

Qt Group

Company report

1/2019

Heading for scalable growth

Qt Group is well positioned for growth, as many industries are on the brink of technological transitions. In our view, it is still a good time to jump on board the growth story as market trends continue to gain momentum, Qt's investments are proven and bearing fruit, but still the market has somewhat neglected the company as it is still burdened by earnings' in the red due to the growth investments.

The digital society is being built using tools by Qt

Qt develops, productizes, and licenses software development tools based on Qt technology by means of open sourced and commercialized licenses. The company's products are used to develop applications for embedded devices as well as graphic user interfaces for desktop, mobile, and embedded devices. An increasing amount of Qt's customers' industries are facing a turning point. The value creation for their products is transitioning from the device to software and services, which is why the customers are in need of knowhow and tools to develop graphic interfaces. The Qt cross-platform development framework as a technology enables this transition. The business model is highly scalable. It is based on licenses sold to developers, and distribution licenses, where the income is based on sales volumes of the end devices that use Qt technology.

Lack of developers and graphic user interfaces gaining popularity drive market growth

Many of the industries in which Qt Group's customers operate are at the verge of making long term choices on technology, and they are searching for a competitive edge and differentiating factors by introducing software and digital services as part of their products. This means that graphic user interfaces will continue to gain popularity in embedded devices, for which Qt offers the development tools required. The software industry is also in constant need of more efficient and powerful tools, as the demand for software developer's exceeds supply. In the embedded devices' market, the competitive field is still largely open and fragmented, which is why Qt Group is well positioned to take advantage of these amplifying market trends. According to a user survey conducted by Forrester and user interviews conducted by Inderes, the Qt framework is a strong choice for technology in especially embedded devices, which is still a very early stage growth market.

Strategy has thus far progressed as planned

The current form of Qt Group was born in 2012, when Digia acquired the technology from Nokia for 4 MEUR. Thereafter, as an independent business, Qt has built a global sales network from essentially scratch, reached 40 MEUR in revenue and has a market cap of 210 MEUR. The company is targeting 100 MEUR in revenue for 2021, and an operating profit margin of over 15%. Our confidence in the validity of these targets is supported by the fact that the strategy thus far has progressed exactly as planned. Correspondingly, the growth strategy risks have been alleviated by the proven successful construction of the global sales organization, as well as the proven competitive success of the underlying technology, illustrated by securing new significant customerships. The sales cycles are however long, and income from distribution licenses (run-time) is recognized only when the customers end product enters the manufacturing phase, so full realization of the potential of the company requires investors to remain patient.

Valuation offers upside as Qt Group progresses towards targets

We expect Qt Group's profile to become more and more intriguing as the company enters the scalable development phase next year, and regains profitability. Sales have a long lead time, and the strong new customer acquisition in license sales reflects in distribution license and maintenance income over the next few years. We expect revenue to grow by 27 %, 25 %, and 30 % in the years 2018-2020. We expect the EBIT margin to be -5 %, 2 %, and 16 % in the same time frame. The share is priced with a 4.0x EV/Sales multiple (2018e). The current valuation holds a lot of growth expectancies, but simultaneously offers strong returns, providing the targets set in the strategy period are met (100 MEUR revenue in 2021).

Analyst



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Recommendation and target price

Buy

Previous: Buy



10.0 EUR

Previous : 10.0

Share price : 8.3 EUR

Potential 20.5 %

Key figures

	2017	2018e	2019e	2020e
Revenue	36	46	57	74
Growth-%	12 %	27 %	25 %	29 %
EBIT adj.	-3,2	-2,1	1,1	11,0
EBIT-% adj.	-8,8 %	-4,5 %	2,0 %	14,9 %
Ne Income	-3,2	-2,2	0,8	9,9
EPS (oik.)	-0,14	-0,09	0,03	0,40

P/E (adj.)	neg.	neg.	>100	20,8
Dividend yield -%	0,0 %	0,0 %	0,0 %	1,9 %
EV/EBIT (oik.)	neg.	neg.	>100	15,0
EV/EBITDA	neg.	neg.	75,2	13,7
EV/Sales	3,1	4,1	3,2	2,2

Source: Inderes

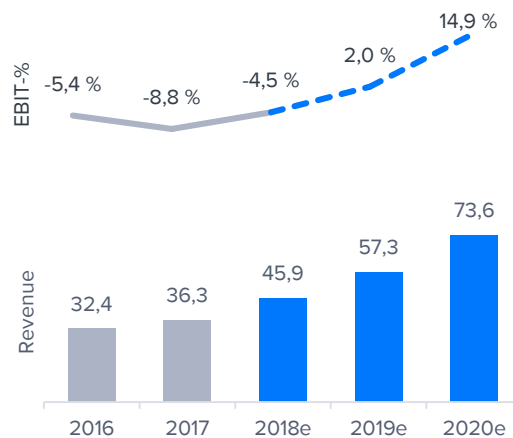
Source: Inderes

Share price development

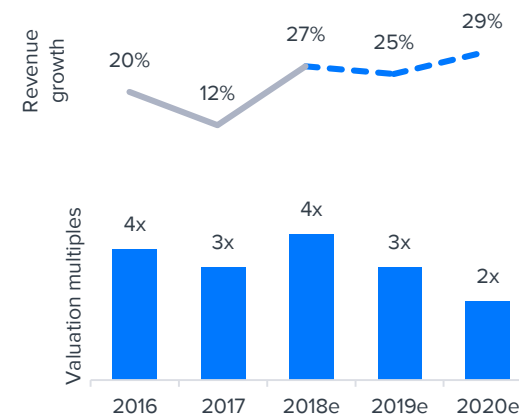


Source: Thomson Reuters

Revenue and EBIT



Growth-% and EV/Sales



Value drivers

- Mature and competitive product and technology
- Markets have strong growth drivers
- Competitive field is still open in embedded devices
- Distribution licenses have scalable potential
- Strategic value of the technology
- The growth strategy has progressed according to plan



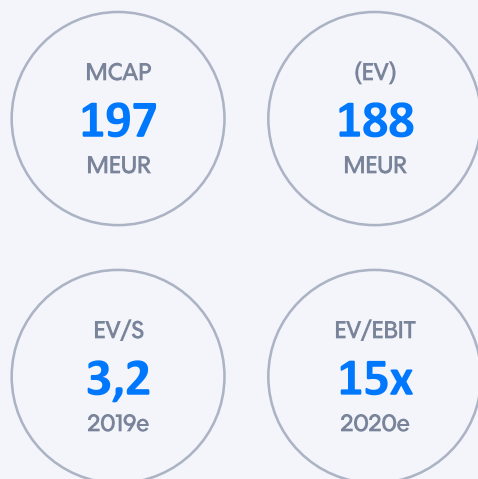
Risk factors

- Failure in investments into sales
- Poor visibility into distribution licenses' income
- Longevity of competitive edge as competing technologies emerge and develop
- Weakening of the Qt developer community



Valuation

- Strong sales growth supports valuation on short term
- Distribution licenses have strong scalable potential
- Earnings in the black and improving profitability offer support starting in 2019-2020
- Potential acquisition target



Source: Inderes

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Qt Group in short

Qt develops, commercializes, and licenses software development tools based on the Qt technology. The company has both commercial as well as open-source based licenses.

2012

Digia acquires Qt from Nokia

2016

Spin-off from Digia

36 MEUR (+12 % vs. 2016)

2017 Revenue

-3 MEUR (-9 % of revenue)

2017 Operating profit

12

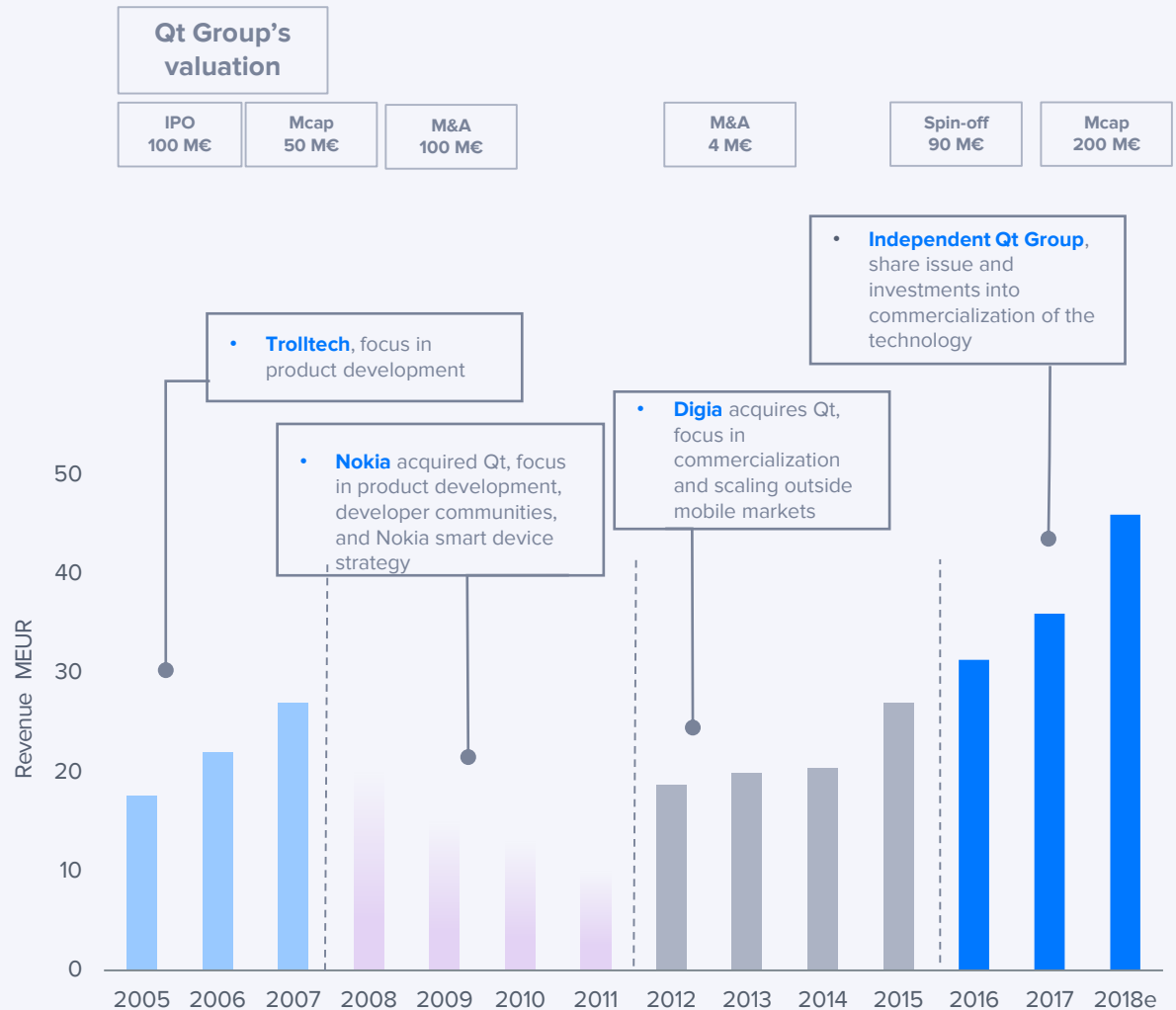
Countries with operating locations

296

Personnel at 2018 Q3

64% / 36%

License/ services and maintenance revenue in 2017



Company description and business model 1/4

Company description

Software development tools independent from platforms

The Qt company offers software developers with a software development environment, which is not burdened by platform constraints. Qt is a cross-platform application framework and widget toolkit for creating interfaces and applications that run natively. These tools enable the customers' software developers to improve their efficiency, and helps them launch their products faster. Qt is aimed at both visual design, as well as coding. The end users are software developers, who develop user interfaces, or service designers. Consumers can see the technology implemented in for instance LG's television interfaces, or the interfaces of new cars' multimedia systems. Touchscreen based user interfaces' increasing demand is one of the megatrends driving demand for Qt. By utilizing the technology, it is possible to develop applications for embedded devices, workstations, and mobile applications.

