



## Technology transfer

### Agreements

## technology transfer

- technology transfer is the process by which a **technology, expertise, know-how or facilities developed by one individual, enterprise or organization** is transferred to another individual, enterprise or organization.
- Effective technology transfer results in the **commercialization of a new product or service** or in the improvement of an existing **product or process**.

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- where the market **evolves incessantly**, with new products, new functions and new designs appearing on a regular basis, companies are **forced to innovate** by *acquiring or developing new technologies.*
  - Technological innovation is therefore a crucial element of the competitive strategy of any enterprise, big or small, hightech or low-tech.

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- Small and medium-sized enterprises (SMEs) have to decide whether to develop technology in-house or to obtain it from others.
  - Investing in technology creation may be expensive and risky as there are many uncertainties linked to the innovation process. But it has the advantage of preventing technological dependence on other companies and enables a company to enhance its technological capability and to innovate according to its own specific needs.

- Many firms, including SMEs (especially high-tech SMEs) will rely on both routes,
  - in-house innovation
  - as well as on technology purchased from others, buying the required machinery from large firms
- to make technical improvements to the company's products, processes and/or services.

## Negotiating agreements

- The sale and purchase of exclusive rights to a patented technology, or of permission to use a given technology or know-how, takes place through legal relationships between
  - the owner of the exclusive rights or the supplier of the know-how, called the “transferor”,
  - and the person or legal entity which acquires those rights or that permission or receives that know-how, called the “transferee.”

## nature of the relationship

- The nature of the relationship between the two parties and the type of agreement that will result from a technology transfer negotiation will depend on a number of factors, including some of the following:
  - The complexity and the level of development of the technology that is to be acquired;
  - The actual needs of the recipient;
  - The technological capacity of the transferee and the latter's ability to use and/or adapt the technology being purchased;
  - The relevance, availability and cost effectiveness of alternative technologies;
  - The price to be paid (in cash or kind) by the recipient;
  - Other proposed terms and conditions for transfer, such as support offered during and after transfer in absorbing and adapting the new technology, or rights over improvements or adaptations made by the recipient;
  - The negotiating power of both parties (which, in turn, will depend on variables such as size, technological sector, demand for the technology, number of competitors, etc.);
  - The type of relationship envisaged between the two parties (e.g. long term, short term or one-off purchase of products/services);
  - Issues concerning product liability, indemnity, warranty, etc; and
  - Whether technical support and training for use of new technology and related equipment are required.

## Players of the game


- Technology transfer agreements may involve different players, including
  - large multinationals,
  - small enterprises,
  - public sector bodies or any other entity or individual seeking
- to acquire or sell new technology or technological information. What is crucial is that both parties perceive the agreement as beneficial to their company and/or institution.

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- Neither must feel that the other party has obtained a better deal and/or that the agreement is unfair. **The secret to the success of technology transfer** agreements is that each party perceives the other as a partner in a fruitful collaborative process.
- In many circumstances, **strategic alliances** between companies may include a technology transfer agreement, and are generally useful for allowing a business to meet its objectives, while maintaining the flexibility to adapt quickly to technological developments, as appropriate.

## Main types of agreement

- The legal relationship between transferor and transferee is essentially contractual in nature, which means that the transferor of the technology consents to transfer and the transferee consents to acquire the rights, the permission or the know-how in question.
- There are various methods and legal arrangements through which technology may be transferred or acquired.

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- Sale or assignment of IP rights
  - License or licence contract
  - Know-how contract
  - Franchise
  - Acquisition of capital goods
  - Consultancy arrangements
  - Joint venture agreements
  - The turnkey project

## Sale or assignment of IP rights

- the sale by the owner of all his exclusive rights to, say, a patented invention, and the purchase of those rights by another person or legal entity.
- When its owner transfers all the exclusive rights to a patented invention to another person or legal entity, without any restriction in time or any other condition, it is said that an “assignment” of such rights has taken place.

## License or licence contract

- A licence is, the permission by the owner of a patented invention to another person or legal entity to perform, in the country and for the duration of the patent rights, one or more of the “acts” which are covered by the exclusive rights to the patented invention in that country.
- When that permission is given, a “licence” has been granted.

## License & conditions

- The license is usually granted subject to **certain conditions**, which will be set out in the written document under which the license is granted to the licensee.
- for example, the manufacture of a pharmaceutical product for use by humans but not for use on animals.
- another condition might be that the licensee is allowed to use the invention **only in specified factories** or sell the product embodying the invention only in **specified geographical** areas.

