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Guide to Fair Value under IFRS

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- **Discusses documentation required by auditors**
- **Offers tips and approaches to the preparation of proposals and documents useful for all steps of the valuation proceedings**

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34 UNPATENTED TECHNOLOGIES

ANKE NESTLER

GERMANY

INTRODUCTION

Know-how and trade secrets are intangible assets owned by almost every organization. While they may be documented in files, drawings, concepts, and archives, such material is usually only a small part of the whole asset. Often described as something “in the head of the workforce,” know-how is an integral component of the people working in an organization.

Joint Ventures

One strategy to benefit from know-how in the technology sector which is undertaken quite often is to establish partnerships or to found joint ventures, which allow the resources from several entities to be combined in a new alliance likely to create additional value.

In December 2008, Daimler AG and Evonik [Industries AG, a multinational specialty chemical manufacturer] announced that they established a strategic alliance for the development and production of Lithium-Ion Batteries. Based on lithium-ion technology from Evonik and with Daimler's expertise, both groups plan to drive forward the research, development and production of battery cells and battery systems in Germany. This strategic alliance is considered to represent an important milestone in the production of electric vehicles.

What Is Know-How?

European Commission (EC) Regulation No. 772/2004, relating to technology transfer agreements, defines “know-how” as:

a package of non-patented practical information resulting from experience and testing, which is:

- *Secret, that is, not generally known or easily accessible*
- *Substantial, that is, significant and useful for the production [...], and*
- *Identified, that is, described in a sufficiently comprehensive manner so as to make it possible to verify that it fulfills the criteria of secrecy and substantiality*

Thus, know-how is accessible only to a specific, well-known group within an organization and should be subject to protective measures to prevent disclosure. The EC definition is a good description of this type of intangible asset but should be extended, because, in general, economic (trade) secrets are different from technology-based know-how. Typical examples of know-how are: formulas, patent operating parameters, drawings, and other nonpatented technologies. Representative trade secrets are: pricing and terms from suppliers, customer lists, contracts, names of key personnel, control systems, process descriptions, and financial information (i.e., margins, acquisition costs, sales).

Importance of Know-How

Know-how can have a major impact on the economic success of a firm. Two examples from the USA and Germany demonstrate this.

The recipe of Coca-Cola is probably one of the most famous formulas in the world. As it is not protected by a patent, this information is not public. While the ingredients have to be documented on the bottle, the formula itself is still a very well protected secret.

Not only technical know-how but also economic trade secrets may often be important for successful businesses.

Aldi is a privately owned German discount supermarket chain operating over 8,200 stores through 66 regional companies in 18 countries. This group is a significant example of a successful entity with minimum transparency about its management strategy, financial situations and key numbers. The latter have been one of the best-kept secrets of German industry; only recent legal obligations to disclose certain financial data provided some insight into the sales of this group (about \$50 billion in 2008).

PROTECTION

The main characteristic of this intangible asset class is that it is not protected by specific laws. In some cases, know-how and trade secrets are covered by copyright or fair trade laws and, in those regimes, also by common law. As a result, the extent of the protection differs from jurisdiction to jurisdiction.

Comparison with Patents

A trade secret is principally addressed in most countries if:

- It is definitely a secret and not known to the public.
- Observable measures are taken to prevent disclosure (e.g., only a small number of people have knowledge of it, employees have signed confidentiality agreements etc.).

The advantage of protecting technology by patents is that the owner of the intellectual property rights (IPR) is shielded not only against imitation and infringement but also against accidental, independent development. Additionally, as the asset is described in detail in public documents, third parties have no excuse to claim ignorance and are therefore able to avoid infringements. Know-how, in the sense of unpatented technology, though legally protected in many jurisdictions, is subject to more risks than that which has been patented. Nevertheless, there are four reasons why an owner of IPR might decide against patenting its know-how:

1. The know-how might be part of an ongoing development process. In that case, as a work in progress, the technology may not fulfill the criteria for a patent. Alternatively, research could show that other registered patents apparently exist that might affect the development process.¹ This suggests that projects in the research or development stages (early-stage technology) are know-how (or a trade secret) that could carry significant value but may be difficult to fully protect.
2. Especially with trade secrets, the owner would like to prevent the technology from becoming public. As the patenting process includes a detailed description and publication of the know-how, the owner of a “business process” patent, issuable in the United States and some other countries, may fear the copying and work-around uses

¹ For a description of steps in the technological invention and valuation issues, see Mirjam Leloux and Aard Groen, “Business Valuation of Technology: An Experimental Model,” *les Nouvelles: Journal of the Licensing Executives Society*. Vol. 42 No. 3, September 2007, 478-486. .

