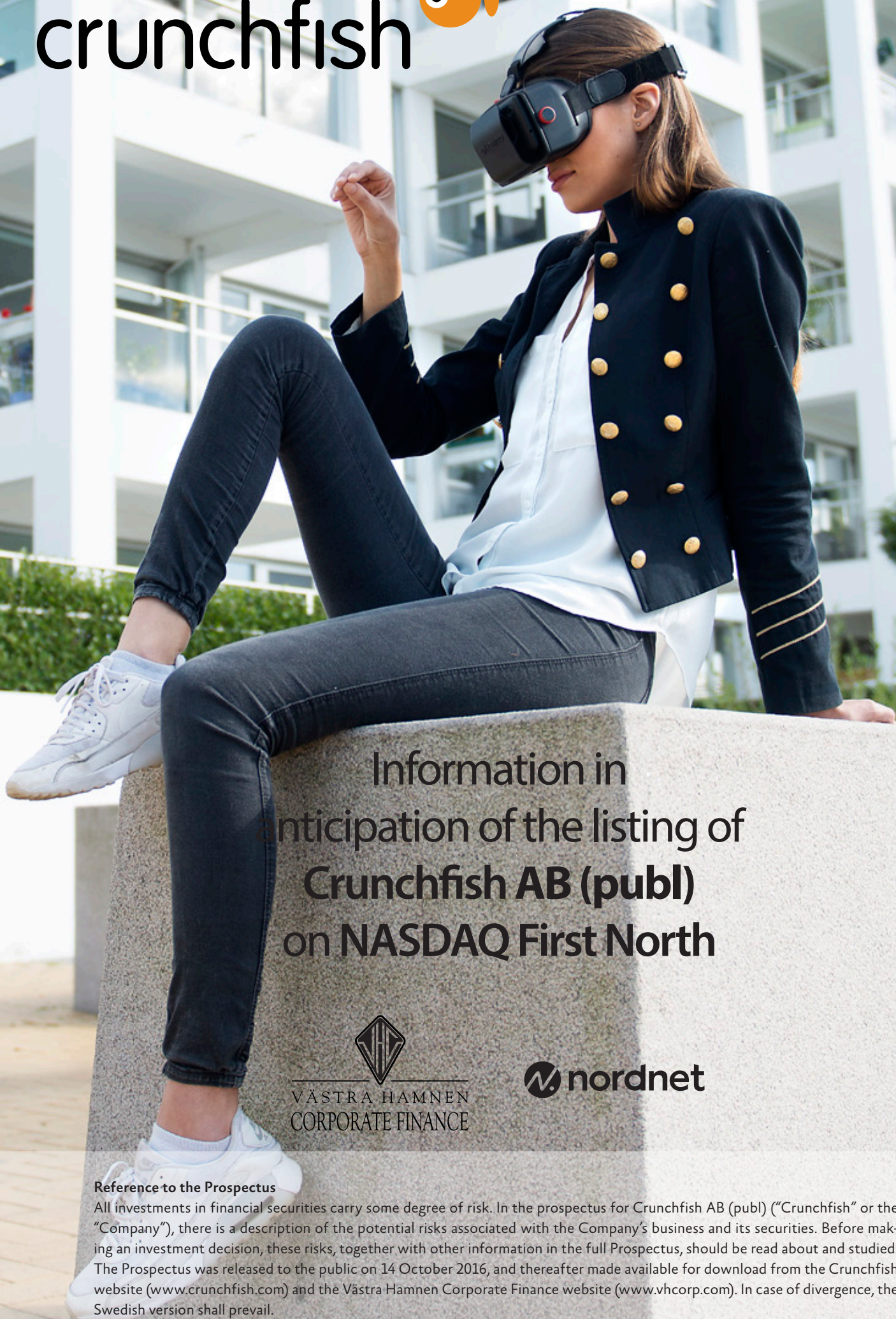


# crunchfish



## Information in anticipation of the listing of **Crunchfish AB (publ)** on **NASDAQ First North**



VÄSTRA HAMNEN  
CORPORATE FINANCE



### Reference to the Prospectus

All investments in financial securities carry some degree of risk. In the prospectus for Crunchfish AB (publ) ("Crunchfish" or the "Company"), there is a description of the potential risks associated with the Company's business and its securities. Before making an investment decision, these risks, together with other information in the full Prospectus, should be read about and studied. The Prospectus was released to the public on 14 October 2016, and thereafter made available for download from the Crunchfish website ([www.crunchfish.com](http://www.crunchfish.com)) and the Västra Hamnen Corporate Finance website ([www.vhcorp.com](http://www.vhcorp.com)). In case of divergence, the Swedish version shall prevail.

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# Crunchfish AB (publ)

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Crunchfish develops software that creates new possibilities for interaction with consumer electronics. The Company's product Touchless A3D® makes it possible to control consumer electronics with hand gestures. By means of the built-in standard camera in a smartphone or tablet computer, the software interprets the gestures and then associates them to different commands to answer an incoming phone call, take a picture, or engage in an interaction for Augmented Reality ("AR") or Virtual Reality ("VR").

The technology can be licensed for both consumer electronics manufacturers as well as for application developers. The Crunchfish solution is tried and tested, and is currently available in millions of devices from global players such as Lenovo, OPPO and TCL.

Crunchfish addresses a market that is estimated\* to reach over USD 6 billion by 2020. The strong growth of gesture recognition in consumer electronics is expected to accelerate from 2018 and will be driven both by gesture recognition for AR/VR as well as when 3D cameras reaches a wider distribution within consumer electronics.

