

# QuarticOn S.A.

Price target: PLN 92.40

Initiating Coverage

Rating: BUY

QuarticOn (QON) is a software company, which has developed a cloud-based tool that with Artificial Intelligence (AI) algorithms delivers personalized product and content recommendations. With >30% of annual revenues already stemming from outside Poland (in total 18 countries worldwide), the company targets its services at online shops (especially medium and large ones with monthly sales of min. PLN 1m) and VOD providers. While positive EBITDA was already reached in H1/18, we expect that revenues will grow from PLN 3.5m in 2017 to PLN 17.3m by 2020E (CAGR of 70.4%) and the EBIT margin to 20% due to (1) a rapidly growing E-Commerce sector (2) new software modules and (3) foreign expansion e.g. to UK, Italy, Spain, Russia. QuarticON plans to use the PLN 7.6m from the share issue in Q3/18 (118.2k new shares at PLN 64.50 per share; QON gained German ACATIS as new investor) for further development of its product and marketing. Based on a DCF model (80% weight) and peer group (20%), we have determined a 12-months PT for QuarticON's shares of PLN 92.40, which implies an upside of 65% at present.

QuarticON's software allows clients to increase sales by up to 15% and conversion rates (actual buyers vs. website visitors) by c. 10%. The tool, which is market leader in CEE according to Datanyze, differentiates itself from competitors by a simple 5 min installation process, full automation and an attractive pricing. In the near term, QuarticON wants to integrate its software with all major E-Commerce and Email advertising platforms, which are available on the market incl. Shopify, Woo Commerce, Freshmail and GetResponse.

Due to a buoyant E-Commerce sector and online advertising market we believe that QuarticON will exhibit significant revenue and margin growth going forward. We expect that in full-year 2018E the company generated sales of PLN 4.6m (+31.2% y-o-y), which due to new products and geographical expansion should increase to PLN 17.3m by 2020E. At the same time, due to a highly scalable business model we forecast that the EBIT margin will increase from -33% in 2018E to 20% in 2020E.

in PLNm	2017	2018E	2019E	2020E	2021E	2022E
Net sales	3.49	4.58	9.51	17.27	24.42	33.51
EBITDA	-1.05	-0.45	2.89	5.23	7.81	11.14
EBIT	-2.39	-1.51	1.62	3.45	5.49	8.71
Net income	-2.55	-1.75	1.46	2.68	4.35	6.98
EPS	-2.39	-1.42	1.18	2.17	3.52	5.65
DPS	0.00	0.00	0.00	0.00	1.10	1.90
Dividend yield	0.00%	0.00%	0.00%	0.00%	1.96%	3.39%
RoE	-56.07%	-22.80%	12.84%	20.01%	25.71%	31.83%
Net gearing	37.67%	-21.90%	-15.01%	-20.70%	-31.54%	-39.83%
EV/Sales	19.16x	14.60x	7.03x	3.87x	2.74x	1.99x
EV/EBITDA	neg	neg	23.14x	12.77x	8.56x	6.00x
P/E	neg	neg	47.50x	25.77x	15.89x	9.92x

## Company profile

QuarticON S.A., which is a technological partner of Google, has developed an AI-based solution, which helps online retailers as well as providers of VOD services to increase sales by delivering smart product and content recommendations.

Date of publication	21 January 2019 / 6:20 am
Website	www.quarticon.com
Sector	Advertising Technology
Country	Poland
ISIN	PLQRTC000015
Reuters	QON.WA
Bloomberg	QON.PW

## Share information

Last price	56.00
No of shares (m)	1.24
Market cap. (PLNm)	69.18
Market cap. (EURm)	16.10
52-week range	PLN 64.50 / PLN 53.50
Average volume (3-months)	958

## Performance

4-weeks	n.a
13-weeks	n.a
26-weeks	n.a
52-weeks	n.a
YTD	-13.18%

## Shareholder structure

Venture FIZ	20.32%
CBNC Capital Solutions Ltd.	15.58%
Q Free Trading Ltd.	10.00%
Kamil Cislo	9.59%
ACATIS Investment Kapitalverw.	9.55%
Pawel Wyborski (CEO)	6.58%
Paulina Maria Zamojska	6.07%
ESOP 2018-2020E*	4.10%
Free float	18.21%

\* incentive scheme for key employees

## Financial calendar

Q4/18 report (exp.)	February 14, 2019
---------------------	-------------------

## Analyst

Adrian Kowolik  
a.kowolik@eastvalueresearch.com

## **Content**

<b>Investment Case</b> .....	2
<b>Valuation</b> .....	4
<b>Recent results</b> .....	8
<b>Financial forecasts</b> .....	10
<b>Business description</b> .....	12
<b>Market environment</b> .....	16
<b>Profit and loss statement</b> .....	20
<b>Cash Flow Statement</b> .....	22
<b>Financial ratios</b> .....	22
<b>Disclaimer</b> .....	23

## Investment Case

- QuarticON S.A. has developed a cloud-based software, which is powered by Artificial Intelligence and allows online shops and VOD services to deliver to each particular customer smart product and content recommendations. The company distributes it in the SaaS-model through own sales staff in Poland, UK and the Czech Republic and in the near term plans to integrate it with the most important E-Commerce platforms (Shopify, WooCommerce, Magento etc.) and providers of Email marketing solutions (e.g. GetResponse, Freshmail). Since 2015, when it started operations, QuarticON has signed contracts with c. 180 paying clients (>330 online shops with monthly revenues of PLN >1m) from 18 countries, with a customer churn of <1%. In 2017, >30% of the company's revenues were generated outside Poland.
- QuarticON's main competitive advantage is its simple integration, which only requires the addition of a script to the E-Commerce website and takes 5 min. The software works autonomously and without human interaction, resulting in significant cost savings and efficiency improvements. With QuarticON, for which clients pay either 4% of sales that are generated by the tool or a monthly flat fee, online shops and VOD providers are able to increase their sales by up to 15% and conversion rates by c. 10%.
- Forecasts for QuarticON's markets are set to benefit the company's development in the coming years. While in Europe the E-Commerce segment was worth EUR 534bn in 2017 and is expected to grow at a CAGR of 13.8% by 2021E, in Poland, which has the lowest share of online sales in total retail spend together with Italy and Spain, it is forecast to increase from USD 10bn in 2017 to USD 13bn. Personalisation and Artificial Intelligence technologies are currently two of the most important trends in the online retail sector. With regard to online marketing, it was worth USD 208.1bn worldwide in 2017 and is set to grow at a CAGR of 10% by 2020E. In Poland, it is expected to advance by 8.1% on average from PLN 4bn in 2017.
- In 9M/18, QuarticON generated sales of PLN 3.3m and EBIT of PLN -892k. While in 2018E we expect a sales growth of 31.2% y-o-y to PLN 4.6m and an EBIT of PLN -1.5m due to investments in marketing and product development, we believe that the PLN 7.6m proceeds (118.2k new shares) from the private placement in September 2018 will help QuarticON to accelerate growth from next year. In our view, additional sales staff in UK, Russia, Italy and Spain, new software modules e.g. personalized triggered emails, customer intelligence dashboard and the high operating leverage of its business model should help the company to grow sales to PLN 17.3m in 2020E. Regarding EBIT margin, we expect that it will reach 20% in 2020E and c. 30% in the long run.
- We have determined a 12-months PT (80% DCF, 20% peer group) for QuarticON of PLN 92.40 per share, which implies an upside of 65% at present and a BUY rating. The main USPs of QuarticON are in our view the following: (1) highly scalable, modular SaaS-based product, which is easy to use (2) a rapidly growing market and (3) likely start of dividend payouts or takeover in the next 3-5 years.

