

## Due Diligence and Valuation Report

Arrowhead Code:	76-01-09
Coverage initiated:	01 December 2015
This document:	12 December 2017
Fair share value bracket-DCF:	€ 2.03 and € 2.51
Share price (20 December 17):	€ 1.48 <sup>i</sup>

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### Market Data

52-Week Range:	€ 1.10 - € 1.74 <sup>ii</sup>
Average Daily Volume:	15,851 <sup>iii</sup>
Market Cap. (20 Dec 17):	€ 32.3 MM

### Financial Forecast (in €) (FY ending - Dec)

€	'17E	'18E	'19E	'20E	'21E	'22E	'23E
High PBT '000	3,293	3,989	4,353	4,967	5,483	5,952	6,335
High NI '000	2,509	3,113	3,389	3,917	4,374	4,800	5,144
High EPS	0.12	0.14	0.16	0.18	0.20	0.22	0.24
Low PBT '000	2,870	3,337	3,632	4,246	4,632	4,993	5,244
Low NI '000	2,178	2,579	2,821	3,347	3,699	4,036	4,271
Low EPS	0.10	0.12	0.13	0.15	0.17	0.19	0.20

**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 Company's operations include renting/selling of payment terminals including programming, personalization, installation, maintenance and repair services. 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. With a view to offer end-to-end payment solutions to its customers, the Company also offers payment services for m-commerce and e-commerce through its payment service platform - PayService. Keyware currently has more than 20,000 customers using their services in various fields-hotels, fashion stores, grocery chains, government agencies etc.



Company:	Keyware Technologies NV
Ticker:	EBR: KEYW
Headquarters:	Zaventem, Belgium
CEO	Mr. Stéphane Vandervelde
CFO	Mr. Alain Hubert
COO	Mr. Wim Verfaillie
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Arrowhead is updating coverage on Keyware Technologies NV with a fair value bracket of € 2.03 (Low-Bracket estimate) and € 2.51 (High-Bracket estimate).

**Key Highlights:** **(1)** We expect a CAGR of 8.0% (low bracket) to 16% (high bracket) in profit before tax (PBT) during 2016-21 period; **(2)** Revenue increased by 4% YoY to € 13,773k in the first 9 months of 2017 from € 13,239k in 9M 2016 led by inclusion of contribution from Magellan since 1 July 2017; **(3)** EBITDA decreased from € 3,671k in 9M 2016 to € 2,852k in 9M 2017; **(4)** PBT fell by 35% to € 2,079k in 9M 2017 compared to € 3,200k in 9M 2016, while net profit decreased from € 2,397k in 9M 2016 to € 1,388k in 9M 2017 due to reduced profitability from the terminal segment; **(5)** Profitability reduced further due to higher depreciation and additional personnel costs associated with the start-up ventures Keyware T&P GmbH & EasyOrder; **(6)** As on 30 September 2017, Keyware's debt increased by € 3,570k to € 9,862k in comparison to first 9 months of 2016; **(7)** In May 2017, Keyware's BOD had initiated a share buy-back programme capped to € 1 million, under which it held shares worth € 279k as on 30 September 2017; **(8)** On September 30, 2016, Keyware acquired 40% of Magellan and on June 30, 2017, remaining 60% was acquired; **(9)** Acquisition of VOF EasyOrder for € 700k, investment expected to be paid off in 5 years, € 425k paid in cash during the Q1 2017 and € 75k on June 30 2017.

**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 KEYW's fair share value lies in the € 2.03 - € 2.51 bracket using Discounted Cash Flow (DCF) which is our primary valuation methodology.<sup>iv</sup> Our fair value bracket implies PE multiple of 17.5x and 24.1x based on our 2017 earnings estimates, compared to the industry average of 27.6x.

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## 1. Summary and Outlook

We are updating coverage on Keyware Technologies NV, headquartered in Zaventem, 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's revenue for the first 9 months of 2017 increased by 4% to € 13,773k from € 13,239k in 9M 2016 mainly led by contribution from software segment revenues which relates to inclusion of Magellan sales. PBT decreased by 35% to € 2,079k in comparison to previous year's € 3,200k due to lower operating profit. EBITDA decreased by € 819k to € 2,852k in 9M 2017 from last year due to decreased profitability from payments terminal segment and higher costs associated with start-up ventures Keyware T&P GmbH as well as EasyOrder. Net profit declined by 42.1% in 9M 2017 to € 1,388k in comparison to € 2,397k in 9M 2016. In 2015, the Company's revenue increased 28.5% to € 12,491k from € 9,718k in 2014 on the back of acquisition of GlobalPay and strong performance by both payment terminal and authorization services divisions. Net profit for full year 2015 increased to € 5,291K in 2015 from € 1,933K in 2014.
- (2) The Company's leverage increased at the end of 30 September 2017 with financial debts increasing to € 9,862k compared to € 6,292k at the end of 31 December 2016 mainly due to the bank financing of € 4,500k to fund the Magellan acquisition for the remaining 60% stake. Cash and cash equivalents rose from € 1,045k at the end of 31 December 2016 to € 3,357k at the end of 30 September 2016.
- (3) KEYW is trading at a forward P/E multiple of 10.3x on 2017 earnings, which is at a significant discount to its industry average of 26.4x.
- (4) At the end of 2016, Keyware recorded a net growth of 1,200 contracts since the previous year. The Company had installed base of terminals of 18,147 at the end 2016, which has increased from 10,195 terminals at the end of 2010.
- (5) 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.
- (6) In May 2017, Keyware's Board of Directors had initiated a share buy-back programme which was capped to € 1 million, under which it held shares worth € 279k as on 30 September 2017. The programme is expected to be completed by 31 May 2018
- (7) Keyware distributed interim dividend of € 0.02 per share to the 21,188,793 shareholders which represents an aggregate amount of € 424k in 2016.
- (8) Keyware Transactions & Processing GmbH, is a Germany based subsidiary which is 50% held by Keyware Technologies NV and remaining 50% by Keyware Smart Card Division, started offering payment terminals and transaction services in the German market beginning from the fourth quarter of 2016.
- (9) Keyware signed an agreement with Bancontact Company, making the Company a Certificate Holder in the "Terminal Provider" and "POS Gateway" categories.
- (10) Keyware signed for 40% participation in French Fintech Company Magellan SAS. A proportional contribution of € 105k related to only fourth quarter of 2016 has been recorded to group's net result of 2016. The Company paid 75% of the price by raising a bank loan of € 3,000k and 25% of the price through Keyware Technologies NV stock equivalent to € 1,000k. The payment of € 1,000k has been realized through treasury share buy-back program. On June 30, 2017, Keyware purchased the remaining 60% shares by raising a bank loan amounted to € 4,500k, comprising of € 2,000k which would be settled as a bullet loan on June 30, 2019 and the second portion of € 2,500k shall be reimbursed by 48 monthly instalments.
- (11) Keyware will offer a more secure payment platform as it receives PA DSS 3.1 security certificate for Magellan's SET2U payment software platform. The entire suite of payment and transaction applications will be certified thus reducing the cost for banks and card issuers to secure payments.
- (12) Keyware acquired the assets of GlobalPay NV on January 01, 2015. Initially, the acquisition added a total of 840 contracts with 74.6% still active as on December 31, 2015. The final price of the acquisition was determined to be € 445k on December 31, 2015, with balance € 170k outstanding at the end of the year. GlobalPay delivered a contribution to revenues of € 850k or 30.65% of the total increase during 2015.
- (13) The Company has modified presentation of its authorization segment. Till 2015 commissions from authorization agreements were recorded as net sales amongst revenues but under IFRS principles these revenues are no longer presented in the same way beginning 2016 and separated among gross revenues and related costs components. Thus, the gross profit for the Company remains same while revenue is higher.