The IP portfolio includes patents granted for 10 gesture recognition inventions and patent applications for another 13 innovations in the field of AR.

Crunchfish is headquartered in the city of Malmö, where all product development takes place. It also has representative offices in China. The Company currently has a total of 17 employees.

\* Technavio Insights, 2016, Global Gesture Recognition Market 2016-2020

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## Highlights

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- *The Gesture Recognition Market is facing a major breakthrough in which AR/VR and 3D cameras will propel the growth.*
- *Positioned for a leading role as a technology leading player, with a strong patent portfolio and a technology that is adaptable to all devices with a camera.*
- *Scalable business model with royalty revenue per unit produced.*
- *Proven technology installed in millions of units at global mobile manufacturers.*
- *Strong organisation and strong ownership base.*
- *Pipeline of development projects with core technology and AR as a base.*

### **The Gesture Recognition Market is facing a breakthrough.**

The primary drivers of the growth of the AR/VR area in which gesture recognition enables effective interaction, as well as 3D cameras becoming standard for consumer electronics. With 3D cameras, the number of functions that can be controlled with gestures increases. Historically, gesture recognition has primarily been a way to differentiate its offering. In line with the development of technology, and that the number of areas of application is expected to increase, global players such as Apple, Lenovo and Samsung take a position.

In the market reports, the value of the software in the global market for gesture recognition is forecast to see a brisk growth, from USD 342 million in 2015 to over USD 6 billion in 2020. The number of units with installed software for gesture recognition is expected to grow from 360 million units in 2015 to over 1.6 billion units in 2020.

**Crunchfish is well-positioned to have a leading role** when the market takes off. The Company's software, Touchless A3D®, is the technology leader and has been selected by global players such as Lenovo, the Oppo, TCL and Vodafone. The Company's gesture recognition technology is applicable to all devices containing a camera which includes everything from mobile phones to Smart TVs. The patent portfolio includes patents granted for 10 gesture recognition inventions and an additional 13 innovations in the field of AR.

**The Company has a scalable business model** that is based on royalty income per device in which the cost base is largely independent of volume. The technology is currently selected and pre-installed several million units by global consumer electronics manufacturers.

The Company focuses on consumer electronics in which the development processes are relatively short, there are a large number of models, and volumes are high. The market focus also creates opportunities to target both manufacturers and application developers where the same technology can be sold and installed in the same device several times.

### **Excellent well-regarded management and Board of Directors**

with extensive prior experience from successful hi-tech and telecom companies. The management team and the members of the Board of Directors have an entrepreneurial track record and long experience with doing business in Asia. The Company's development team has been a pioneer in the field of gesture recognition since 2011 and within AR since 2014.

### **Crunchfish has a pipeline with several advanced stage development projects**

in which the areas of use for the Company's Touchless A3D® product is being broadened. Among other projects, these projects consist of both AR and VR, as well as projects that utilise the 3D camera's full potential.

In addition to interaction with gesture recognition, Crunchfish also has a tangential development area focused on AR with great future potential that allows instantaneous communication with anyone and everyone who is in the vicinity of a mobile device. The technology which is based on low-energy Bluetooth communication from mobile beacons is patent pending and implemented in the software platform aBubbl®. The AR technology can easily be activated in third-party applications, or even mobile operating systems, in order to enable its users to become dynamically interconnected with other users who are in the immediate vicinity. In the social context, the aBubbl® apps within dating, meet-ups and social media provide an opportunity to find others and share information with those who are in one's immediate vicinity. The AR technology also has potential in a commercial context, as it enables the mobile wallet.

# The transaction

## SUMMARY OF THE TERMS AND CONDITIONS

Offering Price	SEK 15
Application Period	17 October – 28 October 2016
Marketplace	NASDAQ First North
First day of trading	11 November 2016
Size of the Offering	SEK 60 million
Subscription Commitment	SEK 45 million

## APPLICATION

An application for the acquisition of shares must be for not less than 400 shares. An application for the acquisition of shares may be made according to one of the following alternative options:

- Via a specially prepared application form submitted to Aktieinvest FK. The application form is available on Crunchfish's website ([www.crunchfish.com](http://www.crunchfish.com)), Västra Hamnen's ([www.vhcorp.se](http://www.vhcorp.se)) and Aktieinvest FK's website ([www.aktieinvest.se](http://www.aktieinvest.se)).
- Via Nordnet's Internet service, internet service for those who hold securities depository account with Nordnet.

## RATIONALE FOR THE OFFER

Crunchfish continues to invest in product development and marketing. New opportunities in application areas such as AR/VR requires continued further development of the technology and market development of new customer groups. Even the constant development of sensors, where the camera is one of the most important, requires the development of the software platform so as to ensure optimum efficiency and performance of the solution. Of the infusion of capital, 35% is allocated to sales and marketing, 40% for the further development of the Company's products and the remaining 25% of the capital injection, is intended to be used to meet the Company's working capital needs.

## GOALS

Crunchfish is committed to reach, within 3 years, a market share exceeding 10% of all devices in consumer electronics with software installed for gesture recognition.

