Initial Research 2019-05-17

Crunchfish: Rebel rocks retail payments

- Uniquely positioned to transform point-of-sales payments
- Strong partnerships facilitate fast rollout
- Gesture technique to blossom when AR glasses catch on

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Stock ticker:	CFISH
Industry:	Technology
Listed on:	Nasdaq First North
Latest stock price (SEK):	15,95
Market cap (MSEK):	423,9
Enterprise Value (MSEK):	402,5
Total number of shares (M):	25,77
- of which free float (M):	14,92

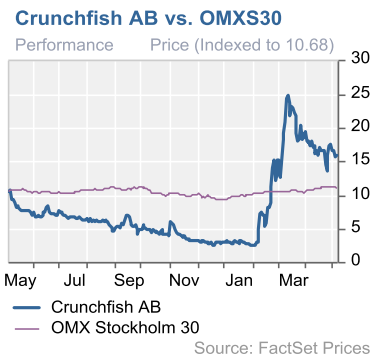
VHCF fair value per share

DCF model	32,60 - 51,80 SEK

	Crunchfish AB
Address:	Stora Varvsgatan 6A
	211 19 Malmö
Webpage:	crunchfish.com
CEO:	Joakim Nydemark

Main owners (31 Mar 2019)	**Capital (%)**
Femari Invest AB	24,8
Midroc Invest AB	17,3
Paul Cronholm	4,2
Carlquist Holding AB	3,8
Coeli Abs European Equity	3,7

Stock price history



	-1m	-3m	-12m
Change (%)	-8,0	429,8	51,2
52 w k range (Low /Hi) - SEK			2,53 / 26,35

Source: FactSet

Crunchfish has two patented technologies with the potential to transform human-machine communication: One in touchless gesture control of electronic devices and the other in contactless checkouts at physical stores.

Checkouts at stores are more than just payments, they can involve membership points, cash-backs, coupons, gift cards etc. Crunchfish has entered the joint venture Blippit with the intention of automating all parts of the checkout procedure, in addition to challenging the hegemony of payment card companies. Its service saves time and money for both shoppers and shops and we expect the adoption of its app terminals to go fast.

Demand for ever larger mobile screens with ever better portability should ultimately lead to breakthrough for AR glasses. Gesture control is arguably the best way of interacting with AR devices. This means an attractive market opportunity for Crunchfish's world-leading gesture technology. It is widely expected that one or more tech giants will launch AR glasses for consumers within a year or two, kickstarting a mass market.

In our economic scenario we foresee quickly accelerating revenues from the payments business starting late this year, while the gesture technology business grows more gradually. We forecast the first full-year profit and turn to positive cash flow in 2021. Depending on how fast the company can monetise the payments business, it may need a final new share issue of around SEK 30 million next year.

With our current assessment of risk, we estimate a fair value interval for the share at SEK 32.60 – 51.80 using a DCF model, implying significant upside from the current market valuation.

Table 1: Financial Overview

MSEK	2017	2 018	2019e	2020e	2021e
Total revenues	12,8	13,8	21,2	35,5	61,9
Grow th (%)	(2,4%)	7,6%	53,0%	68,0%	74,1%
EBITDA	(17,1)	(17,1)	(23,0)	(21,0)	(1,1)
EBITDA margin (%)	neg	neg	neg	neg	neg
EBT	(20,8)	(22,0)	(30,2)	(20,2)	31,6
Cash holdings	21,2	21,4	6,1	4,9	14,8
Total assets	44,7	46,6	38,2	48,6	80,3
Total equity	37,8	40,3	30,3	40,1	71,7
Solidity (%)	84,5%	86,3%	79,5%	82,6%	89,2%
P/E	neg	neg	neg	neg	13,4
ROE	neg	neg	neg	neg	44,0%
EV/EBIT (x)	neg	neg	neg	neg	neg
EV/Sales (x)	31,3	29,1	19,0	11,3	6,5

Source: Västra Hamnen Corporate Finance

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What is Crunchfish?

A world leader in gesture control

Crunchfish is a technology company based in Malmö, Sweden. Since its foundation in 2010, it has become one of the global technology leaders in gesture recognition for control of electronic devices. The technology is already embedded in millions of mobile phones, but its mass market breakthrough is expected to come in the next few years with the advancements in augmented reality (AR). Smart eyeglasses incorporating AR features are still a fringe product but are expected to become a major market once the first global electronics company decides to go for a large-scale launch. Lacking a touchscreen, smart AR glasses must be controlled using gesture, voice or both. Gesture Control is one of Crunchfish's two business units.

A transformation in retail checkouts

More recently, Crunchfish's expertise in mobile technology has led it to discover efficient protocols for short-range communication between mobile devices and between mobile and stationary devices. This technology has many potential uses. Crunchfish's second business unit, Mobile Proximity, is currently focused on mobile point-of-sales payments. Here, the company may redefine the payment infrastructure in physical shops and make checkouts easier, faster and cheaper for both retail stores and their customers.

History

Crunchfish was founded by Paul Cronholm and Tomas Gårdängen in 2010. Its first focus area was the development of mobile apps. By combining cutting edge expertise in image processing and machine learning, they developed algorithms for recognising hand movements using the image stream from a standard 2D mobile camera. The algorithm consisted of very efficient programming which made it possible to produce a purely software-based solution that made economical use of the battery.

Crunchfish's software runs on 30 million devices

It became a product that was easy to incorporate into mobile phones and enabled the user to initiate actions on the phone such as taking a picture when the phone was several steps away. More interestingly, it became possible to control the mobile when it was inserted into an AR or VR helmet and the touchscreen was out of reach. Crunchfish has a number of partnerships with large mobile phone makers such as OPPO, Vodafone and Gionee. Looking ahead, the majority of AR and VR helmets will probably not require mobile phones but be standalone products with their own screens and processors. Gesture control is probably the best way to control these devices. Crunchfish has already started deliveries to some of the most promising players in this market. Since initiating its gesture control solution in 2011, Crunchfish's software has been installed on more than 30 million mobiles, AR and VR devices worldwide.

Mobile-to-mobile communication opens possibilities

In 2014, Crunchfish started a second focus area based on mobile proximity, which was named aBubbl. A number of patent applications were submitted. The solution made it possible to exchange information between phones in inactive mode and opened for many shared experiences between people who were gathered in the same physical space, e.g. a conference, a meeting or a party. In 2017, Crunchfish decided to focus on the commercially most promising application for this solution, mobile payments. This led them to form the joint venture Blippit together with ClearOn who already had a central position in payments in Swedish retail.

Owners and financing

Crunchfish has two dominant owners, Femari Invest AB with 24.8% of the capital and votes and Midroc Invest AB with 17.3%. Femari Invest AB is owned by Joachim Samuelsson, the company's working Chairman and CEO of Blippit AB. Samuelsson first invested in the company in 2012 when the company approached outside investors, and he took over as Chairman at the same time. Samuelsson has increased his stake on several occasions and has subscribed for at least his proportional share of all but one subsequent new issue of shares. Midroc Invest is the investment arm of Midroc, a Swedish real estate and industrial group. Midroc Invest owns a stake in several young technology companies in Sweden. The group became owners at the same time as Samuelsson and has likewise taken their share of all but one of the subsequent new issues. A third notable owner is Paul Cronholm, co-founder of the company and CEO of Crunchfish Proximity AB. Cronholm is the third biggest owner with 4.2% of the company.

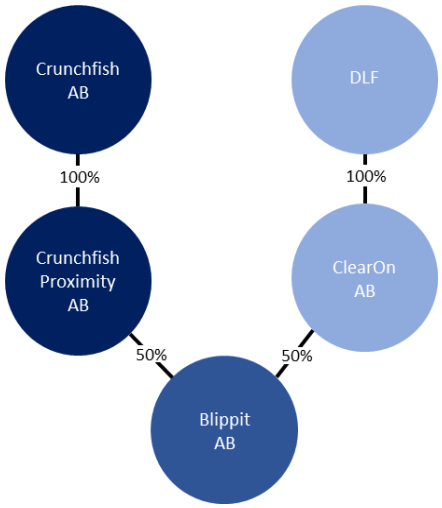
Mobile Proximity

Crunchfish's innovations in mobile communication originate from an idea born within its gesture control projects. In order to showcase how a user could apply a gesture to "move" a photo file from one mobile to another, the developers had to study how mobiles could communicate directly between themselves at short distances. They discovered multiple ways in which direct mobile-to-mobile communication protocols could be useful. Some of these were social applications, such as people exchanging business cards in a quick and convenient way.

Blippit is a joint venture with ClearOn

From an early stage they also realised that the technology could be a game changer in mobile payments at physical checkout desks. At present, payment solutions is the overriding focus in the Mobile Proximity business unit. Ownership of the innovations is vested in a fully owned subsidiary named Crunchfish Proximity AB. This subsidiary is in turn a 50 percent owner of Blippit AB, a joint venture in which ClearOn AB owns the other half. ClearOn is owned by DLF, the trade association for Swedish grocery producers and suppliers. It is the central clearing institution for coupons, vouchers, cash backs, gift cards etc circulating in Sweden.

Figure 1: Blippit ownership structure



What is Blippit?

The payment landscape is undergoing fast changes. Only a decade ago, most adults would carry a large wallet containing payment cards, banknotes and coins wherever they went, and a large share of purchases were paid in cash. Since then, cards have replaced cash in more and more payment situations. Many people nowadays carry small wallets with space only for cards and a handful of banknotes, or they have abandoned the wallet altogether, carrying cards in pockets on their mobile phone covers.

Cash and eventually cards are disappearing

The logical next step is to get rid of the physical cards, since card data can be stored in a mobile phone. Mobile payment services like Samsung Pay, Apple Pay and Google Pay take advantage of this, but their solutions are still limited in three important aspects: Firstly, they handle almost exclusively the payment part of a checkout procedure. Secondly, they require the user to own a payment card and therefore involve the same costly card fees as an ordinary card transaction. Thirdly, they are only available on certain models of mobile.

Blippit is an effort to simplify the whole checkout procedure. By the wave of a mobile phone, all tasks involved in the checkout at physical stores become fully automated. In addition to payment, it may include the redemption of coupons, discount vouchers, cash backs, gift cards and the like. Collecting, storing and applying such savings vehicles become much easier for the customer, thus lowering the overall cost of their shopping. Many different apps can be adapted for use on Blippit's terminals. The solution therefore opens the architecture for any number of underlying payment services and providers. The app could initiate a card payment or a credit transaction, or it could debit a bank account or e-wallet directly. By creating competition against the increasingly dominant card companies, Blippit offers retailers a chance to reduce the transaction fees they are currently paying.

The product

To use Blippit, a retail store has to get a physical app terminal from Blippit AB (Figure 2). Crunchfish Proximity will deliver the terminal and is responsible for both hardware and software design. The terminal connects to the checkout register with a standard USB plug. The communication with mobile devices is by Bluetooth signal.

As the customer approaches the checkout register, the terminal will recognise the mobile's identity and activate any applicable payment apps. If several apps are authorised for use with the present retailer, the user can select which app to use.

Figure 2: Blippit app terminal

One tag or "blip" with the mobile is all it takes

When the customer is about to pay, they simply hold their mobile toward the terminal. The terminal notices that a mobile is located within inches and connects the purchase to that device. The exchange of payment, coupons etc is instantaneous and the customer finally verifies the transaction with a fingerprint or pin code on their device. On the customer side, an authorised payment order is sent to their payment provider (bank, credit institution, card issuer etc) and on the cashier side the register affirms that it has received payment and books a receivable from any payment provider(s) involved.