- (14) As on December 31, 2015, Keyware had € 3.058 MM of deferred tax asset, which is related to Keyware Smart Card Division. We expect that these deferred tax assets will be sufficient to cover the tax liability in profit from the Keyware Smart Card Division till 2017 and will also cover a part of profit from 2018. Therefore, we expect Keyware Smart Card Division to have full impact from tax outflow from 2019 onwards only. For Keyware Technologies, the tax losses amount to € 60.527 MM at December 31, 2015.
- (15) For Keyware Technologies, the accumulated tax losses amount to € 60,541k as on December 31, 2014 and we estimate these losses to restrict any tax outflow from the authorization segment for the next 10 years. We estimate Keyware Technologies to utilize 50% of € 60,541k by 2025, and the tax benefit from the remaining € 30,270k has been added to the terminal value at the end of 2025.
- (16) Under the Warrant Scheme 2012, two warrant holders exercised the warrants on March 24, 2017 which led to the issuance of 425,000 new shares without any nominal value into the market. The issue was of 1,240,000 warrants at a strike price of € 0.70 per warrant out of which 425,000 warrants were exercised at a strike price of € 0.70 per warrant. Thus, capital and share premium increased by € 157,250 and € 140,250 respectively. Following the exercise of warrants, the total number of shares amounted to 21,648,793 and the capital to € 8,027,543.58. On June 9, 2017 two more warrant holders exercised 165,000 warrants at a strike price of € 0.70 per warrant, taking the number of shares outstanding and share capital to 21,813,793 and € 8,088,593.58 respectively.
- (17) Keyware has acquired EasyOrder VOF from Kortrijk for a maximum price of € 700k with a fixed component of € 500k and a variable component of € 200k. For the fixed part, € 425k was to be immediately paid in cash, and the remaining € 75k will be paid as Keyware's shares on 30 June 2017. The variable part of maximum € 200k is to be paid in tranches, based on the achievement of specified results. 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. Keyware expects to become a central payment hub for its customers which may be selling online or in stores.
- (18) Keyware has filed an appeal regarding Court Case Prosecution / Keyware Smart Card Division that condemned Keyware to pay the fine of € 750k for which the pleadings are scheduled for November 2018.

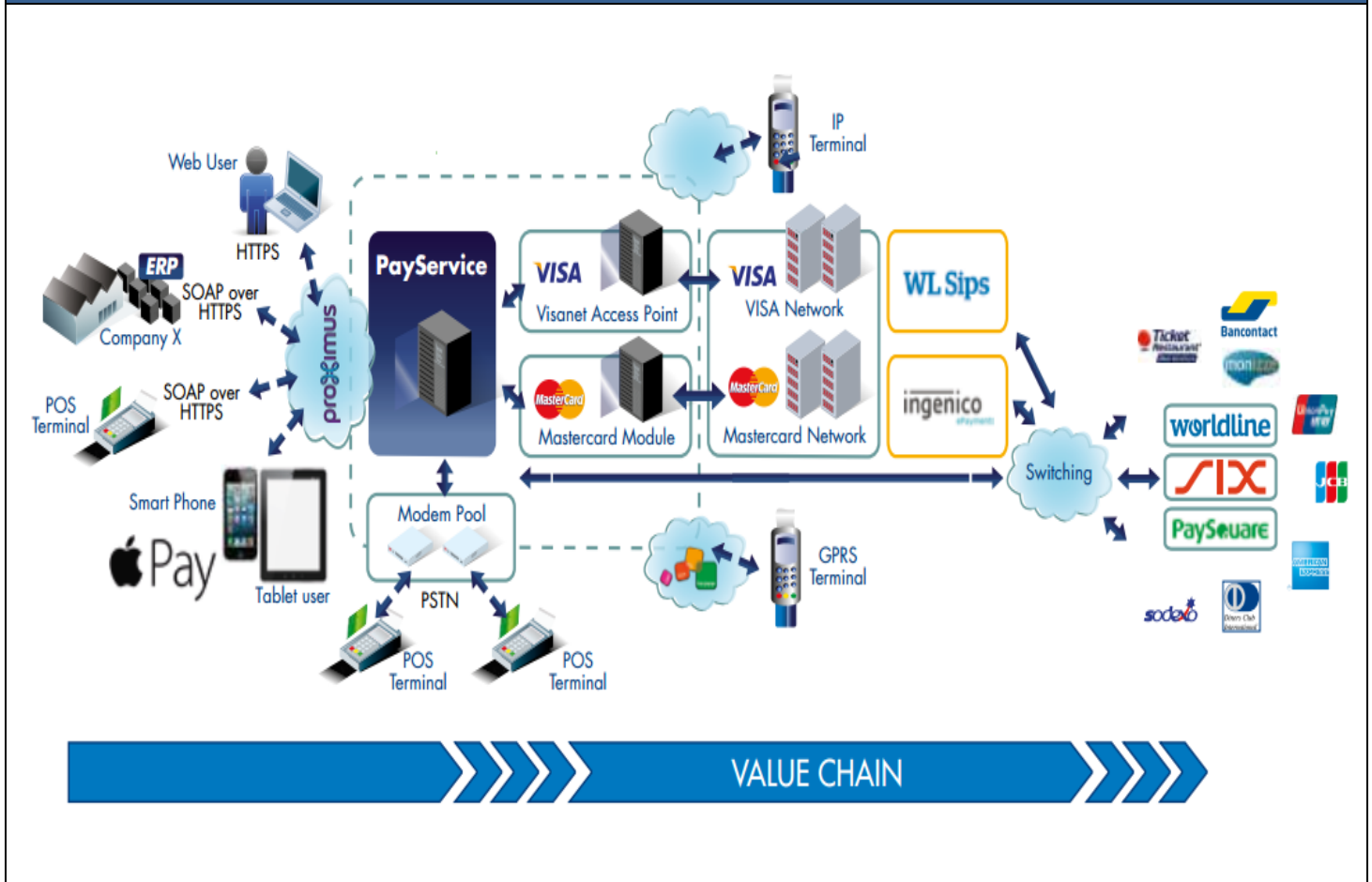
**Key Risks:** Key risks include lower than expected increase in the terminal base, weak business environment in Belgium, excessive contract terminations and slow adaptability to the ever-changing technology.

**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 € 5,000 to € 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. This allows its customers to choose from multiple options depending on their need, market segment and type of organization, ensuring that the customers are not bound to any one terminal. Keyware catered to over 20,000 customers in 2014 covering retail chains, restaurants and cafes, government services, transport companies, installers, house-to-house suppliers, etc.

**Exhibit 1 : Keyware as an Independent NSP<sup>vi</sup>**



Keyware entered an agreement with Worldline to sell its terminals in July 2013, successfully adding the popular terminals, Yomani, Yoximo and Xengo to its wide range of products. During 2015, the Company entered record annual net growth of 2,000 contracts and revised contracts with significant number of GlobalPay’s clients to its own 5-year contracts which helped it achieve a high revenue growth of over 28% YoY in 2015.

In January 2015, the Group acquired the purchase and lease contracts of GlobalPay NV by making an upfront payment of € 275k. The payment was financed via owned funds and loans with € 250k being the amount of loan contracted to finance the asset deal. The final takeover price of this asset deal, € 445k, was determined on December 31, 2015 based on many parameters. The acquisition increased Keyware’s active number of contracts by 840 with 74.6% still active at the end of 2015.

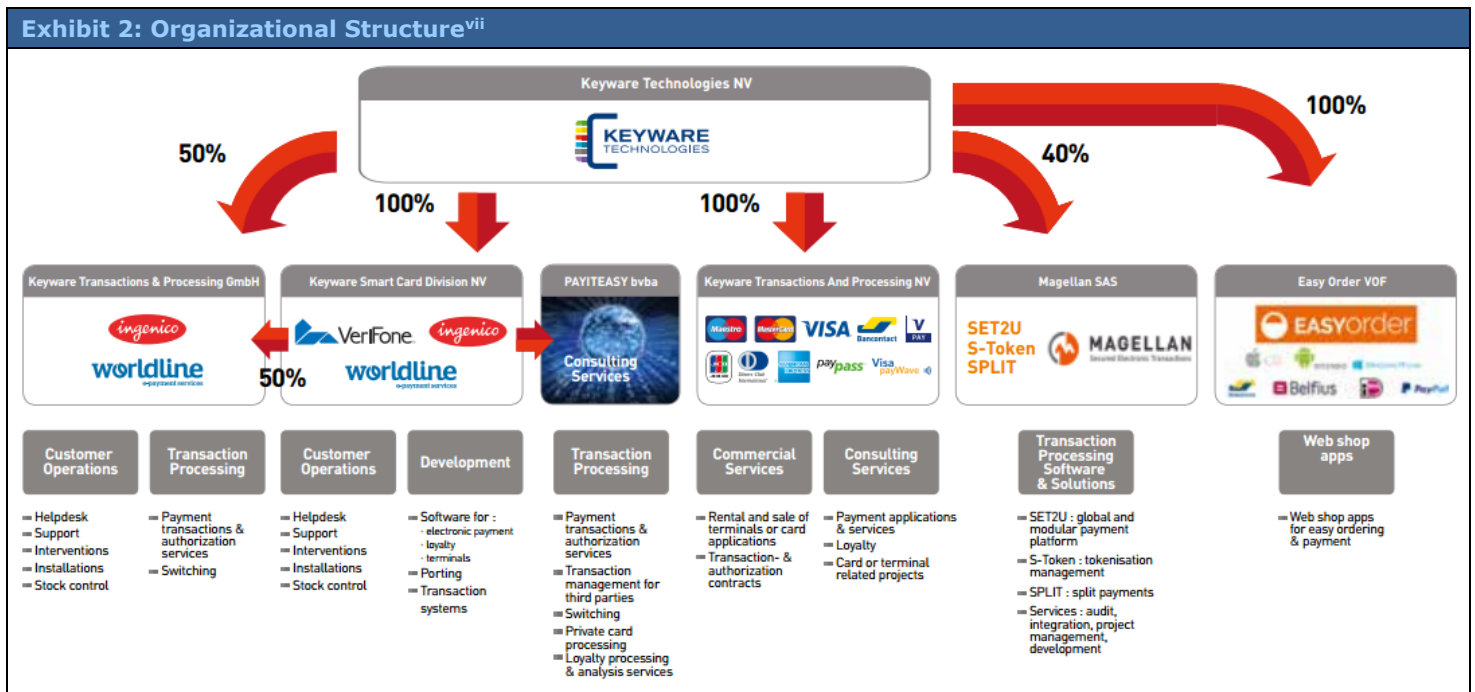
In June 2016, Keyware Transactions & Processing GmbH was incorporated as a 100 % subsidiary which started operations in last quarter of 2016. Its activities are into rental and sale of payment terminals.