## OWNERSHIP BEFORE THE OFFERING

Name	Number of Share	%
Joachim Samuelsson*	3,730,860	33.75%
Midroc Invest AB	3,026,337	27.38%
Paul Cronholm	1,015,070	9.18%
Carlquist Holding AB	700,000	6.33%
Bluefin Ventures AB	452,000	4.09%
Nitrox Consulting AB**	452,000	4.09%
Claes Capital Consulting AB	280,600	2.54%
Rippen AB	280,600	2.54%
Granitor Invest AB	273,080	2.47%
Blomco AB	232,000	2.10%
Other current shareholders	610,523	5.52%
<b>Total</b>	<b>11,053,070</b>	<b>100%</b>

\* At the time of the IPO 1.7 million shares will be held through capital insurance at LCL Life & Pensions and the remainder through capital insurance at SEB Life

\*\* Board member Michael Kretz's company

## SUBSCRIPTION COMMITMENTS AND SET-OFF OF LOANS PROVIDED

Name	Set-off of loans (SEK 000's)	New capital (SEK 000's)	Total (SEK 000's)
Joachim Samuelsson*	3,000	-	3,000
Midroc Invest AB	3,000	-	3,000
Carlquist Holding AB	350	-	350
Claes Capital Consulting AB	150	-	150
Rippen AB	150	-	150
Other current shareholders	-	1,850	1,850
<b>Total current shareholders</b>	<b>6,650</b>	<b>1,850</b>	<b>8,500</b>
Handelsbanken småbolagsfond	-	10,000	10,000
Rothsay Limited	-	5,000	5,000
Eric Tour	-	3,500	3,500
Dunkerintressena	-	2,500	2,500
Per Nilsson	-	2,000	2,000
Mats Svensson	-	2,000	2,000
David Zetterlund	-	1,500	1,500
Bengt and Johan Kjell with comp.	-	1,500	1,500
Gerhard Dal	-	1,000	1,000
Robert Dobson	-	1,000	1,000
Sonny Johansson	-	1,000	1,000
LMK Forward AB	-	1,000	1,000
Oliver Molse	-	1,000	1,000
Oscar Molse	-	1,000	1,000
Magnus Nordin	-	1,000	1,000
Per Vasilis	-	1,000	1,000
Christian Månsson	-	500	500
<b>Total external</b>	<b>-</b>	<b>36,500</b>	<b>36,500</b>
<b>Total</b>	<b>6,650</b>	<b>38,350</b>	<b>45,000</b>

\* Convertible bonds held by Joachim Samuelsson totalling SEK 5.25 million, including interest, will be converted on the same terms and conditions for the other investors in the Offering, three days after the listing.

## A few words from the CEO

As early as within three years from now, it is expected that gesture recognition will be found virtually everywhere. In smartphones, tablet computers, AR/VR devices, TVs and in many other products and applications. VR support in smartphones, which Google is accelerating with its introduction of Daydream View, and the fact that the presence of photos and videos produced in 360 format is greatly increasing, are some of the factors driving the need and demand for gesture recognition. Within consumer electronics, including the breakthrough of the 3D camera with Apple's newly launched iPhone7 plus as a trendsetter, increases the possibilities with gesture interaction. As one of the pioneers of software for gesture recognition, Crunchfish is uniquely positioned for a leading role in this revolution of how we interact with electronics.

Back in 2011, Crunchfish conducted the first experiments using the camera in a mobile phone to recognize hand gestures. With a background in image analysis and neural networks, unique algorithms were created which were patented and developed into what is now our flagship product - Touchless A3D®.

During the summer of 2013, we delivered the first version of Touchless A3D® to two manufacturers in China and the first mobile phones with our technology was launched in the autumn of the same year. Several global customers have followed since then. Crunchfish gesture recognition technology has also achieved recognition by receiving the Frost & Sullivan Global New Product Innovation Leadership Award.

### Our gesture recognition makes the difference

In pace with that consumer electronics becomes more advanced, even better ways to control and interact with it is required. Gesture recognition has a wide range of applications and is the obvious alternative to the touch screen and keyboard when the distance is growing or in situations that do not allow for touching. Examples are the use of AR/VR where one typically does not have a touch screen to press, in front of a Smart TV due to the distance, in the car in order to minimise distractions when driving, or in front of the computer in order to be able to conveniently answer a Skype call.

As the main focus for us has been gesture recognition of mobile phones and tablets, the use within, for example, AR/VR is close at hand, but of course also other consumer electronics. Our solution consists solely of software and can be used in all types of products equipped with a camera. However, it is the



situation and needs that govern the use of gesture recognition, rather than the device in which it works.

### Touchless A3D® - Best performance

Compared to the competition, we have the best performance both in terms of how fast the detection works and how well we follow a hand in motion. This is confirmed both by customers and independent research organisations. Our performance is based on efficient and effective algorithms, combined with comprehensive training of the system for different gestures. Even the time it takes to integrate Touchless A3D® in a product or application is considerably shorter than equivalent competitor solutions.

### The path to a global market

Gesture recognition is facing a breakthrough. This will be propelled by the efforts being made within VR by Google and Facebook. The automotive industry has also invested in gesture recognition, in which BMW and Audi already have solutions in their models, thus driving both the interest as well as knowledge of the advantages and possibilities with gesture recognition. The Selfie trend provided us some attention a few years ago in which manufacturers of mobile phones and tablets differentiated themselves by offering a gesture-controlled camera. With new applications and areas of usage such as AR/VR, in which gesture recognition becomes crucial to achieve seamless interaction, much larger volumes are expected with gesture recognition in the market.

Crunchfish has a unique combination of expertise and personalities along with a continuous customer-oriented focus. My own experience comes from the commercialization of software within consumer electronics and specifically business development and sales to manufacturers in Asia and the US, which is the primary segments for Crunchfish as well. Software providers are another customer group that we are going to focus on. To build a customer base and an organization that can deliver globally is what I previously succeeded in doing. Now Crunchfish will become a leading global provider of software and a fast growing profitable company.