The register sees the mobile as another input device

The advantage of having the app terminal attached to the checkout register by USB is important and differentiates it from existing card terminals. Card terminals are designed to handle payments exclusively, which means they receive their signal only after the purchase is fully entered and handle only the data items "amount owed" and "amount paid". The app terminal is much more versatile. By using USB, it connects to the register just like any other input terminal and can add or subtract to what is included in the purchase while the transaction is still open. It can handle any kind of information, such as coupons, vouchers etc. which the cashier would otherwise have to scan or key in by hand. By transmitting coupons automatically, the cashier may not even notice that any coupons are being used. Neither would they need to, since the validity check of coupons etc. runs automatically against ClearOn's cloud-based service.

Coupon collecting becomes easier and more attractive

The same app that customers use for payments could also be a store of coupons, vouchers, gift cards, cash backs etc. The customer may decide beforehand which of these options to include when paying. They may browse a list of offers inside the app before deciding to accept certain offers and receive the applicable coupons. The coupons are then ready for use at the next checkout. The customer may collect coupons at home when planning their shopping or when queueing for checkout at the store. They may also collect coupons as they walk around the store, by scanning e.g. QR-codes displayed on the shop shelves, which sends a voucher to their preferred app. The increased availability and convenience of using mobile coupons could entice more customers to use them. This would not only save money for the customers, but also make coupon campaigns more attractive to the suppliers who buy such campaigns from ClearOn.

Figure 3: Forthcoming terminal

The app terminal is a cheaper and less complex piece of hardware compared to a card terminal. It does not need a keyboard or screen as the shopper handles all interaction on their own device and it is designed to plug-and-play with cash registers right out of the box.

Next-version terminal will make card terminals obsolete

In a forthcoming version of the app terminal, Blippit plans to add NFC functionality to the hardware. This would enable more forms of payment, including mobile payment

apps like Apple Pay or Google Pay and contactless payments by card for small amounts. By additionally including a small touchscreen and a chip reader to the device, pin entry would be supported and any card payment, except by the outgoing magnetic stripe, would be possible. At that stage, Blippit's terminal would be in position to replace existing card readers at any physical checkout point.

Business model and rollout plan

Blippit is granted free use of technology for store checkouts

The operations of Blippit are formally conducted through Blippit AB, a newly formed company owned jointly by Crunchfish Proximity AB and ClearOn AB. Each partner has contributed half of the equity and will continue to finance its operation with seed capital during the first few years. Crunchfish has granted Blippit the exclusive right to commercialise Crunchfish's technology for mobile checkout at physical checkout registers, at no cost to Blippit. ClearOn contributes the infrastructure for cloud-based processing of coupons etc, also at no cost. All future profits will be shared equally between the partners.

3 income streams: Access, transaction and coupon fees

Blippit will purchase the app terminals from Mobile Proximity at a unit price to be decided, probably in the area of a few hundred SEK. Blippit will probably not charge retail stores any fees for their use of terminal hardware. Instead, it will charge an annual access fee for the use of apps in the terminal.

In addition, Blippit will charge retailers a transaction fee per payment in the same way card companies charge for their services today. In some cases, when the customer pays using alternatives such as credit, cash back or various vouchers, the payment providers responsible for these options may bear the transaction cost. One checkout may include more than one transaction, when a customer pays using a combination of e.g. debit card, gift card and cash back. If so, Blippit may earn several transaction fees for the same checkout.

Finally, Blippit will charge suppliers different fees for handling coupons. ClearOn is the central clearing institution for coupon campaigns in Sweden. In the current setup, ClearOn charges the suppliers behind coupon campaigns a fixed fee per campaign and additional fees for each redeemed coupon. When mobile coupons are used in addition to physical coupons, additional fees apply. Blippit will handle mobile coupons in a similar way. Suppliers will be charged a fixed fee for all campaigns compatible with the app terminal and additional fees for each coupon downloaded and redeemed on an app terminal.

6.5 million Swedes stand ready to Blippit

Already at the outset, a huge potential user base may switch to using Blippit thanks to an agreement with Swish, a Swedish mobile payment app. Swish is backed by all the major banks in Sweden and has fast become the standard for person-to-person payments, replacing cash and bank transfers. It has also become a common form of payment from private customers to voluntary organisations, street vendors and some retail shops. Swish has 6.5 million users in Sweden out of a population of 10 million and handled nearly 400 million transactions during 2018. By bringing on board Swish as a cooperating partner, Blippit has made sure that 6.5 million Swedes already carry an app that works with the app terminals.

Blippit's market rollout will focus on Sweden initially, and grocery stores will be an obvious first target given the high volumes of coupons and similar campaigns. Further out, the goal is to address all physical payment points where you today find a card terminal. The solution should work equally well in any international markets and an international rollout is expected following the launch in Sweden.

Up until now, Crunchfish has produced four handmade, fully functional prototypes of the app terminal. The design has been finalised and the company is currently preparing for industrialisation. This includes preparing tools for mass production and identifying and signing up a manufacturing partner, preferably in Sweden. The company expects the first mass produced app terminals to start shipping during Q3 2019. The planned next version of the terminal, which is expected to include an NFC sensor and a touchscreen, could be ready for shipping in early 2020 according to the company.

People and partner

Blippit AB does not yet have any employees. Personnel from Crunchfish are responsible for the day-to-day running of the business, for which Crunchfish charges Blippit consultancy fees. The consulting services include business management and technical development. The key persons involved are the following:

Joachim Samuelsson, CEO of Blippit AB and Chairman and biggest owner of Crunchfish AB. Samuelsson is a serial entrepreneur with a successful track record of starting or buying companies, developing them and exiting through M&A. Among his previous engagements are ComOpt and Actix (telecom), Biomain (medical devices) and Delta Fastighetsförvaltning (real estate). Samuelsson is also a technology pioneer involved in 17 proximity innovations of which 10 have been granted patents.

Paul Cronholm, founder of Crunchfish AB and CEO of Crunchfish Proximity AB. Cronholm is the innovator of the technology at the heart of Crunchfish and has served as the company's CTO since its foundation. He has more than 15 years' experience with software design and project management in mobile internet.

In the joint venture Blippit, Crunchfish partners up with ClearOn which has established a central role in payments within the Swedish retail industry. Clearon was founded in 1968 by DLF, the trade association for Swedish grocery producers and suppliers.

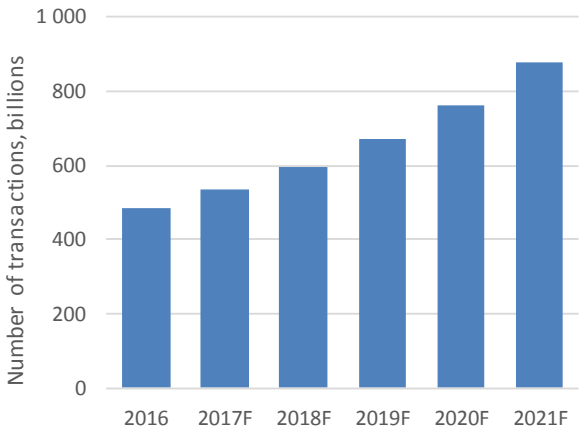
What is the market potential?

Non-cash transactions to grow 12.7% per year until 2021

According to the 2018 edition of World Payments Report by CapGemini and BNP Paribas, the worldwide number of non-cash transactions totalled 482.6 billion in 2016. This represented an average annual growth rate of 9.8 percent compared with 2012. Looking ahead, the report forecasts an acceleration to 12.7 percent average annual growth rate until 2021, when the number of transactions is seen at 876.4 billion, cf Figure 4.

A large majority of the non-cash payments in 2016, at two thirds of the total, were card payments. Credit transfers (17%), direct debits (11%) and checks (5%) made up the remaining third. E-wallet transactions, i.e. payments initiated on a mobile device and settled by either a card payment or a debit or credit transaction, totalled 41.8 billion or 8.6 percent of the total.

Figure 4: Worldwide non-cash transactions



Source: World Payments Report 2018

Sweden is a World leader in non-cash payments

Sweden was the 2016 world leader in non-cash payments per person, according to the World Payment Report. Swedes made on average 461 non-cash payments per person during the year, which put them narrowly ahead of the US. Other countries high on the list were the Nordic neighbours plus South Korea, Australia and the Netherlands.

In Sweden, there are almost 220 000 payment terminals according to Sveriges Riksbank, the central bank. These terminals handled 3 billion transactions at a combined value of SEK 881 billion during 2017. Assuming card companies charge on average 0.5 percent on the value of each transaction, card fees could total nearly SEK 4.5 billion per year.

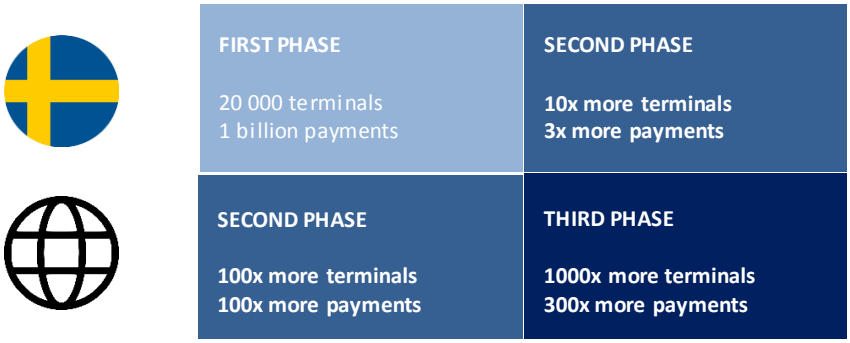
ClearOn is the market leader in the administration of coupon programmes in Sweden. Its online clearing solution connects to around 20 000 checkout registers running at 6 000 stores around the country. These installations are primarily concentrated to grocery and convenience stores, which are high-volume stores with an estimated 1 billion transactions

per year. During 2018, ClearOn handled 2 600 coupon campaigns and administered the redemption of 23 million coupons. According to its Annual Report, ClearOn had revenues of SEK 235 million in 2017.

Blippit's market plan defines grocery stores and convenience stores in Sweden as its **initial focus**. These stores could be fast converters as they are already connected to ClearOn and get a direct benefit in reducing manual handling of coupons etc. The sector is also responsible for a third of all payments in Swedish retail.

The company has defined a **second phase** to comprise the rest of the retail sector in Sweden. This would add another 200 000 payment terminals to the addressable market. The second phase will also include the extension into international markets and once again grocery and convenience stores would be the initial targets. In the company's own estimation, the number of eligible grocery stores worldwide should be one hundred times the number in Sweden, and the transaction volume could scale up by about the same factor.

Figure 5: Expansion plan & market sizes



Source: Crunchfish AB

In the **third and final phase,** the company will pursue all retail installations globally. If the global retail trade is also assumed to scale up by a factor of 100x compared with its equivalent in Sweden, it would make the total addressable market sum up to 20 million terminals and 300 billion transactions.

GS1 could help to open world markets

An interesting opening in relation to Blippit's international expansion is the recently formed cooperation with **GS1**. GS1 is a global not-for-profit organization that coordinates a global system of product identification numbers and is the originator or the ubiquitous bar codes. GS1 has 112 national member organisations and 1.5 million user companies worldwide. Through GS1, Blippit may get access to retail organisations all over the world.

