

Due Diligence and Valuation Report

Arrowhead Code: 76-01-12
 Coverage initiated: December 01, 2015
 This document: May 22, 2019
 Fair share value bracket: EUR 2.32 and EUR 2.73
 Share price (May 22, 2019): EUR 1.04ⁱ

Analysts

Natasha Agarwal Sumit Wadhwa
 +1 212 619-6889 +1 212 619-6889
natasha.agarwal@arrowheadbid.com sumit.wadhwa@arrowheadbid.com

Market Data

52-Week Range: EUR 0.76 - EUR 1.37ⁱⁱ
 Average Daily Volume: 5,064ⁱⁱⁱ
 Market Cap. (22-May-19): EUR 23.4 million(mn)

Financial Forecast (in EUR) (FY ending - Dec)

EUR	'19E	'20E	'21E	'22E	'23E	'24E	'25E
High PBT '000	1,062	1,869	2,543	3,612	3,942	4,634	5,233
High NI '000	540	1,068	1,566	2,372	2,470	2,970	3,380
High EPS	0.02	0.05	0.07	0.11	0.11	0.14	0.16
Low PBT '000	1,022	1,794	2,430	3,444	3,684	4,264	4,738
Low NI '000	510	1,011	1,482	2,246	2,277	2,693	3,009
Low EPS	0.02	0.05	0.07	0.10	0.11	0.12	0.14

Company Overview: Keyware Technologies (herein referred to as "Keyware", "KEYW", "the company", or "the group") is a Belgium-based independent network service provider in the electronic payments industry. Keyware primarily operates in Belgium, with a small presence in Netherlands. The company was formed in 1996 and got listed on Euronext Brussels in September 2003 with the stock symbol of "KEYW". Prior to 2003, Keyware was listed on NASDAQ Europe (also known as EASDAQ) since June 2000.

The group currently operates in three segments: the terminal rentals/sales segment, the authorizations/transactions segment and the software segment. KEYW has collaborated with world leaders in payment terminal manufacturing, like Worldline, Ingenico, Verifone, to offer its customers a wide range of solutions for payment terminals. It also provides transaction services and has partnered with Worldline, Six Pay, PaySquare, EMS and Bancontact to enhance the quality of its services. The company has been strategically transitioning to Fintech. The company's traditional payment terminals segment has been diminishing in importance to the benefit of the software segment. The software segment of the company provides software for payment transaction for banks and financial institutions, tokenization, instalment payment, ordering and payment.



Company: Keyware Technologies NV
 Ticker: EBR: KEYW
 Headquarters: Zaventem, Belgium
 CEO: Mr. Stéphane Vandervelde
 CFO: Mr. Alain Hubert
 COO: Mr. Wim Verfaillie
 CCO: Mr. Joris Maes
 CCO: Mr. Laurent Vandervelde
 Website: www.keyware.com

Arrowhead is updating coverage on Keyware Technologies NV with a fair value bracket of EUR 2.32 (Low-Bracket estimate) and EUR 2.73 (High-Bracket estimate).

Key Highlights: (1) The top line increased by 4.8% year-on-year (YoY) to EUR 19.6 mn in FY 2018 from EUR 18.7 mn in FY 2017 **(2)** Revenue contributions from terminal, authorization and software segments were 36.5%, 49.1% and 14.4%, respectively **(3)** EBITDA for FY 2018 declined by 14.7% YoY to EUR 3.2 mn in comparison with EUR 3.7 mn in FY 2017, owing to lower gross margin in the terminals and software segment and higher salaries and employee benefits and other expenses **(4)** EBIT decreased by 77.0% YoY to EUR 0.3 mn in FY 2018 compared with EUR 1.1 mn in FY 2017 due to higher depreciation and amortization **(5)** Net profit declined by 47.7% YoY to EUR 0.6 mn in FY 2018 from EUR 1.2 mn in FY 2017 **(6)** Financial debt stood at EUR 6.5 mn on December 31, 2018 **(7)** On February 5, 2019, Keyware announced its Keyware's Smart Card Division was acquitted by the court of appeal for alleged fraud and irregular advertising practices **(8)** Keyware updated on its share buy-back transactions stating that the company held a total of 681,494 treasury shares on April 26, 2019 **(9)** In FY 2019, Keyware incorporated a subsidiary Keyware SARL in Luxembourg (on April 04, 2019) and an office in Paris

Key Risks: Key risks include lower than expected increase in the terminal base, excessive contract terminations and slow adaptability to the ever-changing technology. Also, there are a few pending legal disputes against the company and its subsidiaries which lie outside the scope of normal business operations as per the group.

Valuation and Assumptions: Based on due diligence and valuation estimates, Arrowhead believes that Keyware's fair share value lies in the EUR 2.32 - EUR 2.73 bracket. We have valued the company using the Blended valuation method, with equal weightage to Discounted Cash Flow (DCF) method and EV/EBITDA (2020E) multiple based valuation. Our DCF model suggests a fair value bracket^{iv} of EUR 2.88 to EUR 3.54, while relative valuation provides fair value of EUR 1.77 to EUR 1.92.

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1. Summary and Outlook

We are updating coverage on Keyware Technologies NV, headquartered in Zaventum, Belgium, an independent network service provider in the electronic payment industry. It has its own transaction platform and several strategic partners for payment terminals, acquiring services, e-commerce, m-commerce and air time.

Key Highlights:

- (1) Keyware Technologies extended its operations in Luxembourg by incorporating a subsidiary Keyware SARL there in April 2019. Keyware SARL will offer its payment solutions from Q2 2019 onwards. Keyware also opened an office in Paris. The opening of an office in the French capital will help to provide quick response to the various commercial opportunities, both at partners and at customers.
- (2) In FY 2018, the group earned revenue of EUR 19.6 mn compared with EUR 18.7 mn in FY 2017, thus registering a growth of 4.8% on a YoY basis. EBITDA margin declined from 19.9% in FY 2017 to 16.2% in FY 2018. Higher salaries, depreciation and amortization and impairment and other expenses led to a decline in the EBIT margin from 5.9% in FY 2017 to 1.3% in FY 2018. This led to a decline in the Net profit margin from 6.3% in FY 2017 to 3.2% in FY 2018.
- (3) Net shareholder's equity of the company amounted to EUR 27.6 mn on December 31, 2018 and represented 64.3% of the liabilities. Keyware's financial debt stood at EUR 6.5 mn on December 31, 2018, compared with EUR 9.3 mn on December 31, 2017. On December 31, 2018 cash and cash equivalents were EUR 3.5 mn.
- (4) Keyware had filed an appeal regarding Court Case Prosecution / Keyware Smart Card Division that condemned Keyware to pay the fine of EUR ~0.8 mn. On February 5, 2019, the company announced that it had been acquitted by the court of appeal for alleged fraud and irregular advertising practices. This brought an end to the lawsuit that the company was previously exposed to.
- (5) During H1 2018, 730,000 warrants were exercised under the Warrant Plan 2014 which led to an increase in the capital and share premium by EUR 0.3 mn and EUR 0.1 mn, respectively. The number of outstanding warrants currently stands at 1 mn, with a strike price of EUR 0.569. The exercise term of these warrants will expire by the end of September 2019.
- (6) On August 30, 2018, the company management announced launch of a new share buy-back program which started from October 1, 2018, for a maximum period of one year. As part of this buy-back program, 134,572 treasury shares have been purchased for an amount of EUR 0.13 mn. Further, the board of directors declared the distribution of interim dividend at an amount of EUR 0.03 gross per share which corresponds to a gross dividend of EUR 0.7 mn.
- (7) Keyware's revenue remained flat for FY 2017 at EUR 18.7 mn. Revenues from payment terminal segments fell by EUR 2.7 mn because of the lower number of new signed contracts whereas revenues from authorization segment increased by EUR 0.9 mn. The software segment, which comprises Magellan and EasyOrder, contributed EUR 1.6 mn to the total revenues. EBITDA for FY 2017 stood at EUR 3.7 mn compared to EUR 5.2 mn in FY 2016, which was mainly because of lower profitability of the segment from payment terminals and the start-up of the activities in Germany and EasyOrder. Profit before tax (PBT) decreased to EUR 2.1 mn in FY 2017 because of decline in EBIT. Net profit for FY 2017 stood at EUR 1.2 mn compared to EUR 3.1 mn in FY 2016. High depreciation charges and reduced profitability of payment terminals segment are among the reasons behind low net profit. For the first time, authorization segment has surpassed payment terminals segment in terms of revenue contribution. In FY 2017, the authorization segment contributed 45.4% to the total revenues whereas payment terminals segment contributed 45.1% to the revenue.
- (8) In December, Keyware added contactless technology-based payment terminal - Ingenico ICT 250 - to its existing range of terminals. The device is certified for both MasterCard PayPass and Visa payWave contactless technologies, along with the option of conventional payment.
- (9) Keyware Transactions & Processing GmbH, a Germany-based subsidiary which is 50% held by Keyware Technologies NV and 50% by Keyware Smart Card Division, started offering payment terminals and transaction services in the German market beginning from the fourth quarter of 2016.
- (10) Keyware signed an agreement with Bancontact Company, making the company a Certificate Holder in the "Terminal Provider" and "POS Gateway" categories.
- (11) In Q4 2016, Keyware had purchased 40% stake in French Fintech Company Magellan SAS by paying EUR 3.0 mn in cash and Keyware shares worth EUR 1.0 mn. On June 30, 2017, Keyware purchased the remaining 60% shares of Magellan by using EUR 1.5 mn of own funds and by raising a bank loan of EUR 4.5 mn

(12) In FY 2017, Keyware acquired EasyOrder VOF from Kortrijk for a maximum price of EUR 0.7 mn with a fixed component of EUR 0.5 mn (cash of EUR 0.4 mn was paid and Keyware shares worth EUR 0.08 mn were issued on June 30, 2017). The variable part of maximum EUR 0.2 mn was paid in tranches, based on the achievement of pre-specified results.

Key Risks: Key risks include lower-than-expected increase in the terminal base, weak business environment in Belgium, excessive contract terminations and slow adaptability to the ever-changing technology.

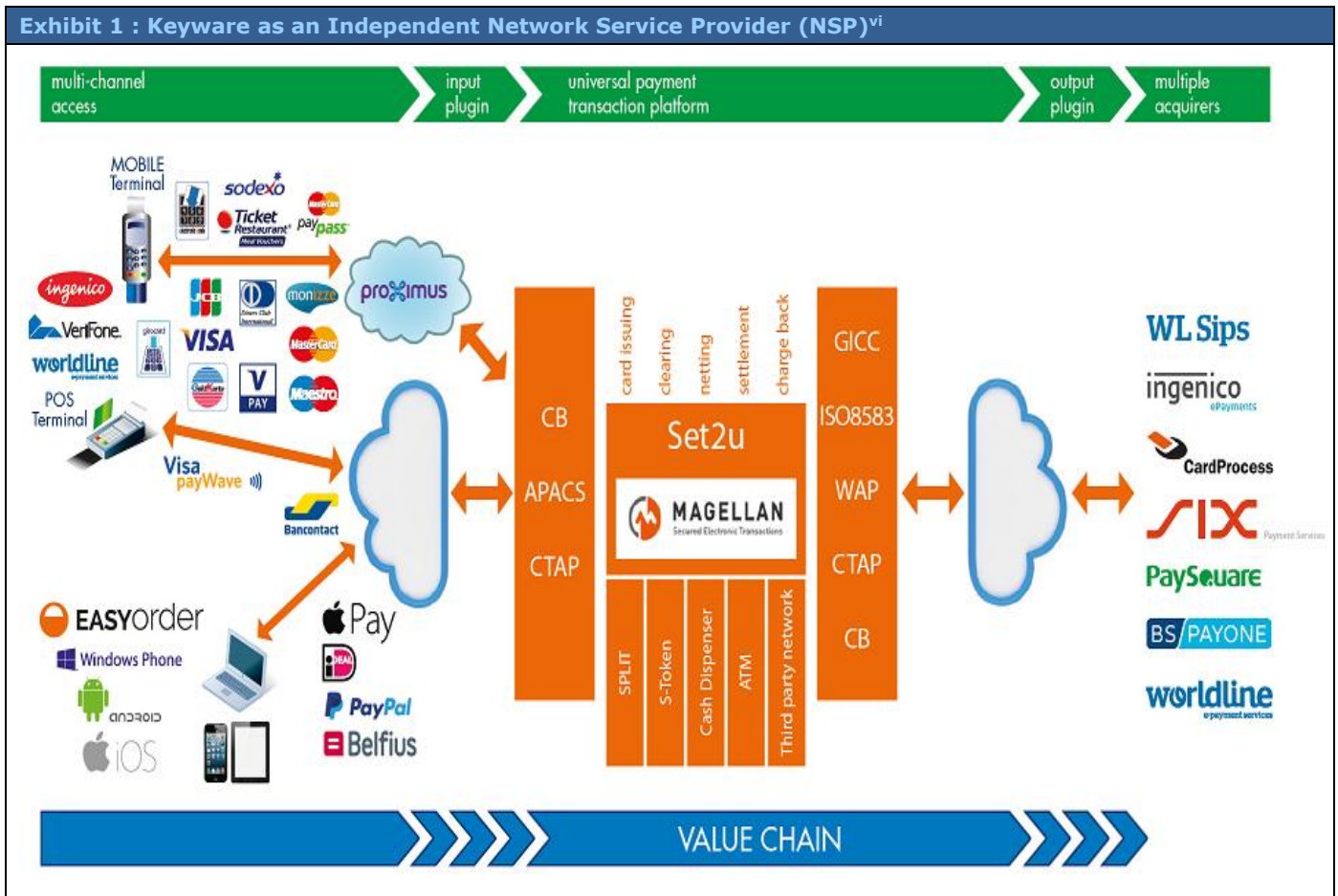
Industry Overview: The electronic payment industry's value chain comprises of several services - providing terminals, transaction services, telecommunication services, etc. Keyware is an active player in providing terminal installation, maintenance and repair services as well as transaction services to its clients. In terms of the number of terminals in the market, the Belgian industry posted an increase of c. 7% CAGR over a period of 4 years from 2010-2014. With the government eliminating the use of paper food coupons like Sodexo and introducing electronic coupons, the industry is poised to witness a significant increase in the number of terminals as many retailers accepting the food coupons do not currently own a payment terminal. In another significant development, the government has reduced the cash transactions from earlier EUR 5,000 to EUR 3,000, which favorably impacts the volume of payment transactions on terminals. Therefore, the industry is well poised to grow through both the volume of transactions as well as the number of terminals over the coming years.

