

Neonode

Sector: Human Interaction

Speeding

Redeye raises the fair value range on the back of the recent Chinese partnerships and Aequitas's lawsuits against Apple and Samsung. In the short term, we expect some profit taking though, following the ~500% stock surge in 3 months.

We estimate patent monetization to USD 40m

The said infringement goes all the way back to iPhone 4S and the Galaxy S series, which was introduced in 2011 and 2010, respectively, but the time limitation on damages is six years. We estimate the relevant US volumes to over 600m. To be on the conservative side, we have not included any tablets or other devices. We assume a royalty of USD 1.3, equal to 19 BPS on the cheapest iPhone, which sums up to USD 400m, subtracting 50% to Aequitas. We arrive at a potential for Neonode of USD 40m, by using a low 10% rate of success, which is due to Neonode's failed efforts to sell the patents to Apple in 2017. Moreover, we believe Apple and Samsung, in their 2011-2018 patent war should have evaluated the threat from the Neonode patents thoroughly, since the risk of Neonode teaming up with an NPE must have been obvious. Other notable lawsuits against Apple in the past have rendered damages of e.g. USD 1.1 bn and 450m. However, we think those included significantly lower volumes. IP litigations on average take 2.5 years, but usually they are settled before trial. Nevertheless, following hundreds of similar lawsuits, Apple has become an expert in stalling litigation. We therefore expect the outcome to be in 2023.

Apple's German patent was invalidated by Neonode's prior art

When Apple went after Samsung, it selected the slide-to-unlock patent among two other patents from its gigantic IP portfolio of thousands of patents, which gives an indication of the value of this patent (and potentially Aequitas' IP as Neonode launched three years before the iPhone). In Germany, Apple's patent was invalidated based on prior art from Neonode, but in the US the court took the exact opposite side, which is an indication of the high uncertainty.

We raise our base case to USD 8

Based on the above, we raise our base case to USD 8 (5) and our bear and bull case to USD 3 and 18 (2 & 10). The USD 3.4m short-term loan facilities of the main owners remove the imminent cash risk. However, in the short term, we expect some profit taking as we think the stock has been speeding (up ~500% in three months).

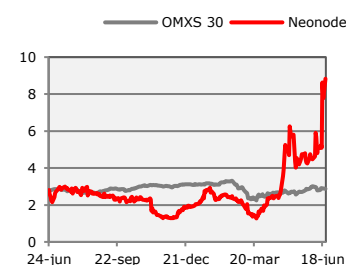
KEY FINANCIALS (USDm)	2018	2019	2020E	2021E	2022E	2023E
Net sales	9	7	6	7	16	31
EBITDA	-3	-3	-2	-5	-1	49*
EBIT	-4	-6	-5	-6	-1	48*
EPS (adj.)	-0.7	-0.6	-0.5	-0.5	-0.1	4.7*
EV/Sales	0.5	2.5	14.4	11.5	5.7	1.4
EV/EBITDA	-1.5	-6.4	-50.7	-16.6	-114.6	0.9
EV/EBIT	-1.1	-2.9	-16.8	-15.3	-70.5	0.9

* = Incl. USD 40m (Aequitas)

FAIR VALUE RANGE

BEAR	BASE	BULL
3.0	8.0	18.0

NEON.OQ VERSUS OMXS30



REDEYE RATING



KEY STATS

Ticker	NEON.OQ
Market	NASDAQ
Share Price (USD)	8.2
Market Cap (MUSD)	83
Net Debt 20E (MUSD)	-5
Free Float	76 %
Avg. daily volume ('000)	12

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Speeding

We expected news about the patent monetization around this time (one year after the Aequitas partnership), but we had not expected simultaneous lawsuits against both Apple and Samsung. First and foremost, Neonode is not at all involved in these lawsuits as the patent rights have been transferred to Aequitas. Thus, from now on in this research piece, we will refer to Aequitas as the plaintiff, instead of Neonode. We think Neonode sees patent monetization as just a potential upside and does not base its budget on winning anything from it. It is worth repeating that Aequitas covers 100% of all costs, for a 50% profit split. Before continuing, we would also like to point out that we, [last year, wrote about Aequitas and the track record of its founder](#), Dooyong Lee, e.g. his USD 16m win in court against Microsoft. Both Apple and Samsung are technology licensees of Aequitas, together with several other Fortune 500 companies.

General comments around the lawsuits

Simply put, we see four things for the court to determine. Are the patents valid? Did Apple or Samsung infringe on the patents? If so, was it willfully, and how large are the damages, i.e. compensation size? We have no idea how strong the patents are, but we think that if the court indeed finds that the patents were infringed upon, there is enough evidence to determine that infringement was willful, which typically leads to significantly higher damages.

The chosen forum is the Western District of Texas. Together with Delaware, this is the favorite IP court for a non-practicing entity (NPE) like Aequitas (or as Apple might say, "patent troll"), since they have the highest win ratios. In Western Texas, the plaintiff wins in a majority of the cases (54%). NPEs think that these courts are the most experienced and efficient. Aequitas demands a jury trial, which we think is because judges tend to favor larger companies. Judging from statistics, a jury trial increases the chance of success about 20 percentage points, compared to a non-jury trial, although one should note that trials in general are pretty rare as pre-trial settlements are common. Furthermore, Aequitas has requested a preliminary and permanent injunction (stop) of any further manufacturing or sales etc. of the involved products. This is normal, but NPEs are very rarely successful in winning injunction.

Apple and Samsung have together controlled about 60-70% of the US smartphone market in recent years, meaning damages will be enormous if Aequitas wins. Sometimes, non-practicing entities (NPEs) negotiate with other potential licensees as well during a litigation process. We think these potential licensees could e.g., be offered royalty discounts in exchange for a quicker settlement, although they typically want to see that the patents are valid first.