## SWOT Analysis

### Strengths

- AI- and cloud-based solution, which was completely developed in-house and allows the delivery of personalised product and content recommendations
- Target customers are online shops and providers of VOD services worldwide; low distribution costs as integration of QuarticON is easy and can be done by the client himself
- Contracts with customers have unlimited duration (on average 36 months); Very low customer churn of <1%
- From its clients, QuarticON receives a flat monthly fee or a percentage of sales that are generated by its software
- Due to high scalability the break-even on EBITDA level was already reached in Q1/18
- QuarticON is technological partner of Google in the area of AI-based solutions in E-Commerce (access to Google's sales force and software developers)
- Largest shareholders are a VC fund of a well-known Polish financial institution and entities of entrepreneurs with a successful track record in the advertising area (CBNC Capital Solutions, Q Free Trading)
- The CEO controls 6.6% of the shares; employees have in total a 10.7% stake in the company; all early-stage investors have a lock-up of 12 months for 90% of their shares (the WSE requires a minimum free float)

### Opportunities

- Establishing of local sales teams in new countries, especially UK, Russia, Spain, Italy; extension of the QuarticON solution by new modules such as personalised triggered emails and a customer dashboard, which should increase the ARPU; integration with all major Email and E-Commerce platforms in order to expand into the segment of small online shops
- QuarticON collects large volumes of E-Commerce data, which in the future can be used to create new revenue streams
- The E-Commerce segment in Europe is set to grow from EUR 534bn in 2017 at a CAGR 17-21E of 13.8%; the highest potential is in Poland, Turkey and Italy, where online sales have the lowest share in total retail spend; Personalisation and AI are top trends in E-Commerce worldwide
- The share of online advertising in total global ad spend is set to increase from 37.6% in 2017 to 44.6% in 2020E; the fastest-growing channels are those, which allow the best personalisation e.g. online video, social media, mobile
- Takeover by one of the large international media groups or Tech companies in the long run
- Regular dividends in the future due to high scalability and cash generation

### Weaknesses

- Weak protection of intellectual property rights (only label is protected, but not the algorithms)
- Listing in the illiquid NewConnect segment of the Warsaw Stock Exchange, where >90% of Polish investment funds and 100% of pension funds are not allowed to invest
- Dependence of results on clients' sales as only 2/3 of QuarticON's revenues stem from flat monthly fees

### Threats

- Risk relating to competition, especially by large international advertising or media groups
- Risk relating to theft of intellectual property
- Loss of key employees
- Risk that the GDPR EU regulation, which became law in May 2018, will make personalisation of product offers and content more difficult

## Valuation

Our valuation model derives a 12-months price target (80% DCF, 20% peer group) for QuarticON's shares of PLN 92.40, which implies a BUY rating at present. The model accounts for the PLN 7.62m capital raise in Q3/18.

### DCF model

Below are the key assumptions of our DCF calculation:

- (1) *Risk-free rate*: Current yield of Polish long-term government bonds with maturity in 2037E is 3.08% (Source: www.boerse-stuttgart.de)
- (2) *Beta*: Average unlevered beta for companies from the Software (System & Application) sector, which are based in Emerging Markets, is 1.46x (Source: www.damodaran.com)
- (3) *Target equity ratio*: 100%
- (4) *Equity risk premium (Poland)*: 7.14% (Source: www.damodaran.com)
- (5) *WACC*: 13.5%
- (6) *Growth in the terminal period*: 2%
- (7) Free cash flows are discounted to January 20, 2019

in PLNm	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
<b>Net sales</b>	<b>9.51</b>	<b>17.27</b>	<b>24.42</b>	<b>33.51</b>	<b>44.62</b>	<b>54.70</b>	<b>65.45</b>	<b>77.08</b>	<b>89.28</b>
(y-o-y change)	107.7%	81.6%	41.4%	37.2%	33.2%	22.6%	19.7%	17.8%	15.8%
<b>Operating profit</b>	<b>1.62</b>	<b>3.45</b>	<b>5.49</b>	<b>8.71</b>	<b>12.49</b>	<b>16.41</b>	<b>19.54</b>	<b>22.90</b>	<b>26.39</b>
(operating margin)	17.0%	20.0%	22.5%	26.0%	28.0%	30.0%	29.9%	29.7%	29.6%
<b>NOPLAT</b>	<b>1.62</b>	<b>2.80</b>	<b>4.45</b>	<b>7.06</b>	<b>10.12</b>	<b>13.29</b>	<b>15.83</b>	<b>18.55</b>	<b>21.38</b>
+ Depreciation & amortisation	1.27	1.78	2.32	2.43	2.55	2.68	2.81	2.95	3.10
= Net operating cash flow	2.89	4.58	6.76	9.49	12.67	15.97	18.64	21.50	24.48
- Total investments (Capex and WC)	-3.45	-3.55	-4.00	-4.61	-5.21	-5.13	-5.14	-5.79	-5.47
Capital expenditures	-2.27	-1.88	-2.42	-2.53	-2.65	-2.78	-2.92	-3.06	-3.20
Working capital	-1.18	-1.67	-1.58	-2.08	-2.56	-2.35	-2.23	-2.73	-2.27
= Free cash flow (FCF)	-0.56	1.03	2.76	4.88	7.46	10.84	13.50	15.71	19.01
<b>PV of FCF's</b>	<b>-0.50</b>	<b>0.80</b>	<b>1.90</b>	<b>2.96</b>	<b>3.99</b>	<b>5.11</b>	<b>5.60</b>	<b>5.74</b>	<b>6.12</b>
PV of FCFs in explicit period	31.72								
PV of FCFs in terminal period	59.85								
<b>Enterprise value (EV)</b>	<b>91.57</b>								
+ Net cash / - net debt (31 December 2018E)	2.32								
<b>Shareholder value</b>	<b>93.90</b>								
<b>Post-money shares outstanding (m)</b>	<b>1.24</b>								
		<b>Terminal EBIT margin</b>							
		<b>26.6%</b>	<b>27.6%</b>	<b>28.6%</b>	<b>29.6%</b>	<b>30.6%</b>	<b>31.6%</b>	<b>32.6%</b>	
<b>WACC</b>	<b>13.5%</b>								
Cost of equity	13.5%	9.5%	143.26	147.27	151.28	155.28	159.29	163.30	167.31
Pre-tax cost of debt	4.0%	10.5%	121.66	124.92	128.18	131.45	134.71	137.97	141.23
Normal tax rate	19.0%	11.5%	104.86	107.55	110.24	112.94	115.63	118.32	121.01
After-tax cost of debt	3.2%	12.5%	91.47	93.72	95.97	98.22	100.46	102.71	104.96
Share of equity	100.0%	13.5%	80.58	82.48	84.38	<b>86.28</b>	88.17	90.07	91.97
Share of debt	0.0%	14.5%	71.60	73.21	74.82	76.44	78.05	79.66	81.28
<b>Fair value per share in PLN</b>	<b>76.01</b>	15.5%	64.07	65.45	66.84	68.22	69.60	70.98	72.37
<b>Fair value per share in PLN (in 12 months)</b>	<b>86.28</b>								

Source: East Value Research GmbH

## Peer Group Analysis

We have compared QuarticON to six local and international companies, which offer software in the SaaS model. Our list of peers also includes seven non-listed companies, which offer similar solutions to QuarticON.