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 in a payment by instalments). Keyware acquired further 60% stake in Magellan by paying € 6000k and reported consolidated financials as on 30 June 2017.

In January 2017 Keyware acquired 100% shares of VOF EasyOrder. This takeover will 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.

**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 2014, PayItEasy BVBA is now fully consolidated from October 01, 2014.



**2.2 Company Milestones**

**Exhibit 3: Keyware Milestones**

Year	Events
2003	<ul style="list-style-type: none"> <li>Keyware shares got listed on Euronext for the first time in September 2003</li> <li>Payment Software got certified by Electronic Payment Certificate Institute</li> </ul>
2005	<ul style="list-style-type: none"> <li>The number of customers exceeded 5,000 in the payment terminal segment</li> </ul>
2007	<ul style="list-style-type: none"> <li>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</li> </ul>
2009	<ul style="list-style-type: none"> <li>Successfully added fixed IP terminals and portable GPRS terminals to its existing offerings</li> <li>Entered co-operative venture with PaySquare, which enabled KEYW to offer payment authorization services on its own and on third party terminals</li> </ul>
2011	<ul style="list-style-type: none"> <li>Successfully penetrated higher market segment customers - government schools, municipalities, etc.</li> </ul>
2013	<ul style="list-style-type: none"> <li>Partnership with Worldline allowed Keyware to rent/sell Worldline terminals in the Benelux region</li> </ul>

<b>2014</b>	<ul style="list-style-type: none"> <li>The reduction in the amount of cash permissible for transactions from € 5,000 to € 3,000 by Belgian government added to the already growing volume of transactions for Keyware</li> <li>Added a record number of terminals crossing 14,000 mark</li> </ul>
<b>2015</b>	<ul style="list-style-type: none"> <li>Acquired the assets of GlobalPay in January, taking over several purchase and lease contracts</li> <li>Replacement of paper meal vouchers with electronic version from the last quarter of 2015 is set to bring in new growth opportunities for Keyware in 2016</li> <li>Transition from spread income model to brokering model for authorization services</li> </ul>
<b>2016</b>	<ul style="list-style-type: none"> <li>Partnership with Bancontact, making the Company a Certificate Holder in the "Terminal Provider" and "POS Gateway" categories</li> <li>Keyware opens office in Germany and started offering payment terminals and transaction services beginning from fourth quarter of 2016</li> <li>Interim dividend of € 0.02 per share was paid in August 2016 amounting to € 424k</li> <li>Completed buy-back share for a maximum amount of € 1 million</li> <li>Keyware signed for 40% participation in French Fintech Company Magellan SAS and holds a Call option for remaining 60% of the shares</li> <li>Keyware will receive PA DSS 3.1 security certificate for Magellan's SET2U payment software platform</li> <li>Acquisition of VOF EasyOrder for € 700k, investment expected to be paid off in 5 years</li> </ul>
<b>2017</b>	<ul style="list-style-type: none"> <li>€ 425k paid in cash during the first quarter of 2017 and € 75k paid on June 30 2017, balance € 200k to be paid partially in 2017 and 2018</li> <li>As of June 30, 2017, Magellan becomes 100% subsidiary as Keyware acquires the remaining 60% of Magellan stake. The financing of the acquisition was partially through the internal funds amounting to € 1,500 k and remaining by bank loans of € 4,500 k</li> <li>In May 2017, Keyware's BOD has decided to initiate a share buy-back programme which is capped to € 1 million and which will remain valid from June 2017 to May 2018</li> </ul>

## 2.3 Business Model

Keyware provides value add 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 enable it to offer its customers the best solutions available in the industry. Keyware provides personalized and flexible payment solutions through two main business segments - Payment Terminals and Transaction Services.

### 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 Tier-III market segment, providing terminals to smaller local shops, grocery stores, fashion departments, pharmacies, café and restaurants. With the introduction of Worldline terminals to its product portfolio, the Company is now looking to penetrate 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 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.

Earlier KEYW used to charge a fixed percentage as a commission per transaction (called the Spread Income Model), but starting 2015 the Company has shifted to Brokerage Model where it will buy the transactions on a floor fee and the upper part will be charged as a commission based on negotiation with the acquirer. The migration to Brokerage Model is expected to be over by the end of 2018. This strategic step will translate into approximately three times higher revenues than Spread Income Model.

## 2.4 Products and Services<sup>viii</sup>

- 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 the 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.

## 2.5 Company Premiums<sup>ix</sup>

- 1. Strong growth in customer base and revenues:** Keyware's revenues increased by 28% in 2015 from € 9.7 MM to € 12.5 MM. Both lease/ sale of the payment terminals and authorization services contributed positively to this increase. While the payment terminal segment witnessed an increase of 28.1%, the authorization services also increased by 27.8%. The management's decision to shift from Spread Income model of revenue to Brokerage model for authorization services contributed to the increase in the authorization revenues. The transition to new commission model will be done by the end of 2018 and will impact the segment earnings favorably going forward. In the payment terminals segment, Keyware acquired the assets of GlobalPay NV adding 840 new contracts at the beginning of 2015. It retained 75% of these clients at the end of 2015 and was also able to convert them to Keyware clients by entering revised contracts for a 5-year period. Overall, the Company has seen expansion through both the organic and inorganic routes. Going forward, we expect the growth from inorganic to continue due to strong cash flow generation while continually improving its in-house capabilities. The Company is also actively looking to expand abroad by acquiring another Company in the range of € 8 MM to € 10 MM.
- 2. No tax outflow for next 2 years:** As on December 31, 2015, Keyware had € 3.058 MM of deferred tax asset, which is related to Keyware Smart Card Division. We expect that these deferred tax assets will be sufficient to cover the tax liability in profit from Keyware Smart Card Division fully till 2017 and partially in 2018. For Keyware Technologies, the accumulated tax losses amount to € 60.5MM as on December 31, 2014 and we estimate these losses to restrict any tax outflow from the authorization segment for the next 10 years. However, the accumulated losses worth € 30,270k would remain at the end of 2025 for Keyware Technologies with tax benefit of € 10,292k. We have added the tax benefit to the terminal value at the end of 2025 to account for the unrealized tax benefits.
- 3. 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.
- 4. 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 MM employees receiving meal vouchers in Belgium, this opens a new market for the payment terminal providers. Per 2014 annual report of Keyware, only 39% of retailers are equipped to process electronic meal vouchers and the remaining 61% do not have the necessary infrastructure to handle such payments. Keyware plans to introduce low cost card readers to tap this new market as well as integrate the existing terminals to accept the e-vouchers. Because it will increase the target market of Keyware, we expect it will be positive for the Company.
- 5. Increasing profitability and lower debt going forward:** Based on our estimates, we expect the Company to register strong top line growth of 6.0%-11% during 2015-20 period and have an operating profit margin in the range of 19%-20%. 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.