Due to Qt's development environment, customers can typically accrue saving in R&D, as they are often typically in a situation which requires a variety of complicated development tools or platforms, which all require specialized skill sets to operate. Due to the cross-platform nature of Qt framework, the customers don't need to develop multiple iterations for different platforms, which also improves the time-to-market. Additionally, Qt's embedded device customers have generated savings compared to HTML, both in terms of development costs' and through lower hardware requirements. The estimates are based on Forrester's total economic impact study.

Due to Qt's long history, the service is mature and competitive, especially in the embedded devices' market. Due to the technologic transition in many industries created by large internet companies, Qt's platform independence and C++ -programming language derived

speed and efficiency are the product's leading competitive advantages.

Qt's customer base is very diverse. Qt framework software is in use in over 70 industries, and according to the company, has a userbase of over one million users. The company has operating locations in Finland, Norway, Germany, the US, Russia, China, Japan, and Korea. At the end of Q3'18, Qt employed 296 people, of whom most work in product development, sales, and consulting.

Revenue breakdown

Qt's revenue in 2017 was 36 MEUR, with YoY growth of 12%, whilst in 2018 comparable revenue has increased by 32% during the first three quarters. Through growth in license sales and increased sales' exertions, the company is looking to break the 100 MEUR revenue barrier in 2021. Qt seeks to grow substantially in the embedded devices' market, whilst growth in desktop and mobile applications is expected to remain steady.

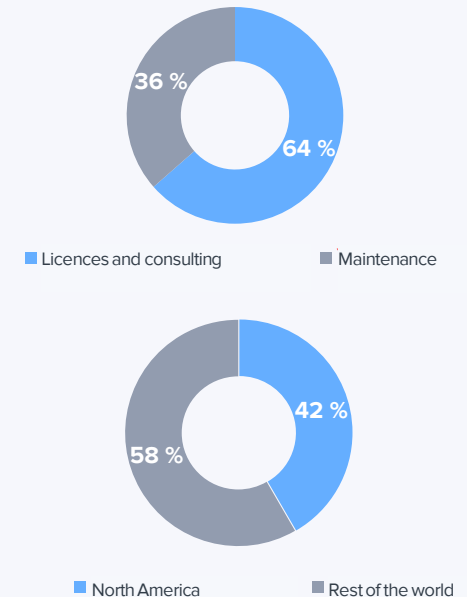
Out of last year's revenue, 64% derived from license sales and consulting, with the remaining 36% coming from support and maintenance. North America accounted for 42% of sales, and the rest of the world for 58%.

History of Qt

Qt as a company has an eventful past, which is beneficial to fathom to understand the strengths. Development began in Norway in 1991, leading to the founding of Trolltec to have the technology. The company enlisted on the Oslo stock exchange in 2006, and was thereafter acquired by Nokia in 2008, subsequently renamed as Qt.

After the acquisition, license sales were halted, as Nokia aimed to spread Qt as far and wide as possible. This largely open access to the Qt technology was part of harnessing Qt to support Nokia's smart devices strategy, and led to revenue decreasing from Trolltech's pre-acquisition 25 MEUR to under 10 MEUR.

Revenue distribution (2017)



Qt's key advantages for customers:

- Improved efficiency in product development, simplification, costs' savings
- Costs' savings in hardware requirements
- Faster Time-to-market
- Reliable and stable foundation based on open source code

Source: Forrester

Partners

KDAB

LUXOFT

siili

Consultants utilising
Qt's technology

Functions

R&D



Consulting



Management



Global sales
organization



Business model

Qt offers a platform agnostic
development framework and related
tools for software developers, enabling
customers to improve their productivity.



- Multi-platform development framework
- Strong potential in embedded devices
- Customer accrues savings in development and hardware costs
- Reliable and stable development for customers

Customer segments

Over 70 customer industries altogether

Industrial automation
and embedded devices



Auto industry



Desktop and mobile
solutions



Resources

Qt
technology



Strong
customer
relations



>1m user Qt
community



Qt developer
community

Products



Developer licenses



Distribution licenses



Maintenance



Consulting

Sales channels



Direct
sales



Partners



Online

Cost base

276 ppl (2017)
40 m€ (2017)



Personnel expenses
(66 % of cost base)



Materials and services
(3 %)



Other business expenses
(28 %)

Income

Revenue 36 m€
EBIT -3 m€ (2017)

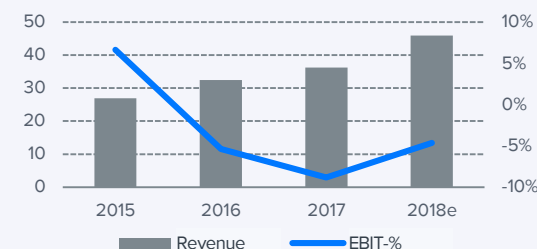
Licenses vs services and
maintenance



64%



36%



Company description and business model 2/4

After Nokia failed their smart device strategy, Qt was left without a role in the organization, but the technology pertained a developer community and customer base. Qt was sold to Digia in 2012, for a meager few million. Digia first acquired the licensing business, and later also the R&D functions. This kick started a new phase in commercializing Qt as a part of Digia.

Qt finally regained its status as an independent company in 2016, when it was divested and listed on the Helsinki stock exchange. We find that the move was of sound logic, as Digia's domestic IT-service business is disconnected to Qt, and different investment wise. As an independent company, Qt Group has a better chance to make invests to fulfil their strategy, and take risk.

Due to Qt Group's long history, they have recognized mature and competitive technology, further strengthened by the strong developer community. History of course also carries challenges. Investments into commercialization of the technology have not been substantial enough, as the focus has been on product development. For instance, the previous open-source license agreements have enabled broad use without payments. The company is still challenged by the commercial use of the Qt software without being obligated to pay license fees. The organization culture transition towards a more sales driven entity has required a lot of work, but the recent emphasis in sales has started to pay back. Currently, with the ready and proven technology already in hand, the company has its focus on the development of the sales organization and sales channels.

Business model

License sales and consulting: 64 %

Qt Group's license sales and consulting were 64% of revenues. This includes 1) developer licenses, 2)

distribution licenses (run-time licenses) and 3) consulting. The company expects the developer licenses to grow at a modest pace, as the growth potential is limited by the number of software developers globally. The largest growth potential derives from the customers' sales of the finished product, where revenue is driven by commercial distribution licenses (run-time income, or volume-based license revenue. It is our understanding, that the share of revenue from these distribution licenses is still quite low. Consulting is expected to grow in-hand with licensing sales.

The licensing and consulting revenue has grown by as much as 45% in Q1-Q3'18, which is a result of the successful investments into sales. The company has not further opened the revenue distribution within this segment, but we estimate consultation to account for no more than 20% of total revenue. The distribution licenses are in our understanding a multi-million business, but this has not been opened further by the company. We believe that developer licenses are still the main revenue source.

Consulting services are a support function for license sales, and are present in all parts of the customer life cycle: 1) At the sales stage to find out the customer needs, eliminate technical risks, and choose the best solution for the project, 2) in making a Proof- of concept, 3) in design and implementation and 4) in productization. With these, Qt Group aims to optimize the use of Qt tools for the customer, and enable the most efficient execution of projects. The consulting services have a broad experience from multiple industries. The Qt Group has numerous consulting partners, including KDAB and Luxoft.

Support and maintenance : 36 %

Qt Group saw increased support and maintenance income during Q1-Q3'18 by 10 %, and the segment is at about a 15 MEUR annual level. The company expects

steady cash flow from these functions, with R&D expenses at about 74 % of service and maintenance income.

The support and maintenance income is based on continuous development and updates. Customers are free to discontinue their subscription, but by doing so, miss out on maintenance services and updates. The support and maintenance income follows license sales with a lag, as about 30% of license sales are typically recognized over the next 12 months as support and maintenance income.

Target market

Qt Group's markets can be viewed from the final products' perspective. The markets are divided into two; 1) desktop and mobile applications' platform agnostic development and 2) embedded devices. As a whole, the Qt technology is used by over 5 000 customer companies. Out of the two, desktop and mobile applications are a bigger market, but technically more mature and more competitive. The embedded device market is smaller, but the growth potential is tempting and the competitive field largely undefined yet. Qt Group's strategic focus is therefore in embedded systems.

Desktop and mobile: sales of developer licenses

In the desktop and mobile application development market, a typical sale is a developer license for some tens of thousands. The customers are typically small software developers, in need of efficient and powerful tools. A single developer license can be purchased directly from Qt's online store. In larger deals, the price and the number of license users is negotiated with the customer. 70 % of the revenue is then immediately recognized as license revenue and 30 % is recognized as support and maintenance revenue during the following 12 months.

Company description and business model 3/4

Qt Group's main challenge historically in license sales has been the ease of exploiting open source software. It is our understanding that especially in Asia the software has ample users and downloads, but not much revenue. Circumventing the commercial license open up the possibility of litigation, and also the possibility that anyone can modify the source code or software contained within the framework. Breaching the license agreement could for instance lead to the offender having to withdraw their product from the market, in addition to legal consequences.

Improper use and failure to receive proper compensation are mostly driven by the historically vague licensing terms in open source software, and when in the gray zone, the company has forfeit the income. The license agreement was amended in 2016 with the release of Qt 5.7 version. The new version contains amended terms that state that producing a commercial product with the Qt framework always requires a commercial license.

The company estimates that the transition towards the 5.7 and newer versions will happen between 2017-2019, which supports license sales. The newer versions also add functionality, which encourages users of older versions to update to newer ones with commercial licenses. We believe that this has already been partially reflected in license sales' growth.

The majority of Qt's user base of over a million individuals are using the free version of the framework, and we believe that the conversion ratio to paying customer is a few percentage, at best. This reflects the historically poor emphasis on in commercialization, and on the other hand growth potential, should they be successful.

Embedded devices: scalable potential from distribution licenses

When looking at embedded devices, the size of both the contracts and customers are vastly greater. The

target group here are global large enterprises, in for instance consumer electronics and the automobile industry. The largest single deal communicated by Qt Group is 1.5 MEUR, and we believe that the average contract in this target group in the ball park of over a million. The contract sizes will scale upwards, should the company succeed in their business model transition towards distribution licenses.

Typically in embedded device contracts, the customer is provided with all the services: consulting, licenses, and maintenance. In the future, a larger part of the revenue is expected to originate from distribution licenses' run-time income, which is based on the sales volumes of the customers' end product.