A final thing to note about the market for payment services is the presence of so-called **network effects**. The classic example of network effects is the early days of telephone, where each additional user added value to all existing users by increasing the number of people they could call. The same effect is noted in payment cards. Each additional card holder increases the value of installing card terminals at retail stores, which again increases the attractiveness for customers in getting a payment card. An additional example is the introduction of person-to-person payment apps like Swish (details later).

Adoption could tend towards binaries

The introduction of Blippit's app terminals could also set off network effects, where the wider spread of terminals encourages more users which in turn cause more terminals to be installed. The point here is that if the development takes off early on, it could lead to more or less complete conversion. However, if the take-up is slow, it could end up going nowhere. Hence Blippit's success in each national market could tend toward binary outcomes: While some national markets could convert completely, others may never get off the ground. Again, person-to-person payment apps are a good example. While achieving

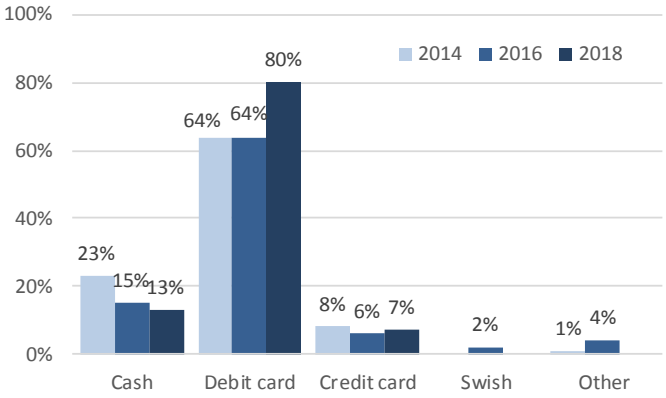
fast dominance in all Nordic markets, they are almost non-existent in some other advanced economies like Germany.

How is the competition?

There are different ways to look at the future competition for Blippit. Firstly, there are competing methods of handling checkouts and secondly, there are competing companies that may employ competitive strategies in response to Blippit. We will look at each aspect in turn.

Looking at Sweden, **card payments** are by far the dominant payment choice of shoppers in physical retail stores, cf. Figure 6. The most common cards are debit cards, i.e. cards that debit the purchase amount directly from a bank account. A less common type is the credit card, by which the customer is invoiced for the purchase after an agreed credit period. Cards have the advantage of being accepted almost anywhere, domestically and abroad. They are convenient for the shopper but are expensive for retailers as they must pay fees to both the card company and the card issuer. A card issuer is normally a bank that issues cards on behalf of card companies like Visa or MasterCard.

Figure 6: Method of payment (Sweden)



Replies to: "How did you pay for your last purchase at a physical store?"
Source: Sveriges Riksbank

In recent years, so-called **contactless payments** have become more and more common, especially in Europe and North America. Contactless terminals are easily recognisable by the icon displayed in Figure 7. Card payments count as contactless when the customer "tags" the physical terminal with their card instead of swiping the magnetic stripe or inserting the card into a chip reader. NFC or RFID technology is used to read the identity of the card. If the amount to be paid is below a certain limit, no verification is needed. If it exceeds the limit, the customer must verify the payment by entering a pin on the terminal. Contactless payments enhance the convenience of cards as the customer can put the card right back in their pocket after having tagged the terminal.

Figure 7: Contactless payments

NFC payment apps are a success in some countries

Mobile devices may also be used for contactless payments. Some mobile phone makers have introduced proprietary apps for handling contactless payments. Examples of such are Apple Pay, Google Pay, Samsung Pay etc. The procedure is exactly like contactless card payments except that the user has the extra option of verifying a payment using pin, fingerprint or face recognition on their device. Although the physical card is not being used, the payment is still reliant on the card infrastructure as the identity of a payment card is being used to execute the payment. Retailers therefore face the same fees. App-based payments have taken a meaningful market share in some countries, notably the US and UK, but it is still rare in many countries like the Nordics.

Mobile payments have taken off in the Nordics

The Nordic countries have on the other hand seen a rapid rise in **mobile payments**. This is primarily because leading banks in each country have assembled behind a platform neutral and card-independent payment app. In Sweden, **Swish** is the payment app of choice, in Norway it is **Vipps**, while has Denmark **MobilePay**. On the international stage the picture is

more patchy. In the US, PayPal backs several services, among them Venmo which has similar features to Swish. The French service Lydia has also started to gain traction domestically and in a few other European services. Meanwhile Germany, the Eurozone's biggest economy, currently has no service in significant use.

Some mobile payment apps require a payment card while most of them do not. Mobile payments differ from contactless payments on mobile devices in that they communicate over cell networks or wifi, not by direct NFC communication with a terminal. This makes them optimal for person-to-person payments and also very apt for paying street vendors or market stalls who may lack a card terminal. A telephone number is enough to identify both payer and payee. However, the process is usually seen as too slow for high-volume stores where checkout capacity is vital. Even when the customer enters the recipient telephone number automatically by scanning a QR-code, there is often a wait for the mobile payment to come through. This will cause holdups and delays at busy checkout desks in grocery stores.

Looking at competition from a corporation standpoint, we believe the players with the most to lose from Blippit's entry could be the suppliers of card terminals, as their hardware could be rendered obsolete by the app terminal. They may therefore deploy competitive responses. There are around a handful of vendors of card terminals with significant market shares globally. The dominant players in Sweden, and arguably the most relevant to Blippit, are:

Figure 8: Verifone terminal

Verifone (US: Private) is headquartered in the US and was listed on NYSE before being acquired by a private equity firm for USD 3.4 billion in 2018. From its foundation in 1981, it was one of the pioneers of secure non-cash payments by supplying a means to control the validity of checks and subsequently credit cards. According to the company, its products handle 7.6 billion transactions per year in more than 150 countries around the world. Its products include merchant-operated, consumer-facing and self-service payment systems, including easily recognizable countertop terminals (Figure 8) for magnetic strip, chip reader and contactless payments.

Figure 9: Ingenico terminal

Ingenico (Euronext Paris: ING) is a listed company with a market cap of EUR 4.3 billion. It has a 39-year history dedicated to payment terminals and related services. It offers a range of different stationary/countertop as well as handheld/mobile payment terminals. It reportedly handles 5.1 billion transactions annually and operates in 170 countries. It claims to have "the world's largest in-store acceptance network" with terminals capable of handling multiple payment types including mobile and contactless. It dedicates 8 percent of revenues annually to R&D and runs an in-house research unit, Ingenico Labs, with innovations in mobile digital payments as one of its priorities.

What are Blippit/Crunchfish Proximity's competitive advantages?

Blippit's competitive advantage rests on a number of advantages to customers, retailers and suppliers. By offering advantages to all parties involved, we regard the chances of triggering positive network effects as good.

Customer advantages:

- Faster checkouts when all parts of checkout are handled by the wave of a mobile
- More convenient, as physical cards and paper-based coupons become obsolete and wallets therefore are left at home
- Convenient collection of coupons etc. in app-based services, leading to better access to savings opportunities and hence cheaper shopping
- Gift cards stored in an app have a higher likelihood of being used, reducing the waste of lost or forgotten cards which are never redeemed
- Use of coupons is automatic and discreet, which removes any perceived stigma of coupon collecting
- Lower payment cost for retailers may ultimately benefit customers through lower prices
- Less chance of retailers demanding cash payment for small purchases

Retailer advantages:

- An app terminal is cheaper to acquire (buy or rent) and cheaper to use (fee per transaction) than a card terminal
- Faster checkouts, reduced manual scanning or keyboard inputs, meaning increased checkout capacity
- Reduced pricing power of card companies by encouraging alternative payment choices
- Opportunity for loyalty-building offers through proprietary app

Supplier advantages:

- Opportunities for better targeting coupon campaigns and receiving demographic profiles on the customer groups taking advantage of coupon offers
- Increased customer usage of coupons meaning higher impact of campaigns
- Lower campaign fees

To capitalise on the long list of advantages, we think Blippit has some unique strengths. First is the technological leadership, which makes the solution technically feasible. This is essential for harvesting first mover advantages such as the network effects mentioned above. Second is the unique positioning with ClearOn already having linked up virtually all of Sweden's grocery stores to its infrastructure. Third is the agreement Swish, which means a majority of Swedes are ready to start using the app terminal the moment it is installed. And finally, Crunchfish has a family of patents. Its IP portfolio includes 20 innovations of which 12 have been granted patents and 8 have patents pending, which should hinder competitors from entering the playing field for some time to come.

Gesture control

Interaction with computing devices has undergone a number of generation shifts since the PC revolution in the late 1970's. From keyboard control to mouse control, further on to touchscreens and more recently to the introduction of voice control. At this point in time, the conflicting demands of bigger screens but lighter and more portable devices suggest that touchscreens may be outcompeted by eyeglasses with built-in image display. This in turns puts new demands on input technology. Gesture control, probably in combination with voice, may be the next big phase in human-machine interaction.

What is Crunchfish Gesture Control?

Crunchfish started development in 2010

Crunchfish has been active in developing image processing and machine learning since its inception in 2010. Using an image stream from standard 2D cameras, they have trained algorithms to recognise a hand, follow its movements in three dimensions and recognise certain gestures. The number of movements and gestures a computer can recognise is in principle limitless, but with respect to both user familiarity and computing accuracy, a simple gesture set may be preferable.

A gesture control system consists of sensors (typically a camera), other hardware (e.g. AR glasses or mobile) and software that analyses the image stream and determines which gestures are used and translate them into machine commands. Any kind of electronic device could be controlled by gestures, including mobile or stationary computing equipment or camera drones etc. Where gesture really comes into its own is in controlling units that are hard to combine with other input methods. AR and VR glasses are currently the best examples of such devices.

Touchless A3D® delivered as SDK

Crunchfish is focused on developing the software part of gesture control systems. Its product Touchless A3D® is licensed to customers as a software development kit (SDK). Touchless A3D® SDK comprises a software library, an application programming interface and integration manuals as well as guides for interaction design and reference software. This constitutes a comprehensive suite of tools for integrating gesture control into existing applications and evidence shows that some customers finish the implementation in a matter of weeks.

Supports any camera from standard mobile to advanced 3D

Touchless A3D® is designed for use in combination with standard 2D cameras of the kind that comes with mobiles and AR glasses. The software is however independent of type of camera and handles anything from the most basic mobile camera to the more advanced sensor kits found on high-end devices. In addition, the software can support 3D cameras and depth sensors which determine with accuracy the distance between the sensor and different objects.

Controlled by a Pinch

In late 2018, Crunchfish took a big step towards creating a simplified and standardised language for touchless human-machine interaction. Instead of a bewildering variety of hand gestures, the simple and intuitive language for touchscreens can be mimicked with touchless control using its Pinch gesture. The Pinch is just what it sounds like – a pinching gesture made by putting together the index finger and the thumb. This will be interpreted as analogous to a tap on a touchscreen. One can use the pinch to tap buttons, open menus and select options. A pinch-and-hold will similarly be used to drag and drop AR items in the field of vision. By standardising the gesture language, a high degree of accuracy and low battery consumption is ensured.

Figure 10: Pinch gesture

Business model

Crunchfish has selected to focus on its core competence of software development instead of producing end products. This opens the opportunity to work with a variety of different partners and creates scalability in the business. Its market presence is realised through partnership deals or selling agreements with mobile manufacturers, AR glasses manufacturers and developers of AR platforms. Its partners are usually large organisations with global sales and marketing resources. By showcasing its technology alongside these giants, Crunchfish gets access to a large audience worldwide.