- 6. Diverse portfolio of customers:** KEYW is a Company with over 17,000 customers contributing to its top line. Per the Company, it's 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<sup>x</sup>

- 1. Slow adoption of new technology:** Keyware's market of operations is characterized by frequent new developments in the field of technology, changing customer needs, upcoming new mode of payments through internet and mobile, 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.
- 2. Poor business environment:** KEYW's success is also dependent on the success of its customers. A downfall in the country's economy increases the probability of businesses going bankrupt, and can shoot up the net impairments of the Company. In 2013, Keyware's net impairments increased by 58% from € 1.1 MM to € 1.8 MM YoY due to a record number of bankruptcies and terminations of the general businesses.
- 3. Less than expected swaps or renewals:** Keyware enters in to 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.
- 4. Change in RMA policy to have a mixed impact:** The Company's impairments reached a level of € 1.9 MM in 2013 due to heightened bankruptcies and business terminations in that year. However, the impairments decreased to € 1.0 MM in 2014 before reaching € 1.7 MM in 2015. The higher impairments in 2015 were due to inventory write-offs mainly with respect to Verifone terminals, which were considered obsolete by the Company and change in its RMA policy. 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. Going forward we expect the Company's impairment charge to decrease but not to a pre-2015 level. Also, the change in RMA policy is expected to lower down the repair and maintenance charges for the Company.
- 5. Obsolescence of payment terminals:** Based on technological evolution and strategy, the Company has qualified some part of its inventories as obsolescent. This led to a write-off amounting to € 561k which impacted FY2015. Because of this write-off, the related payment terminals have been reduced to nil. Hence, this should not be a recurring level of write-offs on inventories.
- 6. Legal Risks:** On December 15, 2016, Keyware Smart Card Division NV was sentenced to a € 720k fine by Court of First Instance in Brussels. This fine, which includes € 22k as payment to civil claimants, is in relation to the Belgian Code of Economic Law for the falsification of documents, fraud and violations. Keyware lodged an appeal to move the court case to a Higher court on January 13, 2017 such that the full debate would be repeated before the Court of Appeal. The litigation relates to the period 2008-2014 and during that time span 39,121 contracts were signed. The complaint was filed by around 100 claimants which represents only 0.3% of the total contracts signed. The consolidated numbers of 2016 do not include any provision in relation to this verdict as the Company has the opinion that this event is a contingent liability. In 2002, Keyware Smart Card Division NV initiated a "descriptive attachment with respect to counterfeiting" action against Kinopolis Group NV claiming a compensation of € 930k plus interest from January 01, 2002. Keyware has charged Kinopolis with alleged infringement of copyright regarding computer programs developed by Keyware. Kinopolis rejects this claim and demands a compensation of € 10k. Per the latest verdict on June 06, 2013, KEYW's claim was unfounded and was sentenced to the payment of compensation of legal expenses to Kinopolis. Keyware has lodged an appeal and the case is pending for the Court of Appeal in Brussels. In addition to this, there are a few claims and legal proceedings pending against the Company and its subsidiaries, however the Board of Directors do not believe such claims or proceedings to have any significant impact on the financial position of the Company or its subsidiaries.

## 2.7 Keyware’s Shareholding Pattern

As on December 20, 2017, the number of shares outstanding was 21,813,793. This number does not include the impact of share buy-back programme.

Exhibit 4: Shareholding pattern <sup>xi</sup>	Exhibit 5: Shareholding Pattern <sup>xii</sup>		
<p>A pie chart illustrating the shareholding pattern. The largest slice is Parana Management at 47.19%, followed by Others at 39.28%, Big Friend at 7.32%, and Drupafina NV at 6.21%.</p>	Shareholders	No. of Shares	% of total
	Parana Management	10,293,498	47.19%
	Drupafina NV	1,355,520	6.21%
	Big Friend	1,597,178	7.32%
	Others	8,567,597	39.28%
<b>Total</b>	<b>21,813,793</b>	<b>100%</b>	

## 2.8 Listing and Contact Details

The ordinary shares of Keyware Technologies are listed on Euronext Brussels (EBR) (Ticker: EBR: KEYW, Date of Listing – 3<sup>rd</sup> September, 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. Key Variable Analysis<sup>xiii</sup>

#### 3.1 Variable 1 – Revenue from payment terminals

Keyware’s major source of revenue is the number of terminals it sells/ leases. Considering developments like 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. From 2010-16, the Keyware’s installed terminal base increased at a CAGR of 10.1% from 10,195 terminals in 2010 to 18,147 terminals in 2016. Following are our estimates for components of revenue from payment terminals for the forecast period under two scenarios, Low bracket and High bracket:

<b>Exhibit 6: Payment terminal revenue breakdown</b>											
In €MM		2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
<b>Low Bracket</b>	Rental revenues	4.9	5.2	5.5	5.8	6.2	6.5	6.8	7.1	7.4	7.7
	Terminal sales	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Rendered services	3.7	3.7	3.7	3.8	3.9	3.9	3.9	3.9	4.0	4.2
	Cancellation pay	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.1
	<b>Total</b>	<b>9.7</b>	<b>10.1</b>	<b>10.4</b>	<b>11.0</b>	<b>11.4</b>	<b>11.8</b>	<b>12.2</b>	<b>12.6</b>	<b>13.0</b>	<b>13.6</b>
<b>High Bracket</b>	Rental revenues	5.4	6.2	6.5	6.9	7.3	7.7	8.1	8.5	8.9	9.3
	Terminal sales	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
	Rendered services	4.3	4.1	4.3	4.3	4.4	4.5	4.5	4.6	4.6	4.8
	Cancellation pay	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.2
	<b>Total</b>	<b>10.8</b>	<b>11.4</b>	<b>12.0</b>	<b>12.6</b>	<b>13.1</b>	<b>13.7</b>	<b>14.2</b>	<b>14.7</b>	<b>15.2</b>	<b>15.8</b>

#### 3.2 Variable 2 – Revenue from authorization services

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

As on December 31, 2015 Keyware offered transaction/ authorization services on c. 85% of the total installed base of terminals compared to c. 83% terminals as at September 30, 2015. These terminals form a source of revenue for the authorization services’ segment. Given that the Company holds solid partnerships with transaction service providers like Six Pay, PaySquare, EMS and Worldline, we estimate the number of terminals offering transaction services to increase going forward. Also, the agreement with Charleroi Airport will also contribute to the revenue from authorization services. Following is the estimate revenue from authorization services during the forecast period for the low bracket and high bracket:

<b>Exhibit 7: Authorization services revenue</b>										
In €MM	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
<b>Low Bracket</b>	7.9	9.0	10.1	11.3	12.4	13.5	14.8	16.2	17.6	19.2
<b>High Bracket</b>	8.0	9.2	10.4	11.8	13.0	14.3	15.8	17.3	19.0	20.8

#### 3.3 Variable 3 – Revenue from software services

Post the acquisition of Magellan and EasyOrder during 2017, software service has been added as a new revenue stream to the company’s business model. Keyware recorded revenues of € 690k as of 9M 2017 in this segment. Following is the estimate revenue from software services during the forecast period for the low bracket and high bracket:

<b>Exhibit 8: Software services revenue</b>										
In €MM	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
<b>Low Bracket</b>	1.2	3.6	3.7	3.9	4.1	4.2	4.3	4.4	4.5	4.6
<b>High Bracket</b>	1.2	3.7	3.8	4.0	4.2	4.3	4.4	4.5	4.7	4.8