### Innovative AR technology

As part of the innovation process in the fall of 2014, we chose to start investing in another area of technology - what we call Connected AR and which consists of the AR platform aBubbl®. The product idea is born out of a gesture recognition feature film demo in which was the video was moved between two

*The Company's software suited for the emerging AR/VR industries*

	VR – Virtual Reality	AR – Augmented Reality
Touchless A3D®	VR interaction	AR interaction
aBubbl®	Social VR	AR activation

*Both Touchless A3D® and aBubbl® are key components of the rapidly emerging AR/VR industries. Gesture recognition is expected to be the way users interact with AR/VR. aBubbl® provides VR users the possibility to be social by interacting with each other. aBubbl®, by its nature is AR, and able to activate AR for any application or operating system and augment the reality for its users.*

tablets with a “grab & drop” gesture which also required technology that handled the communication between the devices. That was what this aBubbl® initially solved, but which was further developed. It is still in its early stages, but we hope and expect to get started with it’s commercialisation next year.

### Passion drives growth and development

With a passion for developing world class software that is as big as the drive to do business, we have built a great team with specialized expertise in all the key areas. With global customers signed that are in production with products containing Touchless A3D®, we have not only proven the software but also our capacity to do business in the Asian market. It has given us both experience and humility for the challenges we face, but also an understanding of exactly what it takes to succeed in developing world-leading technology and create success in the marketplace.

### What the future holds

With new applications and areas of usage within consumer electronics such as AR/VR, combined with that 3D cameras are becoming standard in many products, gesture recognition will quickly see advances. In pace with gesture recognition becoming established, this trend will continue in a similar way as the touch screens did in their breakthrough within a large number of market segments that previously had keyboard and mouse. In the future we will be able to create well-defined interaction areas in the zone where we will accurately control things in our environment without the need for either a remote control, keyboard or touch screen. Though Touchless A3D® can be integrated before the manufacture of a product, it can also be inserted into any software application at any time in order to make the gesture recognition possible, for example, a camera app or Music app downloaded from the App Store directly to the end user.

Our vision is that the interaction with the consumer in the future, in whole or part, will be done with gestures - and Crunchfish is a market leader in the field of gesture recognition. By solving gesture recognition using only software and standard cameras, we have created a solution that scales well and can be distributed to billions of devices annually. The market for gesture recognition will gain momentum, especially driven by the emerging AR/VR industries and in which Crunchfish is perfectly positioned with its position in mobile phones and tablets.

Malmö, 14 October 2016  
 Joakim Nydemark  
 Chief Executive Officer  
 Crunchfish AB (publ)

# The Market

Humans have always been gesticulating with their hands as a means to communicate. With advanced image processing, it is now possible for electronics to understand gestures and translate them into commands. The human's intuitive interaction is no longer limited by technology, but instead can be designed based on human needs. With gesture recognition emergence of new interaction possibilities because one can remotely control electronics without a touch screen, and this also allows interaction with new types of consumer electronics, such as AR/VR devices, where the user does not have access to a keyboard or touch screen but who can take advantage of being able to interact with gestures.

## MARKET DEVELOPMENTS WITHIN THE FIELD OF CONSUMER ELECTRONICS

The value of software sales\* in the global market for gesture recognition in consumer electronics has been estimated at USD 342 million for 2015. The technology's real breakthrough is expected to take place from 2018 in connection with AR/VR and 3D camera's broad entrance into the market for consumer electronics.

Between 2017 and 2020, the market is expected to show an average annual growth of over 100 percent and amounting to over USD 6 billion over in 2020. Number of units sold in the segment (excluding AR/VR devices) was estimated at 388 million devices in 2015. The projected corresponding figure for 2020 is 1.6 billion devices with support for gesture recognition. Smartphones are expected to constitute the absolute majority of the total market.

### AR/VR

AR/VR is facing a breakthrough. Not the least, VR has recently received more attention directed toward itself. Samsung has launched Gear VR and Google has just recently launched Daydream View. On Facebook, users can publish their own 360 films and thereby invite friends to experience their reality as their virtual reality. It takes place in parallel to major investments in gaming, entertainment and many other areas to produce content for VR. In pace with that the use of AR/VR is increasing, the Company expects a significant increase in demand for ges-

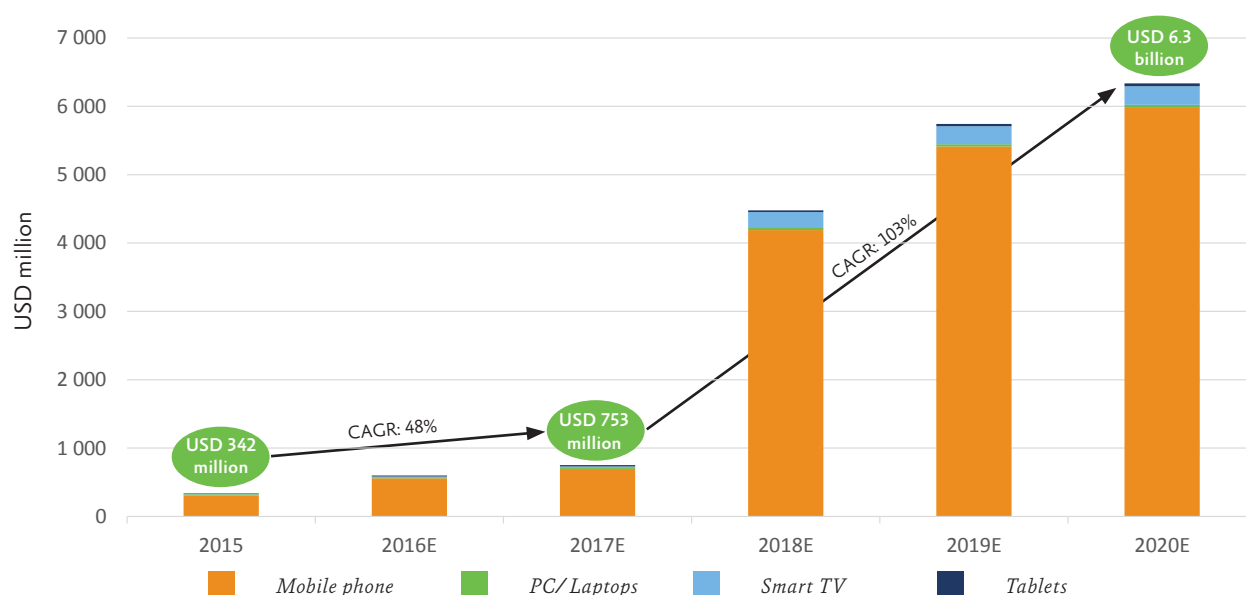
ture recognition as the interaction with gestures is the most natural way to interact in an AR/VR environment. The rollout of VR is expected to go very rapidly via that the technology is integrated into existing smartphones and downloadable applications that are used together with a VR headset. An initial area of application for VR gesture recognition is to give commands to change a video, fast forward or change the volume.