### Listed peers:

- (1) *LiveChat Software S.A.*: LiveChat Software S.A, which is based in Wroclaw/Poland, offers LiveChat, a tool for direct text communication between site visitors and its owners. It supports companies worldwide in the area of sales and customer services. In 2017/18, LiveChat generated sales of PLN 89.4m (2y CAGR of 29.9%).
- (2) *Shopify Inc.*: Shopify, which is based in Ottawa/Canada, offers a cloud-based multi-channel commerce platform for small and medium-sized businesses. Its platform provides merchants with a single view of business and customers in various sales channels, including Web and mobile storefronts, physical retail locations, social media storefronts, and marketplaces; and enables to manage products and inventory, process orders and payments, build customer relationships, leverage analytics and reporting, and access financing. In 2017, Shopify generated revenues of USD 673.3m (CAGR 15-17 of 81.1%).

Shopify is one of the E-Commerce platforms for smaller online shops, with which QuarticON would like to integrate its solution in the future.

- (3) *Workday Inc.*: Workday, which is based in Pleasanton/US, provides enterprise cloud applications for Finance and HR worldwide, which support among others the following functions: accounting, cash and asset management, employee expense and revenue management, projects, procurement, inventory, grants management, workforce lifecycle and organization management, employee benefits administration, goal and performance management, succession planning, and career and development planning. In fiscal-year 2017/18, Workday generated sales of USD 2.1bn (2y CAGR of 36.1%).
- (4) *ServiceNow Inc.*: ServiceNow, which is headquartered in Santa Clara/US, operates the ServiceNow platform that provides workflow automation, electronic service catalogs and portals, configuration management systems, data benchmarking, performance analytics, encryption, collaboration and development tools. In 2017, ServiceNow generated sales of USD 1.9bn (CAGR 15-17 of 38.7%).

- (5) *Zendesk Inc.*: Zendesk Inc., which was founded in 2007 and is based in San Francisco/US, offers SaaS-based products. Its flagship product is Zendesk Support, a system for tracking, prioritizing, and solving customer support tickets across various channels. The company also offers Zendesk Chat, a live chat software to connect with customers on websites, in applications, and on mobile devices; Zendesk Talk, a cloud-based call center software; Zendesk Guide, a knowledge base for customer self-service and support agent productivity; Zendesk Message, a customer messaging software; and Zendesk Explore that makes customer data accessible across an organization. In 2017, Zendesk had sales of USD 430.5m (CAGR 15-17 of 43.6%).
- (6) *Salesforce.com Inc.*: Salesforce.com, which is headquartered in San Francisco/US, develops enterprise cloud computing solutions with a focus on customer relationship management. The company offers Sales Cloud to store data, monitor leads and progress, forecast opportunities, and gain insights through analytics and relationship intelligence, as well as deliver quotes, contracts, and invoices. It also provides Service Cloud, which enables companies to deliver personalized customer service and support, as well as a field service solution that enables companies to connect agents, dispatchers, and mobile employees through a centralized platform. In addition, the company offers Marketing Cloud to plan and optimize one-to-one customer marketing interactions; Commerce Cloud, which enables companies to enhance conversion, revenue, and loyalty from their customers; and Community Cloud that enables companies to create and manage branded digital destinations. Further, it provides Quip collaboration platform, which combines documents, spreadsheets, apps, and chat with live CRM data. In fiscal-year 2017/18, Salesforce.com generated revenues of USD 10.5bn (2y CAGR of 25.4%).

Company	EV/Sales			EV/EBITDA			P/E			P/BVPS	EBITDA margin	Net gearing
	2018E	2019E	2020E	2018E	2019E	2020E	2018E	2019E	2020E	Latest	2017	Latest
LiveChat Software S.A. (PLN)	6.19x	5.68x	5.28x	8.70x	8.32x	7.96x	11.52x	11.28x	10.73x	17.39x	69.01%	-50.38%
Shopify Inc. (USD)	15.19x	10.90x	8.28x	405.55x	171.11x	81.29x	515.13x	218.75x	119.17x	10.54x	-4.84%	-94.38%
Workday Inc. (USD)	13.31x	10.64x	8.67x	79.56x	56.62x	42.53x	135.25x	106.69x	79.89x	20.62x	-7.76%	-21.35%
ServiceNow Inc. (USD)	12.83x	9.93x	7.83x	49.32x	35.81x	26.80x	81.00x	61.27x	45.84x	33.60x	0.77%	-79.53%
Zendesk Inc. (USD)	11.75x	8.93x	6.87x	200.33x	109.15x	60.78x	406.44x	203.22x	87.88x	17.19x	-21.00%	0.32%
Salesforce.com Inc. (USD)	8.89x	7.37x	6.18x	36.79x	29.53x	23.53x	58.52x	55.34x	43.89x	7.95x	8.56%	6.40%
<b>Median</b>	<b>12.29x</b>	<b>9.43x</b>	<b>7.35x</b>	<b>64.44x</b>	<b>46.22x</b>	<b>34.66x</b>	<b>108.13x</b>	<b>83.98x</b>	<b>62.87x</b>	<b>17.29x</b>	<b>-2.04%</b>	<b>-35.87%</b>
QuarticON S.A. (PLN)	14.60x	7.03x	3.87x	n.a	23.14x	12.77x	n.a	47.50x	25.77x	6.52x	-23.31%	-21.90%
<b>Premium/Discount</b>	<b>18.8%</b>	<b>-25.4%</b>	<b>-47.3%</b>	<b>n.a</b>	<b>-49.9%</b>	<b>-63.2%</b>	<b>n.a</b>	<b>-43.4%</b>	<b>-59.0%</b>			
<b>Fair equity value QuarticON S.A. (PLN)</b>	<b>102.98</b>											

Source: CapitalIQ, East Value Research GmbH

Privately-owned peers:

- (7) *Nosto Solutions Oy*: Nosto, which is based in Helsinki/Finland, develops an E-Commerce personalization solution for online retailers. It enables online retailers ranging from small business owners to global retail brands to recommend relevant products to their customers in real-time. The company offers Facebook and Instagram ads, onsite product recommendations, onsite pop-ups, and personalized emails. It has locations in New York, Los Angeles, Berlin, Paris, Stockholm and London. Nosto has >20,000 employees and clients from 168 countries. We estimate Nosto's revenues in 2017 at c. EUR 40m.
- (8) *Pleisty*: Pleisty, which was founded in 2011, is an E-Commerce recommendation engine that makes online shops more intelligent and easier to use. The AI-powered tool uses collaborative filtering, behavioral pattern detection and real-time event analysis to deliver customized product recommendations. The Pleisty team is mainly based in Bucharest/Romania and London/UK.
- (9) *Scarab Research*: Scarab Research, which is headquartered in Budapest/Hungary, has developed a machine learning technology that enables highly personalized online shopping experiences. The company is part of Emarsys Group, the largest independent marketing platform worldwide.
- (10) *Persoo*: Persoo, with offices in Prague/Czech Republic and San Francisco/US, provides personalized websites, search and emails, on-site offers as well as visitor profiles. However, its customers are mainly based in the Czech Republic.
- (11) *Retail Rocket*: Retail Rocket is a provider of customised product recommendations (incl. emails) with offices in Russia, the Netherlands, UK, Germany, Chile, India and South Korea.
- (12) *Certona Corporation*: Certona, which is headquartered in San Diego/US, offers AI-based real-time personalization solutions, which are used by >600 top E-Commerce websites in more than 70 countries. The company's Personalized Experience Management platform, powered by the Certona Predictive Cloud, increases engagement and conversions by leveraging one-to-one behavioral profiling, Big Data insights and real-time predictive analytics to present individualized content, promotional offers and product recommendations across all customer touchpoints.