#### 4. News<sup>xiv</sup>

1. **Announced its 9M 2017 financial results:** Keyware recorded a revenue of € 13,773k in 9M 2017 compared to € 13,239k for the same period in 2016. Revenue from payments terminals decreased to € 6,607K in 9M 2017 from € 7,626k due to less contracts signed during the first 9 months of 2017 whereas revenue from authorization services increased to € 6,266k in 9M 2017 from € 5,613K in 9M 2016. Newly added software segment contributed € 690k to the top-line for the period of nine months 2017 which mainly relates to the Magellan acquisition. The Company witnessed a considerable 35% YoY decrease in its PBT to € 2,079k in 9M 2017 compared to € 3,200k in 9M 2016 mainly due to decrease in payment terminals segment. Due to the trickle-down impact, net profit also decreased to € 1,388k in 9M 2017 compared to € 2,397k in 9M 2016.
2. **Announced its H1 2017 financial results:** Keyware's H1 2017 revenues decreased by 2.6% to € 9,010k from € 9,251k in H1 2016 mainly related to decrease in revenue from terminals. Revenue from terminals decreased to € 4,588k in H1 2017 compared to € 5,456k in H1 2016 whereas revenue from authorization increased to € 4,130k in H1 2017 relative to € 3,795k in H1 2016. On a PBT level, the Company reported a drastic decrease of 31.3% YoY to € 1,583k in H1 2017 compared to € 2,303k in H1 2016. Further, the net profit declined by 43.2% YoY to € 1,060k in H1 2017 from € 1,865k in H1 2016. The net profit declined by € 805k due to reduced profitability from the terminal segment.
3. **Keyware commences buyback programme:** Keyware's board of directors initiated a share buyback programme in May 2017 which was capped at € 1 million. As of 30 September 2017, the company had bought back € 279k worth shares (198,322 shares). The programme was kick started on 1 June 2017 and is expected to be completed by 31 May 2018.
4. **Keyware increases capital by warrant exercise:** Under the 2012 warrant scheme, two warrant holders exercised 165,000 warrants on June 9, 2017. The warrants were exercised at € 0.70 per warrant. This brings the share capital to € 8,088,593.58.
5. **Acquired remaining 60% stake in Magellan SAS:** Keyware signed for 40% participation in French Fintech Company Magellan SAS. The Company paid 75% of the price by raising a bank loan of € 3,000k and 25% of the price through Keyware Technologies NV stock equivalent to € 1,000k. The payment of € 1,000k has been realized through treasury share buy-back program. On June 30, 2017, Keyware purchased the remaining 60% shares by raising a bank loan amounted to € 4,500k, comprising of € 2,000k which would be settled as a bullet loan on June 30, 2019 and the second portion of € 2,500k shall be reimbursed by 48 monthly instalments. A proportional contribution of € 105k related to only fourth quarter of 2016 has been recorded to group's net result of 2016.
6. **Keyware increases its capital by a warrant exercise:** Under the Warrant Scheme 2012, two warrant holders exercised the warrants on March 24, 2017 which led to the issuance of 425,000 new shares without any nominal value into the market. The issue was of 1,240,000 warrants at a strike price of € 0.70 per warrant out of which 425,000 warrants were exercised at a strike price of € 0.70 per warrant. Thus, capital and share premium increased by € 157,250 and € 140,250 respectively. Following the exercise of warrants, the total number of shares amounted to 21,648,793 and the capital to € 8,027,543.58.
7. **Announced its full year 2016 financial results:** On March 9, 2017, Keyware announced its financial results for the financial year ending December 31, 2016. The Group has generated a revenue growth of 11% amounting to € 18,721k compared to € 16,803k over the same period in 2015. EBITDA amounted to € 5,224k against € 4,993k in 2015. Profit before tax increased by € 164k and amounted to € 4,192k. The net profit amounted to € 3,101k and decreased by € 2,190k due to deferred taxes. 2015 recorded deferred tax revenues of € 1,373k in relation to remaining tax losses whereas in 2016, deferred tax assets were used for € 1,038k which gave rise to same amount as a charge (non-cash). The deferred taxes impact equals € 2,411k.
8. **Acquisition of EasyOrder for possibility of personalized web shops:** Keyware has acquired EasyOrder VOF from Kortrijk for a maximum price of € 700k with a fixed component of € 500k and a variable component of € 200k. For the fixed part, € 425k was to be immediately paid in cash, and the remaining € 75k will be paid as Keyware's shares on 30 June 2017. The variable part of maximum € 200k is to be paid in tranches, based on the achievement of specified results. The first and second tranche, each amounting to a maximum € 100k is planned for 2017 end and 2018 end, respectively. The conditions for both are components of 75% cash and 25% Keyware Technologies shares. By 2019, if the total variable equal to the amount of € 200k is not paid, the balance payment will be made at end of the year. EasyOrder is consolidated in Keyware Technologies Group from January 1, 2017. On December 31, 2016, EasyOrder's net equity amounted to € 7k and net income to € 6k. Limited revenues of € 12k were recorded during the start-up phase and hence it's not possible for Keyware

to estimate this acquisition's contribution Keyware's 2017 financial results. The app will be further developed and improved in 2017 and the investment is expected to be paid off in 5 years' time.

- 9. Acquisition of EasyOrder is 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 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.
- 10. Keyware increases its stake in Congra Software S.A.R.L.:** In FY2016, additional shares for an amount of € 150k were purchased, which brings the participation to a book value of € 400k. In September 2015, Keyware acquired a 2.09% stake in Congra Software, the holding Company of Hybrid Software Group, for € 250k. Keyware Group financed this transaction via a loan from its subsidiary, Keyware Smart Card Division SA. Hybrid Software's main activity is to provide a link between MIS systems, web-to-print portals and prepress workflow. The group has operations in Belgium, Germany, Italy and the United States.
- 11. Keyware will offer a more secure payment platform:** Keyware will receive the prestigious PA DSS 3.1 security certificate for Magellan's SET2U payment software platform. SET2U is a gateway to process payments and the certificate for the technology makes "tokenization" a lot cheaper. As the entire suite of payment and transaction applications will be certified, clients no longer need to take the entire investment upon themselves thus reducing the cost for banks and card issuers to secure payments.
- 12. Keyware sentenced to a € 720,000 fine for the falsification of documents and fraud:** Brussels Correctional Court's judgment convicted the Company for the falsification of documents and fraud in a case revolving around a few individual salespeople who, unbeknown to the company, supposedly offered contracts to retailers in an unlawful fashion. The Company emphasized that sales personnel are immediately laid off in case of any irregularities and it will therefore lodge an appeal against the judgment.
- 13. Keyware has entered German Market:** Keyware Transactions & Processing GmbH, a Germany based subsidiary with 50% holding by Keyware Technologies NV and remaining 50% by Keyware Smart Card Division, has started offering payment terminals and transaction services in the German market beginning fourth quarter of 2016. Keyware GmbH will be responsible for the activities regarding sales, marketing, administration and tech support and a technical partner will manage the installations. The primary attraction to enter German markets is the growth potential for electronic payments and strong economic performance.
- 14. Keyware now a Bancontact Certificate Holder:** Keyware signed an agreement with Bancontact, making the Company a Certificate Holder in the "Terminal Provider" and "POS Gateway" categories. With this partnership, the Company is enabled to directly offer the Bancontact payment scheme to its customers as an alternative or in combination with Maestro and process it through its PayService payment platform. Further, new certificate will also contribute substantially towards enhancing Keyware's image and offerings in the multi-POS top segments.
- 15. Final GlobalPay acquisition price determined at € 445k:** Keyware acquired the assets of GlobalPay NV, a reputed player in the market for payment terminals and payment transactions, on January 01, 2015. Keyware paid a sum of € 275k upfront and the balance payment was decided on December 31, 2015 after determination of final price based on various parameters including the number of active contracts. On December 31, 2015, 74.6% of the total 840 contracts acquired on January 01, 2015 were still active and the balance amount of € 170k remained as a liability for the Company.
- 16. Keyware launched Ingenico iCT 250 with contactless technologies:** Keyware continued to expand its horizon of offering personalized, high performance payment solutions by introducing Ingenico iCT 250 payment terminals offering the option of both contactless and conventional payment. The terminal is equipped to process all forms of payments such as w/MisterCash and is certified with two most important contactless technologies- MasterCard PayPass and Visa payWave. The terminal has a compact design with large color screen making it convenient to use. Its large memory capacity and powerful processors make it compatible to process other applications like loyalty programs, gift vouchers, phone cards, ticketing or different electronic purses, as well as for publicity and promotion or even personalized mobile content.
- 17. Keyware signs an agreement to offer payment services at Brussels South Charleroi Airport:** On December 17, 2015, KEYW announced the signing of an agreement to provide comprehensive electronic payment solutions for various services at the Charleroi airport including the services of operator Ryanair. The agreement will help KEYW to process a greater number of payment transactions- ticket payments, excess

baggage claims, purchases at various outlets, etc. and benefit from millions of travelers that go through the Charleroi airport every year. The airport, to reduce its costs, was in search of a payment infrastructure provider who could reduce the costs substantially while maintaining or improving the quality of services. Keyware's multi-brand range of payment terminals enabled it to offer optimized solutions at reduced cost without compromising on the quality of services. The services with high frequency of payment transactions are equipped with high-performance terminals, while other services are provided with standard solutions.

## 5. Management and Governance<sup>xv</sup>

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"> <li>Stéphane is the co-founder of Keyware, with over 25 years of experience in technology organizations.</li> <li>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, amongst others.</li> <li>He is electronics engineer. He completed specialization in micro-electronics and chip design from Catholic University of Leuven (KUL).</li> <li>He has been the President and CEO of Keyware since 2001.</li> </ul>
Wim Verfaillie	COO	<ul style="list-style-type: none"> <li>Wim has over 20 years of work experience in streamlining operations. He worked as Operations Manager at Modular Lighting Industries from 1994 to 2003.</li> <li>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).</li> <li>He is an industrial electricity engineer and joined the firm in 2007.</li> </ul>
Joris Maes	CCO	<ul style="list-style-type: none"> <li>Joris has over 20 years of experience in international sales and marketing positions at Alcatel-Lucent, KPN, AT&amp;T and Balta.</li> <li>He completed his Masters in industrial engineering (electronics) and is an MBA in General International Management from the Vlerick Leuven Gent Management School.</li> <li>He has been associated with Keyware since 2010.</li> </ul>
Alain Hubert	CFO	<ul style="list-style-type: none"> <li>Alain joined Keyware in 2013 and has over 20 years of experience in financial management, taxation and accounting.</li> <li>Previously, he worked with Ernst &amp; Young as an Executive Director of Transaction Advisory Services (TAS).</li> <li>He has been a certified auditor since 1998; until 2008 he was an audit partner at Constantin Bedrijfsrevisoren.</li> <li>He has proficiency in due diligence, quality and risk management.</li> <li>He completed Licentiate Applied Economic Sciences (UG) and Special Licentiate in Accountancy work from Vlerick School of Management.</li> </ul>