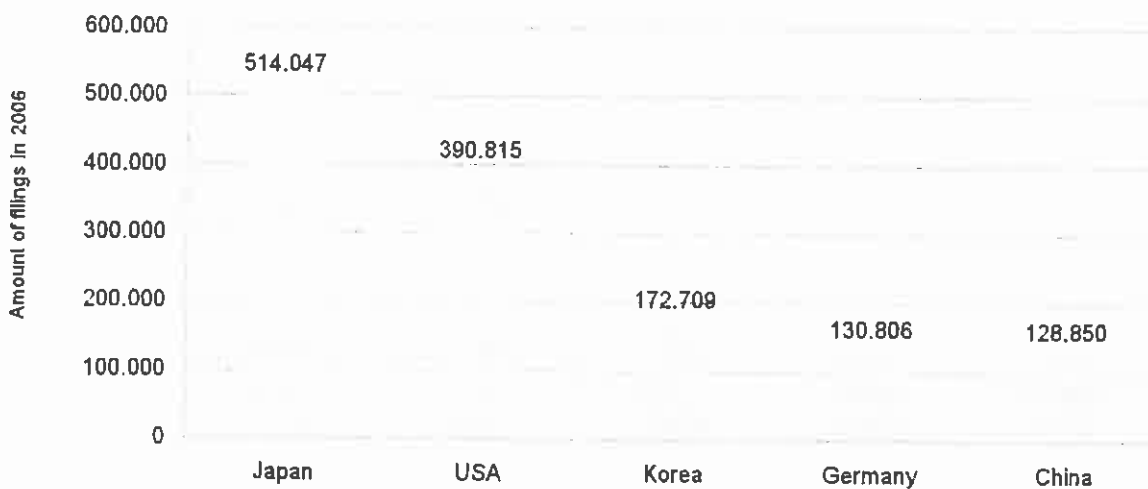
by others. Even if the know-how is protected by law and an infringer can be sued, there is a possibility at that point that the patent is declared invalid; even if it is upheld and damages obtained, it is likely to become part of the industry's general knowledge.

3. A patent, if granted, only protects the know-how during a maximum period, usually 20 years. After that, others can freely use the technology as it has become part of the public domain.
4. The patent application process is time consuming and quite expensive. Thus, many small start-up entities shy away from the effort. As the criteria for patent protection varies significantly between countries, the know-how may not be able to be protected everywhere, as it does not fulfill the requirements in a particular country; this may also be the case for trade secrets.

Trends in Patents

The trend in patent applications differs widely from country to country (see Exhibit 34.1); for many years, Japan and the United States have led in the number of patents. The figures do not differentiate triadic patents, filed simultaneously in the United States, Japan, and Europe by entities that want to protect big ideas in a global market.

Exhibit 34.1 Filings for Patent Applications



Source: World Intellectual Property Organization, World Patent Report 2008

In summary, know-how and trade secrets are unique to the owner but not available to the public, especially not to other industry participants. They are important to an organization as they give it a competitive advantage; if such know-how or trade secrets leave the organization and become known by others, they lose their confidentiality and thereby value. Once this happens, unless the discloser is legally admonished, the know-how and trade secrets are in danger of turning into general knowledge, by becoming public in the market or in relevant parts of it.

KNOW-HOW AND TRADE SECRETS ARE VALUABLE ASSETS

Know-how and trade secrets, as defined, comprise a competitive advantage that has a positive impact on an organization's profits. The loss of such information could cause substantial damage to an entity. The value of the information represents an opportunity cost, which is the loss of profits because the information has become public.

Legal Ownership

The premise of a valuable IPR is that there is no doubt about its legal ownership; to clarify that is the first step in valuing an intangible asset. Other than for registered IPR, this cannot be proven by documents. In valuing know-how, legal ownership is hard to confirm. Inquiries must be made if there are any ongoing litigation issues (outstanding or settled in the past). If a third party can claim or currently claims some ownership rights or is being attacked for breaching the entity's ownership rights of know-how, trade secrets, or other intangibles, a possible discount of the value might be indicated. In specific cases, the value to the entity might be questionable or even nothing, until these uncertainties are clarified.