(13) *RichRelevance Inc.*: RichRelevance, which is based in San Francisco/US, provides omnichannel personalization solutions to multinational companies. It offers Relevance Cloud, a personalization platform that includes RichRelevance Discover, which enables users to personalize search; RichRelevance Engage that maps individual shopper behavior against targeting and audience segmentation tools to enable marketers to personalize campaigns; RichRelevance Recommend, which collects data and uses a machine learning engine to select data-driven product recommendations for customer interactions; RichRelevance Build that gives instant access to API-based personalization tools to manage and route data from various sources and integrate personalization into different applications; and RichRelevance Xen AI that allows digital leaders to deploy strategies for making right decisions for different contexts.

### Price target calculation

Price target calculation	Fair Value	Weight
DCF model	76.01	80%
Peer group analysis	102.98	20%
<b>Weighted average in PLN (today)</b>	<b>81.40</b>	
<b>Weighted average in PLN (in 12-months)</b>	<b>92.40</b>	

Source: East Value Research GmbH

## Recent results

### Revenues and Profitability

In 9M/18, QuarticON generated total revenues of PLN 3.3m, of which c. 10% stemmed from providers of VOD services according to our estimates. 23.5% of sales were generated abroad. While in Q3/18 QuarticON acquired 18 new clients (8 in Poland, 8 in the Czech Republic and Slovakia, 2 in UK), in Poland it unfortunately lost two accounts, who decided to use solutions of its competitors. In 9M/18, EBIT and net income equaled PLN -892k and PLN -1.1m respectively. The largest cost positions were CoGS (PLN 2.3m), which comprise among others expenses relating to freelancers and data centers, full-time personnel (PLN 954k) and depreciation & amortization (PLN 793k).

in PLNm	9M/18
<b>Net sales</b>	<b>3.29</b>
<b>EBITDA</b>	<b>-0.10</b>
<i>EBITDA margin</i>	<i>-3.0%</i>
<b>EBIT</b>	<b>-0.89</b>
<i>EBIT margin</i>	<i>-27.1%</i>
<b>Net income</b>	<b>-1.08</b>
<i>Net margin</i>	<i>-32.7%</i>

Source: Company information, East Value Research GmbH

### Balance sheet and Cash flow

At the end of September 2018, QuarticON had equity of PLN 10.9m, which corresponded to a ratio of 67.5%. In Q3/18, the company raised PLN 7.62m gross (118.2k shares at PLN 64.5 per share) mainly from a German institutional investor at a post-money valuation of PLN 80m. Apart from equity, the largest balance sheet positions were cash of PLN 6.6m and other long-term assets of PLN 5.8m, which sum up the company's software development that has not yet been completed (in our view, this is due to tax reasons and because QuarticON uses Polish Accounting Standards, which are obligatory for all companies listed in the NewConnect segment of the WSE). As of 30 September 2018, QuarticON had interest-bearing debt of PLN 3.5m (100% short-term).

Between January and September 2018, QuarticON generated an operating cash flow of PLN -2.2m. Investments in working capital equaled PLN 2.2m. While cash flow from investing was zero, cash flow from financing equaled PLN 8.5m and reflected the private placement in September and new debt of PLN 1.4m. In total, the cash position increased by PLN 6.3m in 9M/18.

Due to the fact that the long-term assets will gradually be moved to intangible assets as they start generating revenues we believe that QuarticON's D&A expenses will significantly increase in the coming years. Moreover, we believe that within the next 12 months the company will move to the Main Market of the Warsaw Stock Exchange, where IFRS accounting standards are obligatory.

## **Financial forecasts**

### **Revenues and Profitability**

In our opinion, QuarticON has strong growth potential as (1) its modular, cloud-based software is easy to install by international customers and highly scalable (2) the global E-Commerce market is growing at a CAGR of >20% and (3) personalization is a major trend in the area of online retail according to e.g. PayU.

QuarticON generates revenues from monthly subscription fees or a share of sales, which its software helps to generate for the particular client. As subscriptions are better for the company in terms of stability of cash flows (sales of online shops are usually by far the highest in Q4), in our model we have assumed that the share of success-based sales will go down from 45% in 2017 to <11% in the long run. In case of subscription-based revenues, we have based our calculations on the following: (1) CAGR of 5% of the average monthly fee per license (PLN 1,800 in 2017) as QuarticON introduces new software modules (five are planned by 2020E) and acquires more and more international VOD platforms as clients (they generate higher monthly fees than online shops), and (2) growth of the average number of licenses per year from 89 in 2017 to 139 in 2018E and 2,277 in 2027E (CAGR 17-27E of 38.3%) especially due to additional sales staff in UK, Russia, Italy and Spain. Regarding the average gross margin, we have assumed that it will increase to max. 76% in the long run.

For full-year 2018E, we expect a revenue growth of 31.2% y-o-y to PLN 4.6m and an EBIT of PLN -1.5m as in our view in Q4/18 QuarticON increased spending on software development and staff in order to quickly increase scale of operations. However, the PLN 7.62m of proceeds from the capital increase in Q3/18 should allow the company to accelerate growth in the following years and reach positive EBIT and net income in 2019E. We believe that from next year QuarticON will generate >50% of its yearly revenues outside Poland.

in PLNm	2018E	2019E	2020E	2021E
<b>Sales-based fee</b>	<b>1.59</b>	<b>2.27</b>	<b>3.58</b>	<b>4.44</b>
<i>Share in total sales</i>	<i>34.6%</i>	<i>23.8%</i>	<i>20.7%</i>	<i>18.2%</i>
Gross margin	44.0%	65.0%	68.0%	70.0%
Sales fee	4.0%	4.0%	4.0%	4.0%
Sales (in PLN)	39,638,441	56,682,970	89,559,093	111,053,276
<b>Monthly flat fee</b>	<b>2.99</b>	<b>7.24</b>	<b>13.69</b>	<b>19.97</b>
<i>Share in total sales</i>	<i>65.4%</i>	<i>76.2%</i>	<i>79.3%</i>	<i>81.8%</i>
Gross margin	44.0%	65.0%	68.0%	70.0%
Average number of licenses	139	305	548	762
Average monthly fee per license	1,800	1,980	2,079	2,183
<b>Total sales</b>	<b>4.58</b>	<b>9.51</b>	<b>17.27</b>	<b>24.42</b>
change y-o-y	31.2%	107.7%	81.6%	41.4%