The patent claims & the related devices

The claims of patent 993 ("User Interface") and patent 879 ("User Interface for Mobile Handheld Computer Unit") are included in the excerpt below. Both patents' scopes are very broad, not to say fuzzy, which on one hand could give a very wide protection if they hold up in court, but at the same time it is harder to win with very general patents.

Patent claims

1. A non-transitory computer readable medium storing instructions, which, when executed by a processor of an electronic device having a touch-sensitive display screen, cause the processor to enable a user interface of the device, the user interface comprising at least two states, namely, (a) a tap-present state, wherein a plurality of tap-activatable icons for a respective plurality of pre-designated system functions are present, each system function being activated in response to a tap on its respective icon, and (b) a tap-absent state, wherein tap-activatable icons are absent but an otherwise-activatable graphic is present in a strip along at least one edge of the display screen for transitioning the user interface from the tap-absent state to the tap-present state in response to a multi-step user gesture comprising (i) an object touching the display screen within the strip, and (ii) the object gliding on the display screen away from and out of the strip.

1. A non-transitory computer readable medium storing a computer program with computer program code, which, when read by a mobile handheld computer unit, allows the computer to present a user interface for the mobile handheld computer unit, the user interface comprising:

a touch sensitive area in which a representation of a function is provided, wherein the representation consists of only one option for activating the function and wherein the function is activated by a multi-step operation comprising (i) an object touching the touch sensitive area at a location where the representation is provided and then (ii) the object gliding along the touch sensitive area away from the touched location, wherein the representation of the function is not relocated or duplicated during the gliding.

Source: USPTO

Aequitas e.g., claims that Apple's gesture-based iOS navigation and QuickPath typing infringe on the Neonode patents (that Aequitas hold). The infringement goes all the way back to iPhone 4S, which was released in 2011, and officially discontinued in 2013. The predecessor, iPhone 4, was launched in 2010, which is too long ago. In 2011, when iPhone 4S started selling, 72m iPhone units in total were sold worldwide. Units then ramped up to in total 231m during 2015 and have since then been around 210-220m annually, although one should note that the patents at stake only cover US. Nevertheless, we estimate that Apple has sold well over 400m iPhones in the US during 2014-2019.

For Samsung, Aequitas lists a number of infringements, e.g. slide-to-unlock, answering phone calls with a swipe movement, and the method of gliding the fingers across the keys instead of typing all keys individually. Samsung calculations are harder to make since we have a hard time to tell how many of its total ~325 smartphones sold in US that are not included. The lawsuit just mentions the Galaxy S line, the A series, Galaxy Note and Galaxy Tab, among others. We do not know what "among others" refers to.

Below we list the phones included in the lawsuits:

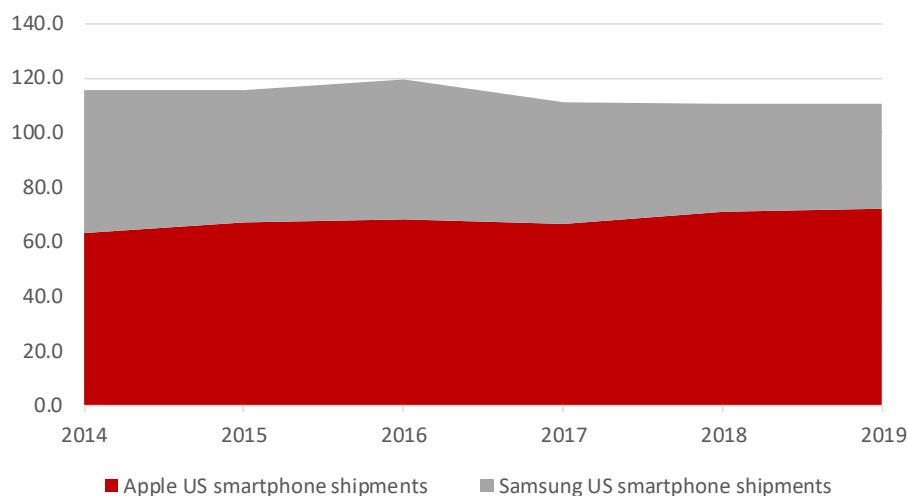
Selection of devices included in the lawsuits		
Apple		Samsung
iPhone 4S	iPhone 7 Plus	Galaxy S series
iPhone 5	iPhone 8	Galaxy A series
iPhone 5c	iPhone 8 Plus	
iPhone 5s	iPhone X	
iPhone 6	iPhone XR	
iPhone 6 Plus	iPhone XS	
iPhone 6s	iPhone XS Max	
iPhone 6s Plus	iPhone 11	
iPhone SE	iPhone 11 Pro	
iPhone 7	iPhone 11 Pro Max	

Source: Associated legal documents

The combined US market share of Samsung and Apple increased to about 78% in Q1'20 but has mostly been in the mid-sixties since 2014. There is a time limit for the damages of six years prior to the filing. After triangulating various data points, we believe relevant volumes are at the very least 200m Samsung phones, meaning the total for Apple and Samsung exceeds 600m phones, or over 100m phones on average per year. In summary, we believe the US smartphone shipments can be summarized like the following graph. To be on the

conservative side, we have completely left out all other device types like tablets etc. in our calculations.

US smartphone shipments (million)



Source: Various industry sources

The royalty rate

Above we have mentioned that we believe the relevant volumes are about 600m in total. The other piece of the puzzle is the royalty, which is often measured in basis points (BPS). According to US law, it cannot be less than a reasonable royalty. As mentioned, deliberate infringement increases the royalty significantly. Previously, when we did not know whether there would be litigation or not, we used a minor royalty rate of a couple cents per phone. However, we believe the slide-to-unlock function and other similar features are crucial parts of the phones that could require a higher royalty.