Actual Asset

The next step is to identify the actual asset to be valued; a major problem in the valuation of an IPR is the separation of the subject asset from other related items, as they usually work together as part of a complete organization. In the case of Coca-Cola, it might be difficult to separate the total value between the formula (in the United States, there are at least four versions) and the brand and maybe the shape of the bottle. In other cases, the question "What is the know-how?" is more easily answered; for a new state-of-the-art plant, details of construction schedule, long-term project management techniques, engineering innovations, process know-how, drawings, and customer base are readily available. Thus, it is very difficult to separate various assets.

Value in Use and Value in Exchange

In this respect, it is essential to differentiate between the going-concern premise of using the intangible asset in the same context (value in use) and the stand-alone assumption, which means the price at which the intangible asset could be sold to an independent third party (value in exchange). (See Chapter 1.)

Security

Another important aspect of facing a valuable asset is the question of how the respective know-how and trade secrets are kept secure in the organization. As discussed, their main characteristic is confidentiality. According to experts and official institutions, entities have to face a realistic danger of losing important information. Industrial espionage is one of the gravest threats to technology-based companies.

According to one article,² 35% of respondents had a strong suspicion of espionage and 19% had discovered a case in their own organization. A significant problem seems to be that, in many instances (39%), the loss of know-how and trade secrets is caused by the employees themselves (see Exhibit 34.2). This is especially true for employees who leave to start up their own businesses or to work for competitors.

² Corporate Trust, "Industrial Espionage—Damages Caused by Espionage in German Industry," 2007. www.corporate-trust.de/End.htm

Exhibit 34.2 Reasons for Industrial Espionage

Lack of information caused by own employees	20.3%
Pick up of employees	18.7%
Hacker into systems	14.9%
Plagiarism	14.5%
Infringement of patents	13.3%
Wiretap meetings	10.7%
To scan at fairs	8.0%
To put a trace on phone, fax, mails	5.3%
Other	6.7%

Source: Corporate Trust, "Industrial Espionage—Damages Caused by Espionage in German Industry," 2007

Information about breaches of intellectual property protection seldom becomes public, unless it leads to litigation. Organizations do not appreciate such information becoming public as it might be regarded as management carelessness because the crimes are often instigated by employees and other insiders. One researcher reports:

3Com revealed some examples of security incidents, as e.g., a caller posing to be a 3Com employee requested a faxed copy of 3Com's Research and Development organization chart from an unsuspecting human resource administrative assistant. This caller appeared to be a predatory headhunter.³

Security Checklist

The next questions should be considered to understand how well the know-how and trade secrets to be valued are secure or easy to copy:

- By what means are the entity's know-how and trade secrets recorded?
- Are they in one central database or numerous departmental ones?
- Is there a distinction between technical know-how and commercial trade secrets?
- How accessible are they?
- Does the organization have a security system to protect its know-how and trade secrets?
- Is this security system updated regularly?
- Is it always in force?
- Who has access to the research and development department where the know-how is generated?
- Is it restricted to certain employees?
- Does the organization work with protection codes for certain files and departments?

³ Dana St. James/Jeffrey L. Hartmann, "Developing And Implementing A Trade Secret Protection Program," *les Nouvelles* (March 2002): 23-26.

- How current are the protection procedures of the computer systems?
- Are the employees, as “carriers” of the know-how and trade secrets, well informed about industrial espionage?
- What is the average turnover of employees with significant know-how?
- Has any leakage of know-how or trade secrets occurred recently?
- When was the last hacker attack?
- How quickly was it detected? Repulsed?
- Are there any ongoing lawsuits about know-how damages or loss of trade secrets?

Degree of Innovation

An important value driver of know-how and trade secrets might be: How extensive is the innovation? For technology, the answer to this question might be:

- An incremental improvement in a current process (technology)
- A breakthrough in an existing technological field
- A revolutionary advancement that creates a new technology.

It is assumed that regarding commercial acceptance and time to market effects, revolutionary technology creates the highest value.⁴

WHEN TO VALUE INTANGIBLE ASSETS

The valuation of intangible assets has numerous purposes. One typical use is the calculation of intellectual property damages. In certain countries, particularly the United States, the enforcement of IPR through the courts, including jury awards for economic damages, is increasing. While such litigation typically comprises patents, copyrights, and trademarks, there is the awareness that damages for less protected IPR (know-how and trade secrets) are also relevant.

Unlike fully protected IPR, the legal entitlement is more difficult in case of an infringement. Nevertheless, know-how and trade secrets usually also belong to an entity which owns protected IPR and thus can claim for additional damages. The legal framework for claiming and calculating economic damages will differ between various legal jurisdictions. Nevertheless, the underlying methodologies and calculations for know-how and trade secrets are quite similar to those for patents.⁵ A typical case for claiming damages is economic espionage; the entity may try to sue the offender who breached its rights.