Source: East Value Research GmbH

in PLNm	2018E	2019E	2020E	2021E
<b>Net sales</b>	<b>4.58</b>	<b>9.51</b>	<b>17.27</b>	<b>24.42</b>
<b>EBITDA</b>	<b>-0.45</b>	<b>2.89</b>	<b>5.23</b>	<b>7.81</b>
<i>EBITDA margin</i>	<i>-9.8%</i>	<i>30.4%</i>	<i>30.3%</i>	<i>32.0%</i>
<b>EBIT</b>	<b>-1.51</b>	<b>1.62</b>	<b>3.45</b>	<b>5.49</b>
<i>EBIT margin</i>	<i>-33.0%</i>	<i>17.0%</i>	<i>20.0%</i>	<i>22.5%</i>
<b>Net income</b>	<b>-1.75</b>	<b>1.46</b>	<b>2.68</b>	<b>4.35</b>
<i>Net margin</i>	<i>-38.2%</i>	<i>15.3%</i>	<i>15.5%</i>	<i>17.8%</i>

Source: East Value Research GmbH

### CAPEX and Working Capital

In our view, QuarticON will concentrate its investment activity in the coming years on extension of existing software with new modules and establishing sales infrastructure in new markets, especially in UK, Russia, Italy and Spain. We expect that gross CAPEX in 2018E-2020E will reach in total PLN 6.9m and in the long run c. 5% of yearly sales. In terms of working capital, we believe that the cash conversion cycle will increase from 9.5 days in 2017 to 30 days in the long run.

## Business description

QuarticON S.A., which is based in Warsaw and is Google's technological partner when it comes to AI in E-Commerce, developed a SaaS-based solution that supports sales and marketing processes of online shops (especially medium and larger ones with monthly sales of min. PLN 1m) and Video-On-Demand services. The tool, which is based on QuarticON's own algorithms, delivers personalised product and content recommendations, which result in up to 15% higher sales and c. 10% higher conversion rates for the client. While the company is the dominant market player in Poland, Czech Republic, Slovakia and the Baltics, its systems are also used by clients e.g. in the US, Mexico, Brasil and Saudi-Arabia. QuarticON, which currently has 47 employees (thereof: 25 IT staff and 8 sales people), has been listed in the NewConnect segment of the Warsaw Stock Exchange since January 2019.

## Company history

2012: Foundation of Quartic Sp. z.o.o by a group of data analysts and software developers, who at the beginning only provided consulting and training services.

Introduction of customized ads.

Investment by the Polish digital advertising company Codemedia S.A.

2015: Completion of development work on QuarticON, a real-time system for data analysis and generation of product recommendations.

Average number of paying clients reaches 80 (94 online shops on average).

2016: Investment of PLN 5m (20% stake) by Venture FIZ, a VC fund that is owned by a well-known Polish financial group.

The average number of paying clients reaches 100 (186 online shops on average, thereof 11 from the Czech Republic).

First client for the new software module for providers of VOD services.

2017: The average number of paying clients reaches 154 (335 online shops on average, thereof 57 from outside Poland).

QuarticON acquires Player.pl, a Top 3 provider of VOD services in Poland, as a customer.

The company initiates work on a software module for Email Automation.

2018: Transformation to the joint-stock company QuarticON S.A.

Market entry in UK.

Creation of a Customer Success department with 6 people, who are supposed to guarantee a professional onboarding of new clients and their service.

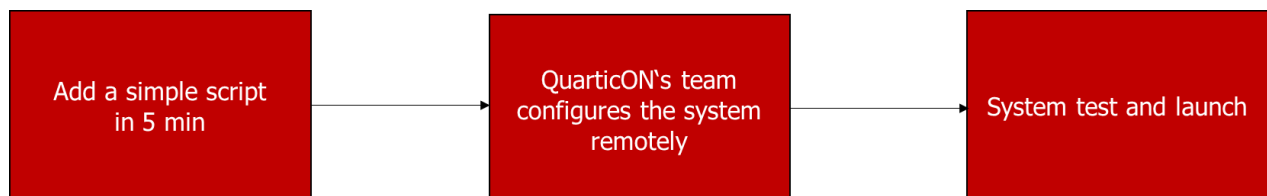
### **How does QuarticON's system work and how does it generate revenues?**

QuarticON's cloud-based software is based on advanced Artificial Intelligence and Machine Learning technology, which allows to collect and analyze c. 1 Terrabyte of data on client behavior per day by >2,000 machines. The system creates shopping profiles and uses proprietary algorithms to deliver in real-time the best product or content offer for each individual customer. QuarticON's solution is available in two different modules for online shops (Supreme) and VOD services (Enterprise), which in 2018 were both complemented by a module for personalisation of emails.

The main advantages for customers include

- 1) Simple installation (only requires a Java script), which can be done quickly (in 5 min) by the client himself and does not require advanced IT knowledge.
- 2) Possibility to use on PC and mobile devices and integrate with the most important shopping and email platforms e.g. Shopify, Magento, Freshmail and GetResponse.
- 3) Flexible payment options (either a fixed monthly fee or 4% of sales generated by the QuarticON solution) and
- 4) Full automation, which reduces clients' operating costs.

### **QuarticON – Installation process**



Source: Company information, East Value Research GmbH

## QuarticON's pricing models

Revenue sharing	Flat fee
Fee value: 4% of sales through recommendations	Fee value: Negotiable
Min. amount: USD 400/month	Min. amount: USD 400/month
Monthly payment	Monthly payment
No setup fee	No setup fee
Seasonality: +20% in Q4	Fixed fee the whole year

Source: Company information, East Value Research GmbH

To date, the QuarticON system has been installed at c. 180 paying clients (>330 online shops) in 18 countries worldwide. References include among others Neckermann (Travel), Leroy Merlin (Do-it-yourself stores), Super-Pharm (Pharmacies), Player (VOD service), Tous (Online jewelry retailer), Gino Rossi (Shoes and bags) and Wittchen (Luxury leather goods, accessories and clothing).

QuarticON's strategy foresees the development of five new modules for its software by 2020E e.g. personalized triggered emails, a customer intelligence dashboard.

### How does the distribution strategy look like?

QuarticON targets its software at online shops and Video-On-Demand services. Its main distribution channels are own sales staff (currently, in Poland, the Czech Republic and UK, but in the near future also in Spain, Italy and Russia) and a partner network (especially E-Commerce agencies). The contracts, which c. 80% of new clients sign after a 14-31 days trial period, usually have an unlimited duration. So far, the customer churn has been <1%.

## **Management**

*Pawel Wyborski (CEO and Co-founder):* Pawel Wyborski is CEO and Co-founder of QuarticON. He graduated with a Master's degree in Information Technology from the Warsaw University of Technology. Before founding QuarticON, he helped to establish the data mining company Data Force Group and worked as Project Manager in the area of CRM at the largest Polish telecommunication company Orange Poland.

*Michal Giergielewicz (CFO):* Michal Giergielewicz is CFO of QuarticON. Before joining the company, he worked among others as Group Controlling Director at one of the largest retail and wholesale groups in Poland and Member of the Supervisory Board at two Internet and E-Commerce companies. Mr Giergielewicz graduated with a Master's degree in Economics from the University in Szczecin. He also completed a post-graduate degree in Value-Based Management at the Warsaw School of Economics.