## Know-how contract

- It is possible to include provisions concerning know-how in a document that is separate from a licence contract. It is also possible to include such provisions in a licence contract.
- The know-how may be communicated in a tangible form. Documents, photographs, blueprints, computer cards and microfilm, among others, are illustrations of tangible forms.

## Examples of know how

- Examples
  - Architectural plans of factory buildings,
  - diagrams of the layout of the equipment in a factory,
  - drawings or blueprints of machines,
  - lists of spare parts, manuals or instructions for the operation of machines or the assembly of components, lists and specifications of new materials, labour and machine time calculations,
  - Process Flow charts, packaging and storing instructions, reports on stability and environmental aspects, and job descriptions for technical and professional personnel.
  - Such know-how in tangible Form is sometimes referred to as “technical information or data.”



## Franchise

- A franchise or distributorship is a business arrangement whereby the reputation, technical information and expertise of one party are combined with the investment of another party for the purpose of selling goods or rendering services directly to the consumer.
- The outlet for the marketing of such goods and services is usually based on a trademark or service mark or a trade name and a special décor (the “look”) or design of the premises.

## Acquisition of capital goods

- The commercial transfer and acquisition of technology can take place with the sale purchase of equipment and other capital goods. Examples of capital equipment are machinery and tools needed for the manufacture of products or the application of a process.
- Sales and purchases of capital goods and their import into the country can be considered, in a sense, technology transfer transactions.

## Consultancy arrangements

- The help of an individual consultant or a firm of consultants that will give advice and render other services concerning the planning for, and the actual acquisition of, a given technology can be useful, if not indispensable, for such enterprises, entities and governments that wish to acquire technology from enterprises in other countries.

## Joint venture agreements

- A joint venture is a form of alliance between two separate companies.
- There are two fundamental forms of joint venture,
  - the equity joint venture
    - The equity joint venture is an arrangement whereby a separate legal entity is created in accordance with the agreement of two or more parties.
  - and the contractual venture.
    - The contractual joint venture might be used where the establishment of a separate legal entity is not needed or where it is not possible to create such an entity.

## The turnkey project

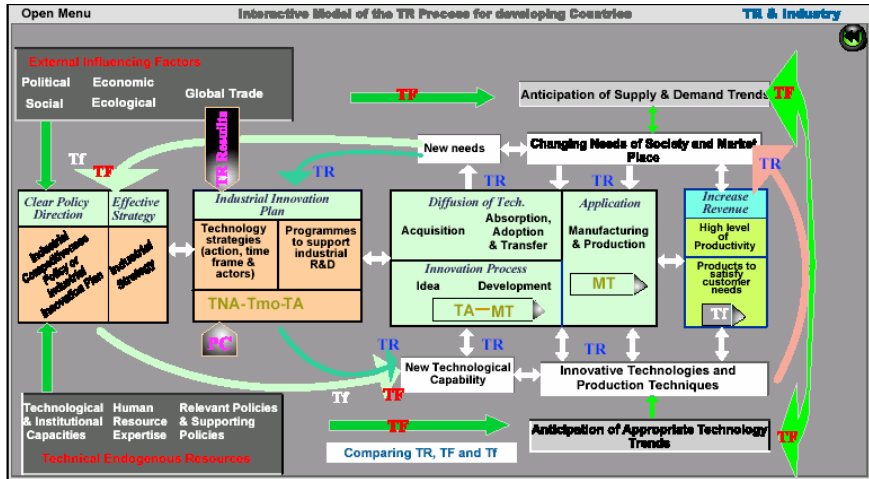
- In certain instances, two or more of the business arrangements, and hence the legal methods that they reflect, can be combined in such a way as to entrust the planning, construction and operation of a factory to a single technology supplier, or to a very limited number of technology suppliers.
- Thus, the “turnkey project” may involve a comprehensive arrangement of certain of the legal methods, whereby one party undertakes to hand over to his client - the technology recipient - an entire industrial plant that is capable of operating in accordance with agreed performance standards