Reasons for Importance

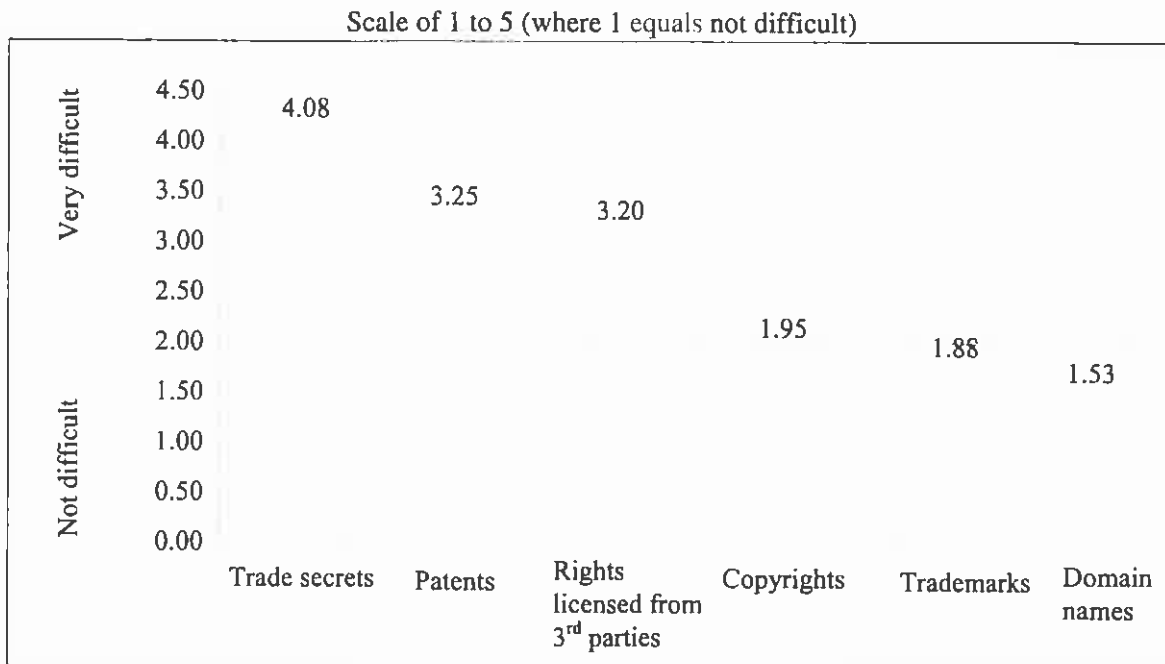
Know-how and trade secrets may become relevant in many transactions, especially in asset deals. A 2008 article analyzed the importance of certain IPR in merger and acquisition (M&A) transactions.⁶

While patents are considered to be the most significant form of protection, 16% of respondents also ranked trade secrets as important. Nonetheless, performing due diligence on them is generally considered more difficult than for other IPR (see Exhibit 34.4). This may reflect the difficulty in identifying the specific economic benefits that arise from know-how or trade secrets and also the fact that such confidential information always runs the risk of being exposed.

⁴ Terry C. Bradford, “Assessing the Value of Technology Innovation,” *les Nouvelles* (June 2004): 95-97.

⁵ For the principles of calculating IPR damages in the United States, see Brent Bersin and Lance Morman, *les Nouvelles* (December 2008): 248-255.

⁶ “M&A Insights: Spotlight on Intellectual Property Rights,” *A Mergermarket Study in Association with CRA International and K&L Gates* (December 2008).

Exhibit 34.4 Difficulty of Performing Due Diligence for Certain Intangible Assets in an M&A Transaction

Source: "M&A Insights: Spotlight on Intellectual Property Rights—A Mergermarket Study in Association with CRA International and K&L Gates," December 2008

Financial Reporting

The valuation of know-how and trade secrets is also relevant for purchase price allocations according to International Financial Reporting Standard (IFRS) 3, *Business Combinations*. In a business combination, the acquirer has to recognize and measure the identifiable assets of the target obtained. Identifiable intangible assets have to fulfill the criterion of either being separable or based on contractual or other legal rights; additionally, the entity must control the specific asset and the future economic benefits flowing from it; see International Accounting Standard (IAS) 38, *Intangible Assets*.