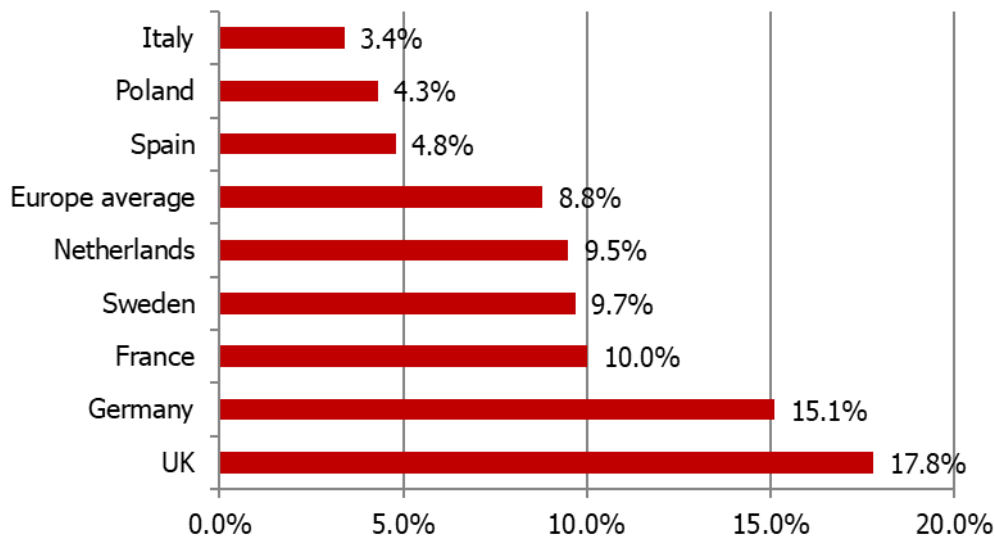
## Market environment

### The global E-Commerce market

According to eMarketer, in 2017 retail E-Commerce sales worldwide reached USD 2.3tr, which corresponded to a 24.8% increase y-o-y. The share of E-Commerce in total retail sales, which amounted to USD 22.6tr (+5.8% y-o-y), equaled c. 10%. While in Asia-Pacific it amounted to 14.6%, in digitally maturing markets of the CEE region, parts of Southeast Asia, Latin America and Middle East & Africa online retail accounted for <5% of overall retail spend.

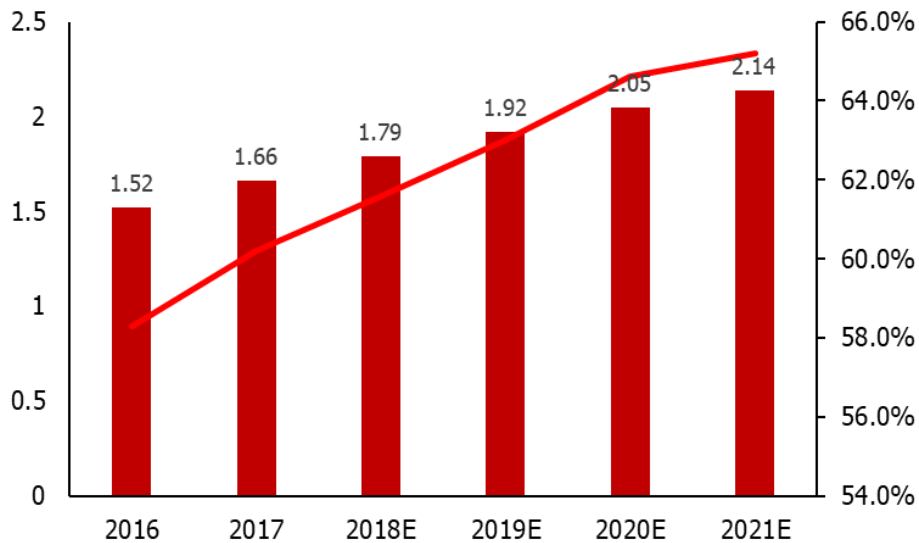
The main growth driver in 2017 was M-Commerce, whose volume grew by 40.3% y-o-y to USD 1.4tr worldwide. It is particularly popular in countries such as China, Japan, South Korea, the UK and the US, with China alone accounting for 67.1% of M-Commerce sales worldwide.

### Share of online sales in the total retail market - Data for European countries



Source: Retailresearch.org (data from 2017), East Value Research GmbH

## Digital buyers +14 years worldwide (in bn) and their share in total internet users



Source: eMarketer, East Value Research GmbH

In 2018E, the volume of the global E-Commerce segment was expected to reach USD 2.8tr (M-Commerce: USD 1.8tr or 63.5% of total E-Commerce vs. 58.9% in 2017), which would correspond to a 23.3% increase y-o-y. Due to rapid growth in Asia-Pacific, which is home to >50% of the world's online buyers, the share of E-Commerce in total retail spend is supposed to increase from 10.2% in 2017 to 12%. By 2021E, eMarketer forecasts the E-Commerce segment to reach a volume of USD 4.9tr (CAGR 17-21E of 20.6%), fuelled by M-Commerce, which is expected to account for USD 3.6tr or 72.9% of the total then.

In Europe, E-Commerce Europe estimates that the value of the online retail segment reached EUR 534bn in 2017 (+11% y-o-y) and EUR 602bn (+13%) in 2018E. While 77% of companies with >10 employees were online in 2016, only 18% of them sold through their website. The largest regional E-Commerce markets were the UK (E-Commerce penetration of 87%) and Germany (82%). In Poland, only 45% of people purchased goods online vs. an European average of 57%.

For the period 2018E-2021E, ecommercenews.eu forecasts a CAGR for the European E-Commerce segment of 13.8%. Over the same period, the Mobile channel is forecast to grow at 25.7% on average and the share of international purchases from c. 20% to >33%, fueled by new EU regulation. While the fastest growing markets are expected to be the Netherlands (CAGR 17-21 of 14%), Italy (14%) and Turkey (13%), online retail sales in the Eastern European countries Poland and Russia are forecast to increase at 8% on average. By 2021E, the E-Commerce segment in Poland is forecast to reach a value of USD 13bn.

**E-Commerce forecasts for selected European countries 2017-2021E**

Country	E-Commerce CAGR 17-21E
Belgium	7%
Denmark	10%
France	9%
Germany	11%
Italy	14%
Netherlands	14%
Norway	10%
Poland	8%
Russia	8%
Spain	7%
Sweden	9%
Turkey	13%
UK	10%

Source: ecommercenews.eu, East Value Research GmbH

**Main trends in E-Commerce**

According to PayU, the following are currently the most important trends in E-Commerce (starting with the most relevant):

- 1) Personalisation and customer experience
- 2) Mobile
- 3) Machine Learning and Artificial Intelligence (helps to automate and simplify sales)
- 4) Increasing role of digital marketing (could be boosted in Poland by the new law forbidding stationary retail activity on Sundays)
- 5) Same-day delivery (currently, only 6% of European online stores do this)
- 6) Reactivation of traditional stores (online shops open their own offline stores)
- 7) Online marketplaces (e.g. Amazon, Allegro, Alibaba)
- 8) Combination of B2B and B2C (business clients will receive the same services as retail customers)
- 9) Chatbots (fully-automated communication with clients)
- 10) Social commerce (sale of goods through social media such as Facebook)

**Forecasts for online advertising worldwide and in Poland**

In 2017, internet advertising overtook advertising on TV to become the world's largest advertising medium, accounting for 37.6% or USD 208.1bn of total ad expenditure. Thereof, Mobile made up 52.6% of total online ad spend or USD 107bn. While reaching a mature stage of development, Zenith forecasts that internet ad spend will continue to be the strongest advertising medium worldwide, with a CAGR of 10% in 2017-2020E. In 2020E, its share in total advertising spending should reach 44.6% and Mobile should account for 65.6% of total online ads.