### The App market

The path to the market for gesture recognition software has so far primarily occurred through manufacturers of consumer electronics. However, gesture recognition can also be installed directly in a third-party application, even if the device already supports certain functions from the manufacturer. By means of distribution via applications, gesture recognition technology can reach 100's of millions of users in addition to manufacturers' volumes via a software update of an application. The user base can be expanded quickly, without any direct additional work for the developer of gesture recognition software. The applications that are closest to hand for an application provider that gesture recognition is camera functions, AR/VR, media players and games, but any function can be controlled via an application with a gesture. There is a large number of application developers and millions of applications, providing a potentially very large market.

\* Technavio Insights, 2016, Global Gesture Recognition Market 2016-2020

The value of the software in the global market for gesture recognition of consumer electronics, 2015 - 2020



# Market Trends

## Development of interaction



1 The first generation of integration with technology consisted of one-dimensional interaction using the keyboard and pointing device.

2 The second generation of integration with technology consisted of two-dimensional interaction using the touch screen.

3 The third generation of integration with technology will consist of three-dimensional interaction using gesture recognition.

### Human interaction with electronics evolves

Human interaction with the electronics has evolved in a long-term perspective, from one-dimensional and controlled towards multidimensional, freer and being more intuitive. With gesture recognition, the next step in development is taken where man is allowed to interact naturally and effectively in space's three dimensions.

### Gesture recognition will emerge as interaction

The market for gesture recognition is facing a major breakthrough. Over one billion devices, just within consumer electronics, are expected to offer gesture recognition within three years. The volumes are driven by the fact that the world's leading electronics companies now integrate gesture recognition in an increasing number of product models. Within consumer electronics, gesture recognition's breakthrough is expected to be further strengthened with products like PC/Laptop, Smart TV, AR/VR and in specific environments such as in the car industry and the home.

### A growing consumer electronics market

It is expected that in 2016, 1.6 billion mobile phones and 330 million tablet devices will be sold, and the growth in these segments is expected to grow by 8% in the coming years, corresponding to more than one hundred million units annually.

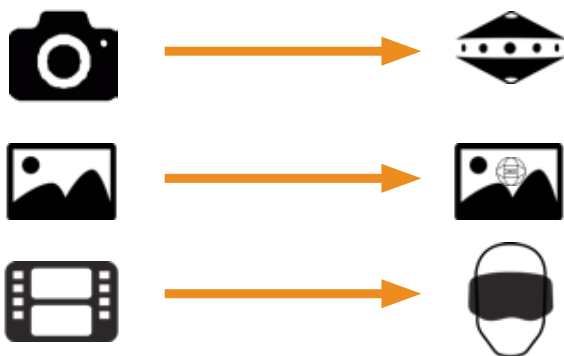
Smart TVs segment is expected to grow from today's 265 million units, while the PC/laptop market is expected to decrease proportionally from 304 million units.

### New product areas

Gesture recognition solves the problem of interaction with the use of AR/VR. Solutions within VR will to some extent be custom-built VR helmets, however the large volumes will build on VR-support in the smartphone. This support will partly be realized by manufacturers of smartphones, but also by third party application developers. In all the categories, there is a need for software for gesture recognition.

AR solutions lies a bit further into the future and may be offered on special AR glasses.

## Media development



Virtual reality (VR - Virtual Reality) will shortly show a breakthrough in all areas and become the modern format of photography and video. By photographing or filming with a 360 camera, the entire room is captured, even backwards. Many have already seen pictures of the "360" symbol in their Facebook feeds. When it comes to video in the 360 format, virtual reality is best enjoyed with a VR headset, as one can seamlessly look around in the virtual real world via that the headset detects head movement.

### Technological developments

The rapid development of technology in a number of areas favours gesture recognition. In addition to the development of ever better camera sensors and processors, the capabilities and possibilities of gesture recognition will be further enhanced when 3D cameras emerge within consumer electronics.

A 3D camera creates an image of the depth in which the camera sees, meaning that for each point of an image which typically contained a colour value, instead it is now a depth value. The more detailed the information about the position of the movement, the more accurate gesture recognition can be made, and then used for new ways to interact. The interaction goes from handling simple commands to more subtle commands and rich of details.