Know-how and trade secrets cannot always be considered to be an intangible asset as defined by IAS 38.9. In those specific cases, they become part of goodwill and do not have to be valued separately. When the trade secrets or know-how are considered an asset, they are valued separately, or if appropriate in groups. The American Institute of Certified Public Accountants (AICPA) Practice Aid "Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices and Pharmaceutical Industries," New York, 2001, deals with in-process research and development (IPR&D), in detail. The Practice Aid recommends techniques for: defining, accounting for, disclosing, valuing and auditing assets acquired to be used in research and development (R&D) activities and including specific in-process R&D projects.

Finally, a valuation may be required at least indirectly if the know-how or trade secrets are violated by third parties. In such a case, it is not the value of the asset itself that is important, only the damages caused to the IPR owner by the infringement.

VALUATION METHODS

For valuing nonpatented know-how and trade secrets, the overall techniques for intangible assets apply: the Cost Approach, Market Approach, and Income Approach; see Chapter

21.⁷ The application of a specific method will differ depending on the valuation purpose, the item to be assessed, and the availability of data. An important question is: Are the know-how or trade secrets being valued in commercial use? That will be true in most cases but not in some others, such as early-stage technology.

Cost Approach

The Cost Approach is based on the concept that the minimum value of an asset are the costs required to “rebuild” a similar item at the valuation date. Normally, replacement cost is used, which is the total amount needed to create (at current prices) know-how or a trade secret with equal utility. In calculations, historic costs, adjusted for inflation, may be used as approximation. Nevertheless, they should take into account sunk costs in regard to functional, technological, and economic obsolescence. In certain cases, it may be appropriate to add a margin to the value, because financial investors usually expect an appropriate rate of return.

The Cost Approach is useful in terms of a make-or-buy decision from a purchaser’s perspective. At the same time, in considering its return on investment, an owner needs to know how much was already spent to reach the level of know-how or to build up the secret information.⁸ A significant advantage is that normally, data are available and that replacement costs comply with realistic considerations of financial investors.

Nevertheless, even though the Cost Approach gives a first indication of possible values for know-how, there are limitations. The main weakness is that the approach does not reflect future commercial opportunities. The costs of creating know-how might understate the potential value or have been totally wasted. Additionally, a make-or-buy decision ignores time to market. Any asset available for purchase has already passed critical stages of development and has achieved a certain success; thus, a buyer saves time and takes on fewer risks.

Market Approach

The concept of the Market Approach is that similar assets should sell at similar prices. Therefore, usually an active market is considered to be the best indicator of the value of any asset. However, the approach’s application requires finding and identifying transactions between third parties involving comparable intangibles. The criteria comprise, among others: the type of know-how, industry, stage of development, inherent risk or protection level, and type and date of transaction. If several market prices exist, they have to be reconciled into at least a reasonable range of values; this is a very important step, in which the valuator has to confirm the reliability of the underlying data and that the subjects are comparable to the know-how or trade secret being appraised.

Market-based intangible valuation methods are hardly ever applicable, as transactions in those types of intangible assets rarely take place, or their terms are not published. Know-how and trade secrets are often part of a merger or acquisition, perhaps even a key value driver, but they are transferred usually as either part of a business unit (legal entity) or at least as a bundle of several related IPR. Another difficulty in practice is that the actual know-how and that covered by a public transaction are usually not comparable.

The relief-from-royalty method, commonly used to value intangibles, is partially covered by the Market Approach, as royalties are derived normally from reported market transactions, which reflect prices paid by market participants to use the IPR. As the revenues and

⁷ Details of the major methods are in Reilly and Schweih, *Valuing Intangible Assets* (1999), 95.

⁸ Pierre Breese, “Valuation of Technological Intangible Assets,” *les Nouvelles* (June 2002): 54-57.

cash flows on which the royalties are based come from financial projections, this method is also part of the income approach. See Chapters 21, 33, and 35.

Income Approach

In theory and practice, the Income Approach is usually considered to be the best for valuing intangibles, as it is based on expected future cash flows from the item. In the case of know-how and trade secrets, if the expected development and related cash flows are reliably predictable, other methods are preferable. For an early-stage technology entity, it is necessary to prepare a full business plan with cash flow projections reflecting: up-front development costs, the timing of expenditures, and adequate returns on other (contributory) assets required. Because of the uncertainties, usually several scenarios are required.⁹

In discounting future cash flows, only the cost of equity should be used to reflect the high risks of IPR&D. One appropriate procedure is to look to venture capital funds, which expect certain rates of return, depending on the investment's stage of development; they start at 25% and go up to 50% for technology start-ups. (See IPR&D Practice Aid, section 5.3.87.)