2. Business Overview:

Keyware Technologies NV was established in June 1996 as a public limited company and is headquartered in Zaventem, Belgium. The company’s shares have been trading on Euronext Brussels under the symbol “KEYW” since June 2000. Keyware is an independent network service provider offering electronic payment solutions in the regions of Belgium and Netherlands. It has more than 15 years of experience in programming, installation, personalization, maintenance, rental and sale of payment terminals. It offers payment services for e-commerce and m-commerce and solutions for loyalty cards. It has partnered with leading global terminal builders like Ingenico, Verifone and Worldline and transaction partners - Worldline, Six Pay, PaySquare, Bancontact and EMS - to offer its customers the most suitable and updated payment solutions.

In FY 2017, the group implemented a fintech strategy according to which it would transition from a pure service company to a software developer. The terminal division is currently at a mature stage and is witnessing lower number of signed contracts on a YoY basis. In the future, the contribution of this segment to revenues is expected to decline in favour of the fast-growing software division. The authorizations and transactions division is expected to remain a key division in the following years. The company is also diversifying its strategy by focusing on sectors that are considered more stable or less cyclical in nature, such as Tier 2 companies. This, in turn, is expected to bring stability in the revenues in the long run and hence, reduce the risk of defaults.

Further, with Keyware’s presence in Belgian, French and German markets, growth is expected to be realized across borders.



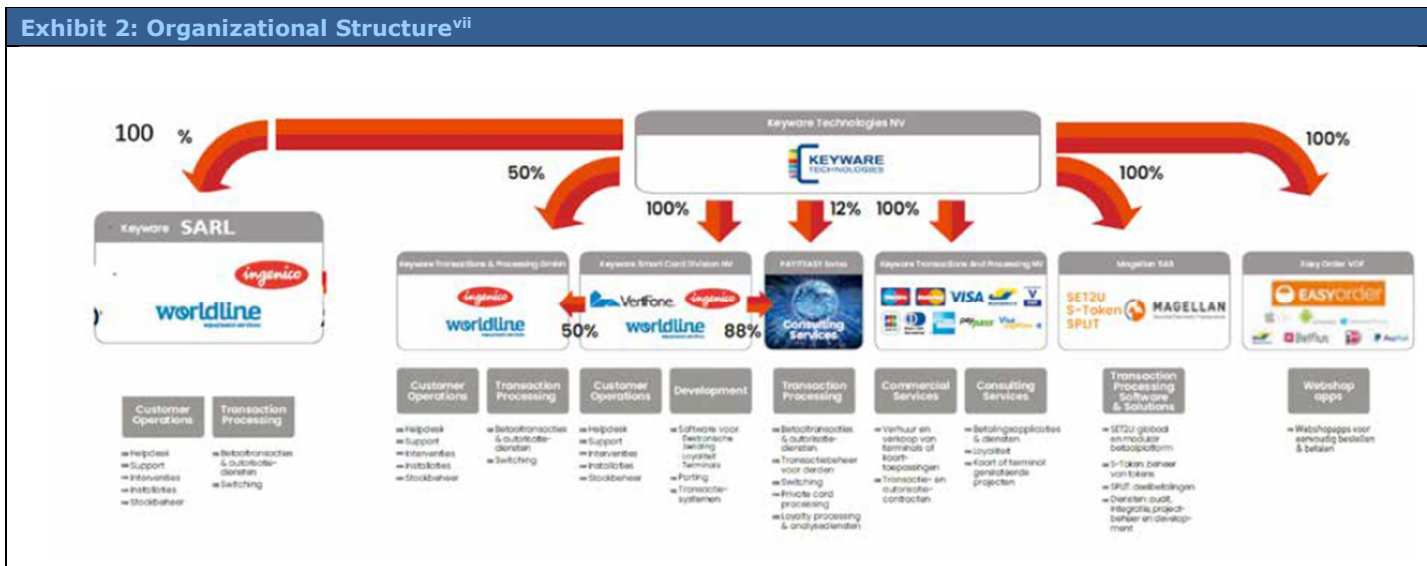
In June 2016, Keyware Transactions & Processing GmbH was incorporated as a 100% subsidiary, which started operations in the last quarter of FY 2016. Its activities are into rental and sale of payment terminals.

In September 2016, a participation of 40% was acquired in Magellan SAS to gain access to Magellan’s electronic solutions for physical environments, e-commerce and m-commerce. Magellan offers innovative solutions for the maintenance of electronic transactions through the existing software solutions like S-TOKEN (payment data anonymization), SET2U (payment platform) and SPLIT (a form of micro credit offered by merchants consisting of payment through instalments). Keyware acquired further 60% stake in Magellan by paying EUR 6 mn and reported consolidated financials on June 30, 2017.

In January 2017, Keyware acquired 100% shares of VOF EasyOrder. This takeover is expected to combine the expertise of both companies and offer a web shop app to merchants, thus a possibility to personalize own web shop on smartphone, tablet or PC. Keyware has also made investments in this platform for customer acquisition.

2.1 Ownership Structure

Keyware Technologies NV operates through its fully owned subsidiaries - Keyware Smart Card Division, PayItEasy BVBA and Keyware Transaction & Processing NV. PayItEasy BVBA was established as a 50% joint venture between Keyware Technologies NV and J4S BVBA in mid-2013. Following the acquisition of the remaining 50% of shares in FY 2014, PayItEasy BVBA is now fully consolidated from October 01, 2014. In FY 2017, Keyware Technologies fully acquired and consolidated Magellan and EasyOrder.



2.2 Company Milestones

Exhibit 3: Keyware Milestones	
Year	Events
2003	<ul style="list-style-type: none"> Keyware shares got listed on Euronext for the first time in September 2003 Payment Software got certified by Electronic Payment Certificate Institute
2005	<ul style="list-style-type: none"> The number of customers exceeded 5,000 in the payment terminal segment
2007	<ul style="list-style-type: none"> Acquired BRV Transactions NV. KEYW benefitted as BRV held license from Royal Bank of Scotland (RBS) for direct offering of credit/debit card authorization for Visa and Master Card in Belgium
2009	<ul style="list-style-type: none"> Successfully added fixed IP terminals and portable GPRS terminals to its existing offerings Entered co-operative venture with PaySquare, which enabled KEYW to offer payment authorization services on its own and on third-party terminals
2011	<ul style="list-style-type: none"> Successfully penetrated higher market segment customers - government schools, municipalities, etc.
2013	<ul style="list-style-type: none"> Partnership with Worldline allowed Keyware to rent/sell Worldline terminals in the Benelux region
2014	<ul style="list-style-type: none"> The reduction in the amount of cash permissible for transactions from EUR 5,000 to EUR 3,000 by Belgian government added to the already growing volume of transactions for Keyware Added a record number of terminals crossing the 14,000 mark
2015	<ul style="list-style-type: none"> Acquired the assets of GlobalPay in January, taking over several purchase and lease contracts Replacement of paper meal vouchers with electronic version from the last quarter of FY 2015 is set to bring in new growth opportunities for Keyware in FY 2016 Transition from spread income model to brokering model for authorization services
2016	<ul style="list-style-type: none"> Partnership with Bancontact, making the company a Certificate Holder in the "Terminal Provider" and "POS Gateway" categories Keyware opened an office in Germany and started offering payment terminals and transaction services beginning from fourth quarter of FY 2016 Completed buy-back share for a maximum amount of EUR 1 mn Keyware signed for 40% participation in French Fintech Company Magellan SAS and held a Call option for remaining 60% of the shares Keyware received PA DSS 3.1 security certificate for Magellan's SET2U payment software platform Acquisition of VOF EasyOrder for a EUR 0.7 mn investment expected to be paid off in 5 years
2017	<ul style="list-style-type: none"> EUR 0.4 mn paid in cash during the first quarter of FY 2017 and shares worth EUR 0.08 mn were issued on June 30, 2017, balance EUR 0.2 mn was paid partially in FY 2017 and the balance in FY 2018 On June 30, 2017, Magellan became 100% subsidiary as Keyware acquired the remaining 60% of Magellan stake. The financing of the acquisition was partially through the internal funds amounting to EUR 1.5 mn and remaining by bank loans of EUR 4.5 mn In May 2017, Keyware's board of directors decided to initiate a share buy-back programme capped to EUR 1 mn, of which buy-back worth EUR 0.7 mn was repurchased in FY 2017
2018	<ul style="list-style-type: none"> Keyware completed its share buy-back program initiated in FY 2017 by repurchasing shares worth EUR 0.2 mn in FY 2018 Keyware distributed for the second time a dividend amounting to EUR 0.03 per share. The amount was paid in September 2018 Keyware announced a third share buy-back programme for a maximum amount of EUR 1 mn
2019	<ul style="list-style-type: none"> Keyware repurchased 134,572 shares for an amount of EUR 0.1 mn as part of the share buy-back program initiated in FY 2018

2.3 Business Model

Keyware provides value addition to its customers by offering personalized payment services - terminals, applications, telecom and transactions, installation, maintenance and repair services. Its tie-ups with the various global players for each part of the payment solution enables it to offer its customers the best solutions available in the industry. Keyware provides personalized and flexible payment solutions through three business segments - Payment Terminals, Transaction Services and Software.

2.3.1 Payment Terminals

It involves renting and selling of fixed, portable and mobile payment terminals from various terminal builders through its Smart Card Division. Approximately 98% of the terminals sold/rented are supplied by Ingenico and Worldline, and the remaining by Verifone. Worldline and Ingenico provide the merchants with secure, extensive and innovative technology; thereby, becoming the first choice for most users.

Keyware has a large presence in the Tier-III market segment, providing terminals to smaller local shops, grocery stores, fashion departments, pharmacies, cafés and restaurants. With the introduction of Worldline terminals to its product portfolio, the company is now looking to penetrate the Tier-II segment, incorporating big corporate houses, government agencies, automotive companies and others.

2.3.2. Transaction/Authorization Services

Keyware commenced providing transaction authorization services from FY 2007. Under this segment, Keyware offers transaction services to acquirers such as banks and payment institutions. It sends the transaction data it receives from the retailer's terminal to the acquirer for payment authorization via the involved debit/credit card schemes and then provides for clearing and settlement of the transactions.