The demand for Qt in the embedded device market is most often driven by strategic needs. In the wake of digitalization, touchscreens, software, and related services are becoming more and more common in many industries. Regardless of if the product in question is a car, television, industrial equipment, or a washing machine, the manufacturer of these devices need to make a strategic choice in whether to develop the software themselves, or use an existing software. The problem for most customers is that they seldom have the required competence in software development. Giving control of the software to a third party (e.g. Google) can on the other hand lead to a weaker position in the value chain, leading to mitigated control of the end product, and simultaneously also the device manufacturer loses control over the user data, which is often critical in digital service creation. This barrier has already been broken in smart devices, and is heading for other industries. Qt Group offers an alternative, when the customer makes a strategic choice to develop their software in-house.

A typical new relationship with a customer begins with the customer going over choices in software. With Qt being one alternative, the sales and consulting departments go over the customer's problems and go

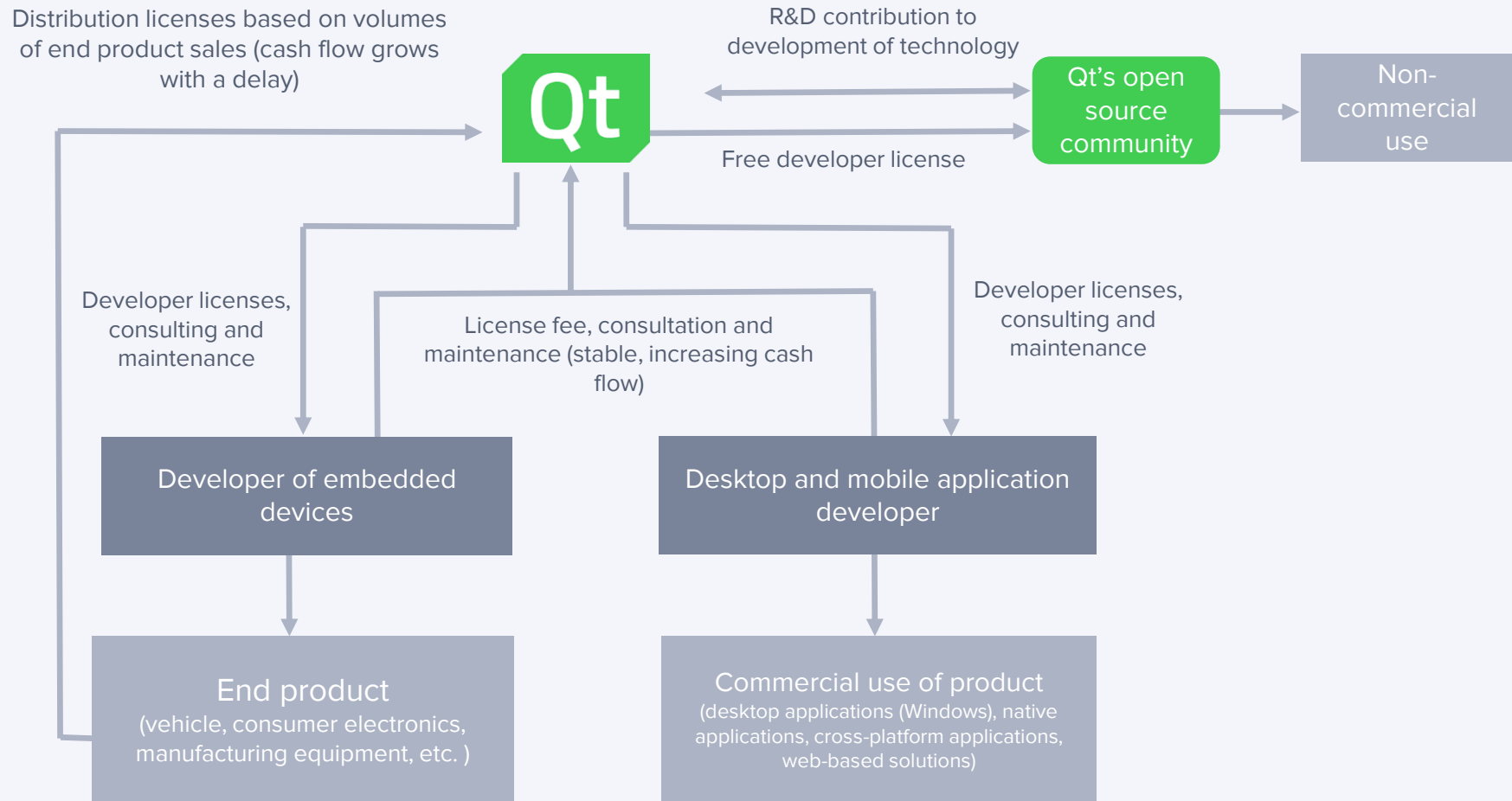
through a demo phase called POC (Proof-of-Concept). The choice in technology is strongly influenced by the strategic mindset of the customer, as well as the input of the R&D manager. Should the customer choose Qt, negotiations between procurement and legal departments on contract terms commence. The negotiations are challenging, as the time frame and sales volumes of the customer's end product are often difficult to predict. This causes instability and uncertainty in the recognized value of distribution licenses.

Negotiations and sales cycles are typically quite long. For instance in the auto industry, from a post POC framework contract, it can take up to 6 months for the development team to start utilizing the developer license. This generates some license revenue, but the majority of revenue is generated with distribution licenses. It takes 2-3 years from product development to the production of a vehicle, after which the revenue for Qt Group's distribution license begins. Consulting services follow along through the whole time period, albeit consulting can also be done by outside companies with Qt knowhow.

It is a long and strenuous process to build a contract portfolio of large customers, but in the long run it offers scalable growth potential with very good customer retention rate. For many customers, Qt Group is a long term strategic technology partner, meaning that utilization of Qt often grows within the customer organization, after the partnership has commenced.

In embedded devices, rapid deliveries are also viable, when there is an established customership beforehand. At fastest, the customer for instance has completed a software update for a TV or a set-top box with Qt framework, and the price and production volumes have been pre-negotiated. After distribution of the updates, the distribution license revenue is recognized by Qt Group.

Qt Group's business model



Company description and business model 4/4

Sales organization and strategy

Qt Group currently has sales locations in 8 countries. A typical team consists of a sales person, a consultant, and a support and maintenance person. The company has had a keen focus in sales organization growth after the 2016 strategy launched. Investments have been mostly financed by equity from the spring 2017 share issue. The results of these investments have been visible especially during 2018, with Q1-Q3'18 license sales increasing 45%.

Qt Group has traditionally been a very engineer driven organization with low priority in sales, mostly due to the strong Nokia background. The sales organization has been virtually built from scrap, after the company was acquired from Nokia in 2012. We believe that the Nokia ownership has also previously hindered the partner network development, which is why there are not a lot of partners globally that are specialized in consulting on the Qt framework. Most notable current partnerships are Swedish-German KDAB and Swiss Luxoft. The role of the partnership network is to offer Qt framework consulting, offer complementary technologies, and partake in software development in the Qt community. We understand that Qt Group is focusing in developing its partnership network in order to be able to better serve especially smaller customers. It could also be possible for Qt to be interested in acquiring a smaller partner as part of the strategy.

The prevailing strategic focus is however still in the sales organization and development of it. The company is focusing on sales for larger clients, and out of customer segments, the focus is in the auto industry, industrial automation, and consumer electronics. The geographic focus points are Asia, especially Japan, where the company has already gained good results. Physical proximity is important in large embedded device contracts, which is why all the

key markets have a local presence. In smaller developer license sales, sales are done online, and a local presence is not critical.

Product development

Qt Group's product development has three segments: 1) maintenance, 2) platform agnostic maintenance, which includes yearly updates for multiple operating systems (e.g. Windows) and 3) specific feature creation for specific customer verticals (code stacks). The product development facilities are located in Berlin, Oslo and Oulu. The product development road map does not contain any radical changes to technology or any completely new products, but instead focuses on improving the competitiveness of current products. Notable updates include the recent support for the Python programming language and 3D Design studio as code contribution from NVIDIA, which eases collaboration between coders and designers.

111 (87) employees worked in product development at the end of 2017. The company also outsources software development. Despite the expected revenue growth, product development expenses are expected to remain stable in the coming years. In 2017, product development cost 8.5 MEUR, or 23.5% of revenue. The R&D expenses compared to support and maintenance income were about three quarters, meaning that maintenance income amply covers R&D expenditure.

About 75-80% of all of Qt Group's product development is done within the organization. The partnership network contributes about 10-15%, and the rest of the developer community 5-15%. Part of the in-house product development is work that is done for a specific customer, but the IPR is held by Qt Group. Changes deriving from the partnership network or developer community require approval from Qt Group, and Qt is also eligible to commercialize them.

Development of the Qt network is therefore partly in the open-source environment, in collaboration with other communities, individuals, and companies. This improves the evolutionary aspects, quality, and credibility of new functions in the product. With the community code contribution, Qt also gains a good interface with the customers and their needs.

Qt as an open-source product is a central competitive feature. The customers value that they have access to the source code and are not left dependent on a third party software supplier. Other competitive advantages provided by the open-source nature are good documentation, continuity, and support.

Qt Group has a contract with the KDE Free Qt foundation stipulating that the essential functionality and features remain under open-source license in the future as well. This guarantees the customer with the functionality provided by the open-source software. Changes in license terms need to be negotiated with the foundation. The agreement also requires a new version of Qt to be released annually.

Business scalability

Qt has a mature and ready product, which is easily duplicated. From a product development standpoint, future growth is highly scalable. The short term limitation to scalability is the sales channel, as it requires substantial up-front investments. Should these succeed, the developer and distribution licenses' sales will be very scalable, and revenue increase can be accomplished without materially increasing costs. The service and maintenance revenue follows with a delay, and provides stability and predictability in cash flows.

Out of Qt group's revenue, we estimate 20% is consulting, which does not scale. It does however provide revenue with good margins, as well as supports license sales.

Investment profile

Investment profile

Scalable growth company

Qt Group's investment profile is a growing technology company in possession of a mature and competitive product, as well as a key strategic role in the technological transition ongoing in many industries. The return on investment isn't dependent on uncertainties related to product development investments, as the technology has already proven its competitiveness.

During the time we have had Qt Group under our scope, we have identified three major uncertainties in the investor story, and we find the risks have decreased especially over the last year in all cases. Firstly, uncertainty pertaining to the competitiveness of the technology has decreased, visualized by closing high value customers (e.g. in the auto industry), and strong sales' growth in license sales (+45%). The second factor has been the company's ability to build a functional sales organization and sales network during the investment phase of 2017-2018, in order to facilitate the commercialization of the technology. On this front as well, we find that the company has been successful. The third factor has been Qt's ability to transition its business model towards distribution license sales, and on this front the company still has some more convincing to do. The trend is however positive and distribution license sales already make up some revenue, proven with a steady and continuous deal flow. On a whole, confidence is boosted by the fact that the strategy has unfolded exactly as planned and communicated.

Despite the good current track record, owning Qt Group still requires vigilant trust in the leadership, as well as strong belief in the distribution license business becoming a major source of income.