## Business Activities

*Crunchfish develops software that creates new possibilities for interaction with consumer electronics. The Company's product Touchless A3D® makes it possible to control consumer electronics with gestures. By means of the standard built-in camera in a mobile phone or tablet, the software interprets the hand gestures and then associates them to different commands - to answer an incoming call or take a photo. The Crunchfish vision is that the interaction with consumer electronics in the future will, in whole or in part, be done with gestures, and Crunchfish will become the leader in gesture recognition.*

### THE PRODUCT

Crunchfish develops software for gesture interaction with consumer electronics. Gesture recognition allows non-contact interaction at a distance and is a complementary alternative replacement for pressure-sensitive touch screens, physical buttons, and other physical controls.

Gesture recognition is a new and natural way to interact with electronics. It is practical, can be used from a distance, or when your hands are busy or dirty. It allows for interaction, for example, from the couch to control the TV or one's media player. Gesture recognition also enables quick access to specific functions or applications. In all sterile or otherwise sensitive environments, gesture recognition provides a means to avoid contamination. Crunchfish's software solution is also independent of platform and operating system.

### Virtual Reality – Soon in all smartphones



#### Navigating in virtual reality

With the mobile phone in a VR headset, or with a dedicated VR helmet equipped with a camera, the user can exercise control by means of hand gestures and navigate in a virtual world. Interaction with menus, video player, browse through 360 degree images, moving around from room to room tour properties in virtual house - all are possible without additional hand controllers or other hardware.

### Touchless A3D®

Crunchfish's Touchless A3D® product is licensed to customers in the form of a development package, referred to as SDK. Touchless A3D® SDK also provides, in addition to software libraries and application programming interfaces, integration manuals, guides for interaction design, as well as reference software in the form of applications. With its approach, Touchless A3D® is very easy to integrate into existing mobile applications and has been deployed in commercial products in a few weeks from project initiation.

Touchless A3D® makes use of the standard camera of the type currently found in all mobile devices, from simple mobile phones to tablets and laptops. Using advanced image analysis, deep machine learning and artificial neural networks, the user's face and hands are detected. These are also followed in real time and in three dimensions, which together enables interaction with simple gestures in the form of a command, to the more complex gestures made up of a series of movements. The product also records the movement in images and can detect with high precision a quick wave of one's hand, for example.

The product is currently independent of the underlying camera sensor technology and works on simple cameras that is embedded in front of a smart phone, or with the high resolution cameras that are often placed on the back of the phone. For some features, such as swipe, the camera needs be able to deliver a stream of images in normal video quality, which already today the majority do today.

In addition to standard cameras, basic support of 3D and depth cameras is also provided. What is meant by a 3D camera refers to a camera that in addition to, or instead of, a colour image, also delivers a depth map in which each pixel represents the distance from the camera to the object. Touchless A3D® works today with cameras from Intel which creates a deep image of up to four meters.

### STRATEGY

3 years ago, Crunchfish made the strategic choice to focus on mobile phones and tablet computers, which in 2016 has been expanded to more segments in consumer electronics. The development processes are relatively short, the number of models large, and the volumes enormous. In the current situation, the Company has a leading position in the mobile and tablet segments and utilizes this position to deliver solutions into the future not only for AR/VR but also for the automobile industry.



Crunchfish has historically chosen to primarily address the manufacturers who base their products on the Android operating system, which today represents about 80% of the total mobile market. There are also ready-made solutions for the iOS and Windows operating systems.

### SALES

Crunchfish operates in a market characterised by relatively long sales processes. Crunchfish carries out all product development, marketing and sales within the Company itself. The products are licensed to customers such as manufacturers of mobile phones/smartphones and other consumer electronics. The working with the customers is both time-demanding and resource intensive. Meanwhile, the short product life cycles and multiple product segments results in that many possible evaluation windows for Crunchfish arises.

The payment model is primarily based on that Crunchfish receives a royalty income per manufactured unit, which means that the business model is scalable to an exceptionally high degree. The Company currently has six licensing agreements with manufacturers of mobile phones and other consumer electronics based in Asia.

### Customers

Crunchfish focuses primarily on sales to manufacturers of mobile phones and tablet computers in which the largest manufacturers in terms of volume are, Samsung, Apple, Huawei, LG, Xiaomi and Lenovo. The fastest growth is mainly found among Chinese companies, which often initiate launches in their domestic market, and then later expand to the rest of

Asia and the West. Many of these companies are unknown to Swedish consumers, yet often have large volumes.

In recent years, Crunchfish has worked up contacts with some forty companies, in which all global mobile manufacturers are included. The Company has commercial licensing agreements with Lenovo, TCL, OPPO, Hisense, Gionee and Tinno - all of which have models out in the market with Crunchfish technology. All are Chinese companies, but in many cases the products are sold globally. In addition to this, within the framework of confidentiality agreements, evaluation and testing of the technology is in progress at some ten companies in parallel.

### GOALS

The number of devices with installed software for gesture recognition of consumer electronics is expected to grow from the current 386 million units to over 1.6 billion devices in 2020. The Company's ambition is that, by means of its technology leadership role as a software provider in the mobile phone and tablets segments, to achieve a significant position on the overall consumer electronics market for gesture recognition. Crunchfish is committed to reach, within 3 years, a market share exceeding 10% of all devices in consumer electronics with software installed for gesture recognition.

### INTELLECTUAL PROPERTY ASSETS

Crunchfish holds patent rights as well as rights to trademarks, designs and domain names divided into two main areas of activity, gesture recognition (Touchless) and proximity-based interaction (Connected AR).