## 6. Industry Characteristics

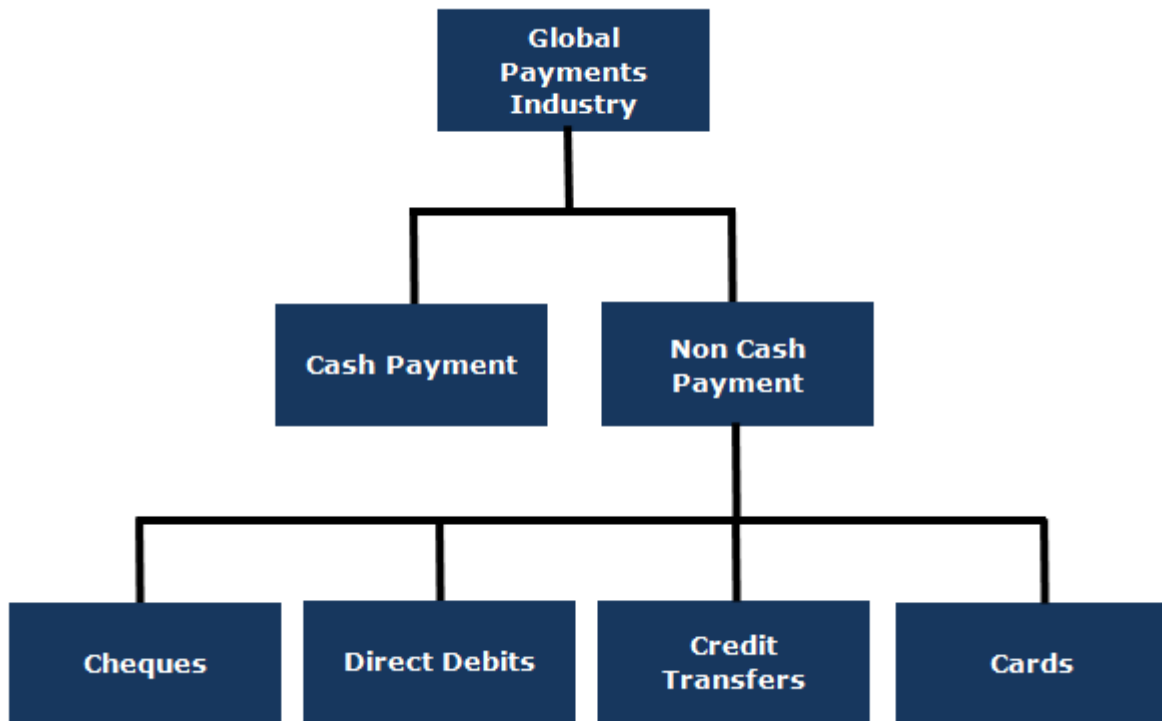
### 6.1 Industry Overview<sup>xvi</sup>

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 € 5,000 to € 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.

#### 6.1.1 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.

**6.1.2 Market performance<sup>xvii</sup>**

**Card Transaction Trends:** Per the Payment Statistics Report 2015 issued by European Central Bank, the total number of non-cash payments in Belgium increased 27.2% YoY to reach 3.44 billion in 2014. Of this, card payments accounted for 43.9%, credit transfers 39.8%, direct debits 15.4% while the remaining 0.9% is accounted by e-payment transactions, cheques and other payment services. Within the non-cash segment, credit transfer volume increased to 1.36 billion, direct debits increased by 69% to 0.53 billion whereas the number of card payments climbed by 13% in 2014 to reach 1.51 billion. (However, the 2014 card data is not fully comparable to previous years; please refer to the note in Exhibit). The volume of transactions through cards increased at a CAGR of 7.7%, that is, from 1.07 billion in 2010 to 1.33 billion in 2013.

Corresponding with the increase in the number of transactions through cards, the total value of the transactions also witnessed a positive trend, growing from € 59 billion in 2010 to € 72 billion in 2013, at a CAGR of 6.8%.

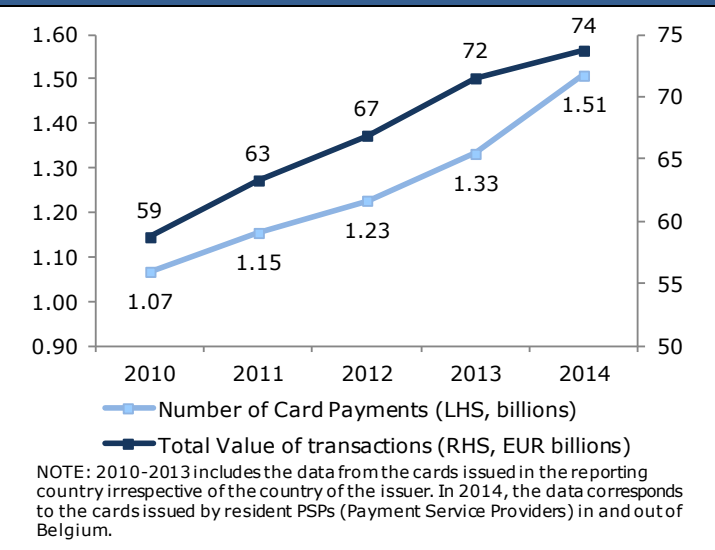
This increase over the years in the volume and value of transactions is expected to persist going forward with the introduction of measures like elimination of paper meal vouchers, w.e.f. from October 01, 2015; introduction of electronic meal vouchers; and limiting cash transactions to up to € 3,000 (effective from January 2014).

**Point of Sale (POS) Terminal Trends:** Per the data provided by ECB, the total number of POS terminals in Belgium increased to 183,210 in 2014, an increase of 25% YoY. Since ECB did not report the figure for 2013, the 25% increase is calculated by using the extrapolated figure of 2013. The extrapolation was done by increasing the 2012 figure by the CAGR during 2010-2014. (However, the 2014 data is not fully comparable to previous years; please refer to the note in Exhibit 8)

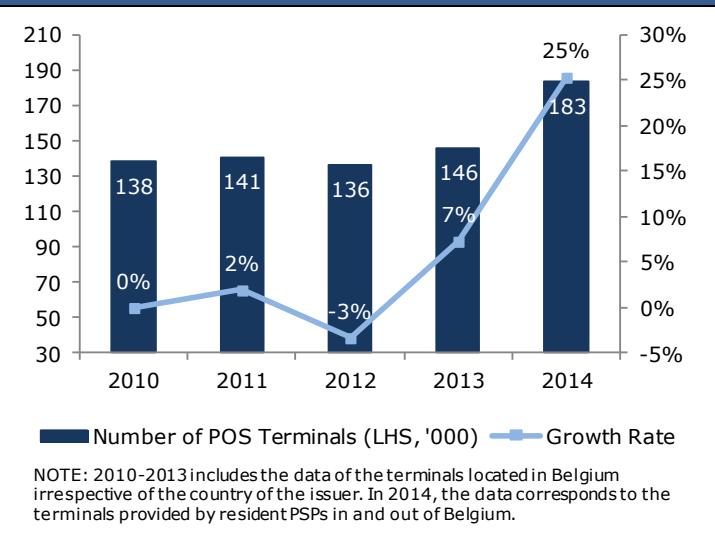
Technological advancements such as introduction of chip embedded payment cards and stringent government measures regarding data security are the likely factors to augment the growth of POS terminals market in the coming years. In 2014, the Belgium government reduced the cash transactions limit from €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

Going forward, the demand for POS terminals is expected to grow on back of the introduction of electronic meal vouchers from the last quarter of 2015. This will do away with paper meal coupons like Sodexo and Edenred. With more than 1.3 million employees receiving meal vouchers in Belgium and only 31% of retailers equipped to accept electronic meal vouchers, the scope of expansion is huge for the terminal providers. Per Keyware's management, this new opportunity will require the introduction of 80,000 new terminals in the market.

**Exhibit 11: Volume vs. Value trends in Belgium<sup>xviii</sup>**



**Exhibit 8: POS Terminal Market in Belgium<sup>xix</sup>**



### 6.1.3 Payment Process Participants<sup>xx</sup>

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.

### 6.1.4 Payment Card Industry Security Standards<sup>xxi</sup>

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 93: PCI-DSS Compliance Requirements**



## 6.1.5 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 104: Services offered by various players in the market<sup>xxii</sup>**

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.