Strengths

We find that the central value drivers for Qt are :

- **Growing undivided market** : the embedded devices market is growing rapidly, and Qt is positioned well for growth. In the wake of digitalization, many industries are experiencing change in the value chain, with the products' value transitioning from the device (hardware) to software. Qt as a technology is present in facilitating this change, meaning that the company is also positioned to reap benefits from the growing proportion of software in the value chain. Here, distribution licenses play a key part.
- **Ready product** : Qt's technology doesn't require vast development investments, instead the focus is on strengthening competitive advantages and maintaining the currency of the software.
- **Scalability**: Qt's business model is extremely scalable already. The largest obstacle is the sales channel, into which the company has to make substantial upfront investments. Consulting plays a lesser role, and is more of a support function for product sales. We expect to see the company turn a profit next year, which makes the investment profile more tempting.
- **Continuity and customer retention**: when a customer once chooses Qt technology, changing to another one is challenging. The customer's product development department is acquainted using Qt, and often the technology usage is expanded throughout the company due to increased efficiency, which makes changing expensive and slow. This means that the continuous support and maintenance income brings also predictability in the business.
- **Strong showing in functionality of strategy**: Qt Group's strategic choice made years ago to focus on embedded devices is proving to be correct, as

the market trends are clearly picking up wind. Additionally, the company has strong showing in successfully building a sales channel, and the strategy towards the 100 MEUR revenue goal has progressed exactly as planned.

Risk profile

Key risks

The most notable risks from an investors' point of view in our understanding are:

- **Quality of sales' recruits, quantity and time**: the success of the growth strategy is dependent on the timely recruitment of proficient sales personnel, as well as finding the right sales' partners.
- **Failure in sales**: Qt Group must be able to win over and close large clients for the distribution license business to succeed as stipulated in the strategy.
- **Poor visibility into contracts and distribution licenses**: Investors currently have poor visibility into larger distribution license contracts, their timing, and the size of cash flows generated.
- **Technologic transition**: Qt Group's product development can fail in estimating coming trends in technology in the future, web-based technologies gaining more ground can weaken the competitive advantages or the Qt communities, or completely new technologies can disrupt Qt Group's business.
- **Industry consortiums**: companies operating in different industries and forming consortiums can disrupt the market or create competing technologies.
- **Piratism**: regardless of the amended and tighter license terms, the company may face difficulties in fighting unlawful use of its software.

Investment profile

1.

Mature and proven technology in commercialization phase

2.

Markets driven by strong growth drivers

3.

Scalable business model

4.

Good track record in strategy's success

5.

Company poised to regain profitability as investment phase comes to an end

Potential



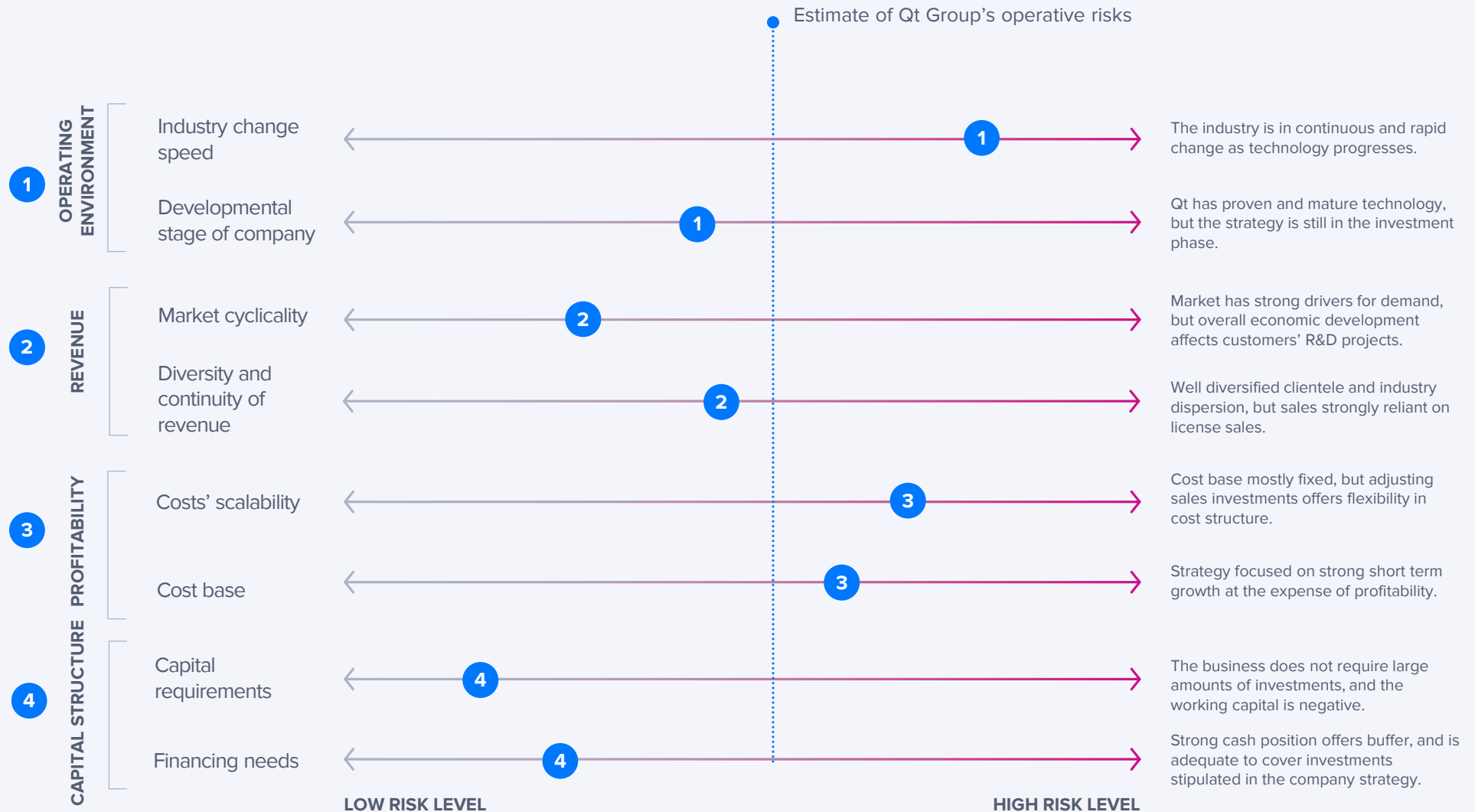
- Current license sales experiencing strong growth and having positive outlook
- Strong growth potential if distribution license sales prove successful
- Competitive field remains open and undefined in embedded devices
- Scalability creates tempting long term profitability potential
- Acquisition option

Risks



- Failure in sales
- Weak visibility in distribution license income
- Sustainability of competitive edge as technology advances
- Weakening of Qt's developer community

Risk profile of business model



Industry 1/3

Market for software development tools

Qt operates on the global market for software development tools, which was about 9.5 billion dollars in 2017 (Gartner). There are about 20 million software developers globally, and the number is expected to increase to 25 million by 2020 (Evans Date Corporation). For Qt Group, the most important segments are traditional desktop application development, mobile applications, and embedded devices. The technology possessed can be utilized in all of these, albeit the strategic focus is in embedded devices. In desktop applications, the market is mature, and in mobile applications it is growing, but very competitive. In embedded devices, the market has substantial growth potential driven by the internet-of-things derived device volume growth. In terms of competition, the market is largely undefined.

Developmental stages of the market

The growth driver for the software development tools' market has changed from desktop applications (PC, 1990-2010) to mobile (2010), and most recently embedded devices. Just a decade ago, software development was mostly focused in desktop applications, and Qt was quite competitive here. The rise of mobility led to the center of gravity transitioning towards mobile devices. In this segment, Qt did not compete very well against the fast growing supply of free net based libraries, such as Facebook React Native and Google Angular 2.

The market quickly became extremely competitive, and the small financially challenged developer segment did not offer a proper opportunity for Qt. Qt remained competitive in cross-platform software development, in which the same application must be transferable to different platforms.

The current growing yet undivided market of interest for Qt is the embedded devices market. The demand for embedded devices is growing rapidly, and they often require visual user interfaces, cross platform solutions, and technologies that can extract the best possible efficiency from the hardware available. Qt is strong in all of these. The embedded devices market is also transitioning towards a prominent commercial market, as the buyers for the technology are the world's biggest corporations and their R&D departments, instead of small individual developers. This enables Qt to transition towards a distribution license based business model.

When looking further, after embedded devices the next major growth driver could be virtual reality. VR solutions are already used in many industrial applications, and these solutions already use Qt technology.

Market trends and growth drivers

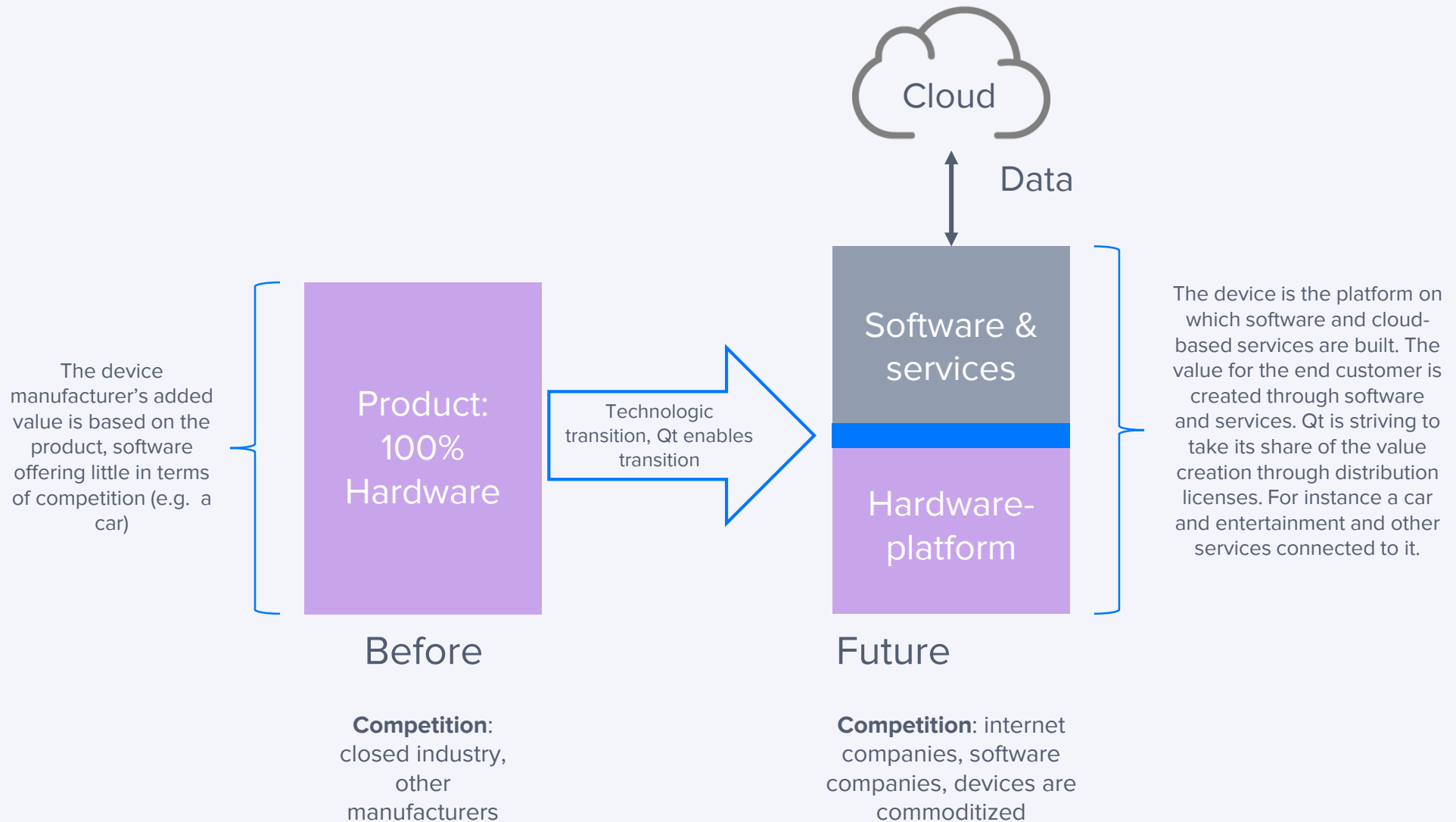
The relevant markets concerning Qt have some supporting trends, of which we have identified as central the following:

- **User experience significance** as a competitive feature is growing across nearly all industries. This is driven especially by the colloquialism of graphic user interfaces. These became common from smart devices, and have thereafter become mainstream in other devices and applications.
- **Hardware prices continue to decrease**, which has led to touch screens and digital interfaces becoming increasingly common in low price volume products, such as household appliances. In these products it is important to maximize the efficiency of the hardware, which is one of Qt's key strengths. There have been market suspicions that increase in

hardware performance and reduction in price will negatively impact Qt's advantage, but we believe that this development is more of a trend that will bring about new markets, as reduction in hardware price opens up the possibility to expand graphic interfaces to new devices and appliances

- **Platform agnostic feature** is emphasized when the same application is required to work across a wide range of operating systems and devices as a continuous user experience. Qt is strategically committed to supporting multiple platforms.
- **Lack of software developers** increases demand for more powerful software development tools globally.
- **Open-source code gaining popularity** in software development supports Qt. Especially on the mobile front, open-source has been the winning solution. The popularity of open-source code exploitation will most likely expand to many new industries through embedded devices, as companies are unwilling to be stuck using a single technology from a single company. Successful technologies also require a strong developer community, which is one of the strengths of open-source code.
- **Transition in distribution and business models** driven by digitalization. A growing number of industries are in the situation where the added value is created by software and services. The business models are transitioning from product sales to cloud based "as a service" type solutions. This is forcing customers to make strategic technology choices, where Qt is one option. Customers migrating towards service based business models also provides Qt Group with a better opportunity to move towards a distribution license based business model.

Qt's strategic role in the technologic transition of industries



Industry 2/3

Desktop and mobile development

The desktop and mobile application developer market is stable from Qt's viewpoint and in which according to the company, Qt has good recognition, market share, and a large customer base. The market has been in transition for some time, as demand for PC's is stays stable, and mobile demand is increasing. The largest focus is the Windows platform, but this is complicated slightly by Microsoft offering their own developer tools as well. Qt has however had a strong stance in desktop applications historically. The mobile application development tools' market has not grown at the same pace as the market for mobile applications, and therefore Qt has failed to be financially successful in this market. The main reason is that the large suppliers (like Google and Apple) offer a wide range of free tools to developers. The best differentiating factor for Qt is therefore the possibility to develop applications in both desktop and mobile with the same technology.

As single markets, mobile nor desktop are not something sought by Qt, but instead the advantage comes from being cross-platform. The competing technologies are mostly web based solutions that have speed, wide developer communities, and code stacks as advantages. Qt on the other hand offers advantage in applications, that require maximized performance.

The target market for Qt's technology in mobile and desktop applications is about 500 MEUR globally. The market is stagnated, and not expected to grow in 2019 (IDC). Qt's sales are largely based on developer license sales (Qt for application development), where the limiting growth factor is the number of developers. The market is important for Qt and brings steady cash flow, but in addition also supports growth and expansion into the embedded device market.

Embedded devices

Qt finds the largest future growth potential in the embedded devices' market. In this market Qt strives to change its business model to be based on the sales volumes of the end product. This would mean that growth is no longer dependent on the number of developers and the company is able to exploit the exponential growth of IOT devices utilizing graphic user interfaces. The diversity of devices creates demand for Qt type platform agnostic software development framework providers. In this market, Qt sells normal developer licenses, but in addition, every device utilizing Qt technology is under a distribution license. The role on distribution licenses is currently still quite small, but essential for future growth. According to user interviews we conducted, the Qt technology and C++ language are very strong in comparison to the HTML powered alternatives. The rationale behind this is the stability which developers find very important when looking at devices with lifespans of a decade. Users also appreciate Qt's efficiency, which generates savings in hardware costs.

Estimates on the market sizes are in the ball-park range, as the market is still at an infant stage. In 2014, the embedded devices' software development tools' market was about a billion dollars (Grand View Research). The entire market is expected to grow at a 8-10% annual rate until 2020. Out of this, Qt estimates that the market segment concerning Qt is about a quarter, roughly 250 MEUR (IDC). The largest customer verticals are the auto industry and industrial automation.

Qt's customer verticals

Qt's technology is strong for one because it is applicable to many different industries, with most of the competing solutions tailored for a specific industry.

The current technology is in use in over 70 different industries, according to the company. The wide industry diversity supports stability and brings about synergies between industries as the core technology is the same, with industry specific modules being possible to add to suit the specific needs of segments.

With the industry specific modifications, Qt is able to strengthen competitive advantages in chosen verticals. It is our understanding that Qt fits quite well into many customer verticals, thanks to the comprehensive code stack. The more thorough the ready code stack library available is, the faster can the customer go through product development, and the more attractive Qt is as an alternative. The most relevant customers are ones that require the performance offered by C++. If the customer's need is to develop fast and light applications with a low performance requirement, web based solutions are more competitive.

The core value of the Qt technology is to be able to scale regardless of industry, hardware, or the technologic platform. Out of the industries, Qt's main focus is currently in the auto industry and industrial automation. Other customer verticals include digital TV, consumer electronics, and medical equipment. The company is targeting especially global manufacturing enterprises with its sales organization.

In the customer verticals in embedded devices, Qt is currently mainly focused on auto industry customers. The customers consist of auto manufacturers and their suppliers. According to Qt, out of the 15 largest auto manufacturers, 13 are already in at least the proof-of-concept stage. Publicly known are Daimler and Peugeot, but Tesla also uses Qt in its cars, albeit in our understanding it's not a license payer and is currently using solutions based on open source.

Industry 3/3

Qt has developed industry specific solutions to be able to expand its offering from for instance infotainment systems to digital dash boards. The potential uses in the auto industry for Qt solutions are infotainment solutions, digital dash boards, and back seat entertainment systems. The auto manufacturers most likely prefer to use a single system in all the in-car screens, which elevates Qt Group's market potential when moving from the POC phase to more thorough implementation.

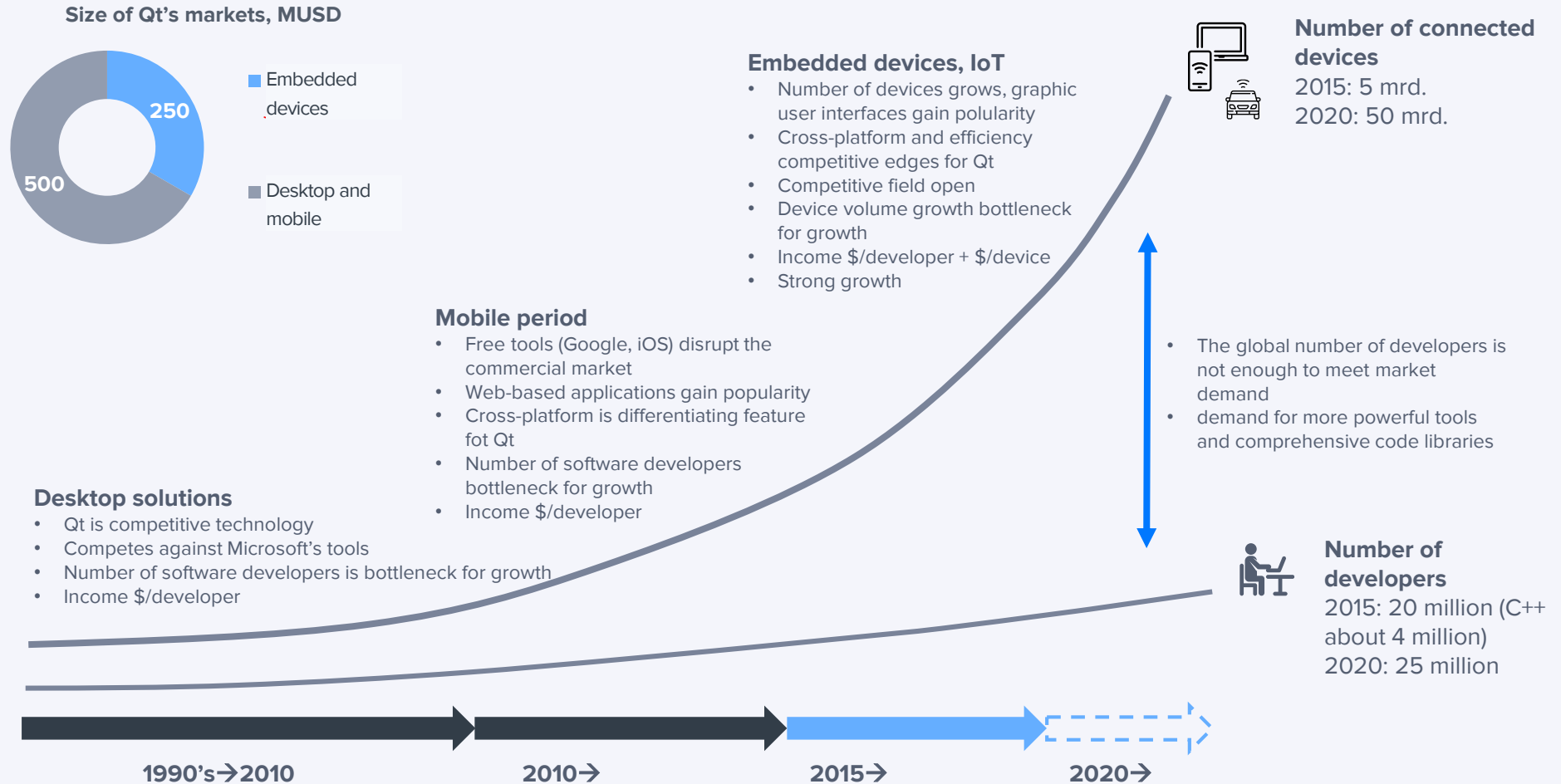
The auto industry's reformation driven by digitalization is very current. The manufacturers strongly prefer to keep all of the data pertaining to customers and software development to themselves. All of the manufacturers are not willing to bring outside internet companies' software and services to their products because the products' position in the value chain will be weak, with the customers' added value transitioning towards data, software, and services related to the aforementioned. We find that this is one of the most notable strategic power struggles caused by the technologic transition since the war of ecosystems in mobile markets. Similar to Here sold to the auto manufacturers by Nokia, Qt is in a very interesting position. It is quite likely that some manufacturers will outsource the digitalization phase to for instance Google, and instead focus on being as efficient as possible in manufacturing volume cars. In this case, Qt is not as likely a choice for a software development framework. For leading brands however, this is probably not a possibility.

