Visualizing Intangible Assets With Due Diligence

Uncover the fallacies in financial statements

inquartik

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Note:

The original analyses in this white paper were conducted on November 6, 2020. Unless otherwise specified, all images and numbers from Patentcloud's *Due Diligence* were taken on July 2, 2021. The analyses and results were reviewed and updated accordingly.

Part I: Intangible Assets

The importance of intangible assets

As the world migrates from traditional labor-intensive industries to intelligence-intensive industries, intangible assets — such as copyrights, trademarks, goodwill, and patents — have become increasingly vital. For more than two decades, the value of intangible assets has greatly exceeded the value of tangible assets. According to a report conducted across S&P 500 enterprises by <u>OceanTomo</u>, it has been 25 years since the intangible asset market value first surpassed the tangible asset market value. Since 2015, the ratio of intangible to tangible asset market value has reached 80:10; in 2020, the ratio was estimated to be 90:10.



What are intangible assets ?

Intangible assets, in contrast to tangible assets, are assets that don't have physical forms. As humans, we find it easy to measure a company's value using its tangible assets — land, factories, inventory, equipment, etc. because we can see these things. However, when it comes to intangible assets — such as intellectual property, goodwill, or brand recognition — there is no definite and accurate way to evaluate them yet, nor a solid book value that can be recorded on a company's financial statements. Some examples of tangible and intangible assets:

Table 1. Intangible assets vs. tangible assets examples

Tangible assets	Intangible assets
Real estate	Patents
Factories	Brands
Vehicles	Trademarks
Buildings	Goodwill
Inventory	Copyrights

Common features of intangible assets:

1. Non-physical

Intangible assets are unable to be physically touched or seen. They are more or less of a conceptual nature and we can only try to present their existence from legal or financial documents.

2. Exclusivity

For certain types of intangible assets — patents and trademarks, legal systems provide exclusivity rights to the owner so that the owner can exclude others from using, manufacturing, importing, or selling the products that utilize these intellectual properties.

The exclusivity of other types of intangible assets such as copyrights and trade secrets — is generated only when others' contents, products, or services copy or steal the owner's idea — in other words — commit willful infringement.

3. Multi-licensing

Tangible assets can only be rented by one legal entity at one time, for example, an office or a vehicle can only be rented to a company during a certain period. Intangible assets, however, can be licensed to several parties at the same time as long as there's no exclusive licensing agreement with a certain party.

The categories of intangible assets

Acquired vs self-creation

Intangible assets can be classified according to whether they were acquired from others or created by the company itself. Both types of intangible assets can be recognized in the financial statements, however, due to some limitations (will be illustrated later,) selfgenerated intangible assets are hard to be recognized. As a result, the value of most intangible assets is usually confirmed through transactions.

Indefinite vs definite

Intangible assets can be indefinite or definite. A company's brand name, for example, is classified as an indefinite intangible asset since it cannot be separated from a company's operations and exists as long as the company is alive. Goodwill, concerning the reputation, credibility, and trustworthiness of a company, is indefinite as well. On the other hand, intellectual properties such as patents, trademarks, or copyrights are classified as definite since they arise from legal systems.

The biggest difference between indefinite and definite intangible assets is whether they are amortizable or not: indefinite intangible assets cannot be amortized but definite intangible assets can be. For example, if company A acquires company B for US\$ 1 million, definite intangible assets can be written off over several years; indefinite intangible assets, however, cannot be amortized and can only be assessed year by year for impairment.

Can intangible assets be defined and recognized in IAS ?

Key definition

In accounting, the disclosure of intangible assets often references IAS (International Accounting Standards) Article 38 — Intangible Assets. The accounting requirements for intangible assets shall be "non-monetary assets," "without physical substance," and "identifiable (either being separable or arising from contractual or other legal rights)." Intangible assets should also be attributed to resources controlled by an entity so that the entity can obtain the benefits from them, and shall be able to generate future economic benefits.

Recognition

IAS 38 also requires an entity to recognize an intangible asset, no matter it is acquired or self-created if, and only if:

- there is a probability that the future economic benefits attributable to the asset will flow to the entity; and
- the cost of the asset can be measured reliably.

These requirements apply to both acquired or selfgenerated intangible assets. However, for intangible assets generated internally, IAS 38 includes additional recognition criteria. The owner shall distinguish such assets as either in the research phase or the development phase. In the research phase, all costs will be incurred to expense instead of recognized as intangible assets; In the development phase, costs are capitalized only after technical and commercial feasibility of the asset for sale or use have been established — and thus can be recognized as intangible assets.