**Comparison with listed peers**

<b>Exhibit 115: Peer Comparison<sup>xxiii</sup></b>						
	<b>Current</b>	<b>TTM</b>	<b>2016</b>		<b>2015</b>	
	<b>Market Cap (US\$ MM)</b>	<b>Revenue (US\$ MM)</b>	<b>EBITDA Margin</b>	<b>Net Profit Margin</b>	<b>EBITDA Margin</b>	<b>Net Profit Margin</b>
Keyware	38	19	20.8%	30.9%	18.4%	15.6%
Worldline	6,209	1,605	16.2%	8.4%	20.2%	11.0%
Ingenico	6,327	2,617	22.1%	10.5%	19.4%	10.6%
Global Payments	15,949	3,668	21.4%	10.0%	21.1%	9.4%
Tsys	14,086	4,787	28.5%	13.1%	22.7%	7.7%
Fiserv	27,473	5,611	32.9%	13.6%	33.7%	16.9%
Wirecard	12,991	1,470	29.4%	18.5%	29.9%	25.9%
<b>Total/Weighted Average</b>	<b>83,073</b>	<b>19,777</b>	<b>28.6%</b>	<b>15.4%</b>	<b>28.1%</b>	<b>15.6%</b>

## 7. Valuation

The Fair Market Value for all the Company shares stands between € 44.27 MM and € 54.68 MM as of December 12, 2017. The Fair Market Value for one Company publicly traded share stands between € 2.03 and € 2.51 as of December 12, 2017. The valuation approach followed is the Discounted Cash Flow method. The terminal value includes the tax benefit worth € 9,263 arising from the accumulated losses of Keyware Technologies which will be realized post 2026.

### 7.1 Discounted Cash Flow Method

Valuation	
<b>WACC</b>	
Risk-free rate	1.90% <sup>xxiv</sup>
Beta	0.60 <sup>xxv</sup>
Equity Market premium	6.65% <sup>xxvi</sup>
Country Risk Premium	0.7% <sup>xxvii</sup>
Cost of Equity	6.31%
Cost of Debt	3.60%
Terminal Growth Rate	3.0%
WACC (Discount Rate)	5.79%

Year Ending- Dec	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
<b>FCFF (High)</b>										
Net cash from operating activities	430	559	1,408	1,309	1,643	1,961	6,198	2,828	4,519	3,618
Capital Expenditure	804	975	526	425	303	255	265	274	284	303
Free Cash Flow to Firm	-374	-416	882	884	1,340	1,707	5,933	2,555	4,235	3,315
Discount factor	1.00	0.94	0.89	0.84	0.80	0.75	0.71	0.67	0.64	0.60
Present Value of FCF	-374	-393	787	746	1,068	1,286	4,226	1,720	2,695	1,994
<b>FCFF (Low)</b>										
Net cash from operating activities	152	248	1,242	1,215	1,426	1,648	5,414	2,288	3,740	3,010
Capital Expenditure	754	908	484	394	279	233	241	248	256	273
Free Cash Flow to Firm	-602	-660	758	821	1,147	1,415	5,172	2,039	3,484	2,737
Discount factor	1.00	0.94	0.89	0.84	0.80	0.75	0.71	0.67	0.64	0.60
Present Value of FCF	-601	-623	676	692	914	1,066	3,684	1,373	2,217	1,647

Arrowhead Fair Value Bracket	High	Low
Terminal Value (TV)	82,903	70,076
Present Value of TV	49,874	42,157
Present Value of FCF	13,754	11,046
Present Value of TV+FCF	63,628	53,203
Net Debt	8,817	8,817
Shares O/s (000's)	21,814	21,814
<b>Fair Share Value Bracket (€)</b>	<b>2.51</b>	<b>2.03</b>
Current Market Price (€)	1.48	1.48
Upside/(Downside)	70%	37%
Current Market Cap. (€ '000)	32,284	32,284
<b>Target Market Cap. Bracket (€ '000)</b>	<b>54,811</b>	<b>44,386</b>

## Sensitivity Analysis

Sensitivity Table - High		Growth Rate (%)				
		2.5%	2.8%	3.0%	3.3%	3.5%
WACC (%)	4.8%	3.47	3.84	4.30	4.93	5.79
	5.3%	2.71	2.94	3.21	3.55	3.98
	5.8%	2.20	2.34	2.51	2.72	2.97
	6.3%	1.82	1.92	2.03	2.17	2.33
	6.8%	1.53	1.60	1.68	1.78	1.88

Sensitivity Table - Low		Growth Rate (%)				
		2.5%	2.8%	3.0%	3.3%	3.5%
WACC (%)	4.8%	2.83	3.13	3.52	4.03	4.74
	5.3%	2.20	2.39	2.61	2.89	3.25
	5.8%	1.77	1.89	2.03	2.20	2.41
	6.3%	1.46	1.54	1.64	1.75	1.88
	6.8%	1.22	1.28	1.35	1.42	1.51

## Valuation multiples - comparison with the peer group

Keyware Technologies is trading currently at 12.9x and 9.3x P/E multiples based on 2017 and 2018 average earnings forecasts. It is trading at significant discount to the industry average of 27.7x and 23.6x respectively. In addition, our fair value bracket implies P/E multiple of 17.5x and 24.1x based on our 2017 earnings estimates, compared to the industry average of 27.7x.

Exhibit 126: Valuation Multiples <sup>xxviii</sup>							
	Market Cap (US\$ MM)	Price to Earnings		EV/EBITDA		Price to Book Value	
		2017	2018	2017	2018	2017	2018
Keyware*	38	12.9	9.3	8.4	6.6	1.1	1.0
Worldline	6,209	37.3	31.4	16.5	14.2	4.5	4.0
Ingenico	6,327	17.5	15.4	10.5	9.1	2.6	2.4
Global Payments	15,949	25.9	22.0	17.2	14.8	4.2	3.7
Tsys	14,086	22.3	20.4	13.7	12.7	5.6	4.9
Fiserv	27,473	25.2	22.3	15.3	14.3	4.7	4.0
Wirecard	12,991	40.4	31.2	24.5	19.1	6.5	5.4
<b>Total/Weighted Average</b>	<b>83,073</b>	<b>27.7</b>	<b>23.6</b>	<b>16.6</b>	<b>14.5</b>	<b>4.9</b>	<b>4.2</b>

Note: \*- Keyware's multiples are calculated based on average of High and Low bracket forecasts.

### Approach for DCF Valuation

**Time Horizon:** The Arrowhead fair valuation for Keyware is based on a DCF method. The time period chosen for the valuation is 109 months (2017E-2026E).

**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 17: Number of terminals at the end of year										
In '000s	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Low estimate	18.4	18.7	19.0	19.2	19.5	19.7	20.0	20.2	20.5	20.7
High estimate	18.6	19.4	20.2	21.0	21.7	22.5	23.2	24.0	24.7	25.5

#### Variable 2 – Terminals offering Authorized services

Exhibit 138: Number of terminals offering authorization services, at the end of year										
In '000s	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Low estimate	17.1	17.3	17.6	17.9	18.1	18.3	18.6	18.8	19.0	19.3
High estimate	17.3	18.0	18.7	19.5	20.2	20.9	21.6	22.3	23.0	23.7

#### Variable 3 – Volume of Transactions

Exhibit 149: Volume of transactions										
In MM	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E
Estimate	16.0	17.9	19.7	21.7	23.6	25.5	27.5	29.7	32.1	34.6



### **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 take into account 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 27 of this report.