As mentioned, the relief-from-royalty method is appropriate in certain cases, especially for technologies that are comparable to one that has been licensed.¹⁰ One difficult issue is to find suitable royalty rates for the subject asset; they differ significantly from industry to industry, depending on the reference figures (sales, gross profits, etc.) and are influenced by the split of obligations and costs as set out in the individual license agreements.

A current study of royalty rates collected data between September 1990 and December 2007.

In this study, several different industries as e.g., computer/software, semiconductors, medical and food & beverages are covered. In the result of this analysis, the most frequently negotiated royalty rate is 5% of net sales, and this across a diverse number of industries. Royalty rates range between 0.5% up to 40.0% of sales, while royalty rates above 15.0% are classified as rare and are only associated with extraordinarily profitable technologies such as those in the gaming and entertainment industry.¹¹

This method is quite difficult for trade secrets, such as customer lists, because, in general, a specific cash flow arising from the asset cannot be separated from that of the entity; likewise with R&D in projects: The IPR&D Practice Aid, section 2.1.12, states: "The task force believes that the Relief-from-Royalty method rarely would be appropriate in the valuation of specific IPR&D projects due to a lack of observable comparable royalty rates."

In some cases, a loss of income method might be appropriate to value the importance and relevance of an entity's trade secrets. In this, the entity is valued separately with and without the trade secret. The difference between the amounts is a measure of the importance of this asset to the value of the entity.

TECHNOLOGY JOINT VENTURES

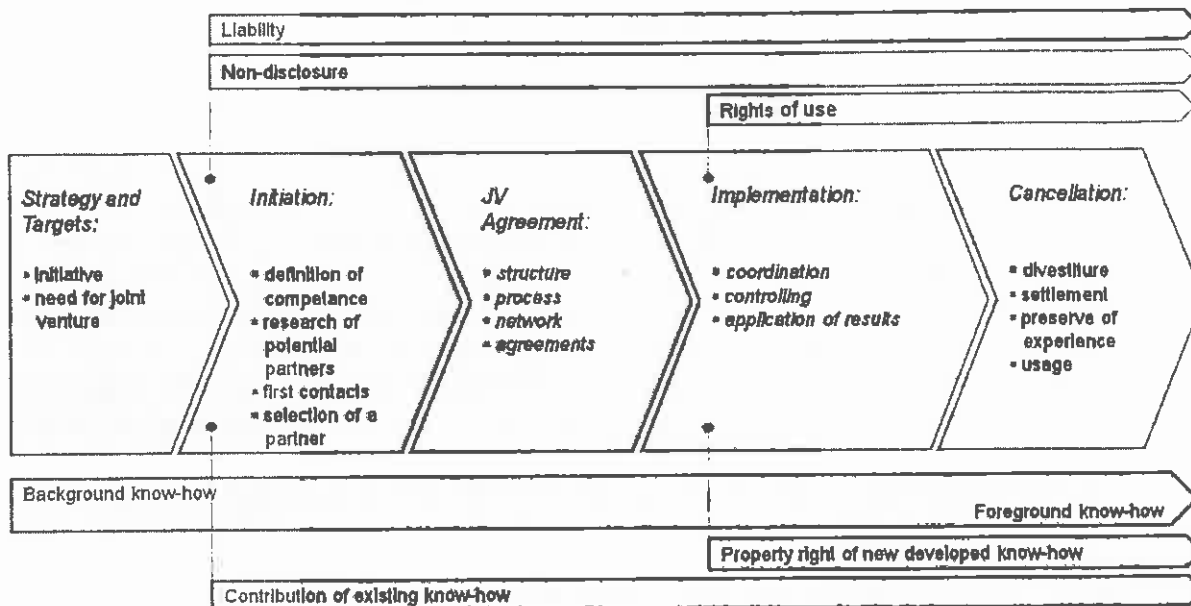
Know-how is often important to joint ventures (JVs) developing new products and technologies. Valuation becomes important at different phases of this type of cooperation, as shown in Exhibit 34.3.

⁹ G. V. Smith and R. L. Parr, *Valuation of Intellectual Property and Intangible Assets*, 3rd ed. (2000), 501.

¹⁰ See Pierre Breese, "Valuation of Technological Intangible Assets," *les Nouvelles* (June 2002): 54-57.