Intangible assets that meet the relevant recognition criteria are initially measured at cost, subsequently measured at cost or using the revaluation model, and amortized on a systematic basis over their useful lives (unless the asset has an indefinite useful life, in which case it is not amortized).

Can the value of intangible assets be measured precisely ?

Various methods already exist for evaluating intangible assets. These methods and their advantages and disadvantages include:

The income approach

This approach "assumes" a future income that the intangible assets may generate to estimate fair value. However, the assumption varies differently and makes it an unrealistic approach in evaluating intangible assets.

The market approach

The market approach evaluates the value of an intangible asset based on the selling price of a similar asset. However, since each intangible asset is unique in itself and for each company, this makes it hard to find and compare it to a similar asset.

The cost approach

This approach estimates the value of an asset according to the cost to create or recreate a similar intangible asset. Yet, due to a huge gap between an asset's cost and value, estimating the re-creation cost of an intangible asset is often difficult.

In summary, the recognition and evaluation of intangible assets — especially self-generated ones — is often difficult and imprecise.

The drawbacks of the current accounting system

Since the publication of *Summa de Arithmetica Geometrica, Proportion et Proportionalita* written by Italian mathematician Luca Pacioli in 1494, the current accounting system stays at reflecting the value generated by past events instead of visualizing the prospect of potential benefits and value of assets. Especially for intangible assets, there is no effective way to visualize and evaluate their value, nor to tell how the expenses reflect their development. For centuries, the balance sheet or the income statement fails to explain questions such as:

- How do we evaluate the effectiveness of R&D expenses?
- How much patent market value was created from R&D expenses?
- How can each inventor's contribution be measured and quantified?

An ideal accounting system should be able to reflect the different dimensions of intangible assets so that even intangible assets recognized as expenses in financial statements can be seen as a result of a transfer of expenses to assets. Based on the inherent characteristics of intangible assets, it is appropriate to say that corporations should prioritize the recognition of intangible assets in the accounting system.

Patents are the most important type of intangible asset. Why ?

Among all types of definite intangible assets, patents are the most common form of intangible assets that are used to evaluate, analyze, and audit companies especially hi-tech companies — worldwide. They are not only the most viewable, measurable, and recordable type of intangible asset, but also because of the numerous and large patent databases that already exist worldwide.

Other intellectual properties have certain limitations, such as trademarks, which are monetized only when a brand or company is sold. Or in the case of copyrights, they have indefinite claim scopes. Moreover, cultural and creative industries are usually the primary beneficiaries. Trade secrets, on the other hand, cannot be demonstrated publicly and cannot be measured objectively. As for other rights granted by the governments, most of them are either uncommon or obsolete.

Subjectively speaking, complete patent data is publicly available and patents are already actively traded in the worldwide market.



AI and big data analytics visualizes patent assets

Due to the uncertainty of future economic benefits and the current systems' inability to properly evaluate patents, the cost of generating these patent assets is often recognized as an expense. As a result, the achievements of the innovative efforts of scientists and technologists have disappeared from financial statements. The absence of patent assets distorts calculations such as the return on R&D investment or other ratios that use such assets as parameters. Without accounting for patent assets, the total value of assets will become understated, and the results may be misinterpreted.

Utilizing big data and artificial intelligence technologies, Patentcloud's *Due Diligence* can now objectively and consistently display and visualize the patent assets of any company—anywhere in the world—in seconds.

Such patent asset information includes the Coverage and Status, Technologies, Owner(s), Inventor(s), Applicant(s), Historical Highlights, Quality and Value, Quality Highlights, and Value Highlights.

The data and insights provided by *Due Diligence* can be used for:

- Comparing patent assets within and across industries
- Evaluating each patented technology and its YOY R&D results
- Examining the correlation between inventorship and technologies/patent portfolios
- Reviewing the event history of a patent, including application, abandonment, assignment, pledge, litigation, invalidation, etc.
- Discovering potential targets for patent litigation or licensing

Furthermore, this information effectively solves the problems of:

- Reflecting patents as intangible assets in the balance sheet
- Recognizing R&D as an expense in profit and loss statements
- Failing to accrediting internally generated patent assets as assets

Only when financial statements adequately account for and display patent assets can the evaluation of enterprise value, corporate credit investigation, investments, and M&A become more accurate and comparable.