Display (incl. banners, social media as well as online video that offers precise targeting and the potential for personalisation of marketing messages), which has benefitted from the transition to programmatic buying (advertiser can decide, which publisher should show his ad in a kind of exchange), is expected to be the fastest-growing internet sub-category, with a CAGR 17-20E of 13%. Paid search (SEM) and classified ads are supposed to follow suit, with a CAGR 17-20E of 8% and 7% respectively. The driving force of online advertising will likely remain ads on mobile devices, whose volume is supposed to grow at an average rate of 18.9% by 2020E.

In Poland, the online advertising segment reached PLN 4bn in 2017 (+9.3% y-o-y), according to IAB and PwC. >70% of growth was generated by online video and social media. For 2018E, Zenith expects a yearly growth of 8.1%.

## Profit and loss statement

in PLNm	2017	2018E	2019E	2020E	2021E	2022E
<b>Revenues</b>	<b>3.49</b>	<b>4.58</b>	<b>9.51</b>	<b>17.27</b>	<b>24.42</b>	<b>33.51</b>
Change of inventories	1.02	0.00	0.00	0.00	0.00	0.00
<b>Total output</b>	<b>4.50</b>	<b>4.58</b>	<b>9.51</b>	<b>17.27</b>	<b>24.42</b>	<b>33.51</b>
Cost of goods sold	-2.60	-2.56	-3.33	-5.53	-7.32	-9.22
<b>Gross profit</b>	<b>1.90</b>	<b>2.01</b>	<b>6.18</b>	<b>11.74</b>	<b>17.09</b>	<b>24.30</b>
Other operating income	0.01	0.00	0.00	0.00	0.00	0.00
Personnel costs	-2.36	-2.41	-2.89	-3.47	-4.16	-4.79
Other operating expenses	-0.60	-0.06	-0.40	-3.04	-5.12	-8.36
<b>EBITDA</b>	<b>-1.05</b>	<b>-0.45</b>	<b>2.89</b>	<b>5.23</b>	<b>7.81</b>	<b>11.14</b>
Depreciation & amortisation	-1.34	-1.06	-1.27	-1.78	-2.32	-2.43
<b>EBIT</b>	<b>-2.39</b>	<b>-1.51</b>	<b>1.62</b>	<b>3.45</b>	<b>5.49</b>	<b>8.71</b>
Net financial result	-0.16	-0.24	-0.16	-0.14	-0.12	-0.10
<b>EBT</b>	<b>-2.55</b>	<b>-1.75</b>	<b>1.46</b>	<b>3.31</b>	<b>5.37</b>	<b>8.61</b>
Income taxes	0.00	0.00	0.00	-0.63	-1.02	-1.64
Minorities	0.00	0.00	0.00	0.00	0.00	0.00
<b>Net income / loss</b>	<b>-2.55</b>	<b>-1.75</b>	<b>1.46</b>	<b>2.68</b>	<b>4.35</b>	<b>6.98</b>
EPS	-2.39	-1.42	1.18	2.17	3.52	5.65
DPS	0.00	0.00	0.00	0.00	1.10	1.90
<b>Share in total output</b>						
Revenues	77.45 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Change of inventories	22.55 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
Total output	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Cost of goods sold	-57.76 %	-56.00 %	-35.00 %	-32.00 %	-30.00 %	-27.50 %
Gross profit	42.24 %	44.00 %	65.00 %	68.00 %	70.00 %	72.50 %
Other operating income	0.28 %	0.02 %	0.01 %	0.01 %	0.00 %	0.00 %
Personnel costs	-52.45 %	-52.64 %	-30.41 %	-20.10 %	-17.06 %	-14.29 %
Other operating expenses	-13.37 %	-1.22 %	-4.22 %	-17.60 %	-20.97 %	-24.96 %
EBITDA	-23.31 %	-9.84 %	30.38 %	30.31 %	31.98 %	33.25 %
Depreciation & amortisation	-29.83 %	-23.16 %	-13.38 %	-10.31 %	-9.48 %	-7.25 %
EBIT	-53.14 %	-33.00 %	17.00 %	20.00 %	22.50 %	26.00 %
Net financial result	-3.45 %	-5.24 %	-1.68 %	-0.81 %	-0.49 %	-0.30 %
EBT	-56.59 %	-38.24 %	15.32 %	19.19 %	22.01 %	25.70 %
Income taxes	0.00 %	0.00 %	0.00 %	-3.65 %	-4.18 %	-4.88 %
Minorities	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
Net income / loss	-56.59 %	-38.24 %	15.32 %	15.54 %	17.83 %	20.82 %

## Balance Sheet

in PLNm	2017	2018E	2019E	2020E	2021E	2022E
<b>Assets</b>						
Cash and equivalents	0.25	3.62	2.91	3.95	6.73	10.35
Short-term financial assets	0.00	0.00	0.00	0.00	0.00	0.00
Inventories	0.00	0.00	0.00	0.00	0.00	0.00
Trade accounts and notes receivables	0.63	0.87	1.78	3.21	4.50	6.11
Other current assets	0.27	0.36	0.74	1.35	1.90	2.61
<b>Current assets, total</b>	<b>1.14</b>	<b>4.85</b>	<b>5.43</b>	<b>8.51</b>	<b>13.12</b>	<b>19.07</b>
Property, plant and equipment	0.10	0.07	0.07	0.07	0.07	0.08
Other intangible assets	3.12	2.40	8.20	9.30	9.40	9.50
Goodwill	0.00	0.00	0.00	0.00	0.00	0.00
Other long-term assets	3.36	5.80	1.00	0.00	0.00	0.00
Deferred tax assets	0.00	0.00	0.00	0.00	0.00	0.00
<b>Non-current assets, total</b>	<b>6.58</b>	<b>8.27</b>	<b>9.27</b>	<b>9.37</b>	<b>9.47</b>	<b>9.58</b>
<b>Total assets</b>	<b>7.72</b>	<b>13.11</b>	<b>14.70</b>	<b>17.88</b>	<b>22.60</b>	<b>28.65</b>
<b>Liabilities</b>						
Trade payables	0.40	0.48	0.60	0.96	1.22	1.46
Other short-term liabilities	0.40	0.52	0.53	0.53	0.54	0.54
Short-term financial debt	0.53	1.30	1.10	0.90	0.70	0.50
Provisions	0.15	0.19	0.40	0.73	1.04	1.42
<b>Current liabilities, total</b>	<b>1.48</b>	<b>2.50</b>	<b>2.63</b>	<b>3.12</b>	<b>3.49</b>	<b>3.92</b>
Long-term financial debt	1.50	0.00	0.00	0.00	0.00	0.00
Other long-term liabilities	0.00	0.00	0.00	0.00	0.00	0.00
Deferred tax liabilities	0.00	0.00	0.00	0.00	0.00	0.00
<b>Long-term liabilities, total</b>	<b>1.50</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Long-term financial debt	1.50	0.00	0.00	0.00	0.00	0.00
<b>Total liabilities</b>	<b>2.98</b>	<b>2.50</b>	<b>2.63</b>	<b>3.12</b>	<b>3.49</b>	<b>3.92</b>
<b>Shareholders equity, total</b>	<b>4.74</b>	<b>10.61</b>	<b>12.07</b>	<b>14.75</b>	<b>19.11</b>	<b>24.72</b>
Minority interests	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total equity and liabilities</b>	<b>7.72</b>	<b>13.11</b>	<b>14.70</b>	<b>17.88</b>	<b>22.60</b>	<b>28.65</b>