¹¹ Russell L. Parr, "Royalty Rates & License Fees for Technology," *les Nouvelles* (March 2009): 15-17

Exhibit 34.3 Typical Phases of a Technological Joint Venture



Source: German Department of Research and Education, "How to Handle Know-how in International Technology Cooperations" (*Umgang mit Knowhow in Internationalen FuE-Kooperationen*), 2009

Valuation Requirements

Basically, the valuations needed for the five typical phases of a joint venture are:

1. *Strategy phase.* Analyses are needed of what know-how already exists and how much additional knowledge may be needed for the planned program. At this stage, assessments are undertaken of risks and chances of a joint venture success, compared with independently creating the product.
2. *Initiation phase.* Each party's existing know-how is valued with other assets and cash; those form the basis for each participant's contribution.
3. *Agreement phase.* How the contributed know-how is protected and who will benefit from newly developed products are defined. Ownership and usage rights are established so each party is aware of all benefits and obligations.
4. *Implementation phase.* Value is created in this phase.
5. *Cancellation phase.* In this phase, settlement payments are made, which require a detailed valuation whose parameters are determined by the JV agreement. If the parties do not agree, an arbitration value may become relevant.

Example: Initiation Phase

In early January 2008, effective at the beginning of the month, two Chinese solar power companies agreed to form a 50-50 joint venture to produce photovoltaic (PV) solar wafers and cells. One participant, Wing Chow Enterprises Limited of Hong Kong, transfers to the JV its X'ide division, which produces monocrystalline polysilicon ingots and wafers; the other, Yi Solar Co. Ltd. of Shanghai, transfers its cell and module manufacturing operations. The joint venture will operate under the X'ide name.

Assets Transferred

At the valuation date, 31 December 2007, the participants contributed the financial physical and intangible assets shown on the table.

	X'ide Processing Division \$'000	Yi Solar Cell/Module Operations \$'000	X'ide Joint Venture \$'000	Note
ASSETS				
Current				
Cash	4,209	35,122	39,331	
Receivables	2,276	7,186	9,462	
Inventories	9,546	5,510	15,055	
Prepays	<u>7,300</u>	<u>1,498</u>	<u>8,798</u>	
	<u>23,331</u>	<u>49,315</u>	<u>72,646</u>	
Fixed (Capital)—net of depreciation				
Land	2,408	--	2,408	
Building	4,624	--	4,624	
Furnaces	2,649	--	2,649	
Equipment	756	3,639	4,395	
Construction in Progress		9,363	9,363	
Supplier Deposits	<u>23,079</u>	<u>--</u>	<u>23,079</u>	
	<u>33,516</u>	<u>13,002</u>	<u>46,518</u>	
	<u>56,847</u>	<u>62,317</u>	<u>119,164</u>	
LIABILITIES				
Bank Operating	5,175	--	5,175	
Bank Term	22,366	--	22,366	
Payables & Accruals	3,822	2,625	6,446	
Unearned Income	<u>7,055</u>	<u>4,525</u>	<u>11,580</u>	
	<u>38,418</u>	<u>7,150</u>	<u>45,568</u>	
REPORTED EQUITY	<u>18,429</u>	<u>55,167</u>	<u>73,596</u>	
INTANGIBLES				
Furnace Write-Up	4,851	--	4,851	A
Equipment Write-Up	2,844	--	2,844	B
Developed Know-How	20,700	--	20,700	C
Customer Relationships	--	26,000	26,000	D
Trade Name	24,300	--	24,300	E
Assembled Work Force	1,250	3,500	4,750	F
Supply Contracts	<u>12,000</u>	<u>--</u>	<u>12,000</u>	G
	<u>65,945</u>	<u>29,500</u>	<u>95,445</u>	
Aggregate Contributions	<u>84,374</u>	<u>84,667</u>	<u>169,041</u>	

Bases of Valuations of Intangibles

Note A Replacement Cost New less Physical Deterioration

Note B Replacement Cost New less Functional Obsolescence

Note C X'ide has developed know-how that enables it to build a furnace for about 25% of the commercial cost. The present value of those savings through lower depreciation during the 10-year projection period is \$20,700,000, at a discount rate of 20%.

Note D The majority of Yi's sales are made in Europe, where at the end of 2007, the price of photovoltaic modules was €4.77 a watt, compared to \$4.85 in Asia, which represented a 36% exchange premium. The amount ascribed to the customer relationships is the present after-tax value of this benefit, assumed to be amortized over 10 years, at a 25% discount rate.