It is our understanding that the auto industry is a significant growth driver in Qt Group's strategy, but only about a quarter of the 2021 target of 100 MEUR revenue is expected from the auto industry. We believe that distribution licenses contribute in the range of about a dollar per infotainment system per

car in the auto industry sales. In addition, Qt of course also has income from developer license sales, and Qt based solutions can expand to other applications in the car, increasing license income further. Global car sales volumes are in the 100 million unit annual sales range, but it would be unrealistic to expect Qt to gain over a 50% market penetration. From a view point of distribution and developer licenses, we are still talking about tens of millions in revenue potential for Qt.

In industrial automation, Qt is also in a very intriguing position, as more and more touch screen based interfaces, that are familiar in consumer devices, are being added to industrial equipment. In the wake of IOT, the supply is poised to grow substantially, with especially small appliances requiring efficient performance that the C++ language offers. The market is however harder to reach than the auto industry market, because there are so many more players dividing the market, and each of them typically has a smaller volume. Reaching and penetrating this market therefore requires a very strong and capable sales organization.

Evolution of Qt's markets



Markets

	Embedded devices	Desktop and mobile
Market size and growth	<p>250 MEUR</p> <p>8-10 % annual growth, Qt aiming for strong growth</p>	<p>500 MEUR</p> <p>Slow growth</p>
Trends	<ul style="list-style-type: none"> • Significance of user experience • Platform agnostics • Open source code gaining popularity • Increase in the amount of connected devices 	<ul style="list-style-type: none"> • Growth in mobile devices • Need for cross-platform support • Dominated by free tools • Weakening market of desktop solutions
Qt's strengths	<ul style="list-style-type: none"> • Platform agnostic – few competitors work on multiple platforms • C++ language efficiency – especially strong in applications that require high performance and memory is limited • Continuity of development – the framework and tools are guaranteed continuous development • Documentation and fast ramp-up – ready-made libraries help shorten customers development times • Preservation of user information – license owner has ownership of data and access to source code 	<ul style="list-style-type: none"> • Platform agnostic • Fast tools for design and execution of user interfaces • Continuity of development – tools are guaranteed continuous development • Documentation – help is found easily • Preservation of user data – license holder has ownership of data and access to source code
Qt's weaknesses	<ul style="list-style-type: none"> • Other technologies stronger, should embedded devices move towards web-based solutions • C++ language difficulty • Qt has a relatively small active developer community and partner network • Third party (community) code libraries are not very common 	<ul style="list-style-type: none"> • Alternative technologies often have broader developer communities behind them, and extensive libraries • Alternative technologies are often free • C++ language difficulty vs Javascript
Competition (development environment)	<p>The market is largely open as of yet. Possible competitors are Microsoft – Visual Studio / Xamarin (C#), Apple – Xcode (Swift/Objective-C), Google – Android Studio (Java). In the auto industry, Rightware and Here are partially competitors- also auto manufacturers' in-house solutions are competitors.</p>	<p>Competitive market, disrupted by free tools. On the mobile side, React Native (JavaScript) and Google / Angular 2 (JavaScript) are strong. Other competitors are Xamarin (C# and Java) and native tools such as (Swift/objective-C and Java).</p>

Competition 1/2

Competition fragmented

Qt Group's competitive field is very fragmented, and it is difficult to pinpoint direct competitors. The competition is mostly related to which customer vertical or field is in question. The different applications of the coding language and intended uses also define competition. Qt is based on the C++ language, whose main advantages are performance and optimizing memory usage, which are sovereign compared to others. This is especially crucial for embedded devices, which usually require good performance and often have limited memory availability. The downside of C++ is that it is notoriously difficult as a coding language. In the latest version, Qt has also brought support for python.

The traditional desktop application market is established and transitioning with the strong growth of mobile applications. On the desktop side, Qt competes with for instance Microsoft Visual Studio and Android Studio, out of which the latter is free. With the growth in device base and diversity, applications of today need to be able to function on different screens and devices. This needs to be accomplished platform and operating system agnostically. In these multiplatform solutions Qt is strong.

The mobile market is very competitive, and the commercial market for tools has been disrupted by free tools that can be used to develop native applications for specific platforms (e.g. Android, iOS). The market is dominated by free platform independent libraries, such as Reach Native (community overseen by Facebook), Xamarin (free, but works with visual studio), Ionic, and Adobe PhoneGap. The advantage with free code stack libraries are the developers and communities, who have access to end user data. The downside is fragmentation and the fact that they may not be stable enough in the long run.

In embedded devices, the competition is still quite open. According to the user interviews, customers often prefer to use self-developed tools instead of commercial products, sometimes in conjunction with Qt. Compared to HTML, Qt framework's performance and stability are competitive advantages in embedded devices. Qt is often competing with solutions devised by the customer itself. For the customer, it is often important to avoid being dependent on outside software providers (Google), and secure access to the code, and subsequently hold the development in their own hands.

We believe that Qt has been very competitive as the company expands into the embedded device market. The market is however developing at quite a slow pace due to the long developmental cycles of customers. Developmental projects can also be delayed or cancelled, which can also hinder Qt's progression. In embedded devices, the competition is also present in the customer verticals. In the auto industry, Qt is facing direct competition from for instance Kanzi (Rightware).

Competition also dependent on intended use of applications

Depending on the requirements of the devices, different tools are suited in different market segments. For instance web-based (Javascript) technologies are well suited for touch screens when a lot of hardware performance isn't required. When the device needs a lot of performance and capacity, C++ and thus Qt are stronger, also thanks to the extensive code stack libraries. There are some specific platforms (such as Ipad) that have targeted native tools available. These are probably not too well suited for the embedded device market, because these devices are required to operate platform agnostically. In the platform agnostic approach, the most important factor is that a once

coded application can be used on multiple platforms simultaneously. The services related to these applications must also function independently of the platform. Qt and the C++ language used by Qt are therefore not optimal in every application, but nevertheless well positioned in the markets Qt has chosen.

Market entry barrier high

The Qt framework is mature and ready. Maintaining the technology up to date requires continuous product development, but there are no R&D needs currently present in near years. New players therefore face challenges in competing with Qt. The entry barrier is enforced with the following:

- Development tools can't live without developers and coders. New tools face difficulty in getting a developer community behind them.
- Customers face difficulty changing tools once the choice has been made technology wise, because development, product lines, and knowhow have been built to facilitate a certain development tool.
- Sales cycles in the embedded device market are long, and gaining access the large customer organizations is difficult.
- Due to the long history of Qt and similar players, their customers have a broad code library in use. Ready and available application components are a valuable competitive advantage.

Qt's most notable competitive risk is free technologies. The company can also face strong competition in the customer vertical from players that have been specialized in for instance the auto industry for a long period of time.

Competition 2/2

Qt's technology's strengths

The key strengths in technology for Qt in our view are the following:

- **Multiplatform support.** Qt has been released for multiple different platform such as Linux, Symbian, Android, iOS, and Windows.
- **C++-language efficiency.** C++ is a very efficient language in applications requiring a lot of performance, which brings about savings for the customer in hardware.
- **Stability and continuity of development.** Qt Group's customers can rely on the continuity of the technology due to the agreement with KDE Free Qt foundation. Qt has strong incentives to develop versions of the software for the most used interfaces. Development of many of the free alternatives (React Native, Angular 2) is in the hands of developer communities in an open environment, and is dependent on the community. The quality of the development can also vary substantially.
- **Documentation.** Documentation is one of Qt's strengths, as it offers developers confidence, smooth and fluent development, and continuous support.
- **Extensive code stack.** This, paired with the proficient documentation, enables rapid product development cycles. This is an important competitive advantage, as time-to-market is often crucial for customers.
- **Independence and data protection.** With Qt, customers can depend on the fact that the user information and source code always stay with the customer (of Qt), and never end up with the software provider.

Qt's technology's weaknesses

From the investors' point of view, the prominent technological challenges in our view are the following:

- **Web based applications gaining popularity.** Should the web based alternatives to interfaces gain more popularity in embedded devices, Qt will be in a weak position.
- **C++ -language difficulty.** C++ is a language relatively hard to master. The number of C++ developers is important for Qt, but the difficulty of the language can negatively impact its ubiquitousness. Qt also supports other languages such as Python, but is nevertheless strongly C++ dependent.
- **Insufficient or lacking license terms.** The license terms for open source code have been quite broad and general in the past, which has hindered the commercialization of the technology, and also made it possible to use the software without having to pay license fees.
- **Small open developer community.** The open active developer community for Qt is relatively small, which means that the contribution of development coming from the community is also relatively small. Many of the large libraries maintained by larger developer communities (i.e. React Native) develop at a fast rate thanks to the extensive community.
- **Limited partner network.** Due to the Nokia background, Qt has a limited amount of technology partners and consulting companies with Qt know-how.
- **Personnel risks.** Qt's development is reliant on in-house R&D, which could pose risks related to key personnel.

Consolidation

Due to the strategic importance of development tools, acquisitions and mergers are quite possible in the sector. We also find that Qt is a viable target for acquisition, but Qt is also possibly looking to acquire consulting companies and companies that can complement the technology. The closest acquisition to Qt is from 2016, when Chinese Thundersoft bought Finnish Rightware. Rightware was a competitor of Qt in graphic dash board displays for the auto industry. The acquisition price was 64 MEUR, and with the estimated 7 MEUR revenue in 2016, the EV/Sales multiple is a very high 9x. Rightware's, Kanzi software is used by over 20 auto manufacturers. As an example, nearly all of Audi's current product line had their dash board displays designed by Rightware's software. Thundersoft offers interface technology and services to mainly mobile and car manufacturers, and its revenue in 2016 was estimated at 116 MEUR the company employs over 3000 people.

Qt could be a strategically tempting target for acquisition for auto manufacturers, who find it important to secure independency and continuity of utilized technology. The strategic interest would be similar to the auto-industry consortium's Here acquisition. Also global software giants (Adobe, Microsoft) could see Qt as a strategically intriguing target.

Competitive field

Software tool/language	Ownership	Components			Usage			Suitability		
		IDE*	Code libraries	Up-to-date documentation	Mobile	Desktop	Embedded devices	Cross-platform	Native-apps (Android, iOS etc.)	Web-based solutions
Qt/C++	Qt Group	✓✓	✓✓	✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓
Xamarin Studio/C#	Microsoft	✓✓	✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓✓	
Rightware Kanzi/Javascript	Rightware	✓✓	✓	✓✓			✓✓ Automotive	✓✓		
React Native/Javascript	Developer community		✓✓	✓	✓✓	✓✓ Browser		✓✓	✓✓	✓✓
NativeScript/Javascript	Telerik		✓✓	✓✓	✓✓	✓✓ Browser		✓✓	✓✓	✓✓

- ✓✓ Core competence
- ✓ Competence

* Integrated Development Environment (IDE) is a development environment or program, that helps write applications or otherwise help in their creation. The simplest form is a text editor. Often they include simulators or other helpful tools.

Strategy 1/2

Qt Group regains clear focus

Qt Group has essentially had a clear strategy and focus point in its own business last time a decade ago when the company was an independent enlisted company Trolltech. After being divested from Digia as an independent company, a good foundation for commercialization was formed, which require large upfront investments into sales.