One important part is the doctrine of the smallest saleable patent practicing unit' (SSPPU). According to SSPPU the royalty should be calculated from the smallest possible unit that embodies the claims of the patent and is sold on the market. Thus, the royalty should not be calculated on the profit of the entire phone, but rather on comparable components. We have seen some cases where the royalty rate was around 100 BPS. As for smartphone components, e.g. Qualcomm's licensing business usually charges royalties of 1-4%.

Neonode did not succeed in selling the patent portfolio to Apple in 2017

In May 2017, Neonode sent an inquiry to Apple's Head of Patent Acquisitions regarding if Apple wanted to acquire the patent family. The email included a prospectus with a citation analysis showing that Apple had cited the 879 patent more than 30 times in its patent prosecution efforts. However, after nine weeks, Apple decided to pass on the opportunity, which is a bad omen, in our view. Is it possible that Apple studied the Neonode patents intensively for nine weeks only to conclude that they were not a threat? Certainly, Apple should have been able to predict that Neonode later would team up with an NPE, as this is extremely common, and Apple long has been the number one target of such constellations. Moreover, as the market cap of Neonode was peanuts at the time, it would likely have been significantly cheaper to buy all of Neonode instead of losing a lawsuit, which we would say still can be still the case. One consequence of the patent wars between Apple and Samsung

(see further below) was that the big tech players started building major patent portfolios for defense purposes, or what in the military is called mutually assured destruction. Neonode's IP could arguably be a good addition in such a portfolio.

As for the Samsung lawsuit, Samsung in 2005 entered into a licensing agreement with Neonode. The contract was terminated in 2009. We therefore think that Samsung has been made aware of the patents on several occasions, which should mean willful infringement (if infringement is established).

Apple & Samsung's patent strategy

We think Apple has become a bit less prone to settle with NPEs, but back in 2014 it settled in 90% of the cases. Apple's and Samsung's lawyer costs are enormous, which is far from surprising as the Apple profit per hour exceeds Neonode's revenues for a whole year. Apple and Samsung are also quite used to fending off NPEs. Apple e.g. has faced over 100 NPE lawsuits. Common IP litigation tactics typically involve stalling the lawsuits and bleeding out the opponent's resources. The major defendants often engage in lengthy negotiations regarding terminology and wording. We think one of the first actions from Apple and Samsung could be a motion to transfer due to incorrect forum in order to toss out the case from Texas, hoping it will end up in a more Apple/Samsung friendly, and inefficient district. Apple has stores and 7 000 employees in Western Texas, which should make it a relevant forum for the litigation.

The history of Apple & Samsung's patent war and Neonode's role

The lawsuits are related to the old patent war during 2011-2018 between Apple and Samsung. This war was fought on four continents. Out of its gigantic IP portfolio of thousands of patents, Apple, when going after Samsung, selected three patents, whereof one was the touchscreen patent that came to be known as the slide-to-unlock-patent. This gives an indication of the value and innovation of this patent (and potentially Aequitas's patents), as it was considered a key invention of the iPhone. Samsung, claiming that the patent was invalid, referenced Neonode as prior art in its defense against Apple's lawsuit. Aside from Neonode's N1 phone from 2004, it also referenced a paper from Plaisant at a computer conference in 1992 that also, it argued, had made the invention public earlier. One question to consider is therefore if Plaisant precedes Neonode's invention and makes it invalid.

Long story short, in the end Samsung lost and its petition in US was denied as the court concluded Samsung failed to demonstrate that the slide-to-unlock patent was obvious. The non-obvious requirement of granting a patent means that someone with ordinary skill in the art would not know how to solve the problem that the invention tries to solve, by using the exactly same mechanism (In Swedish patent law this phenomenon is described as: "uppfinningshöjd"). Thus, what the court said was that the slide-to-unlock invention of the iPhone would not have been obvious for an ordinary skilled person that studied Neonode and Plaisant's findings. In conclusion, the patent is therefore unclear. However, in Germany, the Supreme Court came to the exact opposite conclusion and invalidated Apple's patent, referencing to Neonode as prior art. Thus, we think it is very uncertain what approach the court will take in Aequitas vs. Samsung and Apple. The Texas court is independent with regards to the previous Apple and Samsung outcomes. The question of not invalidating Apple's patent does not affect the validity of Neonode's patent.

Good track record of involved law firm

As far as we can see, the two involved law firms are not two of the larger US firms. The most prominent one, Hagens Berman Sobol Shapiro (HBSS), has previously won a class action lawsuit of USD 450m against Apple and the five largest publishing companies in US, in a case where the companies conspired to inflate e-book prices. HBSS clearly likes to take on the giants. Some cases won in the past by the key people of HBSS involve USD 206 bn from Philip Morris and 27 bn from Visa and Mastercard. In the IP area it has fought Bombardier, LG, Nintendo Wii, Angry Birds and Samsung.

HBSS has operated for 25 years, returning USD 26 bn to clients, i.e. circa USD 1 bn per year, or USD 100m on average per case. The firm operates on a contingency fee basis. It should mean HBSS is more inclined towards sure cases, i.e. suggesting it views Neonode as a more sure case.

HBSS is not focused on the patent niche but has a wide scope of completely other areas including e.g. anti-terrorism, automotive, human rights, consumer rights, emissions, employment, environmental, investor fraud, personal injury, pharmaceutical fraud, sexual harassment and sports. We only find nine IP cases though. Five of them were settled and three led to judgments for clients (the last case is still active). We note five other cases against Apple, albeit within class action suits (consumer rights) and antitrust. Out of the active cases against Apple, the oldest ones are from July 2016 and January 2018.