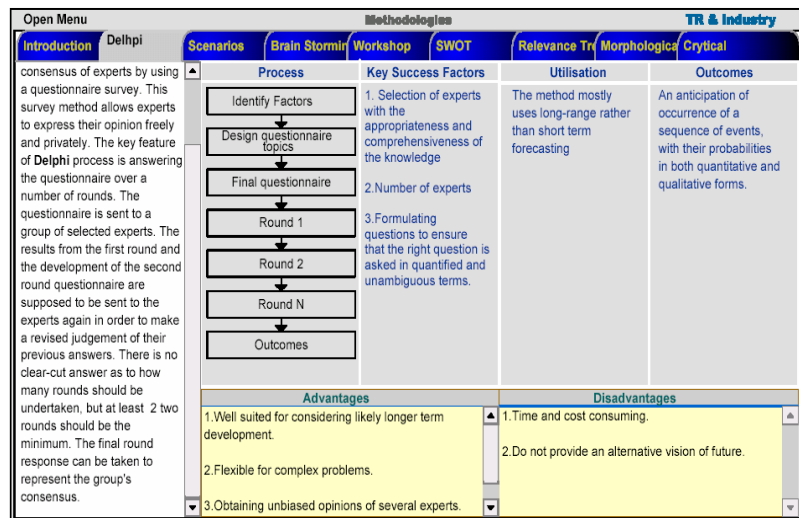
## Technology transfer

United nation recommended  
Procedure for developing  
countries

# General model



# Delphi method



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<p>The technique was developed to explore a step-by-step sequence of events that are likely to occur between now and some given point of time in the future, with reference to a particular element of external environment. There are basically two types of written scenario. The trend-based scenario corresponds to the extrapolation of trends, taking into account the tendencies implicit in a starting situation. The contrasted scenario corresponds to a normative approach, a scenario for a future situation, which is supposed to contrast strongly with the present. The basic approach is to develop several rather than just one scenario from the optimistic and pessimistic views. Workshop, interviews, brainstorming and</p>	<b>Process</b> <pre> graph TD     A[Objective] --&gt; B[Conceptual thought]     B --&gt; C[Identify key variables]     C --&gt; D[Sets of probable assumption]     D --&gt; E[Writing Scenarios]           </pre>		<b>Key Success Factors</b> The credibility of scenario writing is based on the past, the present and the possibilities for the future. It thus involves a well-defined valid of set of assumptions and key factors, which will influence the decision outcomes of the study.	<b>Utilisation</b> Scenario writing has been used to find the policies needed at particular times so as to achieve the declared goals at both industrial and enterprise levels.	<b>Outcomes</b> Sketched histories of the alternative needs of futures lead to be able to develop better-informed strategies and policy options			
	<b>Advantages</b> <ol style="list-style-type: none"> <li>1.Enable alternative visions of the future.</li> <li>2.Allow different points of view to be consider.</li> <li>3.Concern with many aspects, such as socio-economic, technology and political.</li> </ol>			<b>Disadvantages</b> <ol style="list-style-type: none"> <li>1.Users may find difficult to deal with multiple images of plausible futures.</li> <li>2.Some scenarios stay at broad generalities are not thus very operational.</li> </ol>				

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<p>Brainstorming involves a period of freethinking to encourage creativity. The method can be carried out by individuals or groups. The membership of a working group should be small, consisting of a leader and normally from five to ten members, because the response rate from a higher number of members is difficult to control.</p>	<b>Process</b> <pre> graph TD     A[Identify Problems] --&gt; B[Select Facilitator and Experts]     B --&gt; C[Organise Meeting Date]     C --&gt; D[Select and set meeting room]     D --&gt; E[Provide document before meeting]     E --&gt; F[Report Result]           </pre>		<b>Key Success Factors</b> The creativity of brainstorming depends on group intercommunication. In order to achieve participation, a special room is necessary in which participants can be free to criticise and move around is necessary. Time and a highly skilled facilitator are also extremely valuable to the quality of the session.	<b>Utilisation</b> Technique is applicable to problems arising in a wide range of technological areas, but, in contrast, is less suitable for solving problems which have only one possible answer.	<b>Outcomes</b> Brainstorming brings new ideas on how to tackle a particular problem and helps to reduce conflicts			
	<b>Advantages</b> <ol style="list-style-type: none"> <li>1. Face-to-face direct discussion of free thinking.</li> <li>2. Spend a little time gathering results.</li> <li>3. Generate majority opinion.</li> </ol>			<b>Disadvantages</b> <ol style="list-style-type: none"> <li>1. Limit of time may give less accurate estimation.</li> <li>2. Quality of experts is the critical point otherwise the ideas produced can be very ordinary.</li> <li>3. Difficult to consider socio-economic problems in</li> </ol>				