Hence, at the current stage, other methods are necessary for evaluating intangible assets, such as patents. The insights from *Due Diligence*'s patent portfolio analysis can be used as annotations concerning the R&D expenses for patents to complement the current financial statements.

Part II: Case study and Due Diligence Analysis

Case study: Medtronic's acquisition of Mazor Robotics

On December 19, 2018, <u>Medtronic</u> completed the acquisition of <u>Mazor Robotics</u> in a deal worth US\$ 1.7 billion — ranking it among the largest orthopedic deals completed in 2018. Mazor founded in 2001 — pioneered the application of robotics technology and guidance for use during spinal procedures. This acquisition strengthened Medtronic's position in robotic-assisted procedures in spine surgery.

In this section, we will examine Mazor Robotic's financial statements and the patent portfolio analysis delivered by Patentcloud's *Due Diligence*.





Mazor Robotics' financial statements

With such a high acquisition amount, let us first take a look at Mazor's financial statements to get a basic view of the company's past financial status and also if the company's intangible assets are reflected in the various sheets.

Net income

By looking at Mazor's income statements, we found that it suffered cumulative net losses during the years 2015 - 2017.



Valuation

According to <u>Mazor's 2018 Q3 financial statement</u>, the company's valuation was estimated to be around US\$111 million. However, the acquisition amount of US\$ 1.7 billion was 15 times the valuation amount. No doubt, anyone would wonder: how can a company with a low valuation and suffering consecutive losses still be sold at such a high price?

It is apparent that Medtronic was probably most interested in Mazor's intangible assets or technology.

				Figure 4. N	lazor's Assets			
Mazor	Robotics Lt	d.			Current liabilities			
CONSOLIDATED STATEMEN	TS OF FINAM	NCIAL PO	SITION	AS OF	Trade payables	\$ 4,116	\$	3,474
(U.S. Dolla	rs in thousa	ands)			Deferred revenue	8,195		3,471
	September 30, 2018				Other current liabilities	10,882		9,874
			Decen 2	nber 31, 017	Total current liabilities	Total current liabilities 23,193		16,819
	(Unau	udited)	(Au	dited)	Non-current liabilities			
Current assets					Employee benefits	433		414
Cash and cash equivalents	\$	36,532	\$	46,376	Total non-current liabilities	433		414
Short-term investments		70,074		56,708				
Trade receivables		9,479		5,460	Total liabilities	23,626		17,233
Other current assets		3,930		2,054				
Inventory		7,259		7,864	Equity			
Total current assets		127,274		118,462	Share capital	139		136
•					Share premium	235,939		225,678
Non-current assets					Amounts allocated to warrants	9,629		9,629
Long-term investments		968		5,171	Capital reserve for share-based	20,255		10,480
Property and equipment, net		4,597		4,323	payments transactions	2 4 4 0		2 1 1 0
Intangible assets, net		1,676		1,925	Foreign currency cansiacion reserve	2,119		2,119
Other non-current assets		852		1,115	Accumulated loss	(156,340)		(134,279)
Total non-current assets		8,093		12,534	Total equity	111,741		113,763
Total assets	\$	135,367	\$	130,996	Total liabilities and equity	\$ 135,367	\$	130,996

Value of intangible assets

By looking at the financial statements of Mazor, the intangible assets recognized (Figure 3) amounted to US\$ 1,925 thousand, accounting for only 1.47% of the

company's total assets and only 0.05% of the acquisition cost. We can deduce that the numbers in the financial statements fail to reflect the true market value of the patent assets owned by Mazor.



R&D expenses

Mazor's total R&D expenses between 2008 and 2018 (accumulated) reached approximately US \$50 million - 25.8 times their intangible asset value (US\$ 1,925 thousand as seen in Figure 4). Consequently, this raises more questions:

- How do we evaluate the effectiveness of R&D expenses?
- How much intangible/patent asset market value was generated from R&D expenses?

Up until now, we have yet to see any clear answer to either of the questions proposed here.



Amortization expenses

The amortization expenses on intangible assets were around US\$ 333 thousand in 2017. The main issue is that a traditional statement can only show us the final number without offering any insights, such as the original valued total, the number of assets amortized, and the useful lives of such assets.



Revenue

92% of Mazor's revenue came from the U.S., and 82% of the revenue came from the sale of systems and disposable products. Similar to the situation with

amortization expenses, we can only see the final total, but are unable to map the company's patent value to the company's sales regions and categories or uncover any other insights.