## 8. Appendix

### 8.1 Keyware's Financial Summary

<b>Exhibit 20: Financial Summary</b>		<i>Low Bracket Estimates</i>								
<i>Year Ending Dec</i>	<b>2017E</b>	<b>2018E</b>	<b>2019E</b>	<b>2020E</b>	<b>2021E</b>	<b>2022E</b>	<b>2023E</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>
Revenue (€ '000)	19,096	22,975	24,508	26,586	28,263	29,977	31,793	33,684	35,624	37,949
Operating Profit (€ '000)	1,967	2,493	2,638	3,109	3,411	3,727	3,970	4,222	4,456	4,744
Net Income (€ '000)	2,178	2,579	2,821	3,347	3,699	4,036	4,271	4,518	4,762	5,027
EPS	0.10	0.12	0.13	0.15	0.17	0.19	0.20	0.21	0.22	0.23
<b>Growth rates (%)</b>										
Revenue	(0.5%)	20.3%	6.7%	8.5%	6.3%	6.1%	6.1%	5.9%	5.8%	6.5%
Operating Profit	(38.0%)	26.7%	5.8%	17.8%	9.7%	9.3%	6.5%	6.3%	5.5%	6.5%
Net Income	(27.3%)	18.4%	9.4%	18.7%	10.5%	9.1%	5.8%	5.8%	5.4%	5.6%
EPS	(27.9%)	18.4%	9.4%	18.7%	10.5%	9.1%	5.8%	5.8%	5.4%	5.6%
<b>Margins (%)</b>										
Gross Margins	54.4%	53.7%	53.2%	53.0%	52.7%	52.5%	52.2%	51.9%	51.6%	51.4%
Operating Profit	10.3%	10.8%	10.8%	11.7%	12.1%	12.4%	12.5%	12.5%	12.5%	12.5%
Net Profit Margin	11.4%	11.2%	11.5%	12.6%	13.1%	13.5%	13.4%	13.4%	13.4%	13.2%
<b>Ratios</b>										
ROA	4.9%	5.8%	6.2%	7.4%	7.8%	8.0%	7.5%	7.4%	7.2%	7.1%
ROE	7.7%	8.5%	8.6%	9.4%	9.5%	9.5%	9.2%	8.9%	8.7%	8.5%
Debt/Equity	0.3x	0.3x	0.2x	0.1x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x
Interest Coverage	6.0x	8.2x	10.2x	24.4x	NM	NM	NM	NM	NM	NM
Price /Earnings Ratio	15.0x	12.7x	11.6x	9.8x	8.8x	8.1x	7.7x	7.2x	6.9x	6.5x

<b>Exhibit 21: Financial Summary</b>		<i>High Bracket Estimates</i>								
<i>Year Ending Dec</i>	<b>2017E</b>	<b>2018E</b>	<b>2019E</b>	<b>2020E</b>	<b>2021E</b>	<b>2022E</b>	<b>2023E</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>
Revenue (€ '000)	20,384	24,675	26,618	28,695	30,715	32,757	34,970	37,101	39,469	42,081
Operating Profit (€ '000)	2,400	3,135	3,345	3,801	4,220	4,632	4,999	5,327	5,689	6,025
Net Income (€ '000)	2,509	3,113	3,389	3,917	4,374	4,800	5,144	5,463	5,820	6,141
EPS	0.12	0.14	0.16	0.18	0.20	0.22	0.24	0.25	0.27	0.28
<b>Growth rates (%)</b>										
Revenue	6.2%	21.1%	7.9%	7.8%	7.0%	6.6%	6.8%	6.1%	6.4%	6.6%
Operating Profit	(24.4%)	30.7%	6.7%	13.6%	11.0%	9.8%	7.9%	6.6%	6.8%	5.9%
Net Income	(16.3%)	24.1%	8.8%	15.6%	11.7%	9.7%	7.2%	6.2%	6.5%	5.5%
EPS	(16.9%)	24.1%	8.8%	15.6%	11.7%	9.7%	7.2%	6.2%	6.5%	5.5%
<b>Margins (%)</b>										
Gross Margins	55.6%	55.0%	54.5%	53.9%	53.7%	53.4%	53.1%	52.8%	52.5%	52.2%
Operating Profit	11.8%	12.7%	12.6%	13.2%	13.7%	14.1%	14.3%	14.4%	14.4%	14.3%
Net Profit Margin	12.3%	12.6%	12.7%	13.6%	14.2%	14.7%	14.7%	14.7%	14.7%	14.6%
<b>Ratios</b>										
ROA	5.7%	6.8%	7.1%	8.2%	8.6%	8.9%	8.3%	8.1%	7.9%	7.7%
ROE	8.8%	9.9%	9.9%	10.4%	10.5%	10.4%	10.1%	9.8%	9.5%	9.2%
Debt/Equity	0.3x	0.2x	0.2x	0.1x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x
Interest Coverage	7.3x	10.3x	13.0x	29.9x	NM	NM	NM	NM	NM	NM
Price /Earnings Ratio	13.0x	10.5x	9.7x	8.4x	7.5x	6.8x	6.4x	6.0x	5.6x	5.3x

## 8.2 Keyware's Balance Sheet Forecast

Exhibit 15: Consolidated Balance Sheet	All figures in € '000, unless stated differently <i>Low Bracket estimates</i>									
	Year Ending-Dec	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Total current assets	13,755	13,494	14,365	14,027	16,150	18,580	25,239	29,749	34,529	39,830
Total non-current assets	30,247	30,982	31,328	31,483	31,568	31,595	31,600	31,582	31,548	31,341
<b>TOTAL ASSETS</b>	<b>44,002</b>	<b>44,476</b>	<b>45,693</b>	<b>45,510</b>	<b>47,719</b>	<b>50,175</b>	<b>56,839</b>	<b>61,331</b>	<b>66,077</b>	<b>71,171</b>
Total current liabilities	6,153	5,491	7,699	5,980	6,208	5,065	7,893	8,303	8,724	9,229
Total non-current liabilities	9,518	8,511	5,136	3,761	2,479	2,479	2,479	2,479	2,479	2,479
<b>TOTAL LIABILITIES</b>	<b>15,671</b>	<b>14,002</b>	<b>12,835</b>	<b>9,741</b>	<b>8,687</b>	<b>7,544</b>	<b>10,372</b>	<b>10,782</b>	<b>11,203</b>	<b>11,708</b>
Total shareholder's equity	28,331	30,474	32,858	35,769	39,032	42,631	46,466	50,548	54,873	59,464
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>44,002</b>	<b>44,476</b>	<b>45,694</b>	<b>45,510</b>	<b>47,719</b>	<b>50,175</b>	<b>56,839</b>	<b>61,331</b>	<b>66,077</b>	<b>71,172</b>

Exhibit 163: Consolidated Balance Sheet	All figures in € '000, unless stated differently <i>High Bracket estimates</i>									
	Year Ending-Dec	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Total current assets	14,104	14,433	15,866	15,895	18,567	21,663	29,383	34,784	40,623	46,946
Total non-current assets	30,229	31,138	31,546	31,903	32,160	32,331	32,460	32,547	32,605	32,554
<b>TOTAL ASSETS</b>	<b>44,333</b>	<b>45,571</b>	<b>47,411</b>	<b>47,798</b>	<b>50,728</b>	<b>53,993</b>	<b>61,842</b>	<b>67,332</b>	<b>73,228</b>	<b>79,500</b>
Total current liabilities	6,153	5,721	7,984	6,265	6,539	5,440	8,580	9,043	9,557	10,124
Total non-current liabilities	9,518	8,511	5,136	3,761	2,479	2,479	2,479	2,479	2,479	2,479
<b>TOTAL LIABILITIES</b>	<b>15,671</b>	<b>14,232</b>	<b>13,120</b>	<b>10,026</b>	<b>9,018</b>	<b>7,919</b>	<b>11,059</b>	<b>11,522</b>	<b>12,036</b>	<b>12,603</b>
Total shareholder's equity	28,662	31,339	34,292	37,772	41,710	46,074	50,782	55,809	61,192	66,897
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>44,333</b>	<b>45,571</b>	<b>47,411</b>	<b>47,798</b>	<b>50,728</b>	<b>53,993</b>	<b>61,842</b>	<b>67,332</b>	<b>73,228</b>	<b>79,500</b>

## 9. Analyst Certifications

I, Parvati Rai, 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 and 2016 and will receive fees in 2016 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 expect to receive compensation for investment banking activities for Keyware in 2016.

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 advisors 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.

## 10. Notes and References

- i Source: Bloomberg, retrieved on December 20, 2017
- ii 52 weeks to December 20, 2017. Source: Bloomberg, December 20, 2017
- iii 3 months to December 20, 2017. Source: Bloomberg, December 20, 2017
- iv Arrowhead Business and Investment Decisions Fair Value Bracket – AFVBTM. See information on valuation on pages 20-22 of this report and important disclosures on page 27 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: Investor Guide 2017, December 2016, H1 June 2017
- viii Source: Annual Report 2014, Company Presentation
- ix Source: Arrowhead BID analysis
- x Source: Arrowhead BID analysis
- xi Source: Company’s Investor Guide, Company’s guidance
- xii Source: Company’s Investor Guide, Company’s guidance
- 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: Payment Statistics for 2015 by ECB, Keyware Annual Report 2014
- xviii Source: Payment Statistics for 2015, ECB
- xix Source: Payment Statistics for 2015, ECB
- xx Source: Annual Report 2014
- xxi Source: <https://www.pcisecuritystandards.org/> and Keyware Annual Report 2014
- xxii Source: Worldline Presentation December 2014 and Arrowhead Estimates
- xxiii Source: Bloomberg, Respective Company Results
- xxiv Source: Bloomberg
- xxv Source: Bloomberg, 5 year Adjusted Beta
- xxvi Source: Damodaran Estimate
- xxvii Source: Damodaran Estimate
- xxviii Source: Bloomberg Estimates