We expect the company to complete the migration to Brokerage Model by FY 2021 (initiated in FY 2015), where it started buying the transactions on a floor fee and charging upper part as a commission based on negotiation with the acquirer. Prior to this, Keyware was following the Spread Income Model where it was charging a fixed percentage as commission per transaction.

2.3.3. Software

The segment comprises activities of Magellan and EasyOrder. Keyware has advanced e-commerce and m-commerce software. The in-house technology of Magellan helps to process transactions and to secure mobile payments. It also helps the consumers to easily split or postpone their payments without the use of credit cards. EasyOrder, an innovative ordering and payment app, available as software as a service (SaaS) for which customers pay monthly fee based on their selected functionalities. The software division is currently becoming Keyware's main division, developing principally in France and in its overseas departments and territories.

2.4 Products and Services^{viii}

- 1. PayFix:** These terminals use a fixed cable connection to communicate from the terminal to the telephone network or internet modem. They are generally found in shops with fixed payment/ check-out counters.
- 2. PayAway:** These are portable terminals consisting of a base station and a portable device. The base station operates via a fixed connection just like a fixed terminal. However, the portable device has a range of approximately 150 meters, which can be used to receive payments from customers in restaurants and cafes without them going to the billing counter.
- 3. PayMobile:** These pocket-sized terminals use the GSM or GPRS communication technology and can be taken anywhere within Belgium to receive the payments. They are mostly used by door-to-door suppliers and taxi drivers to receive payments.
- 4. Pay-E:** This channel is used to assist e-retailers who wish to add the option for electronic payment on their website. It provides transaction services, along with standard templates, that can be integrated into the web-shop of a retailer without any hassle. Keyware can also adapt to the customer's needs and offer customized solutions to an e-retailer depending upon purchases with debit cards or credit cards, average purchase value, purchase frequency, etc. As a back-end support, Keyware also provides the retailer secure access to the payment module on its site, enabling the retailer to view reports, activate options and monitor its payments.
- 5. Pay-M:** The service provided on this channel is like "Pay-E," except that it is provided for the mobile applications.

- 6. SET2U:** It is a software platform which interprets, regulates and manages the payment transactions. Initially, it was directed for the businesses such as banks, lending institutions, payment processors and other service providers. Set2U has reduced the complicated conventional payment environment for these businesses while leading to better mobility, comfort and security. It provides a centralized solution in the form of SaaS for every payment method and app.
- 7. S-Token:** This software secures sensitive critical data while ensuring that all PCI DSS and EMVCo requirements for the financial sector are met simultaneously. Transactions are kept secure by replacing sensitive data with irreversible tokens with no intrinsic value. This application has substantial potential.
- 8. SPLIT:** It helps the customers to spread out the payments for their purchases in three or four instalments via their bank card irrespective of which national law applies. This is referred to as micro-credit. Customers can make the payment without creating any special credit account nor to file a credit request. While these split payments can be observed already in South America and Scandinavia, it is expected that they will become more important on Europe's mainland too.

2.5 Company Premiums^{ix}

- 1. Growth through diversification into software activities:** Keyware's software segment comprises Magellan and EasyOrder which has contributed nearly EUR 2.8 mn to the total revenue in FY 2018. The Magellan acquisition allows merchants in Belgium market to have their customers paying in instalments and in a secured way.
- 2. Partnership with world leaders in terminal manufacturing and transaction services:** Keyware has collaborated with leaders in the terminal builders' segment - Verifone, Ingenico and Worldline - to offer its customers a wide range of world class terminals to choose from. It has transaction partners like Worldline, Six Pay, PaySquare, Bancontact and EMS. This allows Keyware to offer its customers the latest up-to-date services and maintain Keyware's competitiveness in the fast-changing technological market.
- 3. New market of electronic meal vouchers:** The social partners united in the Nationale Arbeidsraad (NAR) (National Labour Council) agreed to abolish paper meal vouchers and introduce electronic meal vouchers from October 01, 2015. With more than 1.3 mn employees receiving meal vouchers in Belgium, this opened a new market for the payment terminal providers. As per FY 2018 annual report of Keyware, approximately 39% of sector accepts related traders' electronic meals and the remaining 61% did not have the necessary infrastructure to handle such payments. Keyware has introduced low-cost card readers to tap this new market as well as integrate the existing terminals to accept the e-vouchers, we expect it to be positive for the company.
- 4. Increasing profitability and lower debt in future:** Based on our estimates, we expect the company to register top line growth of 6.0%-7.0% during FY 2019-2028 period. Supported by strong operating performance and no tax payments in the near term, we expect the company to generate strong free cash flows. Thus, Keyware's financial leverage will continue to decline and balance sheet will be totally debt free once the Magellan acquisition related loans will have been reimbursed.
- 5. Diverse portfolio of customers:** KEYW is a company with over 17,000 customers contributing to its top line. According to the company, its most important customers contribute less than 1% to the group's turnover. This isolates the company from any significant risk arising from concentrated group of customers.

2.6 Company Risks^x

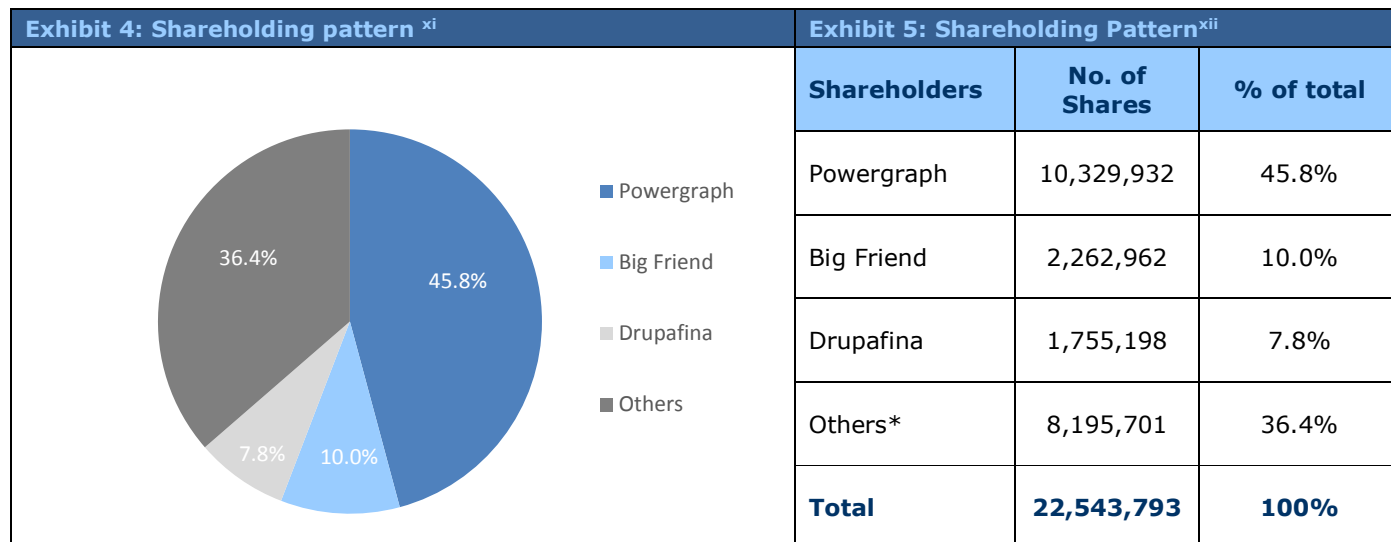
- 1. Pace of technology adoption:** Keyware's market of operations, especially its payment terminals segment, is characterized by frequent new developments in the field of technology, changing customer needs, upcoming new mode of payments through internet and mobile, changing industry standards etc. To stay ahead of its peers, Keyware needs to respond to these changing circumstances in a swift and timely manner without compromising on the quality of services offered to its customers. Not being able to adapt to the fast pace of this industry can result in negative consequences for the company.

The company is making attempts to limit this risk through initiatives such as diversifying of its range of products, associating with in a technologically innovative company (Magellan), and the commercializing of its payment app (Easy Order) from FY 2017.
- 2. Less than expected swaps or renewals:** Keyware enters into a 5-year long lease contract with its customers and it remains crucial for the company to have higher renewals. An increase in attrition rate will not only decrease the revenues but also serve as a negative performance indicator for the other prospective customers.
- 3. Change in RMA policy to have a mixed impact:** The company's impairments reached a level of EUR 1.9 mn in FY 2013 due to heightened bankruptcies and business terminations in that year. However, the impairments decreased to EUR 1.0 mn in FY 2014 before reaching EUR 1.8 mn in FY 2015, and EUR 1.6 mn in FY 2018. We believe that the impact of inventory write-offs to be a non-recurring item, however the change in RMA policy will still contribute to increasing impairment charges. Also, the change in RMA policy is expected to lower the repair and maintenance charges for the company.
- 4. Obsolescence of payment terminals:** The company has witnessed a higher inventory obsolescence because some of the returned terminals no longer comply with PCI standards.
- 5. Supplier dependency:** Keyware sources its payment terminals from Worldline and Ingenico. Having a limited number of suppliers lowers the company's bargaining power with its suppliers; and puts greater pricing power in the hands of the supplier.
- 6. Litigation:** The company operates in an environment which isn't entirely free from litigation. Although, the company saw a favorable outcome of a prosecution lawsuit in February 2019 involving its Keyware Smart Card Division, it remains exposed to an appeal request filed by the prosecution. Moreover, the company is also involved in several minor legal cases that could be considered under IFRS as contingent liabilities or contingent assets.

- 7. Dependency on acquirer:** At any point of time, an acquirer can decide to terminate or discontinue its contract with Keyware which a risk to organization is. In such a case, company must try to find a new acquirer to maintain the flow of revenue from these terminals.

2.7 Keyware’s Shareholding Pattern

On May 22, 2019, the number of shares outstanding was 22,543,793.



*Others include treasury shares.

2.8 Listing and Contact Details

The ordinary shares of Keyware Technologies are listed on Euronext Brussels (EBR) (Ticker: EBR: KEYW, Date of Listing –September 3, 2003)

Contacts: Ikaros Business Park, Ikaroslaan 24, B-1930 Zaventem, Belgium

E-mail ID: info@keyware.com

Phone: +32 2 346 25 23

Fax: +32 2 347 16 88

3. Financial Overview:

Keyware has been transitioning from a hardware player to a software player. Though the revenues from the software segment have been increasing substantially and are expected to do so in the future, the current operating profitability has seen a significant decline due to the substantial rise in cost parameters.

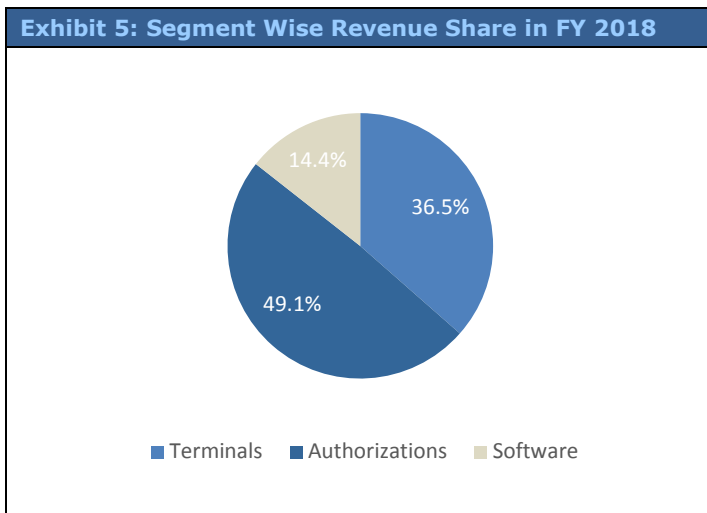
Keyware registered a revenue growth of 4.8% YoY to EUR 19.6 mn in FY 2018 from EUR 18.7 mn in FY 2017. Revenue from the terminal segment declined by 15.2% YoY to EUR 7.1 mn in FY 2018 from EUR 8.5 mn in FY 2017, whereas revenue from authorization segment increased by 13.3% YoY to EUR 9.6 mn in FY 2018 from EUR 8.5 mn in FY 2017. The software segment provided major acceleration to the overall revenues by contributing ~EUR 2.8 mn to the total sales in FY 2018 compared with EUR 1.6 mn in FY 2017. Overall, revenue contributions from terminals, authorization and software were 36.5%, 49.1% and 14.4% of the total revenues, respectively, in FY 2018.