#### Touchless

Touchless constitutes the Company's core business and refers to gesture recognition user interfaces for electronic devices. The patent-pending technology is based on visually tracking an object and thereby identifying gestures associated with control commands.

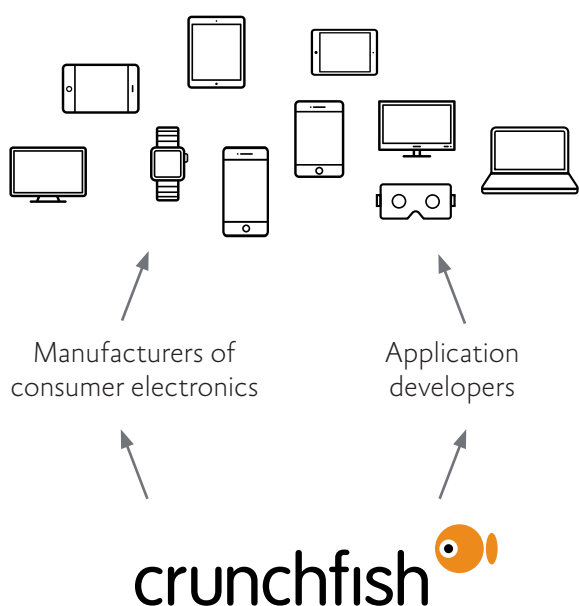
Within the Touchless Area Crunchfish, has ten patents granted in Sweden and for some of the earliest filed patent families, also has been able to obtain US patents.

#### Connected AR

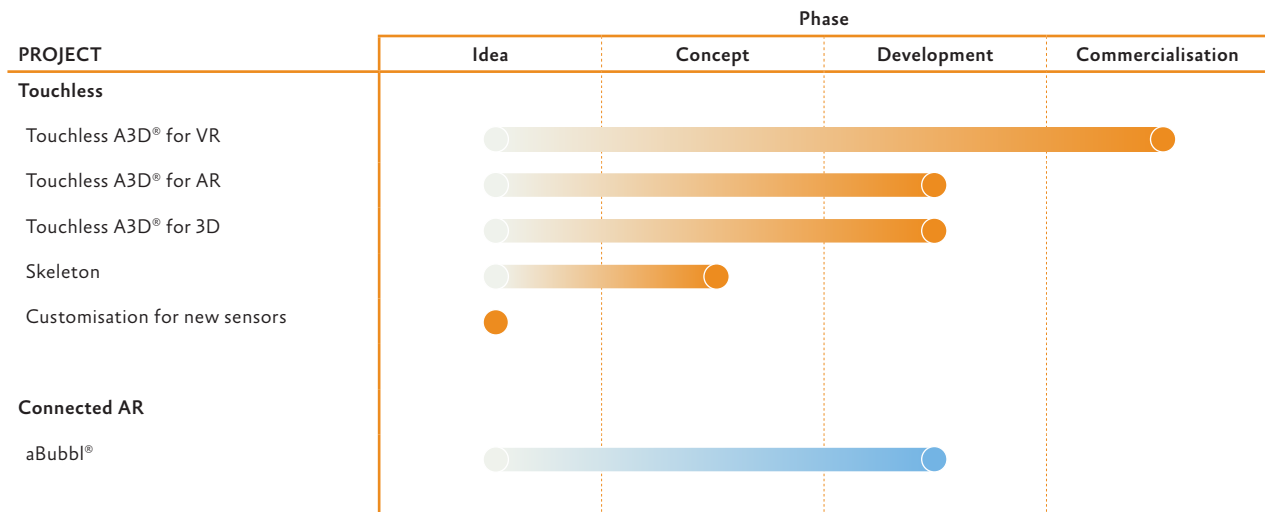
Connected AR is a research area within Augmented Reality, and refers to technologies developed by the Company to facilitate social or other interaction between users of mobile devices in close proximity, via a beacon-based ad hoc temporary network. The technology supports both Apple iOS (iBeacon) and Android.

Within Connected AR, Crunchfish has 13 innovations that have been generated since 2014 and therefore have not progressed as far in the review processes as Touchless, but more patents will also be obtained within Connected AR, as many of the patent families have been able to obtain a fully or partly positive review statement in Sweden and PCT respectively.

### Business Model



## DEVELOPMENT PROJECTS



## DEVELOPMENT PROJECTS

### Touchless A3D® for VR

In all commercial projects, Touchless A3D® is used today for gesture recognition of VR experiences. The product has been integrated with Unity 3D as a tool in order to create content for VR and a new gesture suitable for interaction in the virtual world has been trained. Continued work on additional gestures and support for the new framework for VR is expected to continue for its continued commercialisation.

### Touchless A3D® for AR

To a large degree, gesture recognition in AR is the same as in VR, but some work is done with interaction design and the Company has plans to work on the development of new gestures, and adaptation to customer-specific hardware.

### Touchless A3D® for 3D cameras

Basic support for 3D cameras has already been implemented and has been showcased by the Company. 3D cameras are required in order to give direct commands from a distance of up to five meters for TV control (for example).

### Skeleton

The next stage with 3D cameras is where one, with great precision in depth data, can identify and track individual fingers. With a complete skeleton model, the ability to detect small gestures is expanded, which is useful for interacting with virtual objects within VR, for example, in order to rotate models of organs during surgery with great precision, control music, or navigation equipment in a car.

### Adaptation/Customisation for new sensors

Future development opportunities also exist in other types of sensors, such as radar, ultrasound and infrared.