Crunchfish's partners sum up to about forty companies around the world, though the majority are based in China, Taiwan, Japan or the US. Among its customers in the area of mobile and VR we find OPPO, Vodafone, TCL and Gionee. Customers active in AR include Vuzix, Epson, Lenovo and LLVision.

In the last two years, Crunchfish has assembled a global network of companies in the AR industry. The network comprises manufacturers of AR glasses and platform developers. The benefit of establishing such a network is to combine marketing efforts vis-à-vis systems integrators, who in turn engage the end product manufacturers in the industry.

Either one-off installation fees or recurring license fees

As a component supplier, Crunchfish can charge customers for its technology in either of two ways. In the mobile segment and in AR glasses for the consumer market, Crunchfish charges a fixed fee per sold unit of end products containing Crunchfish software. Each software installation is numbered in order to facilitate an objective count of how many installations enter the market. In industrial AR systems, which are high value-added services that are adapted to particular tasks and users, Crunchfish will normally partner up with AR platform developers or system integrators. The partner will usually be responsible for invoicing the customer and passes on the agreed fee to Crunchfish. In this segment, customer payments may be in the form of either one-off installation fees or recurring license fees.

People

Crunchfish had in total 18 full-time employees at the end of 2018. Of these, 15 persons were involved in the Gesture Control business area and most of these work within development. The company has one full-time representative in China and one in the US. The management of the business area consists of the following:

Joakim Nydemark, CEO of Crunchfish AB since 2012, dedicates most of his time to Gesture Control. Before joining Crunchfish, Nydemark had more than 20 years' experience from CEO roles and senior sales director positions at global organisation in the IT/telecom industry. Among his previous employers we find Anoto, TAT The Astonishing Tribe, Teleca and Obigo.

Daniel Milesson, Head of Development in Gesture Control since 2018. Milesson has more than 15 years' experience with managing software development. He has previously held roles as Head of Development, CTO and product director at several technology companies including Mionix, Blackberry and TAT The Astonishing Tribe.

Henrik Winberg, Head of Sales in Gesture Control since 2015. Winberg's experience includes more than 10 years managing international sales and business development. He has worked extensively with relationship building in the most important markets for Crunchfish, namely North America, China, Japan and South Korea. He has previously worked for Kentima, Texas Instruments and Scalado among others.

What is the market potential?

The market for AR and VR products is still in its infancy. When the first VR helmets were displayed at industry trade shows, they were expected to dominate the gaming world. However, many years later, VR remains a fringe market struggling to take off. One reason for the slow uptake may be that the computing hardware necessary to generate high-resolution images covering the player's whole field of vision, without noticeable latency even when streaming online content, still carries a prohibitively high price tag.

AR has wider and more useful applications than VR

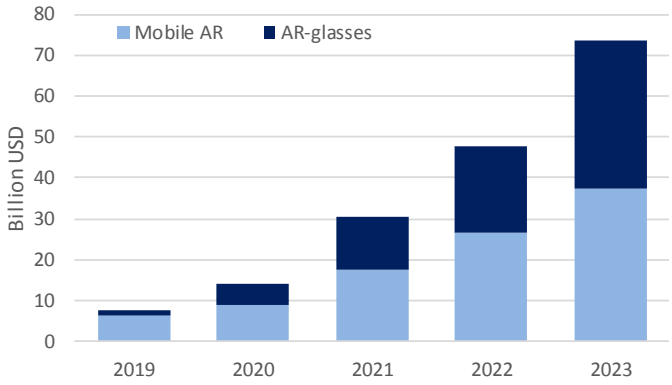
AR may be a younger idea than VR but it has arguably much better prospects, both because of its lighter computing requirements and its general usefulness. AR differs from VR in that it overlays data graphics on the natural field of vision. A famous example of AR is the popular game Pokemon Go, in which computer-generated creatures are "seen" in the players' surroundings with the help of a mobile camera and screen. Since AR content only covers a part of the field of vision, there is less graphics to generate.

AR also has a lot of applications outside the realm of gaming. A pair of AR glasses could show you a detailed instruction manual when you are working using both hands. In everyday situations they could display subtle reminders or notifications, temporary items like a shopping list, or a GPS navigator when you are walking or bicycling. They could be useful for any situation where it is too difficult, dangerous, inconvenient or time consuming to pick out a computing device to look at its screen. In some visions of the future, when AR glasses have become sufficiently light and comfortable, many users may want to wear them almost all the time.

AR could become a USD 74 billion market by 2023

AR is therefore expected to become a major market when the technology matures. The research firm Digi-Capital has estimated the value of the AR market to grow from USD 8 billion in 2019 to USD 74 billion in 2023. This combines the revenues from AR features embedded in mobile devices and from AR glasses. The contribution from mobiles is expected to dominate at first but is subsequently overtaken by AR glasses.

Figure 11: Estimated market value of AR, 2019 - 2023



Source: Digi-Capital, Augmented/Virtual Reality Report Q1 2019

Potential market for mobile AR totals billions of devices

AR features in mobile devices is already a success story thanks primarily to Pokemon Go. With this sort of application, when the user has the device in their hands, the touchscreen is fully available and gesture control offers no advantage. But another market has opened up where users insert their mobile devices into AR/VR helmets and look at their mobile screens inside the helmet. When tucked away like this, the touchscreen is unavailable, and another set of controls are needed. The nodding and turning moves used for controlling some applications work only for the simplest instructions and would be impractical for more demanding tasks, like selecting from a set of menus or entering a pin number. This is where gesture control offers a huge improvement. Any smartphone with a camera and screen on opposite sides, which is the requirement for using AR features, already has the hardware needed for reading hand gestures. The total addressable market for gesture control in mobile AR is therefore limited only by the number of smartphones on the market. The total number of smartphone users worldwide is assumed to run up to several billion people. Only in 2018, the number of smartphones sold exceeded 1.5 billion according to Gartner, the research company.

AR glasses waiting for their iPhone moment

AR glasses are still waiting for their "iPhone moment" – the moment when all of the technical possibilities come together in one product, appetizing to mass consumer markets both in terms of features and price. It is widely speculated that one of the tech giants will get the ball rolling with the launch of a sleek mass-market product in the next few years. Contestants for the first blockbuster launch could be companies like Apple, Google, Microsoft or Facebook, who all have an interest in this space.

Figure 12: Google Glass

Google have already tested the market with the so-called Google Glass. The product was released to the general public in 2014, but with a price tag of USD 1500 and some negative publicity, it was never a big seller. The company halted sales in 2015 and said it would redesign the product. At the relaunch two years later, the company decided to skip the consumer market and directed the product at industrial applications instead. Google Glass were controlled with a combination of voice commands and a touchpad on the side detecting forward and backward swipes.

HoloLens 2.0 launched this February

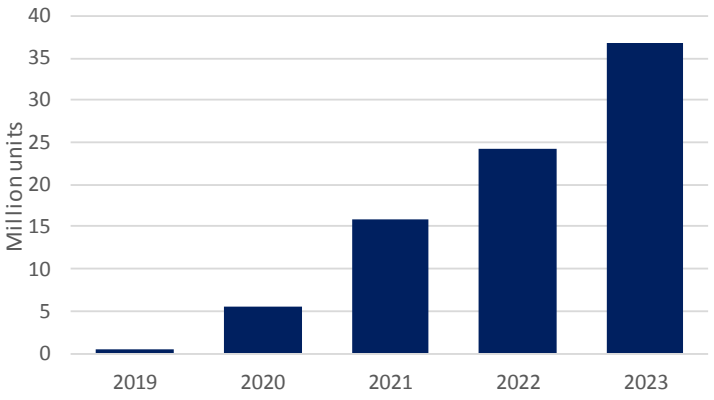
Figure 13: Microsoft HoloLens

Microsoft launched its so-called mixed reality smartglasses HoloLens in 2016 at a list price of USD 3 000, followed by a version upgrade to HoloLens 2.0 in February 2019, now available for preorders at USD 3 500. As indicated by the price, this product is not oriented towards the consumer market. Weighing 566 grams, it is considered too heavy for everyday use. However, it includes a number of powerful features which makes it suitable in industrial settings. The HoloLens is controlled by a combination of physical buttons, voice and gesture, and even includes a small Bluetooth connected hand control called a "clicker".

Researchers predict sales of AR glasses to hit 37 million in 2023

There is still a stretch before AR glasses can become a mass market for ordinary consumers. The successful producer has to solve issues of price, weight, power consumption and connectivity, while also offering enticing content and attractive physical design, plus an intuitive way of interacting with the device. Industry rumours suggest that Apple could be preparing a product launch in 2020 but others may beat them to it or the wait could be longer. Assuming that at least one of the tech giants hit the market with consumer AR glasses in the near future, Digi-Capital has forecast that the number of units sold could grow to 37 million units by 2023.

Figure 14: Sales of consumer AR glasses, 2019 - 2023



Source: Digi-Capital, Augmented/Virtual Reality Report Q1 2019

AR glasses for industry is already a market with several different technology vendors. The application areas are typically situations when a worker needs to consult an instruction manual or checklist while performing a task, and where it improves the workflow to keep eyes and hands on the task instead of handling separate screens or paper documents. Using the built-in camera, the worker can easily invite a co-worker to share their view and offer guidance. Object recognition can change the content on the screen to adapt to the context

of the ongoing task. For use in industrial settings, buyers will probably choose high-specification AR units with ample computing power, and the inclusion of gesture control will likely be a requirement.

AR for industry means smaller numbers but higher prices

Industrial applications of AR will probably not grow to gigantic numbers of sold units. However, the pricing in this segment could be significantly higher than in the consumer market, as illustrated by the HoloLens. With the full price of the end products running to thousands of dollars, it is not unlikely that software suppliers like Crunchfish could fetch prices of several dollars per unit, either as a one-off installation cost or as a recurring license fee.

How is the competition?

The area of gesture control is surrounded by strong interest, given the need for such tools to be built into future AR devices. Many tech companies are competing to develop accurate, fast and versatile solutions with low power consumption. Some early product launches show how difficult it is to get it right. When Samsung added gesture control to some high-end TVs in 2012, users complained that the hand traction was so slow and inaccurate that they chose to stick to their old-fashioned TV remote. Only a handful of companies around the world have reached the technical maturity to be considered competitors to Crunchfish at present.

Microsoft (Nasdaq: MSFT) appears to have succeeded in making gesture control work well on the HoloLens. In the product, gesture works together with voice control and "gaze", i.e. sensors tracking the direction of your stare. Users experience the "airtap" gesture (tapping in the air with an index finger) as intuitive, fast and accurate. Microsoft arguably had an easier job than developers such as Crunchfish, as they had full control of all the hardware including camera and computer in the end product. It is far from certain that the software would port well to other products.

ArcSoft (US: Private) is a software developer offering a variety of image processing services. Founded in 1994 and employing around 700 people, its business areas range from fatigue detection in drivers to food recognition that analyses what is in your refrigerator and finally to hand and gesture recognition. Its technology is said to support anything from single smartphone cameras to 360° cameras and depth sensors. It lists technology giants such as Samsung, Intel, Google and Qualcomm as partners.

Eyesight Technologies (IS: Private) was founded in Israel in 2005 and has employees in Silicon Valley, Hong Kong and China. It has previously delivered gesture control to computers such as the Ultrabook laptop from Lenovo. It is currently focused on two main business areas: In-car solutions such as driver monitoring and touchless controls; and in-home solutions including facial recognition and gesture control of domestic IoT devices.