Outcomes in other patent litigations

Caltech won USD 1.1 bn from Apple in 2020, following a lawsuit in 2016 after Apple's appeal was dismissed. The devices only mentioned phone models up until iPhone 6S, i.e. significantly lower volumes than for Aequitas. VirnetX was awarded damages of USD ~450m for its patent on encryption tech for facetime and iMessage, following a long journey that started ten years before, which we think explains the lower damages than Caltech. In December 2016, Dooyong Lee's old firm Acacia Research won USD 22m from Apple. The lower figure is likely related to fewer devices included (seemingly only based on iPhone 5, iPhone 5c, iPhone 5s, iPad 3, iPad 4, iPad Air, iPad mini, and iPad mini 2). In 2017, Acacia alone had reportedly sued Apple more than 40 times over the last decade. If we look at data from all IP litigation combined (not just Acacia), the median damages for NPEs has averaged around USD 15m, but there is a large spread.

New contactless touch partnerships

Neonode has recently, on June 18 and 22, announced new Chinese partnerships with Yesar and Easpeed. As we understand it, they will buy sensors directly from Neonode, integrate them into their own products and sell to end customers. The information available is extremely limited and mostly in Chinese, albeit this does not mean that these are garage firms. We assume more partnerships could come as aggressive rollouts and intense competition is a common phenomenon in China.

Yesar

Yesar was established in 2016 but has already reached sales of USD 2.8m. The founder and CEO was head of Supply at Futuris Automotive that was sold to Adient for USD 360m in 2017. Yesar sells smart display devices, targeting automotive, industrial and consumer electronics. The holographic interface offering that Neonode will become a part of is more than just elevators and includes e.g. kiosks and gaming as well. From the press release we conclude that the solutions to be ready in H2 are retrofitting of existing hardware. Yesar is a good example of how hard it is to obtain information. We only find two employees on LinkedIn, which on the surface would suggest that it would be impossible to scale. However, its R&D department of 25 people develops e.g. optical design, holographic displays, V2X, AR and HMI solutions. Moreover, the factory site employs 300 people.

Easpeed

The other new partner, Easpeed, was also founded in 2016. It has its own holographic plate production facility. Easpeed is not quite as big as Yesar, as of yet, employing 70 people. However, it is backed by rather large VC investments, totaling USD 14m thus far, whereof ~80% was raised in February 2020. We therefore think Easpeed has the potential to move fast. The agreement with Neonode targets upgrades of thousand elevators, but also other areas like ticket machines and kiosks etc. Easpeed has reportedly installed the world's first contactless vending machine, in Hefei, China. The holographic display technology allows users to choose destinations by tapping the screen projected in the air and pay for the trip in a 100% touchless experience. Easpeed has started rolling out the same technology in elevators.

We especially like the quote: *"Neonode's touch sensor modules are truly a breed apart from anything we've seen"*. The question is how much Easpeed has looked. When it comes to limiting contact by gesture control detection of wide movements, we believe there is cutthroat competition. However, alternatives are much fewer when it comes to Neonode's selling point of precise and accurate holographic touch, i.e. a 100% contactless substitute for touch that keeps the touch button interfaces that customers are accustomed to.

Financial Estimates

To summarize, our base case uses the following assumptions for patent monetization

1. Total volumes: 600m
2. Royalty: USD 1.3
3. Probability of successful outcome: 10%, which is equal to an eventual settlement where Neonode and Aequitas receive 10% of the total damages, assuming Apple has higher bargaining power.
4. Neonode's share: 50%
5. Payment due in late 2023.
6. If Aequitas wins it will be entitled to future royalties as well, which is not included in our modelling.
7. Altogether this equals USD 40m

We think USD 800m is reasonably in line with older cases, or lower, as we assume volumes are significantly larger in these lawsuits, simply because Apple has sold much more phones during the past years, compared to the first years after the iPhone launch. The same goes for Samsung. As a sanity check, we can also note that a royalty of USD 1.3 is equal to 19 BPS of the very cheapest iPhone 4S (USD 699), whereas the simplest iPhone 11 costed USD 999.

The timing of the payment is also important. For VirnetX, it took 10 years. The average patent litigation timeline is about two and a half years, possibly a few months faster in Texas. When there are settlements, which is mostly the case (to 70%), they are usually, to 90%, made during the first 12-18 months. 78% of the trial outcomes are appealed, and 60% receives a written opinion.

Changes in estimates

We increase our expected Aequitas payment to USD 40m based on the assumptions above, but we move the outcome from 2021 to 2023. Our 2022 estimates are increased slightly due to traction in contactless touch.

Forecast adjustments		2020E	2021E	2022E
(USDm)				
Sales	Old	6	14	14
	New	6	7	16
<i>% change</i>		0%	-47%	11%
EBIT	Old	-5	1	-2
	New	-5	-6	-1
<i>% change</i>		0%	-1050%	-41%
Profit before tax	Old	-5	1	-2
	New	-5	-6	-1
<i>% change</i>		0%	-1050%	-41%
Earnings per share	Old	-0.46	0.14	-0.21
	New	-0.46	-0.55	-0.12
<i>% change</i>		0%	-492%	-41%