Qt Group's historical strategy phases have been the following:

- 2006-2008 independent listed company (Trolltech). Focus in commercialization of technology. Revenue about 25 MEUR.
- 2008-2012 under Nokia ownership. Focus in communities, improving the recognition for technology and product development, especially in mobile. Revenue decreased significantly.
- 2012-2016 ownership under Digia. Digia's domestic IT services offered financing and resources to facilitate commercialization. The focus however was not completely on Qt. Revenue started to improve.
- 2016 independent again after parting from Digia. Full focus on scalability and commercialization. Revenue growth increases.

Market is now open, now is the time to invest

The timing for Qt regaining its independence was spot on as the target markets are at the brink of an interesting phase in development, and Qt has mature and ready technology to provide. Many of the markets Qt is targeting for growth are in a transitional phase, meaning that long term choices for technology are made right now. According to the company, it is of utmost importance to invest into aggressive market

share growth now and strive to close noteworthy commercial contracts with large suppliers, due to the ongoing market transition. It is imperative to be part of the negotiations as the potential customers are making the strategic decisions on future technology. Once the customer has made the choice on technology, it is often expanded across the customer's company to cover all of the products, as it is strenuous to have many horizontal technologies in use simultaneously. For instance with Daimler Ag, Qt is in use in the new A series Mercedes model, and will later expand to other models as well.

Sales' strategy

Qt has expanded its sales network through recruitment and opened more operating locations during the last few years. The largest investments have already been done, with the focus starting to shift into improving the efficiency of sales. In embedded devices, the sales cycles are long, work towards deals extremely challenging, and local presence essential. Due to this, the company goal now is to blanket the key markets of the US, Germany, China, Korea, and Japan with a continuous presence. As of now, the company has not closed a single sales location it has opened. We believe that the size of customers and value of contracts have been on a continuous growth path due to the investments, and the company has been able to close many significant customers. For instance in the auto industry, the company has stated that there are 13 out of the 15 largest manufacturers at least the POC stage of the sales cycle.

The reseller organization is under focus in such countries where revenue potential is smaller. Distribution over the internet is important, but the customer potential in embedded devices requires a physical channel and presence.

It is our view that the successful construction of the sales network is detrimental to future success. The investments are upfront in nature, and investors have to wait years to see the results in the form revenue from distribution licenses. The investors' visibility into the potential of the distribution based pricing model is still limited.

Due to the historic organization culture present at Qt, transitioning to a more sales driven model can also be challenging. The company management does however have experience on building global business functions.

Product development strategy

The internet of things drives the need to create good user interfaces. Due to the experience in desktop and mobile applications, Qt has relevant experience and knowhow in interfaces, as well as seamless cross device user experience. The Qt technology's strengths are in embedded devices, and creating platform agnostic solutions and interfaces.

Qt strives to further improve its competitive advantage through continuous development of its development tools. These investments can be into specific components developed for a specific industry, with the intention of strengthening the competitive advantage in chosen customer verticals. The auto industry is the most important, with other significant areas being digital TV, industrial automation, and medical equipment. By developing ready industry specific solutions beforehand into the code library, Qt is able to enhance the customers' product development, which is also an important competitive advantage.

Strategy 2/2

Touch screens and graphic user interfaces are becoming more common in smaller lower price devices, which means that they need to be powered by light software to run on cheaper and less powerful hardware. Qt's competitive advantage is already the efficiency of its technology, but the developmental focus is in slimming down further, to facilitate even lower hardware requirements.

Financing the strategy

Qt has a strong financial position, ample to cover the financial needs of the current strategy, but also to give some buffer as cash flow is turning positive in the wake of the strong revenue growth. The company could also protect its cash flow if needed by dialing back on sales expenses. The net cash position at the end of Q3'18 was 8 MEUR.

Qt makes all the investments through income statement, and doesn't activate product development or investments into the sales organization. Due to this, the operating result during the investment cycle of 2017-2018 has been negative. Due to light balance sheet structure, cash flow and result go hand in hand. Therefore realization of the growth targets and distribution licenses' income would be ample in cash flow. We expect to see the 2019 cash flow to be slightly positive.

Financial figures

Qt released new financial targets for 2017-2021 in February 2017. The target is to reach an annual revenue of 100 MEUR and 15% operating margin in 2021. The roadmap is as follows:

- Revenue growth is expected to grow at about 20% annually 2017-2018. Distribution license income will increase this further in 2019-2020. We expect that about a third of the 100 MEUR revenue will be

distribution based income, and roughly a third will be from developer licenses. The company's strategic target also stipulates a long term revenue distribution target of 20% consulting income and 20% maintenance income.

- The company plans to not exceed 10 MEUR annual increase in cost base for 2017-2018. For 2017, the increase was about 7 MEUR, with 2018 looking to settle at a similar level. It is encouraging that the increases seem to be stabilizing at a much lower level than previously planned. Clear scalability in costs is expected from 2019 onwards.
- From the operating profit standpoint, the implementation of the strategy puts 2017-2018 clearly in the red. For 2019, the company expects to see EBIT in the black, and further improve going into 2020. The 2021 target is expected to be over 15%.
- Due to the investment needs, the company won't be paying dividends in 2018-2019.

Reaching objectives relies on success of distribution licenses

Qt expects revenue growth to be based mainly on organic growth. Acquisitions into specific technology or consulting services are possible, but in our view unlikely. We find the 100 MEUR revenue target feasible (requires CAGR of 30% in 2019-2021), but only if the company is successful in securing major distribution license contracts. Based on the revenue target, the company should already have adequate visibility on the reception and feedback from the market on the validity of the distribution license based business model.

In terms of profitability, Qt's business model is exceptionally scalable apart from the sales organization, meaning that operating profits exceeding

15% is quite realistic, providing revenue growth is met. Should the growth meet the targets, we believe that operating profits in the 20-30% range are realistic on long term, albeit profitability is dependent on the growth investments of future strategies. The downside of a distribution license based business model can however be the weakened predictability of income, as it is based on the sales volumes of the end products, whose time to market and sales figures are out of Qt Group's hands.

In order for investors to have a better grasp on evaluating the progress of Qt's strategy, the following should be kept in mind:

- Revenue growth driven by license sales
- New contracts with prominent device manufactures and auto manufacturers
- The company's comments on the structure of the contracts (pricing model transition towards distribution licenses)
- Profitability improving from the 2017-2018 investment cycle level

Qt's strategy

The strategy period in numbers

	2016	2017	2018e	2019e	2020e	2021e
Revenue	32.4 MEUR	36.3 MEUR	↗	↑	↑	100 MEUR
Expenses	34.7 MEUR	40 MEUR	Max annual growth 10 MEUR	Moderate growth	Moderate growth	Moderate growth
Finance of investments	Loan financing	Rights issue Q2'17	Rights issue Q2'17	Operative cash flow	Operative cash flow	Operative cash flow
Operating profit	-1.7 MEUR	-3.2 MEUR	↘	Positive	↗	> 15 %
Comment	-	Target met	Q1-Q3 exceeded targets	Realistic target	Realistic target	Requires success in distribution license business



Historical development

Operative performance

Qt's revenue has grown rapidly for the past few years. 2015 saw 32% sales growth and 2016 20 %. In 2017, growth slowed down to 13.4 % (in comparable exchange rates), but the first three quarters of 2018 have resulted in 36.5 % revenue growth (in comparable exchange rates). The 12 month rolling for revenue is 44.6 MEUR (35.0 MEUR).

Due to the growth investments, profitability development has been poor since 2013. 2013-2014 were negative, with the company reaching a small profit in 2015 (EBIT-% 6.6 %). In 2016, EBIT-% was -5.4 %, and at about 0 when excluding non-recurring items. 2017 saw ramping up the new growth strategy, due to which the investments took the operating profit margin back down to -8.8 %. In 2018, the first three quarters resulted in a -1.9 % operating margin. The profitability development has been slightly better than we expected, as the growth investments stipulated in the strategy have been somewhat smaller than expected. For 2018, the Q2 operating profit of 11.5 % offered some taste of the scalability, as Q2 was exceptionally strong in sales.

The quarterly result is very sensitive to license sales, and traditionally Q2 and Q4 are stronger quarters for license revenue recognition.

Cost structure

The cost structure is essentially fixed, and scales according to growth. The operational expenses were 30 MEUR in 2017. The costs' were driven up by especially the development of the sales organization. Although Qt is clearly a growth company, we believe that the company also has a strong culture supporting profitability as well.

Personnel expenses were the largest single item at 27

MEUR, or 66% of the cost base. Due to the aggressive incentives provided to the sales force, the personnel costs also fluctuate somewhat in conjunction with sales. The second largest single item is other operating expenses of 8.5 MEUR, 24% of revenue. Materials and services were 1.3 MEUR, and consisted mainly of outside services, such as third party consultants.

Product development expenses amounted to 11.5 MEUR. Product development expenses in 2017 were 8.5 MEUR (8.3 MEUR), and can be expected to scale well with growth. It is important to note that depreciation is very low now and in the future, as the company does not activate its product development expenses.

Balance sheet and financial position

Qt's balance sheet is on a stable foundation in comparison to the business model and current strategy. Net gearing was -42 % at the end of Q3'18 and the equity ratio was 76 %. Cash and cash equivalents amounted to 9.0 MEUR, interest bearing debt was only 0.7 MEUR. Naturally, the company is not paying dividends currently, as the result is still burdened by the growth investments.

One of the strengths of Qt's business model is the negative working capital (-13 % of revenue), which means that part of the growth can be financed from operative cash flow. The balance sheet is also quite light, and does not contain any items that could jeopardize the net profit in the coming years, as there is not much goodwill (6.5 MEUR) and there are no R&D costs activated.

Incentive programs

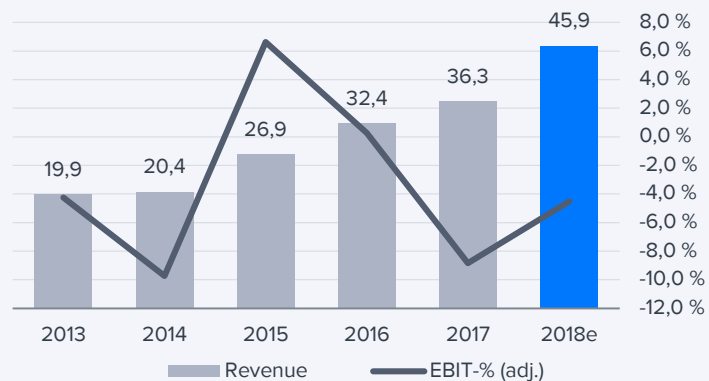
Qt has an active stock option plan for key individuals, which is limited to a maximum of 2 million new shares.

The time frame for executing the options is 19.12.2019–31.12.2022. The options may only be used if the volume adjusted mean share price is at least 5.85 EUR between 18.11.2019–13.12.2019.

