

TECHNOLOGY SEARCH AND ASSESSMENT

Vinay Kumar

Scientist 'G'

*Department of Scientific & Industrial Research, Government of India,
Technology Bhawan, New Mehrauli Road, New Delhi 110 016, INDIA*

Technology search:

A potential technology acquirer, sometimes, finds it difficult to locate a suitable technology supplier. It is no doubt important to locate as many sources as possible so that the best choice could be made. Despite, a very large amount of information that is available, a potential buyer may not know that it exists, and if it does, where to find it. Just as a good technology does not automatically come to a technology seeker, a good information on the sources of technology also does not reach the one who needs it, on its own. It could however, be possible that a technology buyer accidentally passes by a trade fair or a seminar and gets exposed to some sources of technology. Leaving the exposure to technology information through such random chances is not the right way to go about acquiring technology. Not only a good opportunity could be lost but such chance exposures might lead to a bias towards technologies with good advertisements and publicity but not necessarily appropriate to the requirements of the acquirer.

It is thus necessary that a systematic approach is followed in acquiring technology. One of the main tasks would be to identify the right source. While there are a number of sources from where information could be obtained a few important ones are:

- Industrial and technology exhibitions and conferences
- International organizations
- Technical Journals
- Directories
- Industry Associations
- Government Information Sources
- Patent literature
- Foreign embassies
- Data banks/bases
- Experts and consultants
- Informal meets

Industrial and technology fairs and conferences offer a wide source of information. Many important suppliers present their products in fairs with latest developments. Some of them may be willing to offer their technologies. A few fairs are product specific like machine tool fairs, leather products fairs etc. Now a days there are also Fairs which are entirely focussed on selling & buying technologies. Information on the dates and venue of such fairs are available in a country with the Trade Promotion Organizations, Embassies, International Airlines and others.

International organizations such as UNIDO, APCTT are very good sources of information. UNIDO has a large number of programmes and information sources which are available to technology seekers. It organizes technology fairs where small and medium enterprises can find sources, can negotiate and buy or sell the technologies that suit them Asian

and Pacific Center for Transfer of Technology (APCTT) with Head Office in New Delhi has Focal Points in different countries in the Asia Pacific region. It has a number of activities for promoting and facilitating technology transfer. It brings out regularly 'TECH MONITOR' which has a special feature on technology offers. A typical offer of technology published in Tech Monitor is shown in Fig. It has also a Programme TECH MART which is a means to promote & facilitate exchange of selected technologies in the Asia-Pacific region.

Technical journals also provide important information. These may be industry specific, scientific reviews, industrial promotion literature etc. There are also many directories which contain information on various issues ranging from manufacturers, traders, exporters or sometimes even technology suppliers. There are also technical literature and directories brought out by international organizations such as UNIDO, APCTT and others.

Industry Associations, Chambers of Commerce help in locating sources of Technology. They bring out journals and also have data-bases.

Government in many countries provide information on sources, technology trends and other information particularly for the benefit of SMEs. Some of the countries have international agreement with other countries which again is an important source of information besides being a facilitator. Information from government sources are in particular very reliable. The content, mechanism for dissemination, periodicity etc. vary from country to country. For instance, in India, the Department of

Scientific & Industrial Research (DSIR), Technology Information Forecasting and Assessment Council (TIFAC), National Research Development Corporation (NRDC) provide a wide range of information. DSIR publications and data bases contain information on current status of technology, future trends, sources of technology, data on foreign collaboration approvals and others.

Patents are a rich source of information. Through a study of patent literature, one is not only able to identify possible sources of technology but also gauge technology trends, improvement over the prior art etc. There are organizations in a country which provide both national and international patent search and this facility could be made use of.

Data banks/bases are one of the most important sources of information on availability of technologies. These are, in fact, store houses of information on a wide variety of subjects. The main objective is to provide relevant information rapidly from a number of sources, that are available. These data banks/bases have developed very rapidly over the past few years. A very large volume of information gets generated in different forms all over the world. It is indeed very difficult for an individual or even a single organization to keep track of all the information and locate the right one required by it. Data banks/bases provide this kind of a service. Some of the important data banks/bases relating to sources of technology are given by Table 1.

A few sources of technology in India are given in Table 2.

Experts and consultants are also important sources of technology. They could be approached, apart from providing 'know-how', for solving difficulties in understanding technical details, information on technology trends, sources of technology and others. The list of consultants is generally available with Association of Consultants or Consultancy Development bodies in various countries.