Revenue from terminal segment declined significantly due to the lower number of new contracts signed in FY 2018, in comparison with FY 2017. Further, there was a higher number of short-term contracts and a reduction in the average rent. This segment also suffered due to the changed product mix and cheaper devices in FY 2018. Revenues from authorization segment increased because of rise in the number of contracts and the number of transactions. The software segment witnessed significant growth owing to a lower base as Magellan’s contribution was limited to only two quarters in FY 2017. Revenue contribution from the software segment increased from 8.3% in FY 2017 to 14.4% in FY 2018.

A significant increase in the salaries and other operating charges led to an EBITDA decline of 14.7% YoY to EUR 3.1 mn in FY 2018 from EUR 3.7 mn in FY 2017. The cost of personnel and services has mainly risen because of Magellan acquisition and additional hiring for EasyOrder for its research and development (R&D) and sales divisions. As a result, the EBITDA margin declined from 19.9% in FY 2017 to 16.2% in FY 2018.

The operating profit of the company also fell drastically by 77.0% YoY to EUR 0.3 mn in FY 2018 from EUR 1.1 mn in FY 2017, owing to higher depreciation and amortization charges. Net profit declined by 46.7% YoY in FY 2018 to EUR 0.6 mn from EUR 1.1 mn in FY 2017. As a result, Net profit margin declined from 6.3% in FY 2017 to 3.2% in FY 2018.

Net shareholder’s equity of the company amounted to EUR 27.5 mn on December 31, 2018 and represented 64.3% of the liabilities. Keyware’s financial debts stood at EUR 6.5 mn on December 31, 2018, compared with EUR 9.2 mn on December 31, 2017, mainly due to repayment. On December 31, 2018, cash and cash equivalents were at EUR 3.5 mn.



4. Key Variable Analysis^{xiii}

4.1 Variable 1 – Revenue from payment terminals

Keyware’s major source of revenue is the number of terminals it sells/ leases. Considering developments such as partnership with Worldline, requirement of new terminals in the market for electronic meal vouchers, limit on the amount of cash for transactions, we forecast the number of terminals to increase for Keyware. The installed base of terminals of the company was 17,350 terminals in FY 2018. The following are our estimates for components of revenue from payment terminals for the forecast period under two scenarios, Low bracket and High bracket:

Exhibit 6: Payment terminal revenue breakdown											
In EUR mn		2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Low Bracket	Rental revenues	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6
	Terminal sales	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Rendered services	3.1	2.6	2.4	2.2	2.0	1.8	1.7	1.6	1.5	1.4
	Cancellation pay	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	Total	6.4	6.0	5.8	5.7	5.5	5.4	5.3	5.2	5.1	5.0
High Bracket	Rental revenues	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6
	Terminal sales	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Rendered services	3.1	2.6	2.4	2.2	2.0	1.8	1.7	1.6	1.5	1.4
	Cancellation pay	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	Total	6.5	6.1	5.9	5.7	5.6	5.4	5.3	5.2	5.2	5.1

4.2 Variable 2 – Revenue from authorization services

As per the new reporting methodology from 2016 onwards, the segment revenue is disaggregated into gross revenues and related cost components. Such a disaggregated presentation would only affect the presentation of the income statement, i.e., higher revenue and cost of goods sold and a lower overall gross profit margin. However, the other KPIs (EBIT, EBITDA, PBT and NI) would remain largely the same.

On December 31, 2018, Keyware offered transaction/ authorization services on 95% of the total installed base of terminals. These terminals form a source of revenue for the authorization services’ segment. Given that the company holds strong partnerships with transaction service providers like Six Pay, PaySquare, EMS and Worldline, we estimate the number of terminals offering transaction services to increase in the future. Also, the agreement with Charleroi Airport will also contribute to the revenue from authorization services. Following is the estimated revenue from authorization services during the forecast period for the low bracket and high bracket:

Exhibit 7: Authorization services revenue										
In EUR mn	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Low Bracket	9.3	9.3	9.3	9.3	9.2	9.1	9.1	9.1	9.1	9.1
High Bracket	9.6	9.7	9.8	9.7	9.7	9.6	9.6	9.6	9.7	9.7

4.3 Variable 3 – Revenue from software services

After the acquisition of Magellan and EasyOrder during FY 2017, software services have been added as a new revenue stream to the company’s business model. Following is the estimated revenue from software services during the forecast period for the low bracket and high bracket:

Exhibit 8: Software services revenue										
In EUR mn	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Low Bracket	3.5	4.6	5.6	6.7	7.7	8.8	9.8	10.8	11.7	12.4
High Bracket	3.6	4.9	5.8	7.0	8.2	9.6	10.9	12.3	13.8	15.2

5. News^{xiv}

- 1. Update on the share buy-back program:** On April 29, 2019, Keyware reported on the progress of its share buy-back program. As a result of the buy-back transactions until now and the three disposals for an aggregate of 90,610 shares, the company held a total of 681,494 treasury shares on April 26, 2019 or 3.0% of the actual number of shares issued (i.e. 22,543,793).
- 2. Cooptation of Directors:** On March 2019, Keyware announced that Galileo SAS and Cofirans SA have notified their resignation as Directors. MASH BVBA represented by Mrs. Hildegard Verhoeven and Mrs. Mathilde Araujo were coopted as directors on March 14, 2019.
- 3. Announced FY 2018 financial results:** On March 14, 2019, the company announced its financial results for FY 2018. Keyware generated revenue of EUR 19.6 mn in 2018. The decrease in the revenue from payment terminals was offset by a healthy increase from the authorizations and software segment. Authorization segment contributed 49.1% to total revenue in FY 2018 compared to 45.4% in FY 2017. Contribution from the payment terminals segment to the total revenue declined to 36.5% in FY 2018 from 45.1% in FY 2017. EBITDA decreased to EUR 3.2 mn in FY 2018 from EUR 3.7 mn in FY 2017. Net profit for the year FY 2018 falls to EUR 0.6 mn compared with a net profit of EUR 1.2 mn in FY 2017.
- 4. Verdict of the court with respect to the court case against Keyware Smart Card Division:** On February 5, 2019, Keyware announced that it had been acquitted by the court of appeal for alleged fraud and irregular advertising practices. This brought an end to the lawsuit in which the public prosecutor's office instituted a claim on the basis of a complaint from a number of customers lodged with FPS Economy.
- 5. Keyware increased its capital by Warrant Exercises:** On June 27, 2018, the company announced that two warrant holders exercised an aggregate 730,000 warrants at a strike price of EUR 0.569 per warrant. As a result, capital and share premiums increased by EUR 0.3 mn and EUR 0.1 mn, respectively, and 730,000 shares without any nominal value were issued, with the same rights as the existing shares.
- 6. Announced FY 2017 financial results:** Keyware generated revenue of EUR 18.7 mn in FY 2017. For the first time, authorization segment surpassed payment terminal segment in terms of revenue contribution. Authorization segment contributed 45.4% in FY 2017 compared to 40.6% in FY 2016. Revenue contribution from payment terminals segment declined to 45.1% from 59.4% in FY 2016. Net profit for the year FY 2017 falls to EUR 1.1 mn compared to Net profit of EUR 3.1 mn in FY 2016. EBITDA decreased by EUR 1.5 mn to EUR 3.7 mn in FY 2017 from EUR 5.2 mn in FY 2016. The software segment, comprising Magellan and EasyOrder, contributed EUR 1.6 mn to the total revenue.
- 7. Acquired remaining 60% stake in Magellan SAS:** On June 30, 2017, Keyware purchased the remaining 60% shares by raising a bank loan amounted to EUR 4.5 mn, comprising of EUR 2.0 mn which would be settled as a bullet loan on June 30, 2019, and the second portion of EUR 2.5 mn shall be reimbursed by 48 monthly instalments.
- 8. Acquisition of EasyOrder a part of Keyware's omnichannel strategy:** The objective is to combine expertise and develop a web shop app, which will provide retailers the feasibility of personalization into own web shop for smartphones, tablets, PCs. This is expected to give tough competition to international mega web shops like Zalando and Bol.com. Keyware's electronic payment expertise is expected to be an important asset for EasyOrder's web shop app while the latter brings in existing client portfolio and partners. The acquisition is a step towards completion of Keyware's omnichannel strategy. Keyware expects to become a central payment hub for its customers which may be selling online or in stores.

6. Management and Governance^{xv}

The company has a team of experienced professionals with expertise in the field of technology, operations, sales and marketing and finance. These highly qualified professionals have been with the firm for a long time, signifying the stability of the firm's management. The management's focus is on improving profitability and creating shareholder value.

Exhibit 9: Management Team		
Name	Designation	Background
Stéphane Vandervelde	President & CEO	<ul style="list-style-type: none"> Stéphane is the co-founder of Keyware, with over 25 years of experience in technology organizations He has been a Board Member in firms across multiple industries, such as Hybrid NV and US, Pinnacle Investments NV, Immo David NV, Big Friend NV, among others He is an electronics engineer. He has completed specialization in micro-electronics and chip design from Catholic University of Leuven (KUL) He has been the President and CEO of Keyware since 2001
Wim Verfaillie	COO	<ul style="list-style-type: none"> Wim has over 20 years of work experience in streamlining operations. He worked as Operations Manager at Modular Lighting Industries from 1994 to 2003 Since 2003, he has worked as an Operational Business Consultant and Interim Manager. He was involved in long-term projects at Tenovis (Telecom) and Maxeda (Retail) He is an industrial electricity engineer and joined the firm in 2007
Joris Maes	CCO	<ul style="list-style-type: none"> Joris has over 20 years of experience in international sales and marketing positions at Alcatel-Lucent, KPN, AT&T and Balta He has completed his master's in industrial engineering (electronics) and is an MBA in General International Management from the Vlerick Leuven Gent Management School He has been associated with Keyware since 2010
Alain Hubert	CFO	<ul style="list-style-type: none"> Alain joined Keyware in 2013 and has over 20 years of experience in financial management, taxation and accounting Previously, he worked with Ernst & Young as an Executive Director of Transaction Advisory Services (TAS) He has been a certified auditor since 1998; until 2008 he was an audit partner at Constantin Bedrijfsrevisoren He has proficiency in due diligence, quality and risk management He completed Licentiate Applied Economic Sciences (UG) and Special Licentiate in Accountancy work from Vlerick School of Management
Laurent Vandervelde	CCO EasyOrder Country Manager Germany	<ul style="list-style-type: none"> Master Commercial Engineer @ Solvay Business School Sales and marketing development at Readz Experienced in international sales and marketing strategies Market analysis for technology start-ups At Keyware since 2016