SenseTime (CN: Private) was founded in 2014 but already has over one thousand employees over several offices in China plus Japan and Singapore. It brands itself as an AI company focused on computer vision and deep learning. According to its LinkedIn page, the company is valued at USD 4.5 billion. It is involved in many different application areas including face recognition, object recognition, text recognition and autonomous driving. It lists several partnerships with mobile manufacturers including OPPO. However, judging by the customer cases presented, gesture control is not currently a priority area.

ManoMotion (SE: Private) was founded in 2015 but claims to base its solution on seven years of dedicated research into gesture technology. The company has 12 employees and offices in Stockholm and Silicon Valley. Like Cruncfish's Gesture Control business unit, it is exclusively dedicated to tracking hand gestures and offers its software as an SDK for integration with OEM manufacturers. Its software also claims similar capabilities, like utilising standard smartphone cameras and supporting many different hardware platforms, while consuming little battery power.

What are Crunchfish Gesture Control's competitive advantages?

Crunchfish is one of the veterans in the field of gesture control. While many companies are actively pursuing the same goal, many have also attempted to develop solutions and subsequently turned their attention to other computing areas. We interpret Crunchfish's longevity as an indicator of some sustained competitive advantages:

- Nearly a decade's worth of development means a lot of the technical hurdles have been passed, vouching for product quality
- More than 30 million installations already achieved, which serves as a valuable feedback source for further improvements
- Uniquely low power consumption of the tracking software
- Sole focus on hand gesture tracking could signify better customer impact compared to the closest competitors
- The combination with Mobile Proximity in the company enables solutions with contextually dependent AR content
- Strong expertise not only in the technical solution, but also in how to best integrate its software into customer applications
- Proven deal-making skills, with a long list of partnerships in the most attractive global markets

Crunchfish's technical leadership is further bolstered by a family of patents. The company has 12 different inventions of which 11 have been granted a patent. The features patented include ways to activate and deactivate the camera, ways of interacting with the camera and methods for versatile and power efficient gesture detection.

What is the earnings outlook?

To help us estimate a fair value for the company and its stock, we have developed a set of economic projections for the company's future earnings. We think it is relevant to keep the two business areas apart and estimate revenues and costs separately for the two, which enables us to value the company as a sum of the parts.

Mobile Proximity

The Mobile Proximity business yields income to Crunchfish in two different streams. First is the revenues and costs in Crunchfish Proximity AB, of which Crunchfish owns 100 percent of the shares. The second is Crunchfish's share in the income of Blippit AB. As a 50 percent owner, Crunchfish will not consolidate Blippit in its group accounts but report its share of Blippit's profits as *Profit from affiliate companies*.

Crunchfish Proximity adds value primarily through its share of Blippit

Revenues in Crunchfish Proximity AB come from consulting services to Blippit, comprising management and development. In addition, Proximity will offer support to app terminal users, for which the end users will be invoiced directly, not via Blippit. Finally, Proximity will sell the app terminal hardware. For the sake of our model we have assumed that Proximity sells to end users, although the actual sales may be channelled through Blippit without any mark-up. The cost side in Crunchfish Proximity is dominated by personnel costs and its share of the overhead in Crunchfish AB. In addition, it will incur manufacturing costs for app terminals, which we have assumed to sell at a 50 percent gross margin. Overall, the operations of Crunchfish Proximity are pretty lean, and we see quarterly EBIT within single-digit million SEK during the next five years.

The lion's share of the value in this business area is in Blippit. We think the partnership between Crunchfish and ClearOn and the agreement with Swish offers a unique starting position for taking a very large share of the Swedish market. We think it would be hard for a competitor to gain an equally good competitive position.

First revenues to Blippit in Q4 2019

We have assumed that Blippit starts reaping revenues from app terminals already in Q4 2019. They accelerate in 2020 with the launch of the upgraded app and card terminal. From there, we have assumed that the number of Blippit terminals could grow to 50 percent of the combined number of card terminals in Sweden today. This rollout process takes until 2025 in our model. During the same timeframe, we have assumed Blippit's share of payments to increase to half of the total volume at checkout points that have a Blippit terminal, i.e. equivalent to a quarter of all card transactions in the market today. It may seem bold to assume a Blippit terminal at every other checkout point in Sweden, but assuming the app terminal is cheaper for retailers than card terminals and can do at least as much, we think it is realistic. Moreover, since it will replace card readers altogether at many points, its share of payments at many checkout points could end up closer to 100 than 50 percent, so there is still room on the upside of our assumptions.

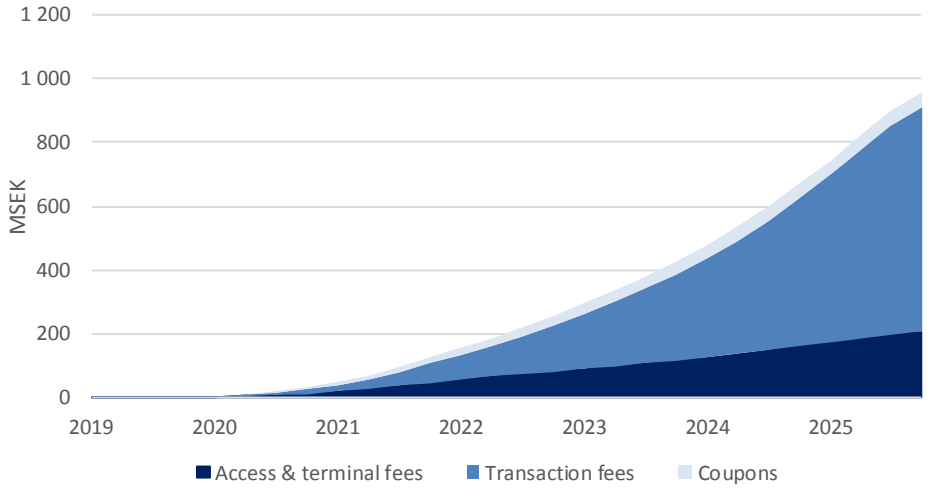
Transaction fees to make up the bulk of revenues

The app terminals generate income to Blippit through access fees, i.e. a fixed fee per app each terminal is set to handle. In addition, Blippit will charge a fee per transaction. Each checkout could entail more than one transaction and in our model, we assume that transaction fees add up to 1 SEK per checkout. Later when the upgraded app and card terminal is launched, this figure could become markedly higher but we choose to stay conservative for now. Transaction fees are anyway where we expect Blippit to make most of its revenues. With the forthcoming app and card terminal, the company will probably also start charging a monthly rental fee per terminal. We have assumed a modest 100 SEK per month, a fraction of what card terminal suppliers charge currently.

In addition to the above, Blippit will have revenues from coupon campaigns and coupon redemptions. The vastly improved convenience for all parties involved suggests that markets may convert to mobile coupons pretty swiftly. We have assumed that this business will grow to 80 percent of the scale of ClearOn's current business by the end of 2023. This assumption may also be conservative as it ignores that the whole coupon market could grow considerably thanks to Blippit's coupon solution.

On the cost side of Blippit we find consulting services bought from Crunchfish Proximity. In addition, we have assumed increasing personnel costs related to sales and marketing. The scalable business model nevertheless allows for significant profits.

Figure 15: Rolling 12M revenues, Blippit



Source:Västra Hamnen Corporate Finance

In the description above, we have focused on Sweden only. Blippit's business model is however easily exportable and to go international is also in its business plan. We see no reason why Blippit cannot conquer many international markets. The advantage of ClearOn's existing network is obviously missing overseas, and it may take time to establish equivalents. However, a broad international push may be helped by partnering with a company with global reach, where card companies or card terminal vendors could be candidates. This partner would naturally take a share of the profits but Blippit would benefit all the same.

For now, we keep our model simple and conservative by assuming that Blippit is going to add "one more Sweden" with a delay. All international opportunities are thus summed up as yielding an EBIT the same scale as the EBIT from Sweden, but we assume them to occur three years later. We regard this as a very modest way to sum up global opportunities, but we always like to leave room for the company to surprise on the upside.

Table 2: Summary income statement Mobile Proximity

MSEK	2018	2019e	2020e	2021e	2022e	2023e	2024e
Net revenues	-	11,0	21,8	32,5	49,9	67,7	95,1
Total revenues	**-**	**11,9**	**22,9**	**33,8**	**51,3**	**69,1**	**96,7**
COGS	-	(0,6)	(2,8)	(4,4)	(4,4)	(4,4)	(7,2)
Operating expenses	-	(12,1)	(18,7)	(20,3)	(30,4)	(40,8)	(53,1)
EBITDA	**-**	**(0,7)**	**1,4**	**9,1**	**16,5**	**24,0**	**36,5**
Amortisation & Depreciation	-	-	-	-	-	-	-
EBIT	**-**	**(0,7)**	**1,4**	**9,1**	**16,5**	**24,0**	**36,5**
Profit fr Affiliate companies	(0,2)	(2,5)	5,0	37,1	75,7	138,1	249,7
EBT	**(0,2)**	**(3,2)**	**6,4**	**46,1**	**92,3**	**162,1**	**286,2**

Source: Västra Hamnen Corporate Finance

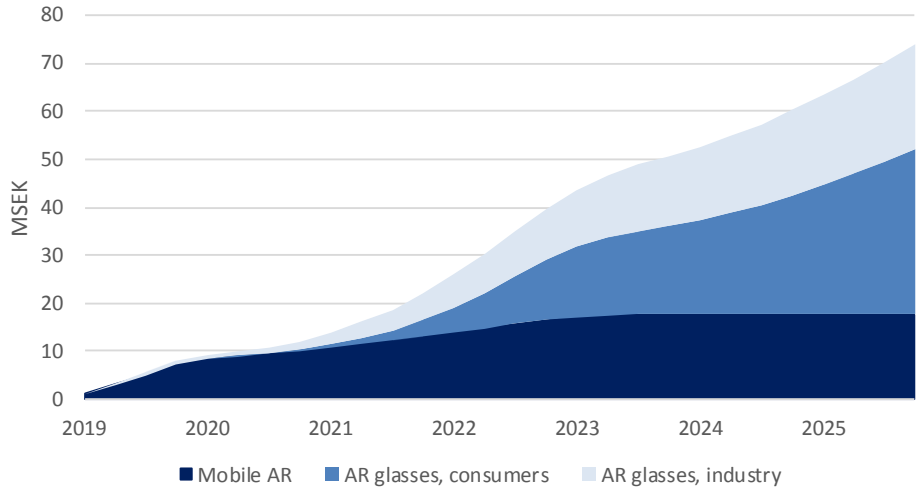
Gesture Control

Revenues in Gesture Control will not expand significantly until the AR market starts to blossom, and we assume that it will take a few years. We expect mobile devices to deliver increasing but moderate revenues in the near future, and to stagnate early. Historic revenue records from Crunchfish show that the income per installation has been very low for the first 30 million units sold. We expect the price per installation to increase as AR comes into higher demand, but mobiles are never going to be a big earner for Crunchfish.

AR glasses will lift revenues in earnest

We see much better prospects in AR glasses. In our model we have assumed the market for consumer AR glasses to grow according to Digi-Capital's forecast, meaning 37 million units sold in 2023. Our model assumes that Crunchfish captures 5 percent of this market and charges the equivalent of 10 SEK per installation. After 2023, we see a second growth stage until 2030 during which installations increase on average 40 percent per year. That implies a world market of barely 400 million AR glasses in 2030, about one fourth the number of smartphones likely to be sold in 2019.