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<p><b>Workshop</b> is a widely used group method. Similar to <i>brainstorming</i> method, it involves a period of freethinking, which is used to articulate ideas. <b>Workshop</b> is suitable for groups from ten to one-hundred people with a shared experience or interest. The appropriate participants should be people who want to contemplate together. The main group can always be broken down into sub-groups. One day workshop sometimes might not be enough to introduce and explore the concepts. Two-days format is normally adapted for tapping into the group dynamics without overwhelming participants and losing their attention. A well-planned workshop and skilled facilitator are crucial elements that lead</p>	<p><b>Process</b></p> <pre> graph TD     A[Identify problem and set objectives of the workshop] --&gt; B[Develop meeting agenda]     B --&gt; C[Select facilitator and identify experts]     C --&gt; D[Plan for meeting such as room, tools technique]     D --&gt; E[Prepare materials needed for discussion]     E --&gt; F[Report the result]           </pre>		<p><b>Key Success Factors</b></p> <p>The creativity of workshop depends on group intercommunication. In order to achieve participation, a special venue is required, in which participants can feel free to criticise and move around. Tools, time and a highly skilled facilitator are also extremely valuable to the quality of the session.</p>	<p><b>Utilisation</b></p> <p>Technique is applicable to problems arising in a wide range of technological areas, but, in contrast, is less suitable for solving problems which have only one possible answer.</p>	<p><b>Outcomes</b></p> <p>Workshop brings new ideas on how to tackle a particular problem and helps to reduce conflicts. It is suitable for identify problems and solutions in larger scale and involve more people than brainstorming</p>	
	<p><b>Advantages</b></p> <ol style="list-style-type: none"> <li>1. Face-to-face direct discussion of free thinking.</li> <li>2. Spend a little time gathering results, compared with other methods (except brainstorming).</li> <li>3. Suitable for larger problems, compared with</li> </ol>			<p><b>Disadvantages</b></p> <ol style="list-style-type: none"> <li>1. Limit of time may give less accurate estimation</li> <li>2. Quality of experts is the critical point otherwise the ideas produced can be very ordinary.</li> <li>3. Difficult to consider socio-economic problems in</li> </ol>		

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<p><b>SWOT</b> is a dynamic analysis tool, which can be used to inspect organization's internal Strengths and Weaknesses and external Opportunities and Threats. <b>SWOT</b> analysis involves the collection of information about internal and external factors which have or may have an impact on development of organization. This technique will help organizations to analyze its own strengths, minimize weaknesses, and take the possible advantage of opportunities available. The <b>SWOT</b> is often portrayed as a 2x2 matrix. <b>SWOT</b> by itself will not give specific answers. Instead, it is a way to organise information and assign probabilities to potential events - both positive and negative - as the basis for developing</p>	<p><b>Process</b></p> <pre> graph TD     A[Identify factors] --&gt; B[Sort factors into SWOT categories]     B --&gt; C[Prioritise factors in each category]     C --&gt; D[Limit the number of factors by using the scoring system]     D --&gt; E[List of high probability of occurrence &amp; likely impact on the organisation]     E --&gt; F[Building strategies and action plan]           </pre>		<p><b>Key Success Factors</b></p> <p>The key part of SWOT analysis is to limit the number of factors under each category through the evaluation of each factor.</p>	<p><b>Utilisation</b></p> <p>SWOT is the heart of Strategic Analysis.</p>	<p><b>Outcomes</b></p> <p>Identified potential factors, both positive and negative, which can be impact on the development of organisation.</p>	
	<p><b>Advantages</b></p> <ol style="list-style-type: none"> <li>1. The analysis process covers all relevant factors, both internal and external factors.</li> <li>2. It is an effective process to select and prioritise relevant factors.</li> </ol>			<p><b>Disadvantages</b></p> <ol style="list-style-type: none"> <li>1. Quality of prioritise factors is the critical point.</li> <li>2. Not flexible for complex problems or requires technical or professional expertise.</li> <li>3. Do not provide an alternative vision of future.</li> </ol>		