7. Industry Characteristics

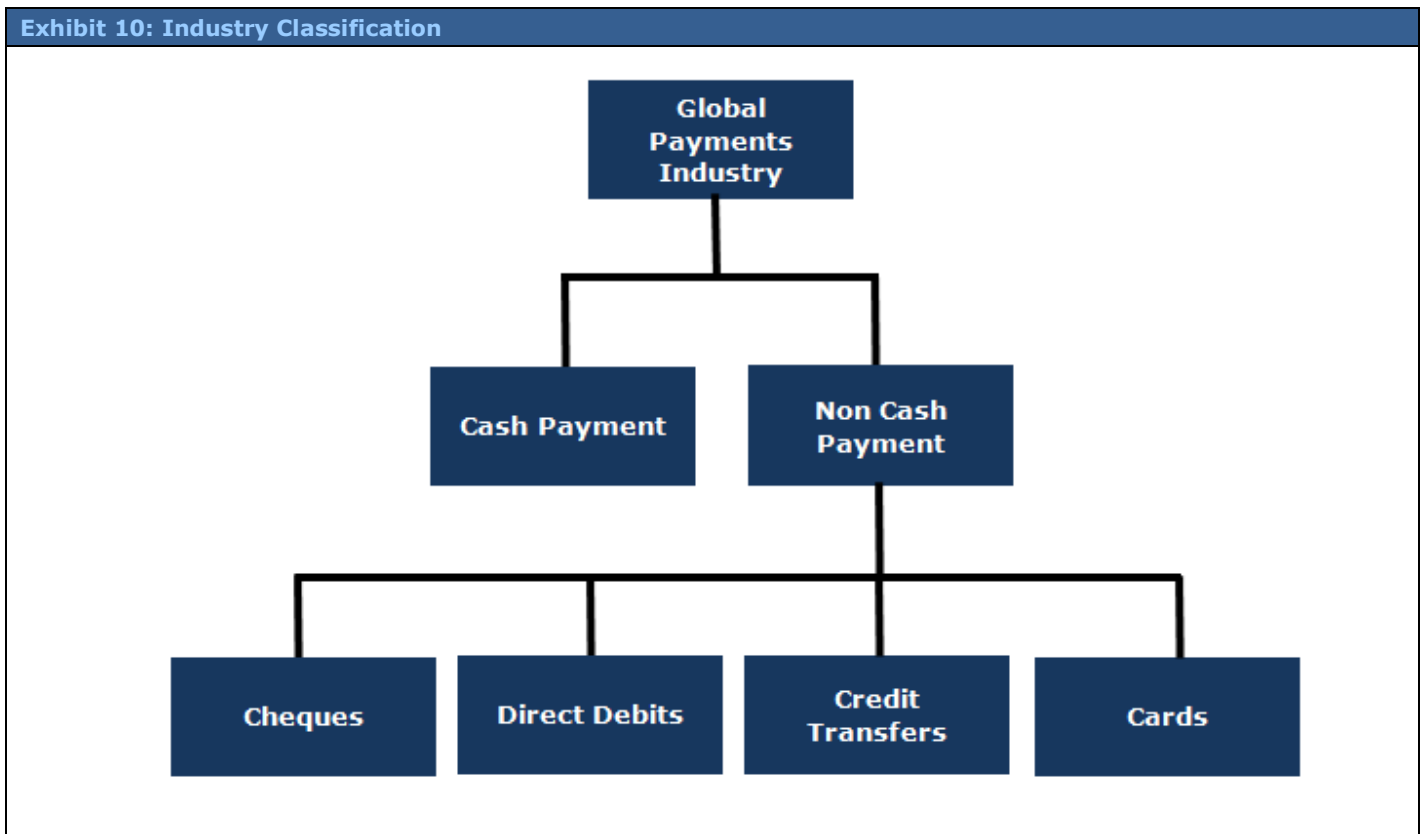
7.1 Industry Overview^{xvi}

Electronic payment industry involves multiple stakeholders including terminal providers, banks and payment institutions, transaction service providers, infrastructure telecommunication companies, government agencies to create a strong payment services ecosystem. The industry is fast eliminating the use of cash and cheques as a mode of payment and moving towards technologically enhanced methods like Debit/Credit Cards, Credit Transfers and Direct Debits. Various European countries have also formulated laws limiting the use of cash for any transaction. Since January 2014, the Belgian authorities have revised the limit on cash transactions for the purchase of goods and services from EUR 5,000 to EUR 3,000. This bodes well for the players involved in the electronic payment industry as this will bolster the volume of transactions occurring through the non-cash mode of payments.

7.1.1 Industry Segments

The payment industry broadly comprises of two segments - Cash payments and Non-cash payments. Non-Cash Payments are further divided depending upon the modes of payment method.

Exhibit 10: Industry Classification



1. **Cash Payments:** Transactions happening using paper money form a part of this segment.
2. **Non-Cash Payments:**
 - a. **Cheques:** A written consent where the person signing the cheque obliges to pay the drawer the amount of money stated on the cheque.
 - b. **Direct Debits:** An arrangement that allows the banks to transfer the funds from a customer’s account to a third party on previously agreed fixed dates. This mode of payment is especially used to pay bills.
 - c. **Credit Transfers:** It is a direct mode of transfer of money from one account to another.
 - d. **Cards:** Use of credit/debit/loyalty cards for making payments for the goods and services purchased.

Keyware Technologies forms a part of the non-cash payment system by providing payment services to facilitate the card payments. For this, it provides infrastructure support in the form of renting/selling of payment terminals along with

the maintenance support. It also provides transaction services required to transmit, authorize and verify the card data used during the transaction. Since the company's major revenues come from renting the terminals, which are used to complete the card transactions offline, the more the number of transactions the better the company's performance in terms of revenue.

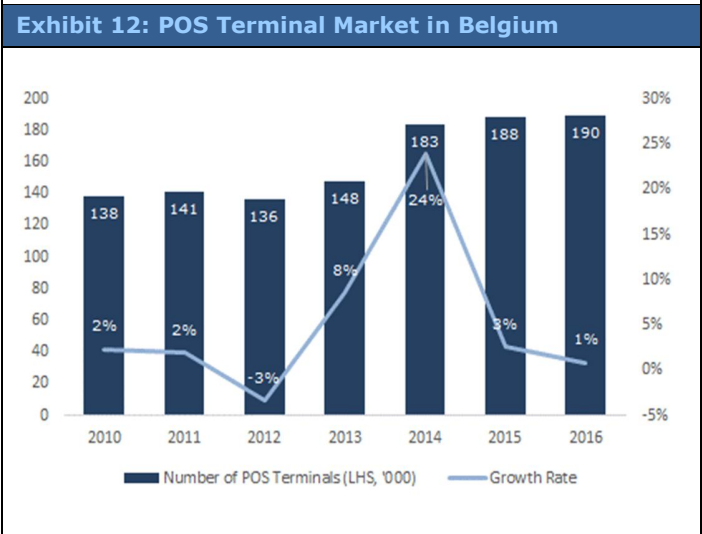
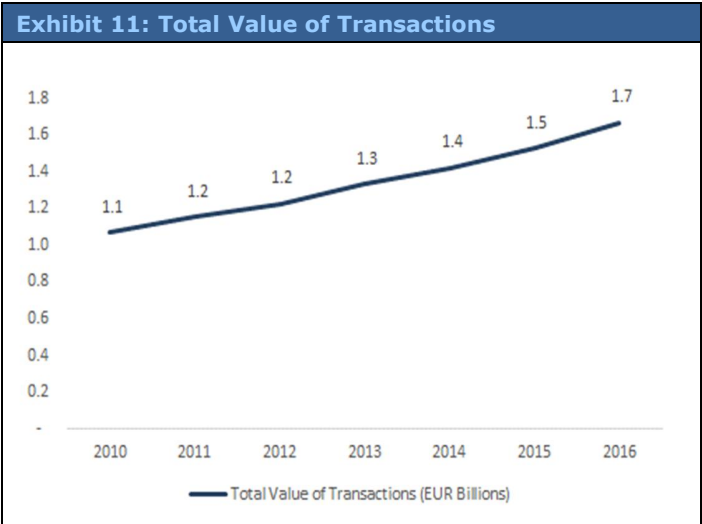
7.1.2 Market performance^{xvii}

Total Volume Transactions: As per the European Central Bank, the total value of transactions increased to EUR 1.7 bn in 2016 compared to EUR 1.5 bn, 9.1% hike on a YoY basis. This increase over the years in the volume and value of transactions is expected to persist in future with the introduction of measures such as elimination of paper meal vouchers, w.e.f. from October 01, 2015; introduction of electronic meal vouchers; and limiting cash transactions to up to EUR 3,000 (effective from January 2014).

POS Terminal Trends: As per the data provided by ECB, the total number of POS terminals in Belgium increased to 189,700 in 2016, an increase of 1% YoY.

Technological advancements such as introduction of chip embedded payment cards and stringent government measures regarding data security are the likely factors to augment the growth of POS terminals market in the coming years. In 2014, the Belgium government reduced the cash transactions limit from EUR 5,000 to EUR 3000, which was also expected to contribute to the future increase in the number of terminals.

The demand for POS terminals was expected to grow on the back of the introduction of electronic meal vouchers from the last quarter of 2015. This was to do away with paper meal coupons such as Sodexo and Edenred. With more than 1.3 mn employees receiving meal vouchers in Belgium and only 31% of retailers equipped to accept electronic meal vouchers, the scope of expansion was expected to be huge for the terminal providers. As per Keyware's management, this new opportunity would require the introduction of 80,000 new terminals in the market.



7.1.3 Payment Process Participants^{xviii}

Various stakeholders play an important role in ensuring successful electronic transactions. High level of collaboration is required to ensure the safe and seamless transfer of funds from one bank account to another. Following are the various participants in an electronic payment process:

- 1. Cardholders:** They are the consumers who use the electronic mode of payment for purchasing goods and services. The transactions are carried out via plastic/physical cards - debit cards, credit cards, loyalty cards, gift cards or virtual cards – and Smartphone.
- 2. Retailers:** They sell goods or services and accept the non-cash payment method. Retailers use fixed, portable or mobile payment terminals to carry out the transactions and receive the payment via a card.
- 3. Payment acceptance processing providers:** These provide the retailers with means to operate and execute the card payment. They arrange for necessary infrastructure like installation of POS terminals, online payment gateways to collect and transmit the card data and receive payment authorization.
- 4. Acceptance-related service providers:** They provide additional features to retailers such as coupon, loyalty or ticket functionalities on the payment terminal, electronic meal vouchers, etc.
- 5. Acquirers:** These are the banks and payment institutions that facilitate the transfer of funds from the consumer's bank (issuing bank) to the retailer's bank account after charging the service fee. The acquirers give the retailer access to various card schemes like Visa, MasterCard, Maestro, Bancontact/Mister Cash, JCB, Diners, etc. and a "merchant account". The payment received from the customer is then transferred into this merchant account.
- 6. Acquiring Processors:** They provide transaction processing services to the acquirers, which include transmitting the card data from the retailer's terminal to acquirers' for receiving payment authorization via the credit/debit card schemes and clearance and settlement of all the transactions.
- 7. Card Schemes:** Various schemes - MasterCard, Maestro, Visa, V-Pay, Diners, JCB - are available for the retailer to choose from. Each card scheme has different processing costs, which the retailer should pay depending upon the service he adopts.
- 8. Clearing and Settlement Institutes:** Generally, the national banks who provide clearing and settlement services between the acquiring bank and issuing bank.

KEYW as a participant is active in payment acceptance processing providers, acceptance-related service providers and transaction services providers as described in points 3, 4 and 6 above.

7.1.4 Payment Card Industry Security Standards^{xix}

Payment Card Industry Security Standards Council (also referred to as PCI SSC), formed in 2006, is responsible for the development, management, education and awareness of PCI Security Standards. It includes Payment Application Data Security Standard (PA-DSS), PIN Transaction Security (PTS) and Data Security Standard (DSS).

- 1. PA-DSS:** It applies to software vendors and others who develop payment applications that store, process or transmit cardholder data and/or sensitive authentication data.
- 2. PTS:** These standards contain the set of requirements for the secure management, processing and transmission of personal identification number (PIN) data during online and offline payment card transaction processing at ATMs and POS terminals. The requirements are applicable to all the acquiring institutions and agents responsible for PIN transaction processing on payment card industry participants' denominated accounts.
- 3. DSS:** These standards apply to all the participants in payment card processing including merchants, acquirers, service providers and all the entities that store, process or transmit the cardholder's data and sensitive authentication data. Cardholder data includes cardholder name, expiration date, service code, Primary Account Number (PAN), amongst others. The cardholder data, except PAN, must be protected in compliance with the PCI DSS requirements. Sensitive authentication data includes CVV, CVC or PIN codes and must not be stored in any form after authorization.












Exhibit 13: PCI-DSS Compliance Requirements



7.1.5 Competition

There are various services offered by the players in the payment terminal market. Different players provide different services along the extended payments value chain. The following table gives an overview of the presence of various players along the wide range of segments in the Payment services industry across Europe.

Exhibit 14: Services offered by various players in the market^{xx}

Card Payment Services in Europe	Issuing transaction processing	Services to cardholders and issuers	Automated Clearing House	Credit/ Debit transfers	Services to merchants	Acquiring transaction processing	Commercial Acquiring	Acceptance POS/ eCommerce
					✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓			✓	✓	✓	✓
					✓	✓	✓	✓
					✓	✓	✓	✓
	✓				✓	✓	✓	✓
	✓	✓				✓		
	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓		✓	✓	✓	✓	✓
					✓	✓	✓	✓

Note: The list of services may not be exhaustive. Additional services may be offered by the individual firms.

7.2 FinTech Industry

7.2.1 Industry Overview

Owing to the recent developments in the IT space, various FinTech technologies (a combination of finance and technology) are being developed. Due to the rapidly growing online market and supply of mobile devices, the need for mobile FinTech payment services that enable easy online and off-line payment has increased. The FinTech market is characterized by a rapidly growing number of startups and businesses without bank licenses (non-banks). FinTech startups tend to focus on selected parts of the financial value chain and try to unbundle traditional bank business models. Also, with more than 50% of the global adult population using the internet to pay bills or buy something online, this industry has begun to move towards being an established one with huge potential, which is yet to be unlocked.