Due Diligence analysis – Mazor Robotics' patent portfolio

So far, we have yet to see any intangible asset or patent asset value shown. Let us take a look at Mazor's patent assets using Patentcloud's *Due Diligence* to see what we can find. As we previously saw, Mazor's total R&D expenses from 2008 to 2018 Q3 reached approximately US\$ 49,805 thousand. However, the company's earliest patent application dates back to 2000, reflecting the fact that more R&D expenses took place than the amount the public financial statements suggest.

Patent assets

Using *Due Diligence*, we found 37 patent families including 111 patent applications — possibly attributed to Mazor's R&D results over the last few years.

	Figure 9. Mazol	r's Patent Assets		
Analysis Scope				
Applications	-	Families	37	
		,		J

Portfolio coverage

Among its 111 worldwide patent applications, Mazor's U.S. patents account for 34% of the total. In deployment, most were applied at the USPTO (U.S.), followed by Europe and China in 2nd and 3rd place. As previously

mentioned, 92% of the revenue came from the U.S. market, and Mazor's patent portfolio coverage might indicate that the U.S. is their primary revenue source. The deployment status indicates that Europe and China markets may become potential major revenue sources.



Remaining life

This chart shows the remaining life of the active patents in Mazor's portfolio. It also reflects the sustainability of the portfolio in each regional market. Until 2028— which will be 10 years after the acquisition — most of the U.S., EU, China, and Canada patents will still be active, indicating a sustainable patent portfolio.



Pending applications

Pending patents are often overlooked as they only indicate the patent applications that are yet to be granted. However, looking beyond just the number of pending patents, these patents also provide information about the direction of research and the technology that the company is developing, which provides insights into the company's future direction. The Pending Patents chart provides the filing dates of the pending patents, which indicates lengthy patent filings and potential prosecution expenses. It also indicates the prospect of an increase in intangible assets if these patent applications are granted in the future. We can see here that Mazor still had a few pending patents at the time of the acquisition.



Distribution of technical fields

The Technical Fields chart highlights the main technical fields covered by the patents in the portfolio, giving us an overview of the company's technology distribution.

As Mazor Robotics is a pioneer in robotic surgical systems, its portfolio predominantly contains patents in the technical field of A61 - medical or veterinary science.



Technology timeline

Observing the technology timeline allows us to recognize the change in the direction of the company's research.From this chart, we can see that A61B technology has been the primary application field since Mazor was founded in 2001. It emerged again in 2016; one of the reasons for this might be an R&D expense increase. The intangible assets recognized in the financial statements at the time fail to explain the cause of the change in expenses and how the expenses are related to its patent assets.



Co-ownerships and co-applicants

With this chart, we can examine the patents with coowners and/or co-applicants, which may limit future transactions, enforcement, and/or may require a review of the contract and terms. Since the data indicate that Mazor has no co-owned patents and just one co-applied patent, there will be next to no limits of rights in the future, which is extremely important to an acquirer.



Top inventors and top assignees

Besides patent assets, inventors are considered the most critical resource to technology companies, as they are responsible for conceiving the inventions and patent assets. For M&A purposes, it is crucial to check whether the top inventors are still working for the company.

If not, the sustainability of innovation in the company could be questioned.

The top assignee is Mazor itself, indicating that it developed and controlled most of its patent portfolio without any external contribution.

		Figure 16. Top 10) Inventor:	s and Assignee	es of Mazor's Patents
			Тор	10 Inventors	
ank 🛞	Inventors	Applicants	¢	Applications	Timeline X-Axis: Appl. Year (2001~2019)
1	SHOHAM MOSHE	MAZOR ROBOTICS 6		<u>80</u>	
2	ZEHAVI ELI	MAZOR ROBOTICS 6		33	
3	ZEHAVI ELIYAHU	MAZOR ROBOTICS		20	
4	BAR YOSSI	MAZOR ROBOTICS		<u>19</u>	
5	STEINBERG SHLOM	MAZOR ROBOTICS		15	
6	KLEYMAN LEONID	MAZOR ROBOTICS 😰		14	
7	BAR YOSSEF	MAZOR ROBOTICS 6		12	
8	USHPIZIN YONATA	MAZOR ROBOTICS		10	
9	JOSKOWICZ LEO	MAZOR ROBOTICS 😰		5	
10	RUBNER JOSEPH	MAZOR ROBOTICS 🛛		5	
			Тор	o Applicants	
ank 🛞	Applicants	Ultimate Parent	÷	Applications	Timeline X-Axis: Appl. Year (2001~2019)
1	MAZOR ROBOTICS			<u>93</u>	
2	MAZOR SURGICAL			<u>16</u>	
3	SHOHAM MOSHE			3	
4	BAR YOSSEF			1	
5	HEWKO BRIAN			1	
	ZELIAM ELI			1	<u>~</u>