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Introduction	Delphi	Scenarios	Brain Stormin	Workshop	SWOT	Relevance Trees	Morphologica	Critical
<p><b>Relevance Trees</b> are used to analyze situations with distinct levels of complexity. They help subdivide a broad topic into smaller subtopics. They start with broad objectives and goals and attempts to set up hierarchical relationships for all conceivable contributions to them. It appears as an organizational chart in hierarchical structure. This implies that the technique requires fairly precise ideas at each level. There are many potential pitfalls in using the <b>relevance trees</b>, in particular to identify problems and solutions and deduce the performance requirements of specific policies, technology deficiencies, etc. The technique is usually applicable to foresee middle-time horizon.</p>	<p><b>Process</b></p>		<p><b>Key Success Factors</b></p> <p>Precise ideas must be available at each level.</p>	<p><b>Utilisation</b></p> <p>The technique is particularly well suited for guiding decision, involving a large number of alternatives and to deduce the performance requirements of specific technologies and policies.</p>	<p><b>Outcomes</b></p> <p>A structured decision network.</p>			
	<p><b>Advantages</b></p> <ol style="list-style-type: none"> <li>1. It is an effective process to categorise and group items.</li> <li>2. It is suitable for identify problems and solutions in small scale.</li> </ol>			<p><b>Disadvantages</b></p> <ol style="list-style-type: none"> <li>1. Quality of identifying relevance item is the critical point.</li> <li>2. Not flexible for generating more complex level.</li> <li>3. Do not provide an alternative vision of future.</li> </ol>				

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<p><b>Morphological analysis</b> is a systematic approach, which attempts to break up the problem into its basic parameters, and then to conceive as many variations of each parameter as possible. The technique aims to organize information in a relevant and useful way in order to solve a problem or stimulate new ways of thinking. This approach can be applied to all sorts of situations, from technological issues all the way to socio-economic and political problem areas. It is often used as complementary technique in conjunction with <i>relevance trees</i>.</p>	<p><b>Process</b></p>		<p><b>Key Success Factors</b></p> <p>Good knowledge about the issue is the critical success factor.</p>	<p><b>Utilisation</b></p> <p>The technique is particularly well suited for analysing the structure of problems more complex than relevance trees.</p>	<p><b>Outcomes</b></p> <p>A structured decision network by in-depth examination of new product development to find solution in order to meet imposed requirement.</p>			
	<p><b>Advantages</b></p> <ol style="list-style-type: none"> <li>1. It is an effective process to categorise and group items.</li> <li>2. It is suitable for identify problems and solutions in large scale.</li> </ol>			<p><b>Disadvantages</b></p> <ol style="list-style-type: none"> <li>1. Good knowledge of issue is the critical point.</li> <li>2. Do not provide an alternative vision of future.</li> <li>3. Not suitable for small scale problems.</li> </ol>				



Open Menu		Methodologies			TR & Industry			
Introduction	Deltpl	Scenarios	Brain Stormin	Workshop	SWOT	Relevance Tr	Morphologica	Critical Technology
<p><b>Critical technology</b> is a technique for defining the key priorities. It consists of applied sets of criteria against which the importance of a particular technology can be measured over economic growth, development and trading advantage. The method usually involves interviews, panel discussion, questionnaires, survey and/or benchmarking analysis, etc. This approach tends to over-emphasize technological issue over socio-economic concerns.</p>		<p><b>Process</b></p> <pre> graph TD     A[Select Industrial sector] --&gt; B[Define definition of Critical Technology]     B --&gt; C[Generate Initial list of technologies (from previous study, brainstorming, or bibliography searches)]     C --&gt; D[Evaluate and project new trends by interviews of survey industrial experts]     D --&gt; E[New list of future technology needs of Industry]           </pre>		<p><b>Key Success Factors</b></p> <p>A well-defined process and unbiased sampling are the critical success factors.</p>	<p><b>Utilisation</b></p> <p>The outcomes will guide future direction of technology and can be used as inputs to define and debate policy.</p>	<p><b>Outcomes</b></p> <p>List of future important technologies.</p>		
		<p><b>Advantages</b></p> <ol style="list-style-type: none"> <li>The outcomes can be used as an input for technology policy.</li> <li>It permits informed assessments on technological developments.</li> </ol>		<p><b>Disadvantages</b></p> <ol style="list-style-type: none"> <li>It cannot be used as to justify decisions or actions relating to technological policy.</li> <li>It is one of complicated method.</li> <li>Time and cost consuming.</li> </ol>				