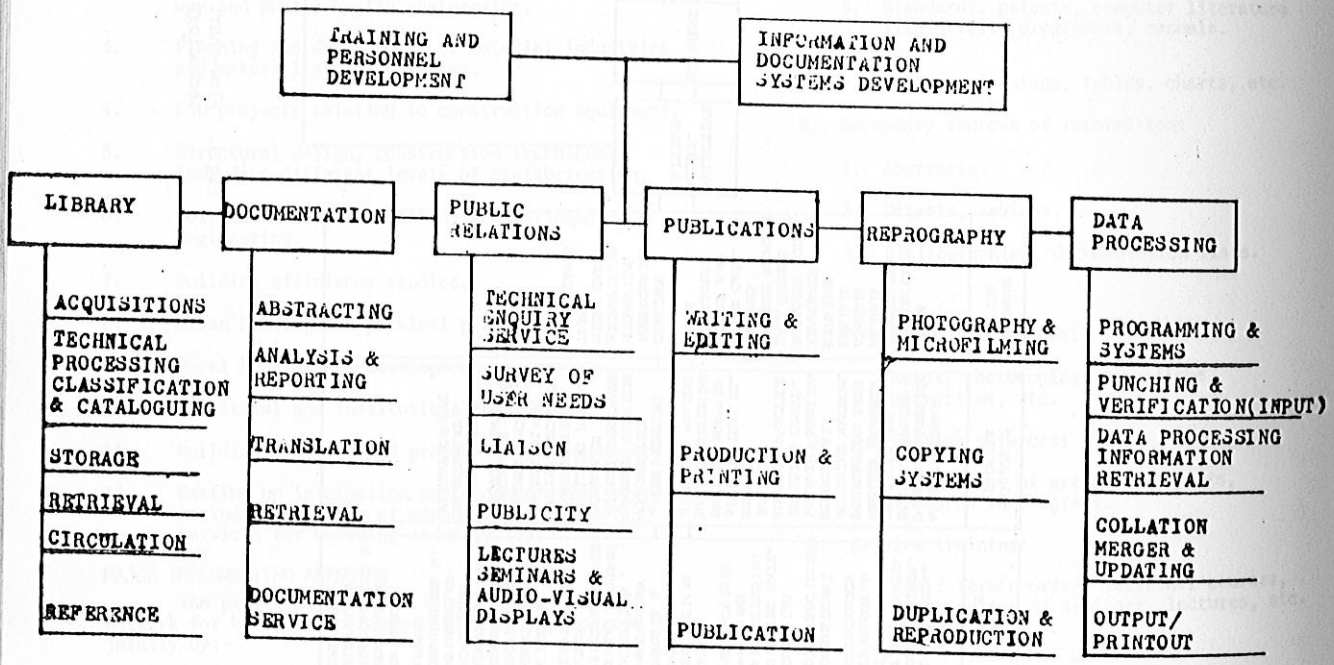


FIG.2 FLOW-CHART OF INFORMATION SYSTEM

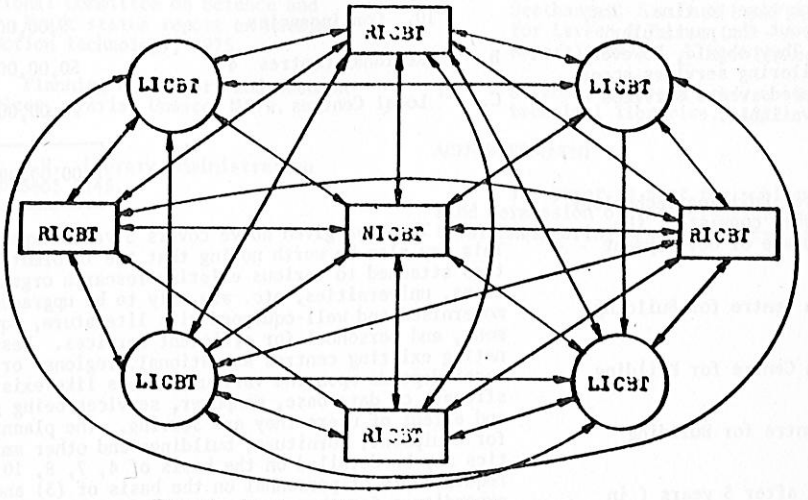


Fig 3. Information network for building technology interlinks

4. Staff and Financial Requirements:

Information system must be well staffed and a well funding system must be established to run the system efficiently and effectively.