Source: Redeye Research, Neonode

Detailed estimates

Sales assumptions: Automotive				
(MUSD)	2020E	2021E	2022E	
Total sales	1.5	1.9	5.0	
<i>whereof infotainment (%)</i>	100%	100%	59%	
<i>whereof Autoliv steering wheels (%)</i>	0%	0%	26%	
<i>whereof tailgate (%)</i>	0%	0%	10%	
<i>whereof door collision avoidance & door handles (%)</i>	0%	0%	5%	
<i>Sales growth (%)</i>	-19%	25%	166%	
Total Neonode units shipped (mil)	0.9	1.0	1.9	
<i>whereof modules (%)</i>	0%	0%	11%	
<i>whereof licensing (%)</i>	100%	100%	89%	
<i>Volume growth (%)</i>	-10%	20%	83%	
Blended ASP (USD)	1.7	1.8	2.6	

Source: Redeye Research, Neonode

Sales assumptions: Printers				
(MUSD)	2020E	2021E	2022E	
Total sales	2.9	3.3	4.8	
<i>whereof HP (%)</i>	65%	55%	52%	
<i>whereof others (%)</i>	51%	45%	48%	
<i>Sales growth (%)</i>	-27%	12%	47%	
Total Neonode units shipped (mil)	4.4	5.1	7.4	
<i>whereof modules (%)</i>	0%	0%	0%	
<i>whereof licensing (%)</i>	100%	100%	100%	
<i>Volume growth (%)</i>	-36%	14%	47%	
Blended ASP (USD)	0.7	0.7	0.7	

Source: Redeye Research, Neonode

Sales assumptions: Other sensor modules				
(MUSD)	2020E	2021E	2022E	
Total sales	0.9	1.8	4.4	
<i>Sales growth (%)</i>	58%	100%	149%	
Total Neonode units shipped (')	92	158	325	
<i>Volume growth (%)</i>	227%	72%	106%	
Blended ASP (USD)	10	11	14	

Source: Redeye Research, Neonode

Sales assumptions: E-readers & other				
(MUSD)	2020E	2021E	2022E	
Total sales	0.3	0.5	1.3	
<i>whereof E-readers</i>	32%	2%	15%	
<i>whereof NRE & other</i>	68%	98%	85%	
<i>whereof Aequitas (enforcement/licensing of patents)</i>				
<i>Sales growth (%)</i>	12%	97%	155%	
Total Neonode units shipped (mil)	0.2	0.0	0.5	
<i>Volume growth (%)</i>	-85%	-84%	1900%	
ASP excl. NRE (USD)	0.5	0.4	0.4	

Source: Redeye Research, Neonode

Short term sales & earnings assumptions				
(USD million)	2020E	2021E	2022E	
Total sales		6	7	16
<i>Sales growth (%)</i>	-16%	33%	109%	
<i>Group gross margin</i>	87%	83%	77%	
OPEX	-10	-12	-13	
EBIT	-5	-6	-1	
EBIT margin	-85%	-75%	-8%	
Pre-tax profit	-5	-6	-1	
Net earnings	-5	-6	-1	
EPS	-0.46	-0.55	-0.12	

Source: Redeye Research, Neonode

Quarterly estimates (million USD)											
SEKm	2018	Q1'19	Q2'19	Q3'19	Q4'19	2019	Q1'20	Q2'20	Q3'20	Q4'20	2020
Sales	8.5	2.0	1.7	1.3	1.6	6.6	1.3	1.2	1.2	1.8	5.6
<i>Sales growth (%)</i>	-17%	-15%	-9%	-32%	-32%	-22%	-36%	-28%	-7%	13%	-16%
EBIT	-3.9	-0.7	-1.3	-1.2	-2.6	-5.7	-1.1	-1.0	-1.3	-1.4	-4.8
PTP	-3.9	-0.7	-1.3	-1.2	-2.6	-5.8	-1.1	-1.0	-1.3	-1.4	-4.8
EPS (USD)	-0.67	-0.07	-0.15	-0.13	-0.29	-0.64	-0.10	-0.11	-0.14	-0.14	-0.46
EBIT margin (%)	-45%	-33%	-77%	-91%	-159%	-86%	-84%	-82%	-103%	-77%	-86%
Gross margin (%)	89%	95%	96%	95%	72%	90%	97%	86%	82%	85%	87%
EPS growth (%)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Source: Redeye Research, Neonode

Investment Case

Turnaround case turned credible with new main owners & management

Limited downside from underlying values that could be unlocked

Major autotech opportunity

Break-even and large module deals to drive the stock price

Turnaround case turned credible with new main owners & management

The stock market's confidence in Neonode has been low since way back, for very good historical reasons, in our view, most notably the communication. Sales have deteriorated, but the low valuation is also a punishment for old sins. However, this means that there are very clear reasons for why shares are undervalued. The Neonode turnaround case has turned credible, due to a promising set of new people. Besides a new CEO with a successful autotech track record, the new owners and board members are very engaged and involved in the company. The COB comes from a long career in private equity where the COB works tight with Management. The new owners also have excellent track records in business and investing. The new board decided to focus and closed several far-fetched, non-core projects initiated by previous Management. Moreover, the failed change in business model was reversed. The company had told the customers they could only buy modules and not licenses going forward. This decision was reversed around year-end 2017 and customers are now free to choose. We believe the lead times are about 2-3 years, meaning we should soon begin to see some results. Despite all of Neonode's failures in the past, the company has only lost a handful of customers, which is remarkable and implies a strong value proposition for the customers. Our conclusion is that the technology and customer benefits are fantastic while execution and communication have been lousy. All in all, there are evidence suggesting that Neonode could, indeed, finally turn.

Limited downside from underlying values that could be unlocked

Neonode's has a recurring license revenue base of about USD 5-6m per year. The burn rate is about USD 1m per quarter, meaning there should be a plan B in unlocking large values tomorrow by cutting costs and earn license revenue with 100 % margin. This opportunity is not new in itself, but the difference, in our own view, is that the new main owners are not sentimental and will not tolerate more years of disappointment, meaning these values will eventually be unlocked if the business does not turn.

