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Valuing Intangible Assets by the Cost Approach

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Valuing Intangible Assets by the Cost Approach

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The cost of any particular asset does not normally represent its fair value. But in practice, replacement cost of an asset adjusted for time to use establishes a ceiling for its fair value, as it is the maximum amount a prudent investor will pay. There may be exceptions for unique items such as antiques, but fair value is intended to overrule sentiment and emotion. Hence, the cost approach is most useful as a sanity check.

Below, I demonstrate the versatility of the cost approach by showing how fair values can be determined for three different types of intangible assets in short case studies: the copyright of a safety training DVD, internally developed software systems for operating a firm, and an assembled workforce.

Case Study #1: Safety Training DVD

Aria Corporation, a specialist lawn care organization, developed a 30-minute safety training DVD created by a specialized independent producer based on an illness and injury prevention project conducted by a state university. The objective was to reduce job-related injuries among Aria's approximately 1,200 staff and franchise technicians. The material became known for its success in improving operators' efficiency and in lowering workers' compensation claims. At the time it was produced, it was the only vehicle for promoting safety and preventing job-related injuries in the landscaping industry. As a result, Aria's parent, Greensleeves Inc., which did not own all the shares, wanted to adopt it for its other lawn care operations. The purpose of

the valuation was to establish a transfer price between the related entities.

Why the cost approach? The valuation expert selected the cost approach because the DVD:

- Was developed specifically to train lawn care technicians in safety awareness and injury prevention. Its intellectual content was derived from the state university's knowledge and experience of safety awareness.
- Represented the only known safety training for lawn care firms; therefore, transactions in comparative copyrights were not available, making the market approach impractical.
- Had no income-producing purpose. The only benefit that could be quantified was the savings in workers' compensation costs.

In addition, all direct, indirect, and opportunity costs related to its creation were readily determinable and traceable.

Replacement Costs. The replacement costs were established from the following calculations:

- Direct overhead- and benefit-related costs of the actual content;
- All additional costs related to the production;
- Estimates of the intellectual content costs based on the need to reproduce the safety-related knowledge and experience that formed the basis for the DVD, including

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re-creating data related to all of the following:

- History of accident claims;
- Experience of several individuals with operating a trimmer;
- Types of accident claims that resulted in lost work time;
- Safety practices currently in place at the firm; and
- Knowledge base at the state university.

Intellectual Content. Re-creating the intellectual content would require the services of at least one experienced individual. The valuation practitioner selected an Aria manager with 15 years' experience in safety and avoiding job-related accidents. To his salary (\$100,000 per year) were added overhead, support, and benefits of approximately \$50,000. The safety concepts presented in the DVD were expected to provide relevant training to Aria employees for the next five years. Thereafter, technological innovation would likely render existing safety concepts and practices obsolete. Projecting a five-year intellectual development period with total annual costs of approximately \$150,000 resulted in an estimated total cost of \$750,000 for the safety instruction. Based on discussions with management and taking into account the estimated five-year benefit period, it was determined that 25% of the total expenditures related to the covered safety instruction concepts and information included in the DVD; this provided a replacement cost of approximately \$187,500 for the intellectual content.

Cost Summary. Aria's demonstration workforce consisted of two managers and eight employees for six weeks, as shown in Table 1.

Case Study #2: Internally Developed Software System

Subsequently, Aria's parent, Greensleeves, was acquired by Andus Inc., a conglomerate. One

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of Greensleeves's significant intangible assets was the source code for various internally developed computer systems that ran its numerous service businesses. This software was made up

of 225 programs comprising about 217,000 lines of code in nine systems, shown in Table 2.

In making its purchase price allocation after the acquisition, Andus adopted the cost approach for the fair value of the software because:

Salaries	45,000
Overhead and benefits	21,000
Equipment, gasoline, and administration	15,000
	81,000
Producer's fee	75,000
Subtotal	156,000
Intellectual content	
Experienced individual	100,000
Overhead support and benefits	50,000
Total	150,000
Less nonsafety portion	0
Net	150,000
Development period	5 years
Total intellectual content costs	750,000
Portion related to DVD	25%
Intellectual content of DVD	187,500
Total costs of DVD	343,500
Portion applicable to transferred rights	40%
Value of DVD for transfer	137,400
Rounded to closest \$5,000	135,000

- While there are a number of enterprise resource planning (ERP) systems that supply similar functionality, the Greensleeves systems are simpler, easier to maintain, and suitable to be rolled out to Andus's other units.
- All direct, indirect, and opportunity costs that relate to the creation of the software are reasonably determinable.
- The software was not created for sale, and management was not able to quantify the efficiencies it generated.
- The code was written in C++ to run on Linux, and used a number of public domain routines and programs.