Figure 16: Rolling 12M revenues, Gesture Control



Source:Västra Hamnen Corporate Finance

Corporate AR market to grow before consumer market

AR glasses for industry run up to smaller figures in our model, but the price per installation is higher (40 SEK) and the revenues start earlier. In addition to installation fees, we have assumed that about 10 percent of the installed base will subscribe to platform services which imply recurring license fees to Crunchfish. The industrial market for AR is already underway and we think growth may be considerable already in the next few years. We see the industrial market yielding more revenue than the consumer market until 2022, when the positions change. In 2023, we expect the number of installations in industry to be about a quarter the number delivered to consumers. In the years 2024 to 2030 we forecast a second growth period for industry running at half the pace of the consumer market, i.e. 20 at percent per year.

Table 3: Summary income statement Gesture Control

MSEK	2018	2019e	2020e	2021e	2022e	2023e	2024e
Net revenues	3,5	3,8	6,9	22,1	43,8	58,9	70,1
Total revenues	**13,8**	**9,2**	**12,6**	**28,1**	**50,1**	**65,5**	**76,8**
Operating expenses	(31,0)	(31,5)	(35,1)	(38,3)	(41,9)	(45,8)	(50,1)
EBITDA	**(17,1)**	**(22,3)**	**(22,4)**	**(10,2)**	**8,2**	**19,7**	**26,8**
Amortisation & Depreciation	(4,7)	**(4,7)**	**(4,2)**	**(4,4)**	**(4,5)**	**(4,7)**	**(4,9)**
EBIT	**(21,9)**	**(27,0)**	**(26,6)**	**(14,6)**	**3,6**	**14,9**	**21,9**
Net financial items	0,0	0,0	-	-	-	-	-
EBT	**(21,8)**	**(27,0)**	**(26,6)**	**(14,6)**	**3,6**	**14,9**	**21,9**

Source: Västra Hamnen Corporate Finance

How is the cash situation?

Crunchfish had a cash reserve of SEK 21.4 million at the end of 2018. Since then, it has raised cash in a rights issue during March, which added SEK 20 million to the liquidity. Taking into account the cash spent on operations, we estimate that net liquidity should end up around SEK 25 million at the end of Q2 this year.

We expect cash flow to turn positive in 2021

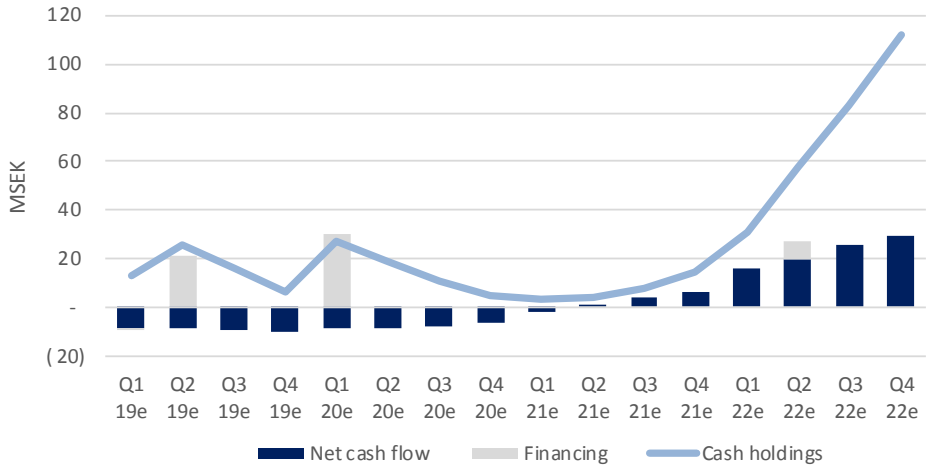
Looking ahead, cash flow from operations will likely remain negative until early 2021. From there on, rising surplus from Crunchfish Proximity and Blippit will ensure growing cash flows from operations, while Gesture Control will start contributing later. We have assumed fairly modest capital expenditures in both business areas. Investing cash flows will primarily consist of immaterial assets related to development expenses in Gesture Control, plus financial investments comprising equity investments in Blippit during its first three years. Working capital investments are also assumed fairly moderate, reflecting the asset light business model. The primary asset build-up in working capital will be in customer receivables. We expect cash to be locked up in customer receivables also in Blippit, which we have adjusted for when valuing the joint venture.

A SEK 30 million new share issue may be needed in 2020

If our estimates for the burn rate in the next few quarters hit the mark, we expect to see another capital raise in 2020. In our model the current cash reserve is exhausted in Q1 next year, at which point we have pencilled in a new share issue amounting to SEK 30 million. It may be possible for the company to scrape through on existing funds by keeping operations skinny and hoping for early monetisation of Blippit. But with future prospects as strong as they are, in our opinion it would make better sense to finance the operation properly for a whole-hearted push now that the opportunity is here.

From mid to late 2022 we expect to see a fairly substantial cash accumulation in the company, which could be used to pay dividends, acquire other businesses or finance a more aggressive international expansion.

Figure 17: Cash flow and cash holdings



Source: Västra Hamnen Corporate Finance

What is fair value for the stock?

We apply two techniques to estimate fair value for the company. The first is a discounted cash flow (DCF) model based on the economic scenarios described above and the second is a peer valuation. In the DCF analysis, we model each business area separately and estimate fair value for the stock as the sum of the two parts.

Our DCF model involves two steps (see details in the appendix). In the first we estimate fair enterprise value assuming that the company survives until it reaches sustainable profitability. In the second we multiply this enterprise value with a risk coefficient, reflecting the probability of it reaching the profitable stage.

We apply a WACC of 18 percent

As the risk coefficient adjusts for the risk of non-survival, we can apply a lower discount rate than would otherwise be the case. We have nevertheless chosen to discount future cash flows by a weighted average cost of capital (WACC) rate of 18 percent. The rate is arguably high, especially given that Blippit is expected start generating revenue already this

year. The main argument for selecting a high WACC is that even in the profitable stage, Crunchfish will be a small company exposed to the violent changes and unpredictability of the technology industry.

Mobile Proximity

When we combine the estimated cash flows accruing from Crunchfish Proximity AB, including those stemming from Blippit, they sum up to a net present value of SEK 832.2 million for our explicit model horizon until 2030. To this we add a terminal value assuming 2.5 percent growth in perpetuity, which brings our estimated fair enterprise value (EV) to SEK 1 544.3 million before adjusting for survival risk.

As the company is still years from its first full-year profit, we apply risk coefficients to our estimated fair EV to reflect the probability of economic success. We assume that the present circumstances imply a probability of survival until sustained profitability of between 50 and 80 percent. Our estimates of fair EV is SEK 772.1 million using 50 percent probability and SEK 1 235.4 million using 80 percent.

Mobile Proximity is worth SEK 29.30 – 46.70 per share

To go from fair EV to fair market capitalisation we add half of the company's net cash, assuming each business area is entitled to one half of Crunchfish AB's present cash holdings. Finally, we divide the market capitalisation with the fully diluted number of shares, including those pertaining to employee options currently in the money. The result is a fair value market capitalisation of SEK 778.4 million and SEK 1 241.7 million using 50 and 80 percent risk weights, respectively. This is equivalent to SEK 29.30 and 46.70 SEK per share.

Table 4: DCF model Mobile Proximity

MSEK	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e
EBIT Proximity	(0,7)	1,4	9,1	16,5	24,0	36,5	46,3	44,4
Adj. Taxes	0,2	(0,3)	(2,0)	(3,6)	(5,3)	(8,0)	(10,2)	(9,8)
NOPLAT (= EBIT - tax)	**(0,6)**	**1,1**	**7,1**	**12,9**	**18,7**	**28,5**	**36,1**	**34,6**
Profit share, Blippit	(0,2)	(2,5)	5,0	37,1	75,7	138,1	249,7	385,1
Capex + Working cap	-	(2,6)	(7,7)	(10,9)	(14,2)	(20,3)	(23,8)	(16,9)
Net cash flow	**0,2**	**(2,9)**	**5,6**	**40,4**	**81,7**	**147,8**	**263,7**	**404,5**

DCF (MSEK)		
WACC	18,0%	18,0%
Enterprise value (EV)	1 544,3	1 544,3
Prob of profitability	50%	80%
Risk adjusted EV	772,1	1 235,4
Net cash /2	6,3	6,3
Fair value market cap	**778,4**	**1 241,7**
Diluted no of shares (M)	26,58	26,58
Fair value/share (SEK)	**29,30**	**46,70**

Sensitivity analysis (value per share, SEK)

WACC \ Prob of profitability	50%	60%	70%	80%
22%	26,50	31,80	37,10	42,30
20%	27,80	33,30	38,80	44,30
18%	**29,30**	**35,10**	**40,90**	**46,70**
16%	31,30	37,50	43,70	49,90
14%	34,00	40,70	47,40	54,20

Source: Västra Hamnen Corporate Finance

Gesture Control

We apply the same technique for both business areas, and we have decided to use the same WACC and probability weights throughout. We also use the same 2.5 percent growth rate in perpetuity for the period from year 2031 and onward. We sum up the net present value of cash flows in the period 2019 – 2030 to SEK 22.9 million. For the period thereafter, we estimate a terminal value of SEK 137.7 million and summing the two, we end up with a fair EV of 160.7 million before adjusting for survival risk. Again applying the success probabilities of 50 an 80 percent, our risk adjusted EV is seen at between SEK 80.3 million and SEK 128.5 million.

Gesture Control is worth SEK 3.30 – 5.10 per share

We adjust our fair EV of Gesture Control for half of Crunchfish's net cash and divide the resulting market valuations by the fully diluted number of shares. Our fair value market capitalisation is estimated at SEK 86.6 million assuming 50 percent chance of survival and SEK 134.8 million assuming 80 percent. This is equivalent to SEK 3.30 and SEK 5.10 SEK per share, respectively.

Table 5: DCF model Gesture Control

MSEK	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e
EBIT Gesture Control	(27,0)	(26,6)	(14,6)	3,6	14,9	21,9	31,5	45,6
Adj. Taxes	-	-	-	-	-	-	-	-
NOPLAT (= EBIT - tax)	**(27,0)**	**(26,6)**	**(14,6)**	**3,6**	**14,9**	**21,9**	**31,5**	**45,6**
Depreciation	4,7	4,2	4,4	4,5	4,7	4,9	5,0	5,2
Capex + Working cap	(11,3)	(16,3)	(27,4)	(4,1)	(9,5)	(10,9)	(10,0)	(11,5)
Net cash flow	**(33,6)**	**(38,7)**	**(37,5)**	**4,1**	**10,1**	**15,8**	**26,6**	**39,3**

DCF (MSEK)		
WACC	18,0%	18,0%
Enterprise value (EV)	160,7	160,7
Prob of profitability	50%	80%
Risk adjusted EV	80,3	128,5
Net cash /2	6,3	6,3
Fair value market cap	**86,6**	**134,8**
Diluted no of shares (M)	26,58	26,58
Fair value/share (SEK)	**3,30**	**5,10**

Sensitivity analysis (value per share, SEK)

WACC \ Prob of profitability	50%	60%	70%	80%
22%	2,70	3,20	3,70	4,20
20%	3,00	3,50	4,10	4,60
18%	**3,30**	**3,90**	**4,50**	**5,10**
16%	3,60	4,30	5,00	5,70
14%	4,20	4,90	5,70	6,50

Source: Västra Hamnen Corporate Finance

DCF model puts combined fair value at SEK 32.60 – 51.80 per share

The combined market capitalisation of Crunchfish AB shares is simply the sum of the two business areas. Using the lower risk coefficient of 50 percent, we estimate fair value at SEK 32.60 per share. When applying 80 percent, fair value is estimated at 51.80 SEK per share.