Major autotech opportunity

Contactless touch has emerged as a major opportunity, propelled by the coronavirus and fear of touching buttons etc. However, we still think automotive has the largest potential. Smart Eye has the same market and drivers etc. as Neonode but the valuation differs by several factors. In addition, Neonode has higher ASP and even better barriers to entry (hardware vs software) compared to Smart Eye. Thus, we have reason to believe that the perceptual change could be quite substantial, should Neonode be perceived as a hot autotech company. If Neonode would manage to close one single automotive contract it could have a value the size of half of today's market cap. As an example, We believe the steering wheel partnership with Autoliv could alone be worth USD 100m, although this lies a couple of years down the road, and consequently is not on the stock market's radar. Euro NCAP is now mandating driver monitoring technology but it still does not have any activities within hands on the steering wheel. According to our industry sources though, it is likely that such activities could start going forward.

Break-even and large module deals to drive the stock price

We argue that financial reports with black figures are needed in order to change the perception of investors and move the stock. In addition, large module contracts, especially in auto, are important catalysts for the Neonode shares (but of course the company also need to deliver on those contracts - not only announce them).

Valuation

Bear Case 3.0 USD

Our investment case relies to a great extent on the assumption that Neonode will eventually succeed in its module business. In our bear case we assume Neonode shuts down the module fab in 2021 and therefore can cut OPEX by 40%. By lowering its ambitions and laying off people Neonode could maintain high license profit margins but would then become a company of minor size with limited growth possibilities. We believe Neonode can have a decent success in monetizing licenses in its old areas and keep printer sales stable, but we do not see any traction in new verticals such as med-tech and military etc. The main difference in our bear case compared to our base scenario is the automotive modules. However, we expect steering wheel licensing revenue, albeit a bit delayed. We assume the focus, in general, will be on license deals. In total we forecast volumes of 3 million in automotive during year 2025, meaning half the volumes and half the revenue of our base case. We believe that one big risk in automotive is tier-1 suppliers launching their own optical solutions and that this materializes in a reasonably pessimistic scenario. In our bear case we also apply a higher margin of safety when it comes to the long-term technology risks as the many shortcomings of pro cap provide a massive incentive for development of existing and new technologies to replace pro cap. However, we do believe that pro cap, in a bear case, would prove to be more viable than expected, preventing Neonode from expanding. Basically, we expect a status quo compared to what the company currently delivers. With the assumptions above we expect a slower CAGR sales growth of 31% during 2019-2025 and 4% during 2026-2028. Neonode would break even in the end of 2022 from savings and layoffs (a 40% OPEX reduction) and would then reach an EBIT margin of ~25% during 2022-2025 and a long-term EBIT margin of 10 percent.

Base Case 8.0 USD

In our scenario analysis we use a required rate of return of 12%. In our base case we expect Neonode to find product/market-fit in automotive and be able to provide modules, although it will take some time. We expect modules to account for about half of automotive volumes in 2023. In printers, however, we do not expect any module conversion at all. We estimate a 38% CAGR automotive volume growth during 2019-2025 where infotainment volumes grow to 1.6 million - slower than the market. The remaining growth is divided by modules from collision avoidance sensors, tailgates and licenses for steering wheels. Steering wheels are the most important area given the high ASP, although we use more conservative ramp-up assumptions. In total, we forecast about 7 million sensor modules and licenses in automotive during year 2025. As for printers we assume an addressable market of 50 million units taking into account higher touch penetration but less focus from Neonode on the low-end printers. We assume Neonode can grow its volumes by a CAGR of 8% to 11m (compared to 9m in 2016), reaching a market share of about 20% and a CAGR sales growth of 8% during years 2019-2025. We expect other sensor module volumes reaching around 1m in 2025 since the new segments, like med-tech, have smaller volumes. We estimate a blended ASP of about USD 10-15 during the period, meaning sales reaching USD ~10m in 2025. As for AirBar we expect it to be discontinued and not sold to a third party. We assume average module gross margins of about 45 percent for all module applications during 2018-2025. Our OPEX assumptions implies scalability as we expect a CAGR OPEX growth of only 7% during 2019-2025, considerably less than the sales growth. From the assumptions mentioned above we derive a CAGR sales growth of 38% during years 2019-2025. The break-even is estimated around 2024, including a temporary profit around

Bull Case 18.0 USD

In bull case we assume that there are no more hick-ups in the module business. We also believe that the cars in 2025 would include on average around 30% more modules than our base case, due to tailgate and collision avoidance sensors. We expect higher volumes for the steering wheel. If Autoliv maintains a 50+ percent win ratio on new contracts and consequently approaches its target of doubling its market share Neonode should sooner or later get a piece of the pie. Besides higher automotive revenue, our bull case also differs from our base case when it comes to new verticals. We expect 50% higher volumes from new verticals in 2025 compared to our base case, most notably related to the med-tech and military areas, where we believe Neonode has a strong value proposition. In addition, we assume a three times higher patent enforcement fee from Aequitas (USD ~120m). From the assumptions above we estimate a CAGR sales growth of 48% during years 2019-2025 with the EBIT margin averaging 25% during 2022-2027. Hereafter we expect that margins will reach a sustainable, long-term EBIT margin of a solid 25% due to scalability and lower investment needs.

2023 from a one-off payment of USD 40m related to Aequitas and enforcement of the patents. We see the EBIT margin reaching 26% during 2023, whereafter margins will start to approach the long-term EBIT margin of 16%.

Catalysts

Patent Monetization

Neonode has a contract with Aequitas where Aequitas will try to monetize some of Neonode's patent for a 50/50 revenue share. In return, Aequitas covers all the costs of the process. We value this opportunity to USD 40m.