Table 1

A few on-line information services in Canada and the United States

ADF Network Services
Automatic Data Processing Inc:75 Jackson Plaza
Ann Arbor, MI 48106
Tel (800) 521-3166
Fax (313)769-6800

BRS SEARCH, BRS/BRKTHRU and BRS/After Dark
BRS Information Technologies
1200 Route 7
Latham, NY 1 2110
Tel(800)227-5277
Fax (518)783-7251

Compuserve, Inc
5000 Arlington Centre Boulevard
P O Box 20212
Columbur, OH 13220
Tel: (614)457-8600
Fax: (614)529-1610
Internet address: Compuserve.com

Data Resources
Data Resources, Inc.
24 Hartwell Ave
Lexington, MA 02173
Tel: (617) 863-5100

Data Times
Suite 450, Parkway Plaza
14000 Quail Springs Parkway
Oklahoma City, OK 73134
Tel : (800) 642-02525
Fax: (405)751-6400

DIALOG, Knowledge Index and DIALMAIL
DAILOG Information Services
3460 Hillview Avenue
Palo Alto, CA 94304
Tel (800)334-2564
Fax (415)858-3719

Dow Jones News/Retieval Services
P.O. Box 300
Princeton, NJ 08540
Tel: (800) 522-3567
Fax (609)452-2000

Dun and Bradstreet Information Services Inc
3 Syivan Way
Parsippany, NJ 07054-3896
Tel: (201)455-0900
Fax: (201)605-6980

EasyNet
Telebase Systems, Inc
763 W Lancaster Ave
Bryn Mawr, PA 19010
Tel: (215)526-2800

Genie
General Electric Information Services
401 N. Washington St.
Rockville, MD 20850
Tel: (301)340-4000

InfoService and InfoMagic
I P Sharp Associates Inc
Suite 1900
2 First Canadian Place
Toronto MSX IE3
Canada
Tel : (800)387-1588
Fax: (416)364-5361

LAXIS MEDIS and NEXIS
Mead Data Central
P O Box 933
Dayton OH 45401
Tel : (800)227-4908
Fax: (513) 865-6800

MCI Mail
1133 19th St N W
Washington, DC 20036
Tel : (202) 872-1600

NewsNet
945 Haverford Road
Bryn Mawr, PA 19010
Tel : (215) 527-8030
Fax: (215)527-0338

ORBIT Search Service and Pergamon Infoline
Pergamon ORBIT Infoline
1340 Old Chain Bridge Road
McLean, VA 22101
Tel : (800)421-7229
Fax: (703)442-0900

QL Search
QL Systems Ltd
Suite 1018 Tower B
112 Kent Street
Ottawa, Ontario K1P 5P2
Canada

Tel (613)238-3499

The Source
Source Telecomputing Corp
1616 Anderson Road
McLean, VA 22102
Tel : (800)336-3330
Fax: (703)821-8888

VU/TEXT
VU/TEXT Information Services Inc
1211 Chestnut St
Philadelphia, PA 19107
Tel : (800)258-8080
Fax: (215)665-3300

WESTLAW
West Publishing Co
50 W Kellog Blvd
St Paul MN 55165
Tel : (800)328-9833
Fax: (612)228-2692

Wilsonline
H W Wilson Co
950 University Ave
Bronx, NY 10452
Tel : (800)367- 6770
Fax: (212)588-8400

*Source: UNIDO's Manual on Technology Transfer Negotiation
ID/SER.0/18*

Table 2

A few sources of technology from India

1. Council for Scientific & Industrial Research
Anusandhan Bhawan
2 Rafi Marg
New Delhi 110 001
Phone: 011-3711321
Fax : 011-371 0340
Email : root@csir.res.in
2. National Research Development Corporation
20-22 Zamroodpur Community Centre
Kailash Colony Extension
New Delhi 110 048
Phone:011-6146827
Fax :011-6478010,646 0506
Email: nrdc@nda.vsnl.net.in
3. Technology Information Center
Confederation of Indian Industry
23 Institutional Area, Lodi Road
New Delhi 110 003
Phone:011-462 9994
Fax :011-4633168/4626149
Email:cii@co.cii.ernet.in
4. Federation of Indian Chambers of Commerce & Industry
Federation House, Tansen Marg
New Delhi 110 001
Phone:011-331 9251-61
Fax :011-3320714,3721504
Internet:ficci.bisnet@gems.vsnl.net.in

TECHNOLOGY OFFER FROM CHINA

Manufacture of xylitol from Bagasse

Chinese Organization is offering technology for manufacture of Xylitol from Bagasse. The process is as follows: Bagasse Hydrolysis - purification – hydrogenation – concentration – crystallization – drying and packing.