Current owners

This chart lists the current owners of the patents and whether the patents were filed by the patent owners or acquired from third parties. We can see that Mazor developed 103 of the patents internally with only one patent acquired from others. This information clearly indicates that at the time, Mazor had considerable strength in R&D and human resources.



Transacted patents

This chart highlights the US and CN patents that have been transacted. A transaction may imply market recognition of value, but it can also suggest potential limitations in future transactions and enforcement. From the record, we can see that there was one patent transferred from another party to Mazor. The results do not show any transaction of Mazor's patents to other parties. We can deduce that Mazor focused the utilization of its intangible assets on strengthening its product competitiveness.



Litigated patents

This chart shows the U.S. patents that have been involved in litigations in each jurisdiction. So far, none of Mazor's patents were involved in patent litigation cases, which may indicate that either the patents cover innovative technology, have great patent quality, or have not been well monetized yet. Also, the results, or lack of results here indicate that Mazor did not instigate any patent lawsuits against others.



High-value patent families

In this chart, we can see an assessment of the patent value of the patent family portfolio, reflecting the tendency to being monetized and commercialized. 77.4% of Mazor's patents are above the A rank, and more than 58% of its patents were widely deployed with applications in more than four patent offices, which may imply their higher tendency to be monetized or commercialized in many regional markets.



Quality and value of the patent portfolio

The Quality Ranking focuses on indicating the relative eventuality of prior art references being found for a patent, which can then threaten its validity. The Value Ranking focuses on reflecting the relative tendency of a patent to be practiced or monetized after its issuance. 14% of Mazors' patents have a quality and value rank of A or above.



Peer comparison with Intuitive

It is important to make peer comparisons with companies in the same field to see if a company can generate patent assets with higher quality and value than its peers. This chart shows Patentcloud's proprietary Patent Quality and Value Rankings in action to compare a portfolio with that of its competitor. We compared Mazor's patents with those of <u>Intuitive</u> — the developer of the famous da Vinci System — which had 48 times the revenue of Mazor. Although it has a smaller business scale, Mazor still had overall better quality rankings and almost the same value rankings compared to Intuitive's patents.



How patent data and analysis complements financial statements

After viewing all of the various analysis methods seen in the previous charts, what can we do with the information?

Let us now look at how the charts and analyses we have obtained from *Due Diligence*'s report complement Mazor's financial statements.

Balance sheet

Due Diligence reveals the real patent assets, quality, and value of a company, complementing the "Intangible Asset" account name listed on the balance sheet.



Income statement

Due Diligence's dashboards and charts demonstrate the results of the R&D and human resources expenses

and how more monetization opportunities can be created, both for the management boards and shareholders alike.



Statement of assets

Due Diligence discloses complete patent assets which cannot be fully displayed in a traditional statement of assets sheet.





Conclusion

Although the types of intangible assets are limited to just a few items, mainly intellectual properties, most of them cannot be secured and the scope of their rights is largely unavailable to the public. This — coupled with the examples shown in this white paper — demonstrate how financial statements still lack the ability to truly reflect the value of intangible assets, making it extremely difficult to assess the quality and value of any kind of intangible asset and conduct accurate corporate valuations.

This white paper has shown how Patentcloud's *Due Diligence* introduces an insightful method in evaluating patents — the most important intangible asset. By analyzing the various aspects of patent assets, *Due Diligence* complements the current deficiencies in how financial statements recognize patent assets. Corporations can now obtain more transparent and comparable patent portfolio assessments and analyses of any company.

We sincerely hope that corporations can benefit from *Due Diligence* — delivering the actionable insights needed for making impactful decisions.



About InQuartik

InQuartik is an IP intelligence company dedicated to converting patent data into actionable insights and delivering AI-driven solutions. From first-tier companies and law firms to SMEs. InQuartik supports IP professionals throughout the entire patent lifecycle so that they can work smarter, live better, and gain more success.

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