Peer valuation

It is common to compare the valuation of one company with that of similar companies in the market to assess the reasonableness of the current market price. With young companies that have yet to turn a profit, the problem is to define an appropriate scaling factor. Metrics like EV/EBITDA and P/E are hard to apply before any profits are achieved. Another problem is to define what we mean by similar companies. Usually we look for companies exposed to comparable economic trends, competitive forces and risks, but in the case of Crunchfish that would not necessarily put both of its business areas on the same shelf.

For simplicity, we have compiled a list of the biggest Swedish software companies. Some of these happen to be in the gaming industry which is rather different, but at least they share with Crunchfish the asset light and scalable business model and the subjectivity to fast change. We have selected only companies with a net profit of around SEK 100 million or higher. According to our model, Crunchfish will perform at around that scale in 2022 with an expected net profit of SEK 95.9 million.

Table 6: Peer analysis

MSEK	Market cap	Net profit T12M	P/E	Enterprise value (EV)	EBITDA	Sales	EV/EBITDA	EV/sales
Crunchfish	**423,9**	**(21,2)**	**neg**	**402,5**	**(15,3)**	**7,3**	**neg**	55,4
Paradox Interactive	15 354,2	294,5	52,1	15 015,7	574,2	1 099,0	26,2x	13,7
THQ Nordic B	23 282,9	293,9	64,7	23 258,0	756,5	4 123,6	30,7x	5,6
Addnode Group B	4 913,8	138,0	35,0	5 108,8	347,0	3 063,0	14,7x	1,7
Enea	2 859,1	164,8	17,0	3 351,9	273,8	901,0	12,2x	3,7
G5 Entertainment	869,6	120,7	7,2	731,2	238,7	1 383,5	3,1x	0,5
IAR Systems Group B	4 028,2	87,7	45,9	3 955,0	137,5	388,8	28,8x	10,2
Fortnox	7 526,7	89,6	83,8	7 328,2	134,6	406,1	54,4x	18,0
Average			43,7				24,3	
Crunchfish 2022e *)		**95,9**			**100,4**	**93,7**		
Fair value per share, SEK			**46,60 - 74,60**				**27,40 - 43,90**	

*) For comparability, we have added expected profit from affiliated companies (Blippit) to Crunchfish EBITDA 2022

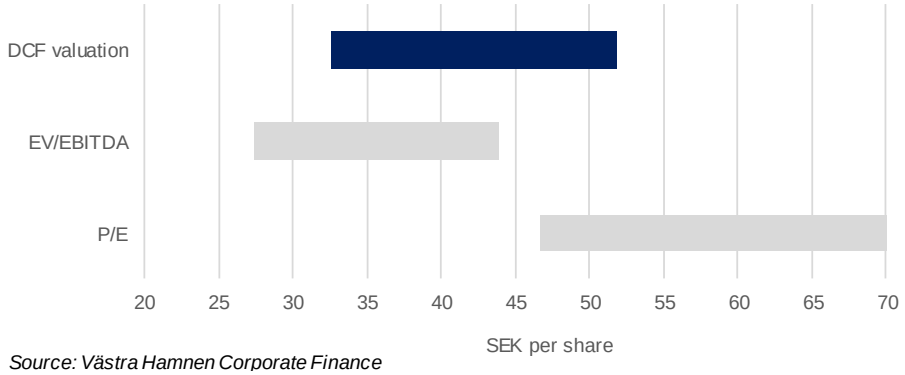
Source: Factset, Västra Hamnen Corporate Finance

Peer valuation puts fair value at SEK 27.40 – 74,60 per share

The valuation metrics of the peer group vary widely. That aside, we choose to use a simple average, applying a P/E multiple of 43,7 to Crunchfish's estimated 2022 net profits. Since EBITDA at Crunchfish ignores the important contribution from Blippit, we have modified EBITDA by adding our estimate of profit from affiliate companies and applied the peer group's average to that adjusted EBITDA. Finally, we have discounted the resulting peer valuations to the present and applied the two risk coefficients of 50 and 80 percent as in the DCF model. **In summary, the peer analysis suggests a fair value of between SEK 46.60 and 74.60 per share using P/E and between SEK 27.40 and 43.90 based on EV/EBITDA.**

As a final note on valuation, it is worth pointing out that acquisition by other companies remains a possibility for Crunchfish. An acquiring company could target either one business area or both. If we look at historical transactions, the prices paid for innovative tech companies have been high. Apple has made a series of acquisition related to AR, among others it reportedly paid USD 30 million for AR headset maker Vrvana in 2017. Even more interesting, PayPal acquired iZettle for around USD 2.2 billion last year. In our opinion iZettle's offerings in mobile payment is narrower in scope than Blippit and the valuation is therefore worth noting.

Figure 18: Football field - DCF, EV/EBITDA, P/E



Source: Västra Hamnen Corporate Finance

What is behind the numbers?

In our research we try to look beyond the reported numbers to see if the company uses accounting methods, or reports items off the income statement or balance sheet, that could impact our interpretation of its official figures. The underlying economics of the company could be stronger or weaker than they look at first and this could be important for our valuation.

Modest use of capitalised costs

In the case of Crunchfish, the picture is pretty straightforward. We are always mindful of capitalised development costs, which Crunchfish reported an accumulated SEK 20.4 million of on the balance sheet at the end of 2018. Capitalised costs are in reality only deferred costs. Instead of expensing right away, the costs will show up as depreciation down the road. In this case the amount is fairly small and not significant to our case.

Deferred tax asset outside the balance sheet

In the opposite direction, there is a potential off-balance sheet item in the form of deferred tax assets. Historical deficits may be used for tax deductions once the company goes into profit. The company reported accumulated historical losses of SEK 115.5 million at the end of 2018 and this amount times the current corporate tax rate is an unreported asset benefiting the company in the future.

Finally, the company has outstanding warrants acquired by employees as part of an incentive program. Currently there are 700 000 outstanding warrants, each one entitling the holder to purchase 1.15 shares at SEK 9.47 per share with a tenor until June 2022. If all warrants are exercised, the dilution effect will be 3.0 percent. Since the warrants are well in the money, we have already adjusted for them in our valuation, calculating fair value per share after full dilution.

What could go wrong?

There are many potential pitfalls for young companies on their way to their first profit. For Crunchfish, we regard the risk as higher in Gesture Control than in Mobile Proximity even though the first has a longer history and has had historical revenues.

Dependent on good partner relations

For Mobile Proximity, we regard the strength and unique position of partners ClearOn and Swish as being risk mitigators for Blippit. However, the argument can also be turned around as implying vulnerability to any trouble between the three partners. By joining a joint venture, Crunchfish and ClearOn have strong incentives to make the partnership work. But good intentions are no guarantee for a productive long-term working relationship.

Competitors may retaliate

There is also risk of competitive reactions from some of the powerful players in the payments market. The card terminal manufacturers, the card companies and card services companies such as NETS and BABS are strong opponents and they will probably not sit idly and watch Blippit take a large part of their business. They may e.g. launch their own competitive services or change their pricing in response.

There are several risks associated with the international expansion of Blippit. Lacking the positional power of ClearOn and Swish, breaking into international markets may take much longer than in Sweden. Largely for this reason, we have been very conservative in weighing international opportunities into our valuation of Mobile Proximity.

No certainty that AR takes off

In Gesture Control, risks are higher simply because the market is less mature. Although it seems likely at present, it remains to be seen whether AR will become a mass market. Without it, gesture control is likely to remain a technology looking for an application.

Even if AR does make a grand breakthrough, it might turn out that consumers are shy about waving their arms in the air in front of them to control their devices. They may prefer other input alternatives. For example, it should be noted that progress is being made in pupil tracking, whereby a user could be able to control AR objects using only their eyes. This could turn out to be a competing technology which is easier to accept for users.

Tech giants could become tough competitors

Crunchfish is also up against some very strong opponents in gesture control. Microsoft apparently has the know-how inhouse, and so probably does several of the tech giants. If they decide to make their technology available to a wide audience of hardware manufacturers and platform developers, it may be hard for an independent developer like Crunchfish to compete.

Coming events

It is hard to pinpoint the timing of coming events, especially in Gesture Control. Crunchfish has reported new partnerships at irregular intervals and we expect more to come but cannot say when. In Blippit the way forward is slightly more predictable. The company expects to ship the first app terminals in Q3 and to book revenues from these in Q4. These will be major steps forward. A further big leap will be the release of the next version of the terminal which supports card transactions. We will also keep an eye out for any international partnerships which could help establish Blippit in foreign markets, and for indications that Blippit's market entry instigates a boost in the coupon market.

Financial calendar

22 August 2019:	Q2 2019 report
14 November 2019:	Q3 2019 report
12 February 2020:	Full-year 2019 report

Appendix: Valuation method

Companies in an early stage usually report negative net profits and may have many years left until they turn a profit. Sometimes they even have years until their first significant sales revenues. The difficulty in valuing growth companies with limited historical records is that the valuation rests on uncertain estimates of future earnings; more uncertain than for companies with years of stable profits on record. There is little in terms of historical figures on which to base estimates of future revenues, future profit margins and other items.

To handle these challenges, we choose to follow a generally accepted method for valuing growth companies described by finance professor Aswath Damodaran[1)] among others. Instead of scaling the discount rate (WACC) to account for all the risks and uncertainties associated with a young company, we use a two-stage valuation approach:

- First, we estimate fair enterprise value under the explicit assumption that the company survives until its first year of sustainable profits. We use a WACC commensurate with the circumstances of the company once it reaches profitability.
- Second, we adjust the estimated enterprise value by multiplying with a probability factor reflecting the likelihood that the company survives.

With each passing period after the initial valuation, the probability factor may be adjusted based on the company's development and our updated assessment of its chances of survival.

1) Damodaran, Aswath,*"Valuing Young, Start-up and Growth Companies: Estimation Issues and Valuation Challenges", Stern School of Business, New York University, May 2009*