Major module deals

In the fall of 2016 Neonode received a module deal of in total USD 11 million related to door handle modules for one car model. Similar deals would have a major impact on the share price. We especially believe that a design win for the steering wheel together with Autoliv/Veoneer would be positive as touch in steering wheels is crucial in handing over from automatic to manual driving.

Break-even

We expect the reaching of break-even in the end of 2021 which would be an important milestone for the stock market to grasp that Neonode has left the losses behind and hit the point of inflection.

Summary Redeye Rating

The rating consists of three valuation keys, each constituting an overall assessment of several factors that are rated on a scale of 0 to 1 points. The maximum score for a valuation key is 5 points.

People: 4

The Board members are aboard, holding substantial amounts of shares, particularly the COB, Ulf Rosberg, who holds 18 %. Reputable investor Peter Lindell owns 17 %. These new main owners come from the private equity industry and we believe they will not tolerate more mis-management. The new CEO Urban Forssell that joined in January 2020 has a successful track record in building autotech businesses, which we believe is important for Neonode as automotive is its number one growth area. Overall, Management has been long in the organization or have experience from adjacent industries. Neonode has earlier missed its guidance on several occasions causing stock market mistrust, although operationally it has managed to pivot from e-readers to automotive and printing, demonstrating years of consistent hard work in order to be auto qualified. The large investments thus could pay off. For a higher ownership score we would primarily therefore like to see share purchases from the Management as executives only have minor holdings.

Business: 3

With the many competitive advantages of its unique, patented technology, Neonode is poised to benefit from the generally growing sensor penetration for touch and gesture applications. Following challenging qualification phases of several years, Neonode managed to break into automotive (infotainment), launching over 30 car models with a large number of different tier-1s. We believe there is an opportunity to add several more use cases in automotive, e.g. the steering wheel partnership with Autoliv. In addition, the modules open up a world of new opportunities in segments that previously were not worthwhile due to low volumes or extensive integration work, e.g. medtech. The company has detected viable niches in rugged touch for professional users and touchless touch.

Financials: 2

As Neonode never before has been able to reach profitability our retrospective profitability Redeye Rating can be no more than 0. However, we believe that Neonode slowly is getting closer and closer to the point of break-even. The base of license revenue together with scalability and the low costs indicate that Neonode seems to have the ingredients it takes to be profitable in the future. At that point, the rating would start to gradually increase. Neonode has a lean balance sheet, basically without debt or capitalized assets. Neonode did a USD 4.7m private placement in December 2018, but our estimates assume another financing round in mid-2020. As for operative risks, there is a rather narrow product portfolio and a major dependence on a few customers.

INCOME STATEMENT	2018	2019	2020E	2021E	2022E
Net sales	9	7	6	7	16
Total operating costs	-11	-9	-7	-13	-16
EBITDA	-3	-3	-2	-5	-1
Depreciation	-1	-3	-3	0	0
Amortization	0	0	0	0	0
Impairment charges	0	0	0	0	0
EBIT	-4	-6	-5	-6	-1
Share in profits	0	0	0	0	0
Net financial items	0	0	0	0	0
Exchange rate dif.	0	0	0	0	0
Pre-tax profit	-4	-6	-5	-6	-1
Tax	0	0	0	0	0
Net earnings	-4	-6	-5	-6	-1

BALANCE SHEET	2018	2019	2020E	2021E	2022E
Assets					
<i>Current assets</i>					
Cash in banks	7	2	8	0	1
Receivables	3	2	2	2	5
Inventories	1	1	1	1	2
Other current assets	0	0	0	0	0
Current assets	10	5	11	4	8
<i>Fixed assets</i>					
Tangible assets	2	2	0	1	1
Associated comp.	0	0	0	0	0
Investments	0	0	0	0	0
Goodwill	0	0	0	0	0
Cap. exp. for dev.	0	0	0	0	0
0 intangible rights	0	0	0	0	0
0 non-current assets	0	0	0	0	0
Total fixed assets	3	2	0	1	1
Deferred tax assets	0	0	0	0	0
Total (assets)	13	7	11	4	9
Liabilities					
<i>Current liabilities</i>					
Short-term debt	0	0	3	1	4
Accounts payable	2	3	2	3	5
0 current liabilities	0	0	0	0	0
Current liabilities	2	3	5	4	9
Long-term debt	0	0	0	0	1
0 long-term liabilities	1	1	1	1	1
Convertibles	0	0	0	0	0
Total Liabilities	3	4	6	5	11
Deferred tax liab	0	0	0	0	0
Provisions	0	0	0	0	0
Shareholders' equity	12	6	8	2	1
Minority interest (BS)	-2	-3	-3	-3	-3
Minority & equity	10	4	5	0	-2
Total liab & SE	13	7	11	4	9

FREE CASH FLOW	2018	2019	2020E	2021E	2022E
Net sales	9	7	6	7	16
Total operating costs	-11	-9	-7	-13	-16
Depreciations total	-1	-3	-3	0	0
EBIT	-4	-6	-5	-6	-1
Taxes on EBIT	0	0	0	0	0
NOPLAT	-4	-6	-5	-6	-1
Depreciation	1	3	3	0	0
Gross cash flow	-3	-3	-1	-5	-1
Change in WC	-1	1	0	0	-1
Gross CAPEX	0	-2	-2	-1	-1
Free cash flow	-4	-4	-3	-6	-3

CAPITAL STRUCTURE	2018	2019	2020E	2021E	2022E
Equity ratio	74%	52%	45%	-9%	-18%
Debt/equity ratio	0%	6%	48%	70%	535%
Net debt	-7	-2	-5	1	4
Capital employed	3	2	0	1	3
Capital turnover rate	0.6	0.9	0.5	1.7	1.7