## Cash Flow Statement

in PLNm	2017	2018E	2019E	2020E	2021E	2022E
Net income / loss	-2.55	-1.75	1.46	2.68	4.35	6.98
Depreciation	1.34	1.06	1.27	1.78	2.32	2.43
Change of working capital	0.52	-0.12	-1.18	-1.67	-1.58	-2.08
Others	-0.05	-0.05	-0.21	-0.33	-0.30	-0.39
<b>Net operating cash flow</b>	<b>-0.73</b>	<b>-0.86</b>	<b>1.34</b>	<b>2.47</b>	<b>4.78</b>	<b>6.94</b>
<b>Cash flow from investing</b>	<b>-1.65</b>	<b>-2.75</b>	<b>-2.27</b>	<b>-1.88</b>	<b>-2.42</b>	<b>-2.53</b>
Free cash flow	-2.38	-3.61	-0.93	0.58	2.36	4.41
<b>Cash flow from financing</b>	<b>1.51</b>	<b>6.98</b>	<b>0.22</b>	<b>0.46</b>	<b>0.41</b>	<b>-0.79</b>
Change of cash	-0.87	3.38	-0.71	1.04	2.77	3.62
Cash at the beginning of the period	1.11	0.25	3.62	2.91	3.95	6.73
Cash at the end of the period	0.25	3.62	2.91	3.95	6.73	10.35

## Financial ratios

Fiscal year	2017	2018E	2019E	2020E	2021E	2022E
<b>Profitability and balance sheet quality</b>						
Gross margin	42.24%	44.00%	65.00%	68.00%	70.00%	72.50%
EBITDA margin	-23.31%	-9.84%	30.38%	30.31%	31.98%	33.25%
EBIT margin	-53.14%	-33.00%	17.00%	20.00%	22.50%	26.00%
Net margin	-56.59%	-38.24%	15.32%	15.54%	17.83%	20.82%
Return on equity (ROE)	-56.07%	-22.80%	12.84%	20.01%	25.71%	31.83%
Return on assets (ROA)	-31.00%	-11.52%	10.99%	15.79%	19.79%	24.70%
Return on capital employed (ROCE)	-38.35%	-14.23%	13.39%	18.96%	23.29%	28.54%
Economic Value Added (in PLNm)	-3.24	-2.94	-0.01	0.80	1.87	3.72
Net debt (in PLNm)	1.79	-2.32	-1.81	-3.05	-6.03	-9.85
Net gearing	37.67%	-21.90%	-15.01%	-20.70%	-31.54%	-39.83%
Equity ratio	61.40%	80.93%	82.09%	82.52%	84.56%	86.30%
Current ratio	0.77	1.94	2.06	2.72	3.76	4.86
Quick ratio	0.59	1.80	1.78	2.29	3.22	4.19
Net interest cover	-15.42	-6.29	10.10	24.67	45.78	87.13
Net debt/EBITDA	-1.70	5.16	-0.63	-0.58	-0.77	-0.88
Tangible BVPS	4.45	8.59	9.77	11.94	15.47	20.02
CAPEX/Sales	-47.24%	-60.08%	-23.92%	-10.90%	-9.90%	-7.56%
Working capital/Sales	2.78%	4.71%	14.64%	17.72%	19.02%	20.06%
Cash Conversion Cycle (in days)	9	0	2	4	7	9
<b>Trading multiples</b>						
EV/Sales	19.16	14.60	7.03	3.87	2.74	1.99
EV/EBITDA	-63.67	-148.34	23.14	12.77	8.56	6.00
EV/EBIT	-27.93	-44.25	41.36	19.36	12.17	7.67
P/Tangible BVPS	12.60	6.52	5.73	4.69	3.62	2.80
P/E	-23.43	-39.51	47.50	25.77	15.89	9.92
P/FCF	-29.10	-19.19	-74.28	118.46	29.26	15.69

## Disclaimer

This document (prepared on 18 January 2019) does neither constitute an offer nor a request to buy or sell any securities. It only serves informational purposes. This document only contains a non-binding opinion on the mentioned securities and market conditions at the time of its publication. Due to the general character of its content this document does not replace investment advice. Moreover, in contrast to especially approved prospectuses, it does not provide information, which is necessary for taking investment decisions.

All information, which have been used in this document, and the statements that have been made, are based on sources, which we think are reliable. However, we do not guarantee their correctness or completeness. The expressions of opinion, which it contains, show the author's personal view at a given moment. These opinions can be changed at any time and without further notice.

A liability of the analyst or of the institution, which has mandated him, should be excluded from both direct and indirect damages.

This confidential study has only been made available to a limited number of recipients. A disclosure or distribution to third-parties is only allowed with East Value Research' approval. All valid capital market rules, which relate to the preparation, content as well as distribution of research in different countries, should be applied and respected by both the supplier and recipient.

Distribution in the United Kingdom: In the UK this document shall only be distributed to persons who are described in Section 11 (3) of the Financial Services Act 1986 (Investment Advertisements) (Exemptions) Order 1996 (as amended). This research may not be distributed and forwarded directly or indirectly to any other group of individuals. The distribution of this document in other international jurisdictions may be restricted by law and individuals who possess this study should inform themselves about any existing restrictions and comply with them.

Neither this document nor any copy of it may be taken or sent to the United States of America, Canada, Japan or Australia or distributed, directly or indirectly, in the United States of America, Canada, Japan or Australia or to any resident thereof. Any failure to comply with these restrictions may constitute a violation of United States, Canadian, Japanese or Australian securities laws or the law of any other jurisdiction.

Declaration according to § 34b WpHG and FinAnV on potential conflicts of interest (As of July 24, 2013): East Value Research has been commissioned to prepare this report by QuarticON S.A..



Declaration according to § 34b WpHG and FinAnV on additional disclosures (As of July 24, 2013):

It is the sole decision of East Value Research GmbH whether and when a potential update of this research will be made.

Relevant basis and measures of the valuations, which are included in this document:

The valuations, which are the basis for East Value Research` investment recommendations, are based on generally-accepted and widely-used methods of fundamental analysis such as the Discounted-Cash-Flow method, Peer Group comparison, or Sum-of-the-Parts models.

The meaning of investment ratings:

Buy: Based on our analysis, we expect the stock to appreciate and generate a total return of more than 10% over the next twelve months

Add: Based on our analysis, we expect the stock to appreciate and generate a total return between 0% and 10% over the next twelve months

Reduce: Based on our analysis, we expect the stock to cause a negative return between 0% and -10% over the next twelve months

Sell: Based on our analysis, we expect the stock to cause a negative return exceeding -10% over the next twelve months

The respective supervisory authority is:

Bundesanstalt für Finanzdienstleistungsaufsicht  
Lurgiallee 12  
60439 Frankfurt