Income Statement - Annual Data

kSEK	2016	2017	2018	2019e	2020e	2021e	2022e	2023e
Net revenues	2 690	3 203	3 510	14 733	28 670	54 616	93 714	126 612
Capitalised development cost	8 175	7 602	6 769	4 640	4 945	5 197	5 375	5 550
Other revenues	2 301	2 041	3 548	1 785	1 932	2 091	2 263	2 450
Total revenues	**13 166**	**12 847**	**13 827**	**21 157**	**35 547**	**61 904**	**101 352**	**134 611**
Cost of goods sold	-	-	-	(550)	(2 750)	(4 400)	(4 400)	(4 400)
Personnel costs	(12 141)	(14 324)	(14 784)	(22 555)	(30 698)	(33 403)	(44 681)	(56 427)
Other external costs	(10 854)	(15 290)	(14 637)	(19 165)	(19 948)	(21 809)	(23 844)	(26 068)
Other operating expenses	(192)	(285)	(1 554)	(1 897)	(3 116)	(3 406)	(3 724)	(4 072)
EBITDA	**(10 020)**	**(17 053)**	**(17 148)**	**(23 009)**	**(20 965)**	**(1 114)**	**24 703**	**43 644**
Amortisation & depreciation	(2 149)	(3 433)	(4 748)	(4 699)	(4 224)	(4 377)	(4 543)	(4 710)
EBIT	**(12 169)**	**(20 486)**	**(21 896)**	**(27 708)**	**(25 189)**	**(5 491)**	**20 160**	**38 934**
Profit from affiliated companie	-	-	(180)	(2 500)	4 971	37 071	75 725	138 106
Other financial items, net	(365)	(293)	50	22	-	-	-	-
EBT	**(12 534)**	**(20 779)**	**(22 027)**	**(30 186)**	**(20 218)**	**31 580**	**95 885**	**177 040**
Taxes	-	-	-	-	-	-	-	(29 439)
Net profit	**(12 534)**	**(20 779)**	**(22 027)**	**(30 186)**	**(20 218)**	**31 580**	**95 885**	**147 601**
Earnings per share (SEK)	**(0,96)**	**(1,35)**	**(1,30)**	**(1,21)**	**(0,76)**	**1,19**	**3,60**	**5,54**
Growth (%)								
Net revenues	na	19,1%	9,6%	319,7%	94,6%	90,5%	71,6%	35,1%
EBITDA	na	na	na	na	na	na	na	76,7%
EBIT	na	na	na	na	na	na	na	93,1%
Net profit	na	na	na	na	na	na	203,6%	53,9%
% of revenues (%)								
EBITDA margin	neg	neg	neg	neg	neg	neg	24,4%	32,4%
EBIT margin	neg	neg	neg	neg	neg	neg	19,9%	28,9%
EBT margin	neg	neg	neg	neg	neg	51,0%	94,6%	131,5%
Profit margin	neg	neg	neg	neg	neg	51,0%	94,6%	109,6%
Personnel costs	451,4%	447,1%	421,2%	153,1%	107,1%	61,2%	47,7%	44,6%
Total OPEX	862,0%	933,4%	882,5%	296,1%	187,5%	107,3%	77,1%	68,4%
Profitability (%)								
ROE	neg	neg	neg	neg	neg	44,0%	54,7%	45,7%
ROIC	neg	neg	neg	neg	neg	neg	24,9%	45,6%
ROCE	neg	neg	neg	neg	neg	neg	9,0%	9,4%

Source: Västra Hamnen Corporate Finance

Balance Sheet - Annual Data

kSEK	2016	2017	2018	2019e	2020e	2021e	2022e	2023e
Subscribed but not paid equity		-	-	-	-	-	-	-
Inventories	-	-	-	181	362	362	362	362
Account receivable	1 545	1 824	356	836	1 833	6 418	11 450	13 799
Receivables fr affiliated comp	-	-	1 118	2 600	3 240	3 333	3 336	3 648
Prepaid costs & accrued inco	1 415	992	1 089	1 761	2 337	2 710	2 883	2 997
Other receivables	2 039	984	475	791	934	1 012	1 054	1 105
Cash and cash equivalents	44 077	21 164	21 362	6 079	4 913	14 758	112 450	256 692
Total current assets	**49 076**	**24 963**	**24 400**	**12 247**	**13 618**	**28 593**	**131 535**	**278 603**
Tangible assets	222	728	522	392	319	260	212	172
Intangible assets	14 520	18 655	20 402	20 474	21 268	22 147	23 026	23 905
Long-term receivables	-	373	373	373	373	373	373	373
Affiliated companies	-	-	945	4 677	12 977	28 977	28 977	28 977
Total fixed assets	**14 742**	**19 757**	**22 242**	**25 915**	**34 937**	**51 757**	**52 588**	**53 428**
Total assets	**63 818**	**44 720**	**46 642**	**38 163**	**48 555**	**80 350**	**184 124**	**332 030**
Accounts payable	1 610	2 640	2 280	2 528	2 467	2 271	2 288	2 300
Accrued cost & prepaid incon	3 265	3 287	3 177	4 289	4 810	5 170	5 381	5 637
Other liabilities	424	963	917	1 011	1 162	1 212	1 250	1 288
Total current liabilities	**5 299**	**6 889**	**6 373**	**7 828**	**8 439**	**8 654**	**8 919**	**9 225**
Total equity	**58 519**	**37 768**	**40 269**	**30 334**	**40 116**	**71 696**	**175 204**	**322 805**
Total equity and liabilities	**63 818**	**44 657**	**46 642**	**38 163**	**48 556**	**80 350**	**184 124**	**332 030**

Source: Västra Hamnen Corporate Finance

Cash flow statement

kSEK	2016	2017	2018	2019e	2020e	2021e	2022e	2023e
Operating activities	(10 609)	(16 767)	(16 868)	(25 244)	(15 994)	35 957	100 428	152 311
Changes in w orking capital	(2 757)	2 266	369	(2 841)	(1 926)	(4 914)	(4 985)	(2 520)
Investing activities	(8 216)	(7 975)	(6 823)	(8 640)	(13 246)	(21 197)	(5 375)	(5 550)
Financing activities	54 980	(163)	23 356	21 426	30 000	-	7 623	-
Cash flow for the period	**39 348**	**(22 640)**	**34**	**(15 299)**	**(1 166)**	**9 846**	**97 692**	**144 241**
Beginning cash balance	4 729	44 077	21 164	21 362	6 079	4 913	14 758	112 450
Adjustments	-	(273)	165	16	-	-	-	-
Ending cash balance	**44 077**	**21 164**	**21 362**	**6 079**	**4 913**	**14 758**	**112 450**	**256 692**

Source: Västra Hamnen Corporate Finance

Income Statement - Quarterly Data

kSEK	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019e	Q3 2019e	Q4 2019e
Net revenues	216	233	929	2 133	3 973	2 350	3 100	5 310
Capitalised development cost	1 647	1 974	1 854	1 295	1 024	1 194	1 206	1 215
Other revenues	529	629	299	2 091	433	442	450	460
Total revenues	**2 392**	**2 836**	**3 081**	**5 518**	**5 430**	**3 986**	**4 757**	**6 985**
Cost of goods sold	-	-	-	-	-	-	-	(550)
Personnel costs	(4 271)	(3 514)	(2 990)	(4 009)	(3 573)	(5 645)	(6 237)	(7 101)
Other external costs	(3 306)	(3 577)	(3 598)	(4 155)	(5 329)	(4 509)	(4 611)	(4 715)
Other operating expenses	(101)	(295)	(71)	(1 087)	-	(440)	(720)	(736)
EBITDA	**(5 286)**	**(4 551)**	**(3 578)**	**(3 733)**	**(3 472)**	**(6 608)**	**(6 811)**	**(6 117)**
Amortisation & depreciation	(945)	(1 024)	(1 045)	(1 735)	(1 623)	(1 016)	(1 025)	(1 034)
EBIT	**(6 231)**	**(5 575)**	**(4 623)**	**(5 468)**	**(5 095)**	**(7 625)**	**(7 836)**	**(7 152)**
Profit from affiliated companie	-	-	-	(180)	(268)	(585)	(800)	(847)
Other financial items, net	35	(20)	(45)	80	22	-	-	-
EBT	**(6 197)**	**(5 595)**	**(4 668)**	**(5 568)**	**(5 341)**	**(8 210)**	**(8 636)**	**(7 999)**
Taxes	-	-	-	-	-	-	-	-
Net profit	**(6 197)**	**(5 595)**	**(4 668)**	**(5 568)**	**(5 341)**	**(8 210)**	**(8 636)**	**(7 999)**
Earnings per share (SEK)	**(0,40)**	**(0,36)**	**(0,30)**	**(0,26)**	**(0,25)**	**(0,32)**	**(0,34)**	**(0,31)**
Y-o-Y Growth (%)								
Net revenues	(88,9%)	7,6%	299,3%	129,7%	86,3%	(40,8%)	31,9%	71,3%
EBITDA	na	na	na	na	na	na	na	na
EBIT	na	na	na	na	na	na	na	na
Net profit	na	na	na	na	na	na	na	na
% of revenues (%)								
EBITDA margin	neg	neg	neg	neg	neg	neg	neg	neg
EBIT margin	neg	neg	neg	neg	neg	neg	neg	neg
EBT margin	neg	neg	neg	neg	neg	neg	neg	neg
Profit margin	neg	neg	neg	neg	neg	neg	neg	neg
Personnel costs	1976,4%	1511,2%	322,0%	188,0%	89,9%	240,2%	201,2%	133,7%
Total OPEX	3553,3%	3176,6%	717,1%	433,8%	224,1%	450,8%	373,2%	236,4%
Profitability (%)								
ROE	neg	neg	neg	neg	neg	neg	neg	neg
ROIC	neg	neg	neg	neg	neg	neg	neg	neg
ROCE	neg	neg	neg	neg	neg	neg	neg	neg

Source: Västra Hamnen Corporate Finance

Balance Sheet - Quarterly Data

kSEK	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019e	Q3 2019e	Q4 2019e
Subscribed but not paid equity		-	30 365	-	21 475	-	-	-
Inventories	-	-	-	-	-	-	-	181
Account receivable	2 056	306	429	356	3 176	1 118	805	836
Receivables fr affiliated comp	-	-	-	1 118	1 366	1 525	1 718	2 600
Prepaid costs & accrued inco	1 179	1 549	2 599	1 089	1 230	1 859	1 948	1 761
Other receivables	686	968	1 087	475	751	877	853	791
Cash and cash equivalents	13 154	7 741	7 143	21 362	12 913	25 564	16 089	6 079
Total current assets	**17 075**	**10 564**	**11 257**	**24 400**	**19 435**	**30 943**	**21 413**	**12 247**
Tangible assets	160	646	584	522	457	434	412	392
Intangible assets	19 282	20 007	20 809	20 402	19 869	20 070	20 272	20 474
Long-term receivables	373	373	373	373	373	373	373	373
Affiliated companies	-	-	-	945	1 677	2 677	3 677	4 677
Total fixed assets	**19 815**	**21 027**	**21 767**	**22 242**	**22 375**	**23 553**	**24 734**	**25 915**
Total assets	**36 890**	**31 590**	**63 389**	**46 642**	**63 286**	**54 496**	**46 148**	**38 163**
Accounts payable	1 478	1 574	1 882	2 280	3 127	2 558	2 584	2 528
Accrued cost & prepaid incon	3 369	2 996	4 025	3 177	4 222	3 966	4 232	4 289
Other liabilities	533	1 033	11 170	917	758	1 004	998	1 011
Total current liabilities	**5 380**	**5 603**	**17 078**	**6 373**	**8 107**	**7 527**	**7 814**	**7 828**
Total equity	**31 510**	**25 987**	**46 311**	**40 269**	**55 179**	**46 969**	**38 334**	**30 334**
Total equity and liabilities	**36 890**	**31 590**	**63 389**	**46 642**	**63 286**	**54 496**	**46 148**	**38 163**

Source: Västra Hamnen Corporate Finance

Kassaflödesanalys - kvartalsvis data

kSEK	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019e	Q3 2019e	Q4 2019e
Operating activities	(5 170)	(4 453)	(3 476)	(3 769)	(3 475)	(7 193)	(7 611)	(6 965)
Changes in w orking capital	(1 158)	898	(1 173)	1 802	(2 916)	563	342	(830)
Investing activities	(1 701)	(1 974)	(1 854)	(1 295)	(2 024)	(2 194)	(2 206)	(2 215)
Financing activities	-	(56)	5 943	17 468	(49)	21 475	-	-
Cash flow for the period	**(8 029)**	**(5 585)**	**(559)**	**14 207**	**(8 465)**	**12 650**	**(9 475)**	**(10 010)**
Beginning cash balance	21 164	13 154	7 741	7 143	21 362	12 913	25 564	16 089
Adjustments	19	172	(39)	13	16	-	-	-
Ending cash balance	**13 154**	**7 741**	**7 143**	**21 362**	**12 913**	**25 564**	**16 089**	**6 079**

Source: Västra Hamnen Corporate Finance

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