### Connected AR - aBubbl®

During the past three years, Crunchfish has developed an additional technology, which has been implemented in the software product aBubbl®. The technology is a pioneering and patent pending platform in AR - Augmented Reality - since aBubbl® in several ways augments the reality of the mobile user. It can easily be activated in a mobile operating system or within any application in order to allow its mobile users to detect and communicate with other mobile devices in the vicinity, which Crunchfish refers to each other's being in a mobile user's bubble, here and now.

In all social contexts, aBubbl® provides apps within dating, business meetings or social media, the opportunity to detect other users who are in the vicinity, in order to be able make contact and start a conversation. It is also possible to communicate and share information such as files or photos, to those who are nearby, even if the user does not know their identities. This can be done to anyone who is up to a distance of 70 meters away, or only to someone who is within one meter, which Crunchfish refers to as a digital handshake. In order to present the functionality of the technology, Crunchfish has released two apps that it has developed itself: "aBubbl" and "Six Degrees".

The technology also has great potential for commercial purposes because it enables the mobile wallet. The vision is to replace the physical wallet and the first step is mobile payments. Here aBubbl® facilitates payments in stores as well as between individuals. This is followed by the need to manage other digital valuables such as offers, coupons, loyalty points, ID documents, tickets and receipts for the realisation of the mobile wallet. Also here, aBubbl® will play an important role in one's ability to transfer their identities and digital valuables to nearby devices.

# Financial information

## Profit and Loss Statement

	1 Jan 2016 - 30 Jun 2016	1 Jan 2015 - 30 Jun 2015	1 Jan 2015 - 31 Dec 2015	1 Jul 2013 - 31 Dec 2014
	(6 months)	(6 months)	(12 months)	(18 months)
(amounts in SEK)	Unaudited	Unaudited	Audited	Audited
Net sales	462,931	1,824,260	3,594,328	4,838,654
Work performed by the company for its own use and capitalised	3,970,438	4,580,324	9,480,408	-
Total operating income	1,036,548	745,903	1,622,640	1,575,489
<b>Total operating income</b>	<b>5,469,917</b>	<b>7,150,487</b>	<b>14,697,376</b>	<b>6,414,143</b>
Third-party services	-	-336,686	-377,590	-1,003,852
Other external expenses	-4,289,037	4,681,710	-9,574,921	-13,165,777
Personnel expenses	-6,631,919	-6,626,699	-13,269,960	-16,439,986
Depreciation of intangible and tangible fixed assets	-1,219,788	-285,552	-978,413	-92,449
<b>Total operating expenses</b>	<b>-12,140,744</b>	<b>-11,930,647</b>	<b>-24,200,884</b>	<b>-30,702,064</b>
<b>Operating profit/loss (EBIT)</b>	<b>-6,670,827</b>	<b>-4 780 160</b>	<b>-9,503,508</b>	<b>-24,287,921</b>
<b>Net profit/loss for the period</b>	<b>-6,708,505</b>	<b>-4,800,146</b>	<b>-9,947,808</b>	<b>-24,107,290</b>

## Balance Sheet

	six months		full year	
	30 Jun 2016	30 Jun 2015	31 Dec 2015	31 Dec 2014
(amounts in SEK)	Unaudited	Unaudited	Audited	Audited
<i>Assets</i>				
Intangible long-term assets	11,394,848	4,324,172	8,598,297	-
Tangible fixed assets	222,893	148,601	268,793	178,001
Long-term financial assets	22,254	22,254	22,254	-
<b>Total fixed assets</b>	<b>11,639,995</b>	<b>4,495,027</b>	<b>8,889,344</b>	<b>178,001</b>
Current receivables	1,881,805	2,046,320	2,685,286	1,293,584
Cash & Bank*	1,226,355	6,191,288	4,729,025	25,489,417
<b>Total current assets</b>	<b>3,108,160</b>	<b>8,237,608</b>	<b>7,414,311</b>	<b>26,783,001</b>
<b>Total assets</b>	<b>14,748,155</b>	<b>12,732,635</b>	<b>17,086,655</b>	<b>26,961,002</b>
<i>Shareholder's Equity and Liabilities</i>				
Shareholder's Equity	4,141,851	8,667,845	10,846,602	21,964,240
Provisions	299,157	677,811	497,721	857,901
Current liabilities	10,307,147	3,386,979	5,742,332	4,138,861
<b>Total Shareholder's Equity and Liabilities</b>	<b>14,748,155</b>	<b>12,732,635</b>	<b>17,086,655</b>	<b>26,961,002</b>

\* As per 31 August 2016, liquid assets amount to SEK 4,391 thousand.

## COMMENTS ON FINANCIAL PERFORMANCE

For the period January 1 to 30 June 2016, net sales amounted to SEK 463 thousand, a decrease of about SEK 1,400 thousand in comparison with the same period the year prior. The decrease is explained mainly by natural variations in revenue flows because of the link to specific projects and the customers' production cycles. For the period, work performed by the company for its own use and capitalised amounted to SEK 3,970 thousand. Of the work performed by the company for its own use during the period 1 January to 30 June 2016 and capitalised, SEK 3,367 thousand represents personnel costs and SEK 603 thousand consulting fees plus costs relating to patent applications.

Other external expenses amounted to SEK 4,289 thousand, a decrease of approximately SEK 400 thousand in comparison with the same period the year prior. The Company has decided to engage in software development primarily with its own staff, therefore the costs for outside consultants has declined by approximately SEK 700 thousand. During the period, personnel costs amounted to SEK 6,632, which is on par with the same period the year prior.

The operating results for the period 1 January to 30 June 2016 amounted to a loss of SEK -6,671 thousand, a decrease of approximately SEK 1,900 thousand in comparison with the same period the year prior.

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