7.2.2 Global Landscape

Global FinTech investments increased steadily at 18.5% CAGR, from USD 19.9 bn in 2014 to USD 39.4 bn in 2017. This trend accelerated in the first half of 2018 when an amount of USD 41.7 bn was invested across 789 deals, driven by – USD 12.9 bn acquisition of WorldPay by Vantiv, USD 2.2 bn purchase of iZettle by PayPal and the USD 14 bn venture capital (VC) funding round raised by Ant Financial - the payments affiliate of China’s Alibaba Group. Dominant FinTech players attracted large investment rounds, including challenger banks Revolut (USD 250 mn) in the UK and N26 (USD 160 mn) in Germany.

In Q1 & Q2 of 2018, VC firms strongly invested in FinTech in comparison with previous quarters. The focus of VC investors was on mature companies wherein they were putting in efforts to support Series B and Series C stage deals. The Series C round was led by Temasek Holdings and Government of Singapore Investment Corporation (GIC), with co-investment from Sequoia Capital and Warburg Pincus, among others. This single deal accounted for a third of the total capital raised during H1 2018. Capital raised in Q2 2018 surged to reach a record of USD 32.2 bn. This represented an increase of 3.2x compared with Q2 2017. Even while not considering the two megadeals valued over USD 1 bn, Q2 2018 remained a very strong funding quarter. Despite the high funding total, deal activity was historically low at just 381 deals. This was the second-lowest value recorded between 2014 and Q2 2018. This resulted in the average deal size, excluding megadeals, jumping by 56.6% YoY from USD 26.5 mn in Q1 2018 to USD 41.5 mn in Q2 2018.

7.2.3 Top FinTech Deals in H1 2018

The aggregate of the top 10 FinTech deals in H1 2018 amounted to USD 21.8 bn, and this accounted for 52.3% of the total capital raised during this period. The largest deal in H1 2018 was done by Ant Financial to the tune of USD 14 bn. This was followed by a USD 4 bn funding round raised by Block.one, an end-to-end blockchain solutions provider. SenseTime, a Beijing-based provider of facial recognition technology, initially raised USD 600 mn in a Series C round led by Alibaba Group. This was followed by a further USD 620 mn in Series C+ funding, led by Tiger Global Management, Silver Lake Partners, Fidelity International and HOPU.

Exhibit 15: Total Global FinTech Investments – Yearly Basis^{xxi}

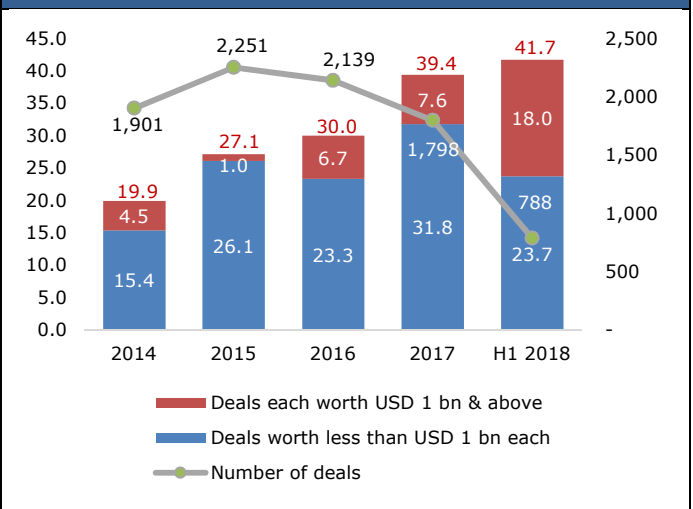
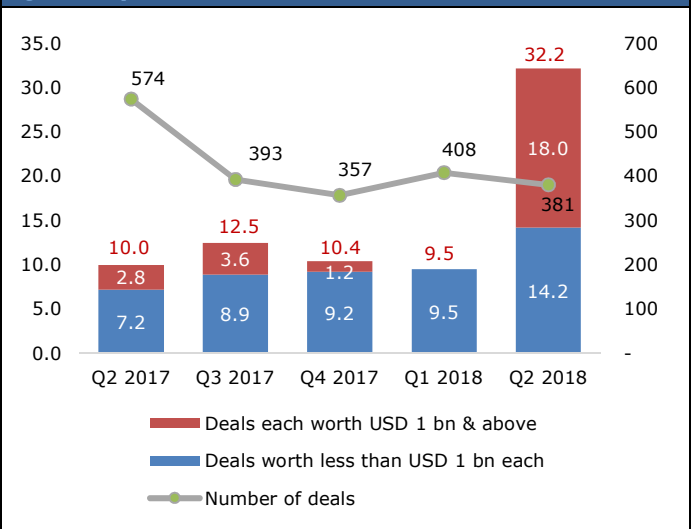


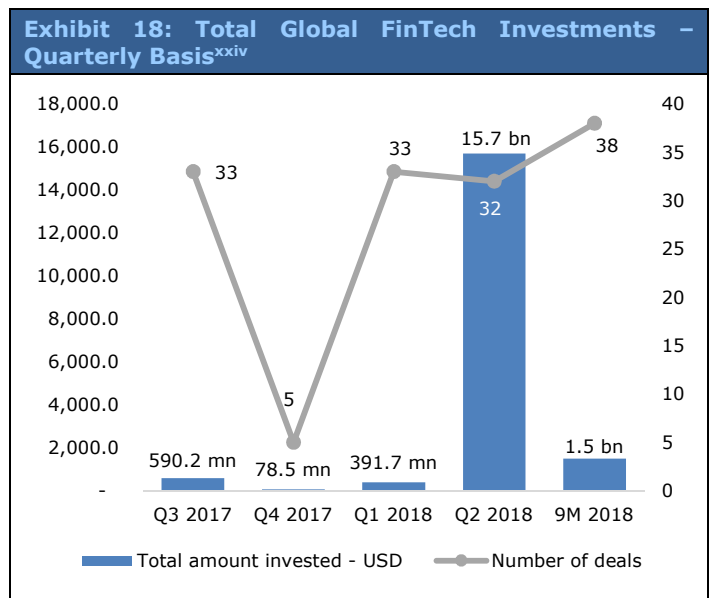
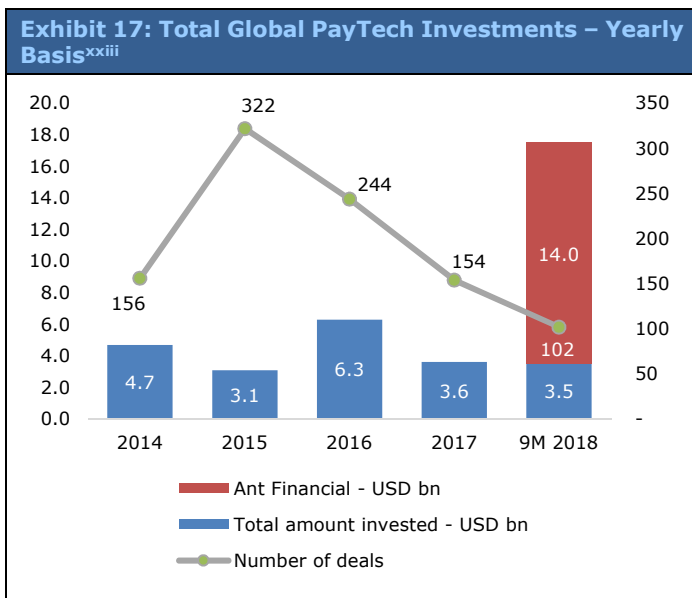
Exhibit 16: Total Global FinTech Investments – Quarterly Basis^{xxii}



7.2.4 Global PayTech Investments in 9M 2018

The year 2018 saw the highest ever investment in the FinTech as well as the Payment Transfer space, led by Ant Financial. The main investors were Singapore’s sovereign fund GIC and Temasek Holdings. The China-based FinTech conglomerate is the highest valued unicorn globally at USD 150 bn and this previous funding round makes up 79.7% of total capital raised in the sector in 2018. However, even excluding this deal, the total amount invested in 9M 2018 was already at 99.3% of 2017’s total investments. The largest deal after Ant Financial was to the tune of USD 575 mn raised in post IPO equity by Singapore-based company Sea. Sea offers a digital financial services platform, AirPay, which provides e-wallet services via a mobile app. This was the company’s first funding round since its IPO in October 2017, which raised over USD 1 bn. In 9M 2018, the number of deals stood over 100 and the total number of deals in 2017 appeared likely to slightly decrease from the previous year. The top 10 PayTech deals accounted for 91.3% of the total funding to the sector in 9M 2018.

In Q3 2018, the total PayTech investments increased by 154.2% YoY to USD 1.5 bn across 38 deals, compared with USD 590.2 mn raised in Q3 2017 across 33 deals. The largest deal in this quarter involved One97 Communications and was worth USD 365 mn. One97 Communications company’s sub-organization Paytm is a digital e-commerce payment system and digital wallet company. Deal activity in Q3 2018 reached the highest level in the past five quarters.



For the last four years, companies in the mobile payments subsector have attracted ~45% of total deal activity in the PayTech sector. In 9M 2018, 46 of the 101 deals involved mobile payments companies. The two largest deals were the previously mentioned deals completed by Sea and Ant Financial. The third biggest funding round was worth AUD 245 mn, raised by San Francisco-based Stripe. The company helps businesses accept payments online.

Point of Sale, the second-largest subsector, has made up, on average, 36.1% of total deal activity since 2014. Its share of deal activity has been steadily increasing. In 9M 2018, the share of deals was 8.3% higher than four years ago, owing to the higher number of consumer switches from cash to online payments. The largest deal in this subsector in 9M 2018 was the previously mentioned deal with One97 Communications. In fact, three out of the four largest funding rounds completed in this sector since 2014, totaling USD 2.4 bn, were all raised by One97 Communications. Another noticeable deal in the Point of Sale subsector was a deal worth USD 115 mn, involving Toast. The US unicorn is an all-in-one point-of-sale and restaurant management platform.

Deal activity in the P2P Payments and B2B payments subsectors witnessed a trailed path. In 9M 2018, they constituted just 15.8% of the total deal activity combined. The largest amount of funds raised in both these subsectors was USD 250 mn, raised in a series E round by US company Tradeshift in Q2 2018. The company helps connect supply chains with digital marketplaces, payments and apps.

7.2.5 Region-Wise Fintech Updates

- Canadian FinTech companies raised over USD 3 bn across 294 transactions from 2014 to 2018, thus registering a CAGR of 50.0% during that period. In 2018, ~USD 950 mn was raised in the top 10 FinTech deals in Canada.
- In 2018, FinTech companies based in China raised USD 20.5 bn across 55 deals. The amount invested was 6.6 times larger than in 2017. After excluding the previously mentioned Ant Financial deal, the capital raised was nearly twice the 2017 level. FinTech investment in China in 2018 was over 50% higher than any previous year’s level.
- In Q3 2018, French FinTech companies raised USD 522.6 mn across 21 deals. The total amount invested continued to increase since 2014 and in 9M 2018 it saw the biggest yearly jump in the capital raised. FinTech Investment in France more than doubled in 9M 2018 as compared with 2017.