Areas of application

- ◆ Food Industry: As sweetener
- ◆ Pharmaceutical Industry
- ◆ Light Industry: As raw material

Advantages

- ◆ Safe and flexible process line
- ◆ Simple operation
- ◆ Low investment
- ◆ Cleaner production: effluents can be simply treated within battery limit; all waste discharged from the plant would be in accordance with international standards
- ◆ Waste utilization: waste residues can be used as fuels in bricks manufacturing industry

Pay back period: 5-6 years

Stage of Development: Commercialized

Inputs required

- ◆ Building - 5,000 sq.m
- ◆ Land - 200x200 sq.m
- ◆ Water - 2599T/T of product
- ◆ Power - 5,500 KWH/T of product

Manpower required: Total - 200
Technicians - 20

Production capacity 600-700 TPA (300 working days)

Raw materials Bagasse, H₂SO₄, NaOH

Economic data

- ◆ Total project cost – US\$ 5.5 million;
- ◆ Machinery/equipment (FOB)-US \$ 3.0 million;
- ◆ Operation cost – as per local labour and material cost;
- ◆ Know-how - fee – US \$ 400,000;
- ◆ Training fee - US \$ 50,000

Transfer forms

Know-how, consultancy, technical assistance, production equipment, training
Export US \$ 30 million

Target countries India

Languages English, Chinese

Company Profile

- ◆ Export: US \$ 30 million
- ◆ Import US \$ 8 million
- ◆ Workforce: 75
- ◆ Year of Incorporation: 1986

Fig: EXTRACT FROM TECH MONITOR TECHNOLOGY OFFERS:

Technology assessment:

Once the sources of technology are known, both the technology supplier as well as technology need to be evaluated. It has been observed that even good technologies do not get effectively transferred due to an incompetent technology supplier. Therefore, it is very essential that both the 'technology supplier' as well as 'technology' need to be carefully evaluated.

Evaluation of Technology Supplier

Is the technology supplier a manufacturer of the product or is it a R&D organization or is it a technical institute? In case it is a manufacturer, one can feel confident that technology supplier has the experience in using the technology on a commercial scale but its market share in the home as well as in the world markets, its reputation amongst other receivers of technology are important factors. One should also check out if the supplier is the rightful owner of technology and/or has the authority to transfer technology. In its absence, the acquirer runs the risk of acquiring a technology which may be operated or obtained through illegal or unauthorized sources leading to legal actions. The financial health of the supplier is another important factor to be noted. The R&D set up of the Company is indicative of its technological strength. In case the supplier has a good set up, it could also guide the technology receiver in setting its own R&D Division. In the current scenario of high technology growth, it is almost essential for the technology receiver to not

only adopt and absorb the acquired technology but make continuous improvement otherwise it ruins the risk of being left out in the market.

Therefore few important factors for evaluating a technology supplier are:

- ◆ Market share of the product in the home as well as international markets.
- ◆ Financial health
- ◆ R&D set up
- ◆ Ownership of technology
- ◆ Authority to transfer
- ◆ Assistance in adaptation and absorption of technology
- ◆ Reputation amongst other technology acquirers.

Technology Evaluation

Technology should be evaluated in respect of many factors. One very important consideration would be the contemporariness of technology, at what stage of technology life cycle it is? Is the technology

suitable for the locally available raw materials? What are skill levels required and what are the training needs? It is also important to know if the technology is at the laboratory scale or pilot scale or is it commercially proven. This would have a bearing on the risk in operation as well as the price. Input-output ratios would determine the quality of technology. What are the requirements of major inputs (e.g. raw materials, power, water etc) for producing the same amount of output? What are the risks involved in operating the technology and what safety parameters are provided? An assessment of any potential danger to environment would also be required to be undertaken.

A number of quantitative techniques are today available to help in the process. To undertake the evaluation, a good amount of information may be required from the supplier, who may not be willing to part with the same without perhaps some payment. If that be the case, it may be worth paying.

Some important considerations for accessing technology, therefore, are:

- ◆ Suitability to locally available raw materials
- ◆ Skill levels required
- ◆ Stage in technology life cycle
- ◆ Input-Output ratios
- ◆ Laboratory scale, pilot plant or commercially proven
- ◆ Safety considerations

- ◆ Environmental aspects
- ◆ Status of IPR, Trade Marks etc
- ◆ Quantitative approaches
- ◆ Present value
- ◆ Rate of return
- ◆ Comparative costing method
- ◆ Ranking technology parameters
- ◆ Point system
- ◆ National Policy Issues.