GROWTH	2018	2019	2020E	2021E	2022E
Sales growth	-17%	-22%	-16%	34%	109%
EPS growth (adj)	600%	-4%	-29%	21%	-77%

DCF VALUATION		CASH FLOW, MUSD	
WACC (%)	11.6 %	NPV FCF (2020-2021)	-10
		NPV FCF (2022-2028)	59
		NPV FCF (2029-)	29
		Non-operating assets	1
		Interest-bearing debt	0
		Fair value estimate MUSD	78
Assumptions 2020-2026 (%)			
Average sales growth	44.2 %	Fair value e. per share, USD	7.7
EBIT margin	9.7 %	Share price, USD	8.2

PROFITABILITY	2018	2019	2020E	2021E	2022E
RDE	-38%	-62%	-65%	-112%	-81%
ROCE	-44%	-82%	-72%	-111%	-56%
ROIC	-187%	-175%	-245%	-1135%	-159%
EBITDA margin	-34%	-38%	-28%	-69%	-5%
EBIT margin	-45%	-86%	-86%	-75%	-8%
Net margin	-46%	-85%	-83%	-75%	-8%

DATA PER SHARE	2018	2019	2020E	2021E	2022E
EPS	-0.67	-0.64	-0.46	-0.55	-0.12
EPS adj	-0.67	-0.64	-0.46	-0.55	-0.12
Dividend	0.00	0.00	0.00	0.00	0.00
Net debt	-1.12	-0.22	-0.46	0.11	0.41
Total shares	5.86	8.80	10.17	10.17	10.17

VALUATION	2018	2019	2020E	2021E	2022E
EV	4.4	16.4	79.7	85.6	88.6
P/E	-2.5	-3.0	-18.0	-14.9	-66.3
P/E diluted	-2.5	-3.0	-18.0	-14.9	-66.3
P/Sales	1.1	2.6	15.0	11.2	5.4
EV/Sales	0.5	2.5	14.4	11.5	5.7
EV/EBITDA	-1.5	-6.4	-50.7	-16.6	-114.6
EV/EBIT	-1.1	-2.9	-16.8	-15.3	-70.5
P/BV	0.8	2.7	10.7	38.3	90.5

SHARE PERFORMANCE	GROWTH/YEAR	18/20E
1 month	72.8 %	Net sales
3 month	489.2 %	Operating profit adj
12 month	192.5 %	EPS, just
Since start of the year	322.2 %	Equity

SHAREHOLDER STRUCTURE %	CAPITAL	VOTES
Ulf Rosberg	17.3 %	17.3 %
Peter Lindell	16.7 %	17.4 %
AWM Investment	6.0 %	6.0 %
Carl Grevelius	5.1 %	5.1 %
Andreas Bunge	1.1 %	1.1 %
Blackrock Inc	1.1 %	1.1 %
Vanguard Group	0.5 %	0.5 %
Geode Capital Management	0.2 %	0.2 %
FMR LLC	0.2 %	0.2 %
Credit Suisse Group	0.2 %	0.2 %

SHARE INFORMATION	
Reuters code	NEON.OQ
List	NASDAQ
Share price	8.2
Total shares, million	10.2
Market Cap, MUSD	83.3

MANAGEMENT & BOARD	
CEO	Urban Forssell
CFO	Maria Ek
IR	David Brunton
Chairman	Ulf Rosberg

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Redeye Rating and Background Definitions

Company Quality

Company Quality is based on a set of quality checks across three categories; PEOPLE, BUSINESS, FINANCE. These are the building blocks that enable a company to deliver sustained operational outperformance and attractive long-term earnings growth.

Each category is grouped into multiple sub-categories assessed by five checks. These are based on widely accepted and tested investment criteria and used by demonstrably successful investors and investment firms. Each sub-category may also include a complementary check that provides additional information to assist with investment decision-making.

If a check is successful, it is assigned a score of one point; the total successful checks are added to give a score for each sub-category. The overall score for a category is the average of all sub-category scores, based on a scale that ranges from 0 to 5 rounded up to the nearest whole number. The overall score for each category is then used to generate the size of the bar in the Company Quality graphic.

People

At the end of the day, people drive profits. Not numbers. Understanding the motivations of people behind a business is a significant part of understanding the long-term drive of the company. It all comes down to doing business with people you trust, or at least avoiding dealing with people of questionable character.

The People rating is based on quantitative scores in seven categories:

- Passion, Execution, Capital Allocation, Communication, Compensation, Ownership, and Board.

Business

If you don't understand the competitive environment and don't have a clear sense of how the business will engage customers, create value and consistently deliver that value at a profit, you won't succeed as an investor. Knowing the business model inside out will provide you some level of certainty and reduce the risk when you buy a stock.

The Business rating is based on quantitative scores grouped into five sub-categories:

- Business Scalability, Market Structure, Value Proposition, Economic Moat, and Operational Risks.

Financials

Investing is part art, part science. Financial ratios make up most of the science. Ratios are used to evaluate the financial soundness of a business. Also, these ratios are key factors that will impact a company's financial performance and valuation. However, you only need a few to determine whether a company is financially strong or weak.

The Financial rating is based on quantitative scores that are grouped into five separate categories:

- Earnings Power, Profit Margin, Growth Rate, Financial Health, and Earnings Quality.

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Disclaimer

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Redeye Rating (2020-06-25)

Rating	People	Business	Financials
5p	14	12	4
3p - 4p	108	82	33
0p - 2p	6	34	91
Company N	128	128	128

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Westman owns shares in the company : Yes

Havan owns shares in the company : No

Redeye performs/have performed services for the Company and receives/have received compensation from the Company in connection with this.