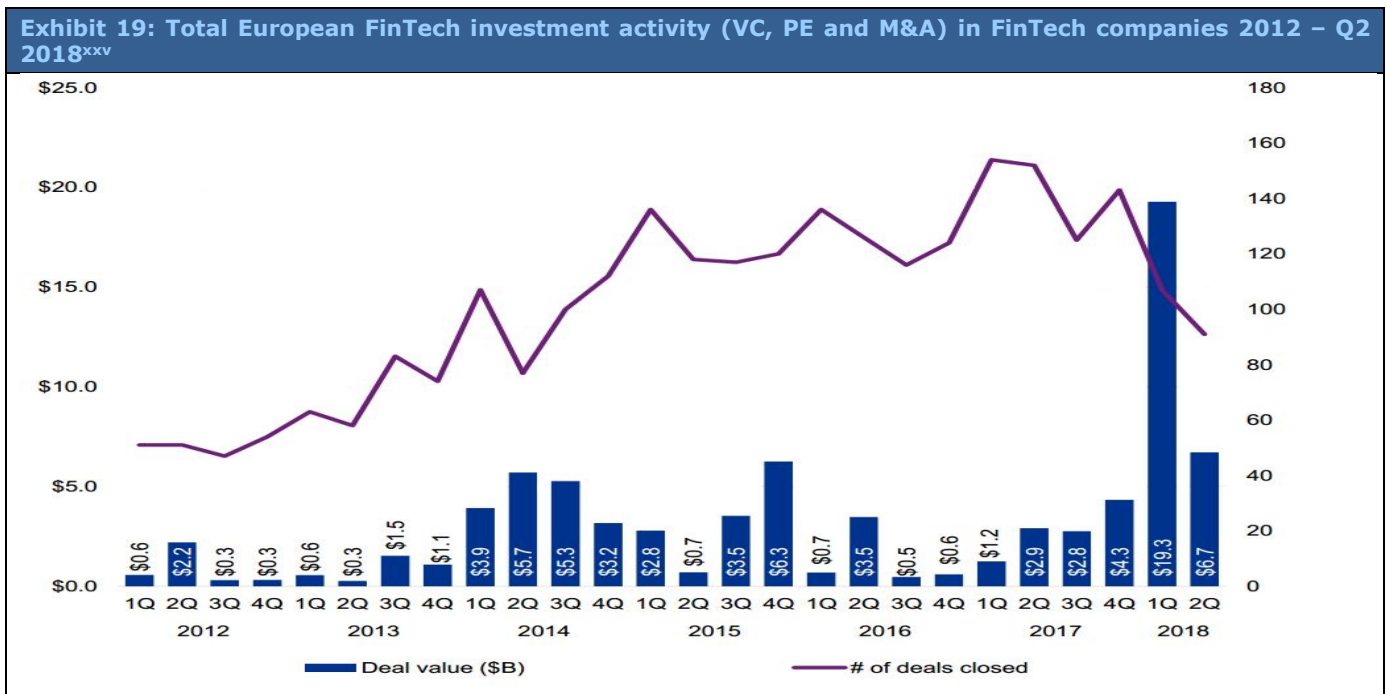
FinTech investment activities in the UK, Germany and Ireland registered a robust growth in H1 2018. Top four deals in the UK region were - USD 250 mn raised by Revolut, USD 100 mn raised by eToro, USD 60 mn raised by Flender and USD 54 mn raised by MoneyFarm.

In H1 2018, there were several investment activities in Germany, namely, funds raised by N26 (USD 160 mn) and Solaris Bank (USD 70 mn).

In 2019, investment in FinTech in Europe is likely to remain robust, with investments increasing in areas such as regtech, insurtech and wealth management. Small business sectors are the key main target for the FinTech investors. Mature areas such as payments and lending are likely to experience consolidation over the following 6 to 12 months as the largest platforms become bigger and others fail to achieve scale.

FinTech companies across various industries are exploring ways in which to pick off high-value segment incumbents, with blockchain projects being increasingly well-funded. The threats and opportunities created by disruptive FinTech companies have not been lost on market incumbents – with a whole host of actors, from consultancy firms to accelerators, seeking to get in on the action.

Some groups that are particularly keen to engage with the expanding startups are venture capitalists, private equity firms and corporate M&As.



8. Valuation

The Fair Market Value for all the company shares stands between EUR 50.24 mn and EUR 59.11 mn on May 22, 2019. The Fair Market Value for one publicly traded share of the company stands between EUR 2.32 and EUR 2.73 on May 22, 2019, using blended valuation (DCF and EV/EBITDA (2020E) multiple).

8.1 DCF Method

Valuation	
WACC	
Risk-free rate	0.45% ^{xxvi}
Beta	0.81 ^{xxvii}
Equity Market premium	8.50% ^{xxviii}
Country Risk Premium	0.0% ^{xxix}
Cost of Equity	7.34%
Cost of Debt	2.53%
Terminal Growth Rate	3.0%
WACC (Discount Rate)	6.41%

Year Ending - Dec	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
FCFF (High)										
Net cash from operating activities	2,863	2,786	3,265	3,420	4,166	4,528	5,834	6,200	7,396	7,224
Capital Expenditure	(985)	(1,033)	(1,073)	(1,120)	(939)	(985)	(905)	(952)	(1,002)	(1,049)
Free Cash Flow to Firm	1,878	1,753	2,192	2,299	3,227	3,542	4,930	5,247	6,393	6,175
Discount factor	0.96	0.90	0.85	0.80	0.75	0.70	0.66	0.62	0.58	0.55
Present Value of FCF	1,806	1,585	1,862	1,835	2,420	2,496	3,265	3,266	3,739	3,394
FCFF (Low)										
Net cash from operating activities	2,831	2,651	3,134	3,263	3,877	4,130	5,252	5,414	6,253	5,835
Capital Expenditure	(960)	(995)	(1,036)	(1,081)	(895)	(931)	(846)	(878)	(906)	(929)
Free Cash Flow to Firm	1,871	1,657	2,097	2,182	2,982	3,199	4,406	4,536	5,347	4,907
Discount factor	0.96	0.90	0.85	0.80	0.75	0.70	0.66	0.62	0.58	0.55
Present Value of FCF	1,799	1,497	1,781	1,741	2,236	2,254	2,918	2,823	3,127	2,697

Arrowhead Fair Value Bracket	High	Low
Terminal Value (TV)	1,02,409	81,375
Present Value of TV	56,282	44,722
Present Value of FCF	25,666	22,873
Present Value of TV+FCF	81,948	67,596
Net Debt	(3,998)	(3,998)
Deferred Taxes	(1,344)	(1,344)
Equity Value (EUR '000)	76,606	62,254
Shares O/s (000's)	21,630	21,630
Fair Share Value Bracket (EUR)	3.54	2.88
Current Market Price (EUR)	1.04	1.04
Upside/(Downside)	241%	177%
Current Market Cap. (EUR '000)	21,630	21,630
Target Market Cap. Bracket (EUR '000)	76,606	62,254

Sensitivity Analysis

Sensitivity Table - High		Growth Rate (%)				
		2.5%	2.8%	3.0%	3.3%	3.5%
WACC (%)	5.4%	4.65	5.00	5.42	5.94	6.60
	5.9%	3.81	4.04	4.31	4.63	5.02
	6.4%	3.20	3.36	3.54	3.75	4.00
	6.9%	2.74	2.85	2.98	3.13	3.30
	7.4%	2.38	2.46	2.56	2.66	2.78

Sensitivity Table - Low		Growth Rate (%)				
		2.5%	2.8%	3.0%	3.3%	3.5%
WACC (%)	5.4%	3.76	4.04	4.38	4.79	5.32
	5.9%	3.09	3.28	3.49	3.75	4.06
	6.4%	2.61	2.73	2.88	3.05	3.24
	6.9%	2.24	2.33	2.43	2.55	2.68
	7.4%	1.95	2.02	2.09	2.17	2.27

Approach for DCF Valuation

Time Horizon: The Arrowhead fair valuation for Keyware is based on the DCF method. The time period chosen for the valuation is 116 months (2019E-2028E).

Terminal Value: Terminal value is estimated using terminal growth rate of 3.0%.

Prudential nature of valuation: It should be noted that this Arrowhead Fair Value Bracket estimate is a relatively prudential estimate, as it discounts the eventuality of any new products being launched in the market or any significant change in the strategy.

Key variables: The upper and lower bounds in the estimation correspond to the extreme positions taken by the following key variables:

Variable 1 – Installed Base (Terminals)

Exhibit 20: Number of terminals at the end of year										
In '000s	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Low estimate	17.3	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
High estimate	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4

Variable 2 – Terminals offering Authorized services

Exhibit 21: Number of terminals offering authorization services, at the end of year										
In '000s	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Low estimate	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
High estimate	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6

8.2 Relative Valuation

The Fair Market Value of one of Keyware's publicly traded regular shares stood between EUR 1.77 and EUR 1.92 on May 22, 2019 according to the relative valuation method.

Exhibit 23: Peer Set (Keyware) ^{xxx}				
Companies	Market Cap (in EUR mn)	Current Enterprise Value (in EUR mn)	EBITDA (FY 2020E) (in EUR mn)	EV/EBITDA (FY 2020E) (in EUR mn)
Worldline	9,424	9,669	657	14.7x
Ingenico	4,636	6,197	621	10.0x
Global Payments	21,173	25,741	1,609	16.0x
Tsys	15,930	19,407	1,421	13.7x
Fiserv	31,056	36,229	2,557	14.2x
HIQ International AB	259	236	25	9.3x
Glintt-Global Intelligent Technologies SA	15	54	NA	NA
SysGroup PLC	23	24	3	7.9x
Average				12.2x

	High	Low
Keyware EBITDA FY 2020E	2,484	2,415
PEER EV/ EBITDA	12.2x	12.2x
Relative Valuation Premium / (Discount)	4%	4%
Adjusted EV/ EBITDA	12.7x	12.7x
FY2020 EV	31,622	30,741

Exhibit 24: Peer Set (Magellan) ^{xxxi}				
Companies	Market Cap (in EUR mn)	Current Enterprise Value (in EUR mn)	EBITDA (FY 2020E) (in EUR mn)	EV/EBITDA (FY 2020E) (in EUR mn)
RS2 Software PLC	237	233	NA	NA
Gresham Technologies PLC	82	75	4	18.6x
B+S Bankssysteme AG	16	19	2	9.1x
Asseco South Eastern Europe SA	178	173	34	5.0x
GPI SpA	140	203	35	5.9x
Inside Secure SA	125	96	27	3.5x
NETinfo Plc	16	20	NA	NA
Vetrya SpA	45	42	13	3.1x
CPU Softwarehouse AG	8	8	NA	NA
msg life ag	103	71	NA	NA
SinnerSchrader AG	148	141	NA	NA
GHL Systems Bhd	250	226	19	11.8x
Earthport PLC	282	256	-6	-43.4x
Bottomline Technologies DE Inc	1,727	1,743	96	18.2x
Silverlake Axis Ltd	859	735	63	11.7x
Wirecard AG	19,394	17,740	1,021	17.4x
Worldpay Inc	33,866	40,621	2,185	18.6x

WEX Inc	7,928	10,410	775	13.4x
ACI Worldwide Inc	3,118	3,613	365	9.9x
PayPal Holdings Inc	1,18,240	1,13,470	4,815	23.6x
Global Payments Inc	21,173	25,741	1,609	16.0x
KGMobilians Co Ltd	144	267	NA	NA
Visa Inc	2,92,764	2,99,059	16,286	18.4x
Mastercard Inc	2,33,467	2,33,134	10,534	22.1x
First Data Corp	22,216	37,588	3,280	11.5x
Global Payments Inc	21,173	25,741	1,609	16.0x
Total System Services Inc	15,930	19,407	1,421	13.7x
Average				7.2x

*Only B+S Bankssysteme AG, GFI Informatique SA/France, Asseco South Eastern Europe SA, GPI SpA, GHL Systems Bhd, Inside Secure SA, Vetrya SpA, CPU Softwarehouse AG, Msg life ag, Silverlake Axis Ltd and KGMobilians Co Ltd have been used for average calculation

Relative Valuation for Magellan (All figures are in EUR '000, except percentage and multiple data)	High	Low
Magellan EBITDA FY 2020E	1,800	1,707
PEER EV/ EBITDA	7.2x	7.2x
Relative Valuation Premium	19%	5%
Adjusted EV/ EBITDA	8.5x	7.5x
FY 2020 EV	15,338	12,835

Keyware and Magellan (Combined) (All figures are in EUR '000, except per share data)	High	Low
Total EV	46,959	43,577
Adjustment		
Less: Net Debt	(3,998)	(3,998)
Less: Deferred taxes	(1,344)	(1,344)
Implied Equity Value	41,617	38,235
Shares o/s ('000s)	21,630	21,630
Intrinsic Value per share	1.92	1.77
Current Market Price	1.04	1.04
Upside / (Downside)	185%	170%

8.3 Blended Valuation

Blended Valuation	High	Low
DCF	3.54	2.88
Relative valuation	1.92	1.77
Blended Value	2.73	2.32
Upside/(Downside)	163%	123%
Target Market Cap. (EUR '000)	59,112	50,244

Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent depending on the subsectors in which the research is conducted, but all Arrowhead valuation research possesses an underlying set of common principles and a generally common quantitative process.