INFORMATION CENTRES - NETWORK PLANNING

The information system must be planned in such a way so that within its framework it has inter-links with its various sub-systems (service centres). The interlinking must be direct and indirect both depending upon the nature of service a centre produces and utilises.

The whole system may be interlinked among:

(1) National Information Centre for Building Tech. (NICBT)

(2) Regional Information Centres for Building Tech. (RICBT) and

(3) Local Information Centre for Building Tech. (LICBT) (See Fig 3).

The interlinking will be more effective if the various services at input stage and output stage are entrusted separately to the centres depending upon their fields of activity. For example, the translation unit in each local unit will be costlier and sometimes it will be difficult to provide such services as there may not be much of the work load. Abstracting services at each centre may lead to duplication of work and wastage of manpower. It is, therefore, suggested that besides the local needs, the work relating to a group of inter-related specific subjects must be entrusted to one Regional Centre.

DIVISION OF RESPONSIBILITIES

The following division of services may be helpful:

1. The local centres may be asked to collect locally generated information and transfer it to other local, regional and national centres for their use and record.

2. The local centres may be allowed to utilise the information stored in any of the local, regional or national centres.

3. A comprehensive collection should be developed at the national centre and topic-wise collections at the regional centres. The periodicals must be procured at the national centres and current awareness service (CAS) must be circulated to all the centres. The reprographic and translation facilities should be available at this Centre. The data bank, data processor and computer must be available at this Centre to provide SDI services and other search facilities on-line or offline, as the system may allow. The publication unit may also be in the national centre.

4. The regional centres must be entrusted to prepare abstracts, bibliographies, trend reports, documentation lists, etc. on specific topics or group of topics as assigned to that centre. The carrying out of retrospective searches, attending to queries, preparation of research reports for publication, editing and liaison work must also come with in the purview of the regional centres.

5. The local centres are actually service centres only. They will be in direct touch with a variety of users who will interact with the system. The local centres will, therefore,

take the responsibility of informing the regional and national centres for repairs in the system, if required, from time to time. They will also inform them about the particular requirements in input. They should, however, be given autonomy of tailoring services according to their specific needs where services general in nature are available.

INFORMATION NETWORK PLAN

The Information System for Building Technology as described earlier should consist of the following in the first phase of development planning:

1. National Information Centre for Building Tech. 1
2. Regional Information Centre for Building Tech. 4
3. Local Information Centre for Building Tech. 4

In the second phase, say after 5 years (in the next five year plan) the following may be added:-

1. Regional Centres 4
2. Local Centres. 8

Looking towards the vast area of India and information need on large scale the third phase must also provide 4 & 8 regional and local centres depending upon the financial outlay allotted in the budget.

The draft status report on housing and construction technology (6) mentioned that a financial outlay of Rs. two crores has been made in the Fifth Five Year Plan for establishing an information network in building technology.

The tentative break-up of the outlay is given hereunder:-

A. National Information Centre:

1.	Survey of existing information services, users needs etc.	50,000
2.	Acquisition of literature (books, journals, etc.)	25,00,000
3.	Equipment (reprographic & data processing)	30,00,000
4.	Translation services.	12,50,000
5.	Abstracting services.	7,00,000
6.	Other documentation services.	5,00,000
7.	Publicity (display, exhibition, seminars, etc.)	10,00,000
8.	Preparation and publication of secondary sources of information (directories, etc.)	10,00,000
9.	Personnel	20,00,000
10.	Contingencies	5,00,000
B.	Regional Centres 4	50,00,000
C.	Local Centres . 4	25,00,000
		2,00,00,000

The plan given above covers 5 years expenditure. This may also be worth noting that the information centres attached to various existing research organisations, universities, etc. are only to be upgraded, modernised and well-equipped with literature, equipment, and personnel for efficient services. Designating existing centres as national, regional or local depends upon the various factors like existing strength of data base, manpower, services being given and extent of users they are serving. The planning for equipment, furniture, buildings and other aminities may be detailed on the basis of 4, 7, 8, 10 and requirements of personnel on the basis of (3) and the expenditure for them on the basis of various pay commissions - UGC and 3rd Pay Commission, Govt. of India and also on the various survey reports submitted by experts from DRTC, INSDOC and such other organisations. The second and third phases of development planning will have to feed the recurring expenditure and setting up new regional and local centres at different places.

CONCLUSIONS

Building technology provides the basic facilities of shelter. Information utilisation and generation play a vital role for achieving this goal of providing shelter to millions. Information network for better use of information is essential. For development planning information grid for building technology in India, a step by step effort is essential.

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