Note E The X'ide trade name was valued by the relief-from-royalties method using a market derived royalty of 3% and a discount rate of 15%.

Note F As the formation of a joint venture is not a business combination, no goodwill is recorded, except for the assembled workforces. These are at duplication cost, based on headhunting and recruitment fees and all training and learning curve expenses.

Note G X'ide has long-term contracts with a German polysilicon supplier for about 80% of current usage at a fixed price, which is about 85% below the recent spot level. The spot price is expected to decline from 2008 to 2016, the period of the contract. The allocated amount is the present value at a 30% discount rate of the expected after-tax savings.

Example: Cancellation Phase

During 2008, the joint venture was modestly profitable, reporting a \$12.5 million operating profit on sales of \$395 million, compared with pro forma figures for 2007, which were \$11.4 million on revenues of \$142 million. In the fourth quarter, however, profits were only \$1.4 million before an inventory write-down of \$11.4 million.

There were three reasons for the disappointing results:

1. Cultural and language differences between Hong Kong and Shanghai
2. A rapid global decline in the prices of polysilicon and PV cells
3. Delays and start-up costs for the equipment and construction in progress at the initiation

As a loss was incurred in the first quarter of 2009, Yi Solar offered to purchase, at fair value, Wing Chow's interest in all the assets and liabilities net of cash; this was \$50.5 million.

	X'ide Joint Venture \$'000 31-Dec-07	X'ide Joint Venture \$'000 31-Mar-09
ASSETS		
Current		
Cash	39,331	--
Receivables	9,462	17,978
Inventories	15,055	12,642
Prepays	<u>8,798</u>	<u>6,591</u>
	<u>72,646</u>	<u>37,211</u>
Fixed (Capital)—net of depreciation		
Land	2,408	2,239
Building	4,624	4,261
Furnaces	2,649	6,250
Equipment	4,395	17,670
Construction in Progress	9,363	--
Supplier Deposits	<u>23,079</u>	<u>19,473</u>
	<u>46,518</u>	<u>49,893</u>
	<u>119,164</u>	<u>87,104</u>
LIABILITIES		
Bank Operating	5,175	--
Bank Term	22,366	--
Payables & Accruals	6,446	12,247
Unearned Income	<u>11,580</u>	<u>9,148</u>
	<u>45,568</u>	<u>21,395</u>
REPORTED EQUITY	<u>73,596</u>	<u>65,709</u>
INTANGIBLES		
Furnace Write-Up	4,851	--
Equipment Write-Up	2,844	--
Developed Know-How	20,700	9,000
Customer Relationships	26,000	12,900
Trade Name	24,300	9,200
Assembled Work Force	4,750	--
Supply Contracts	<u>12,000</u>	<u>4,300</u>
	<u>95,445</u>	<u>35,400</u>
Aggregate Contributions	<u>169,041</u>	<u>101,109</u>

The major changes in the assets outside normal operations are:

- Land and building decreased by 7%
- Developed know-how decreased by 57%
- Customer relationships decreased by 50%
- Trade name value decreased by 62%
- No payment was made for the assembled workforce
- Supply contracts declined by 64%

Each of the intangibles was valued in the same manner as for the initiation phase; comments on certain items are set out next.

During 2008, the United States and Asian price per watt, according to Solarbuzz, a consultancy, became \$4.78 (-1.4%), while that in Europe decreased to €4.55 (-4.5%) and the strengthening dollar lowered the exchange premium from 36% to 25%; that reduced the value of the customer relationships by 30% to \$12.9 million.

Sales in the fourth quarter of 2008 were 54% below those of the third; in the first quarter of 2009, they were down a further 8%, with a gross margin of only 1%; this reduced the value of the trade name to \$9.2 million.

In the second half of 2008, polysilicon prices fell swiftly, dropping to \$200 per kilogram in November, from \$450 to \$500 earlier in the year. An analyst predicted they would sink below \$100/kg by the end of 2009 and to the \$50 to \$80 range in 2010; this is roughly the same level as prices in the long-term contracts.

CONCLUSION

Know-how and trade secrets are types of intangible assets that represent unpatented rather than patented technology. Thus, similar valuation principles apply. At the same time, these assets might comprise early-stage technology with unprotectable secret know-how that is difficult to assess. Trade secrets have a value to an organization, as they are unique to it, but they are usually not a marketable product or do not directly generate cash flows, except to the extent they reduce costs. The critical factor for valuing these intangibles is to determine whether they are well protected by the entity and do not become public knowledge.