With Arrowhead Commercial and Technical Due Diligence, Arrowhead extensively researches the fundamentals, assets and liabilities of a company, and builds solid estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance, such as price/earnings ratios, indicated as applicable, are present mainly for reference purposes. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

Elements of comparison, such as multiple analyses may be to some limited extent integrated in the valuation on a project-by-project or asset-by-asset basis. In the case of this Keyware report, there are no multiple analyses integrated in the valuation.

Arrowhead BID Fair Market Value Bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analysis, such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to those projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a tool for valuation. The high-bracket DCF valuation is derived from the high-bracket key variables, while the low-bracket DCF valuation is based on the low-bracket key variables.

In principle, an investor who is comfortable with the high-brackets of our key variable analysis will align with the high-bracket in the Arrowhead Fair Value Bracket, and likewise in terms of low estimates. The investor will also consider the company intangibles – as presented in the first few pages of this document in the analysis on strengths and weaknesses and other essential company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in the investor's own analysis.

The bracket should be understood as a tool provided by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that on one hand, global capital markets contain inefficiencies, especially in terms of information, and that on the other hand, corporations and their commercial and technical positions evolve rapidly: this present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months). The reader should refer to important disclosures on page 29 of this report.

9. Appendix

9.1 Keyware's Financial Summary

Exhibit 25: Financial Summary		<i>Low Bracket Estimates</i>								
<i>Year Ending - Dec</i>	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Revenue (EUR '000)	19,805	20,499	21,329	22,221	22,986	23,867	24,773	25,688	26,499	27,158
Operating Profit (EUR '000)	565	1,353	1,983	3,003	3,267	3,876	4,375	4,834	5,338	5,622
Net Income (EUR	510	1,011	1,482	2,246	2,277	2,693	3,009	3,323	3,714	3,906
EPS	0.02	0.05	0.07	0.10	0.11	0.12	0.14	0.15	0.17	0.18
Growth rates (%)										
Revenue	(3.6%)	3.5%	4.0%	4.2%	3.4%	3.8%	3.8%	3.7%	3.2%	2.5%
Operating Profit	115.0%	139.4%	46.5%	51.5%	8.8%	18.6%	12.9%	10.5%	10.4%	5.3%
Net Income	(18.6%)	98.5%	46.5%	51.5%	1.4%	18.3%	11.8%	10.4%	11.8%	5.2%
EPS	(18.6%)	98.5%	46.5%	51.5%	1.4%	18.3%	11.8%	10.4%	11.8%	5.2%
Margins (%)										
Gross Margins	58.0%	59.8%	61.8%	63.9%	66.0%	67.9%	69.8%	71.2%	72.4%	73.4%
Operating Profit	2.9%	6.6%	9.3%	13.5%	14.2%	16.2%	17.7%	18.8%	20.1%	20.7%
Net profit Margin	2.6%	4.9%	6.9%	10.1%	9.9%	11.3%	12.1%	12.9%	14.0%	14.4%
Ratios										
ROA	1.3%	2.6%	4.0%	5.9%	6.0%	7.1%	7.6%	8.2%	8.7%	8.8%
ROE	1.9%	3.6%	5.3%	7.6%	7.7%	9.0%	9.8%	10.4%	11.1%	11.1%
Debt / Equity	0.2x	0.1x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x
Interest Coverage	4.2x	13.8x	42.6x	191.7x	466.8x	553.7x	625.0x	690.6x	762.6x	803.2x
Price / Earnings Ratio	44.1x	22.2x	15.2x	10.0x	9.9x	8.4x	7.5x	6.8x	6.1x	5.8x

Exhibit 26: Financial Summary		<i>High Bracket Estimates</i>								
<i>Year Ending - Dec</i>	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Revenue (EUR '000)	20,309	21,257	22,057	23,011	24,088	25,240	26,456	27,819	29,258	30,601
Operating Profit (EUR '000)	605	1,428	2,095	3,171	3,525	4,245	4,869	5,503	6,265	6,808
Net Income (EUR	540	1,068	1,566	2,372	2,470	2,970	3,380	3,825	4,410	4,796
EPS	0.02	0.05	0.07	0.11	0.11	0.14	0.16	0.18	0.20	0.22
Growth rates (%)										
Revenue	(1.2%)	4.7%	3.8%	4.3%	4.7%	4.8%	4.8%	5.2%	5.2%	4.6%
Operating Profit	130.1%	136.0%	46.7%	51.4%	11.2%	20.4%	14.7%	13.0%	13.9%	8.7%
Net Income	(13.8%)	97.9%	46.7%	51.4%	4.1%	20.3%	13.8%	13.2%	15.3%	8.8%
EPS	(13.8%)	97.9%	46.7%	51.4%	4.1%	20.3%	13.8%	13.2%	15.3%	8.8%
Margins (%)										
Gross Margins	57.5%	59.6%	61.5%	63.7%	66.0%	68.1%	70.2%	71.9%	73.5%	75.0%
Operating Profit	3.0%	6.7%	9.5%	13.8%	14.6%	16.8%	18.4%	19.8%	21.4%	22.2%
Net profit Margin	2.7%	5.0%	7.1%	10.3%	10.3%	11.8%	12.8%	13.7%	15.1%	15.7%
Ratios										
ROA	1.3%	2.8%	4.2%	6.2%	6.4%	7.6%	8.3%	9.0%	9.7%	9.9%
ROE	2.0%	3.8%	5.5%	8.0%	8.2%	9.7%	10.6%	11.4%	12.3%	12.4%
Debt / Equity	0.2x	0.1x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x
Interest Coverage	4.5x	14.6x	45.0x	202.4x	503.5x	606.5x	695.6x	786.1x	895.0x	972.6x
Price / Earnings Ratio	41.7x	21.1x	14.4x	9.5x	9.1x	7.6x	6.7x	5.9x	5.1x	4.7x

9.2 Keyware's Balance Sheet Forecast

Exhibit 27: Consolidated Balance Sheet		All figures in EUR '000, unless stated differently <i>Low Bracket estimates</i>									
<i>Year Ending - Dec</i>	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	
Total current assets	14,258	13,427	13,242	14,231	15,336	16,630	18,710	20,852	23,802	26,625	
Total non-current assets	25,847	24,904	24,056	23,520	22,417	21,537	20,700	19,774	18,769	17,747	
TOTAL ASSETS	40,105	38,331	37,297	37,751	37,753	38,168	39,410	40,626	42,570	44,372	
Total current liabilities	5,263	4,662	4,306	3,810	3,925	4,057	4,524	4,674	5,161	5,277	
Total non-current liabilities	7,393	5,867	4,790	4,575	4,349	4,101	4,030	3,937	3,844	3,786	
TOTAL LIABILITIES	12,656	10,529	9,096	8,385	8,274	8,158	8,554	8,611	9,005	9,063	
Total shareholder's equity	27,449	27,801	28,202	29,366	29,479	30,009	30,855	32,015	33,566	35,309	
TOTAL LIABILITIES & EQUITY	40,105	38,331	37,297	37,751	37,753	38,168	39,410	40,626	42,570	44,372	

Exhibit 28: Consolidated Balance Sheet		All figures in EUR '000, unless stated differently <i>High Bracket estimates</i>									
<i>Year Ending - Dec</i>	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	
Total current assets	14,365	13,672	13,587	14,715	16,098	17,774	20,396	23,265	27,274	31,408	
Total non-current assets	25,840	24,850	23,991	23,451	22,311	21,369	20,429	19,352	18,125	16,803	
TOTAL ASSETS	40,205	38,522	37,577	38,166	38,409	39,142	40,825	42,617	45,399	48,212	
Total current liabilities	5,334	4,768	4,415	3,929	4,091	4,264	4,800	5,024	5,652	5,889	
Total non-current liabilities	7,393	5,867	4,790	4,575	4,349	4,101	4,030	3,937	3,844	3,786	
TOTAL LIABILITIES	12,727	10,635	9,205	8,504	8,440	8,365	8,830	8,961	9,496	9,675	
Total shareholder's equity	27,479	27,888	28,372	29,663	29,970	30,777	31,994	33,656	35,903	38,536	
TOTAL LIABILITIES & EQUITY	40,205	38,522	37,577	38,166	38,409	39,142	40,825	42,617	45,399	48,212	

10. Analyst Certifications

I, Natasha Agarwal, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject company, based on the collection and analysis of public information and public company disclosures.

I, Sumit Wadhwa, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject company, based on the collection and analysis of public information and public company disclosures.

Important disclosures

Arrowhead Business and Investment Decisions, LLC received fees in 2015-2019 and will receive further fees in 2019 from Keyware Technologies for researching and drafting this report and for a series of other services to Keyware Technologies, including distribution of this report and investor relations services. Neither Arrowhead BID nor any of its principals or employees owns any long or short positions in Keyware. Arrowhead BID's principals have a mandate for investment banking services from Keyware and intend to receive compensation for investment banking activities for Keyware in 2019 or 2020.

Aside from certain reports published on a periodic basis, the large majority of reports are published by Arrowhead BID at irregular intervals as appropriate in the analyst's judgment.

Any opinions expressed in this report are statements of Arrowhead BID's judgment to this date and are subject to change without notice.

This report was prepared for general circulation and does not provide investment recommendations specific to individual investors. As such, any of the financial or other money-management instruments linked to the company and company valuation described in this report, hereafter referred to as "the securities", may not be suitable for all investors.

Investors must make their own investment decisions based upon their specific investment objectives and financial situation utilizing their own financial advisers as they deem necessary.

Investors are advised to gather and consult multiple sources of information while preparing their investment decisions. Recipients of this report are strongly advised to read the Information on Arrowhead Methodology section of this report to understand if and how the Arrowhead Due Diligence and Arrowhead Fair Value

Bracket integrate alongside the rest of their stream of information and within their decision-making process.

Past performance of securities described directly or indirectly in this report should not be taken as an indication or guarantee of future results. The price, value of, and income from any of the financial securities described in this report may rise as well as fall and may be affected by simple and complex changes in economic, financial and political factors.

Should a security described in this report be denominated in a currency other than the investor's home currency, a change in exchange rates may adversely affect the price of, value of, or income derived from the security.

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Arrowhead Business and Investment Decisions, LLC is not responsible for any loss, financial or other, directly or indirectly linked to any price movement or absence of price movement of the securities described in this report.

11. Notes and References

- i Source: Bloomberg, retrieved on May 22, 2019.
- ii 52 weeks to May 21, 2019. Source: Bloomberg, May 22, 2019
- iii 3 months to May 21, 2019. Source: Bloomberg, May 22, 2019
- iv Arrowhead Business and Investment Decisions Fair Value Bracket – AFVBTM. See information on valuation on pages 24-27 of this report and important disclosures on page 32 of this report
- v Source: Quarter Report Q1 2017, Company Website and Press Releases
- vi Source: Investor Guide, December 2016, H1 June 2017
- vii Source: Company Management
- viii Source: Annual Report 2014, Company Presentation
- ix Source: Arrowhead BID analysis
- x Source: Arrowhead BID analysis
- xi Source: Filings
- xii Source: Bloomberg
- xiii Source: Arrowhead BID estimate
- xiv Source: Press Releases, Full year 2016 results report
- xv Source: Company Reports, Company website and Bloomberg
- xvi Source: Europe Consumer Center (ECC)
- xvii Source: Provided by the Keyware Management
- xviii Source: Annual Report 2014
- xix Source: <https://www.pcisecuritystandards.org/> and Keyware Annual Report 2014
- xx Source: Worldline Presentation December 2014 and Arrowhead Estimates
- xxi Source: Fintech Global: <http://fintech.global/2018-is-already-a-record-year-for-global-fintech-investment/>
- xxii Source: Fintech Global: <http://fintech.global/2018-is-already-a-record-year-for-global-fintech-investment/>
- xxiii Source: Fintech Global: <http://fintech.global/global-paytech-investment-has-hit-17-5bn-in-the-first-three-quarters-of-2018/>
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- xxv Source: KPMG Report (The Pulse of Fintech 2018)
- xxvi Source: Bloomberg
- xxvii Source: Arrowhead Estimate
- xxviii Source: Damodaran Estimate
- xxix Source: Damodaran Estimate
- xxx Source: Bloomberg, Respective Company Results
- xxxi Source: Bloomberg, Respective Company Results