Based on a sample review of every tenth file, the number of person-days required to re-create and test the code was estimated, as was the portion considered obsolete. The fully loaded cost per person-day was based on the expected number of each of three classes of programmers required—junior, experienced, and superior (see Tables 2 and 3).

	Programs	Lines of Code	Daily Production	Person-Days to Recreate
Capital assets	6	300	4	75
General ledger	28	4,225	13	325
Human resources	29	3,186	11	290
Order entry	10	1,541	7	220
Payables	6	403	4	100
Payroll	62	2,660	3.8	700
Production	61	24,518	10.5	2,335
Quality control	9	40,000	40	1,000
Receivables	14	900	6	150
	225	77,733	15	5,195

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Table 3. Fair Values of Greensleeves Systems

Obsolete %	System	Person-Days	Fully Loaded Cost (\$)	Reproduction Cost (\$000)	Value (\$000)
35	Production	2,335	380	887	577
25	Human Resources	290	400	116	87
15	General ledger	325	400	130	111
15	Payables	100	400	40	34
15	Receivables	150	400	60	51
10	Payroll	700	425	298	268
10	Order entry	220	450	99	89
5	Capital assets	75	400	30	29
5	Quality Control	1,000	475	475	451
		5,195	411	2,135	1,696
	Rounded				1,700

By the replacement cost method, the value of the software is \$1,700,000 rounded. To confirm this is a reasonable estimate of fair value, two questions must be asked: “What deductions, if any, need to be made for the four factors?” and “Would market participants be willing to pay this amount?” The four factors are functional deterioration, technological obsolescence, physical decline, and economic deprivation. Of those, the only one that might have an effect is technological obsolescence due to the mature nature of the programming language (C++) and operating system (Linux).

After reviewing the well-maintained and well-commented code with an expert adviser, management determined that a 10% reduction to \$1,530,000 should be made for this factor. With respect to an exit price, similar commercially available, complex installations would have license fees of between \$1,200,000 and \$1,500,000 for the number of users contemplated by Andus, including those currently operated by Greensleeves; therefore, based on using a competitive product, a reduced amount of \$1,500,000 qualifies as fair value.

Case Study #3: Assembled Workforce

Although an assembled workforce often meets the criterion to be an intangible asset and

was treated as such in the United States until 2001, FASB determined that it no longer qualified because the normal methods of measurement do not result in an exit price and hence the result is not fair value. However, it is treated as a contributory asset in valuing many intangibles, especially brands, and therefore a supportable amount needs to be developed. Several methods and techniques from the cost and income approaches are used to value assembled workforces (see Table 4). The most common are the replacement costs relating to the individuals involved, including:

- Salaries and benefits of employees involved in recruiting and interviewing;
- Overhead and benefit costs related to them;
- Headhunter fees;
- Direct hiring expenditures such as job placement ads and relocation costs;
- Learning curve adjustment as employee’s effectiveness improves over time; and
- On-the-job and off-site training expenses.

The estimated costs to recruit, hire, and train new employees are expressed as a percentage

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of their total annual compensation; the learning curve is the period new hires take to become fully effective from an initial assumed 50% efficiency. When there is a job grade system, total compensation for a grade is calculated by multiplying the number of individuals by their average salary and related benefits. Table 4 shows Aria's management's estimated costs to recruit and train employees for each grade: It shows a value of \$5,440,000 (rounded) for the assembled workforce or 68% of the annual payroll.

Although the FASB and IASB prefer actual prices in active markets or "a present value technique" such as discounted cash flows because they more easily reflect the assumptions of market participants, methods under the cost approach provide essential information to establish the reasonableness of value indications from other approaches.

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Job Grade	Payroll (\$000)	Cost to Recruit	Cost to Train	Replacement Cost (\$000)
A1	185.5	5%	10%	27.8
A2	255.8	10%	15%	64.0
A3	455.1	15%	20%	159.3
A4	291.6	20%	25%	131.2
	<u>1,188.0</u>			<u>382.3</u>
B1	298.5	10%	20%	89.6
B2	157.2	15%	25%	62.9
B3	453.7	20%	30%	226.9
B4	810.6	25%	40%	526.9
	<u>1,720.0</u>			<u>906.2</u>
C1	836.6	20%	35%	460.1
C2	591.6	25%	50%	443.7
C3	845.4	30%	50%	676.3
C4	427.0	35%	50%	363.0
D1	557.0	35%	45%	445.6
D2	367.8	40%	50%	331.0
D3	493.9	40%	55%	469.2
D4	961.3	40%	60%	961.3
	<u>2,380.0</u>			<u>2,207.1</u>
Total	7,988.6			5,438.7