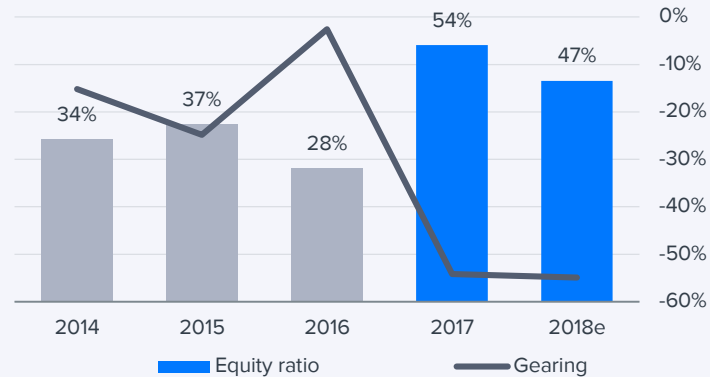
Taking into account the expected growth, we expect the share price to surpass the option strike price by the end of 2019. Therefore we have taken the stock option plan into consideration in our estimates.

Historical development

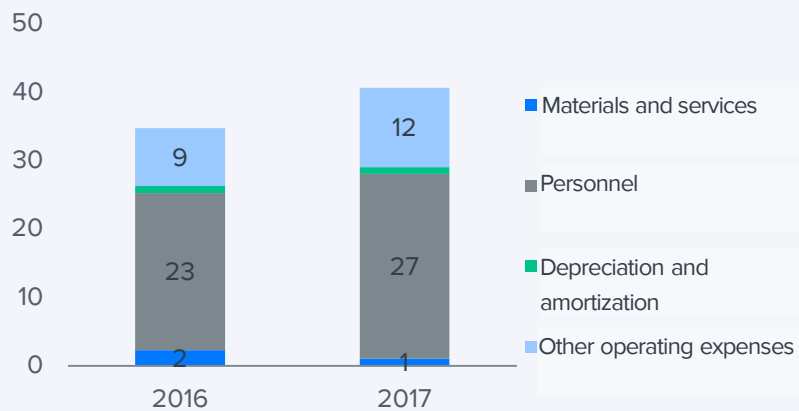
Revenue and EBIT-% development



Development of balance sheet key figures



Cost base



Estimates and valuation 1/3

Estimates

Baseline for estimates

We base our estimates on revenue through three components: developer licenses and consulting, distribution licenses, and services and maintenance. The company does not currently report the value of the distribution licenses, but we have estimated it separately due to its central role in value creation. Otherwise we expect developer licenses and consulting to drive the core functions' growth, and maintenance income to grow more modestly, driven by license sales.

During the next few years, Qt is transitioning from the investment phase into the growth phase. After the investment phase, the business model scalability will start to show, as revenue growth accelerates and costs' growth evens out. The company's own strategic roadmap is the foundation of our estimates. We find the targets convincing, but our own estimates are more cautious in the base case scenario.

On short term, growth is driven by the timing of license sales, which means that quarterly visibility is poor. The maintenance income (about a third of revenue) provides some stability. The long term estimates are still burdened by the poor visibility into distribution licenses' income. Should the company succeed in securing contracts with for instance large auto manufacturers, this could offer long term visibility as the models enter production in 2-3 years' time from signing. The visibility offered by the aforementioned can bring about substantial benefits. Qt could for instance adjust costs, take strategic risks, and have a better estimate of the future, as the income years away would be more predictable.

Short term estimates – scaling phase

Qt's outlook expects 2018 revenue to increase over 20 % at comparable exchange rates. Due to the investments into growth, EBIT is expected to be clearly negative.

We estimate 2018 revenue growth to be 26 % up to 45.9 MEUR and EBIT to be -2.1 MEUR (EBIT-% -4.5 %). There is quite little uncertainty involved, as the company has three strong quarters behind it (growth 32 %) and our Q4 estimate is quite cautious (growth 13.5 %). We believe that the license sales have been exceptionally strong during the year to date, which is why we expect growth to slow down during Q4. The growth has been driven by the successful investments into sales. We also believe that the changes into the license terms have driven growth in 2017-2018. We estimate that 2018 license sales' revenue has grown 35 %, and maintenance income growth clearly below this, at 11 %. Growth in license sales should however reflect in maintenance income with a delay in the coming quarters. We expect distribution licenses to generate a few million in income for 2018, but their size is not large enough yet for the company to report them individually.

We expect the EPS for 2018 to have increased to € -0.09 from the € -0.14 in 2017. As a whole, it seems that Qt is going to achieve a better result than previously expected due to the revenue growth and costs increasing slightly slower than expected.

For 2019, we believe that revenue growth will continue as expected in the strategy. Our estimate for next year revenue growth of 25 %, translating to 57.3 MEUR. We expect costs to rise by 16 %, and profitability to be slightly above 0, within the strategic expectancy (1EBIT 1.1 MEUR). We estimate the 2019 growth driver to be distribution licenses, highlighted

during the end of the year. Strong 2018 license sales also pave for clear increase in maintenance income. In our estimates the EPS also rises to profit of 0.03 EUR for 2019.

Long term estimates – distribution licenses need to deliver

Qt's goal of 100 MEUR in revenue for 2021 requires success in distribution license sales. It is our understanding that the transition towards distribution (runtime) licenses have progressed well and sales have been encouraging, building trust towards the target's validity. Due to the long "tail" in distribution license income, 2019 is still a part of the ramp up phase in winning over the larger contracts leading towards the 100 MEUR goal. Singled out, developer licenses will reach their upper limit in the 100 MEUR revenue range, with the global number of software developers being the limiting factor.

In 2020, we expect sales to continue to increase by 29 % (74 MEUR) and EBIT to reach 15 % (11 MEUR), driven by distribution licenses and especially the auto industry. In 2021, we estimate sales growth to continue at 22 % and reach 90 MEUR (company target 100 MEUR). In our estimate, a almost a third of the revenue is from distribution license sales. For operating profit however, we expect to see 23 % operating profit margin (EBIT 21 MEUR), which is clearly above the company target of 15 %, due to the strong scalability of expenses. The EPS in our estimates is 0.73 EUR in 2021.

Estimates and valuation 2/3

Valuation

Valuation foundation

Valuating Qt is still challenging due to the developmental phase of the company, with a substantial portion of the value based on growth estimates, subsequently meaning the current profitability can not be used to give support for the valuation in short term. In our view, the current value (197 MEUR) can be seen as a sum of three components:

- **Growing and profitable core business in developer license sales, maintenance, and consultation.** Should Qt be willing to optimize its result, the company could easily sustain a clearly positive yet growing business by adjusting its cost base and so maintain a software company profitability profile. The current clientele already offers growth potential, and we believe that the use of Qt technology is expanding inside many customer organizations as the customers transition forward from R&D product testing whilst making technological choices. In this scenario, the company would still operate in the 50 MEUR revenue range while experiencing moderate growth (5-10 %) and excellent profitability (15 % EBIT). This would translate to a market value of 113-150 MEUR with a 15-20x EBIT multiple. The example is purely hypothetical, as the company is not making such a strategic choice in the foreseeable future. It does however highlight that the current value is not based solely on the future growth promises, but instead the current business gives support for the valuation.
- **Qt's technology's strategic value** during technology driven transitions can be notable, which

is why the valuation is also slightly effected by the possibility of an acquisition. Investment case should however not be based on this.

- **Scalable potential related to distribution licenses.** This part is naturally still an option, as visibility into distribution licenses is still limited. The role of this option will be emphasized in the future.

Valuation in different scenarios

We will be evaluating Qt's value in three scenarios, based on different estimates and valuation multiples. The base case scenario corresponds to our current valuation. The pessimistic scenario reflects failure of strategy and the positive scenario reflects such a scenario where the company slightly exceeds strategic goals for the period. In each scenario, Qt is priced at the end of the strategy period with different valuation multiples. In the pessimistic scenario, the multiples are the lowest, in the base scenario a little below the peer group, and in the optimistic scenario they are a little above. After this, we will evaluate the value of the company in 2021 in different scenarios, as well as what kind of annual return the share could offer as different scenarios realize in 2019-2021.

In our base case scenario (our current estimate) Qt's value would be 410 MEUR, corresponding to a 16.2 EUR share price. This offers a 25% annual expected return for the next 3 years. At this level, the expected return compensates the risks handsomely.

In the pessimistic scenario, Qt is worth 122 MEUR in 2021, or 4.8 per share. This corresponds to -17 % expected annual returns, should the pessimistic scenario materialize. We would like to note that the worst scenario is considerably worse, and the return subsequently more negative. In the pessimistic scenario, Qt remains profitable for the next few years,

with revenue evening out in the 50-60 MEUR range.

In our positive scenario, Qt is valued at 727 MEUR or 28.7 EUR per share, in 2021. This corresponds to 51% annual expected return, and reflects the strong leverage present, should the company succeed exceptionally in its strategy.

Current valuation multiples

We are evaluating Qt's value mainly through the EV/Sales- multiple, as the current developmental stage means that revenue growth is a central value driver. Strong scalability means that revenue growth is an important profits driver as well, meaning the faster the revenue grows, the faster the earnings' can support the valuation. In light of our estimates, earnings multiples offer support for the valuation from 2020 onwards.

Qt is currently priced at about 4x EV/Sales for 2018e and at about 3x for 2019e. From the perspective of the revenue multiple, we don't believe there is a lot of room for improvement, unless the company accelerates its growth to a 30 % annual level. If growth rate decreased to clearly under 20%, the multiples would face downwards pressure. In our base case scenario, the EV/Sales multiple can be expected to hold relatively steady in 2019-2021, as the company's valuation would be supported by earnings' multiples in 2021 as well, providing the estimate is accurate. Therefore the share's expected return for the next few years can be estimated by the current parameters as being roughly the same as our expected revenue growth estimate ("25%). The expected returns do however decrease with the same leverage effect if revenue growth slows down as the lower growth rate would also require lower acceptable multiples.

Estimates and valuation 3/3

From an earnings point of view, Qt's valuation multiples for 2020 EV/EBIT and P/E are 15x ja 21x. At these levels, the valuation can be considered in earnings terms as cautious for a company that is still in a strong revenue growth and scalable profitability phase. Visibility into 2020 is still however quite limited, and our estimate of 29 % growth requires proper success in distribution license sales, as per the strategy.

We have used operating system developers, CAD companies, and automotive industry software vendors as a peer group for Qt. The peers are mainly large and established IT sector players. The larger size of the peers weakens comparability to Qt, but on the other hand gives credibility to the peer group and estimates. We are inspecting Qt from a 2019-2020 multiples

scope compared to the peers. With the EV/Sales multiple, the share is 29 % and 48 % undervalued compared to the peer group. This reflects cautious valuation, but the deficit can also be explained by weak profitability and small size. The earnings' based EV/EBIT, EV/EBITDA and P/E multiples indicate about 15 % discount with 2020 estimates. This also slightly supports the valuation, as we expect the strongest earnings' improvement to be in 2021.

DCF valuation

Our DCF enterprise value (EV) for Qt is 242 MEUR which corresponds to 10.6 EUR per share. The business offers strong cash flow as the result turns positive, the balance sheet is very light, and working capital is negative. Our estimates have the growth for the coming years at about 25 % annually, and we

expect the company to achieve an EBIT margin of about 20 % during the next decade. Our terminal estimates have the operating profit margin at 12.5 % and growth at 2 %. The valuation is elevated by the negative working capital, which increases cash flow as revenue increases. The weight of the terminal value is 35 % (terminal value after 2023). The WACC in our DCF model is set at 10.7 %.

Valuation by scenarios

Year 2021	Pessimistic	Current estimates	Optimistic
Variable: revenue MEUR	59	90	120
Variable: EBIT MEUR	7	21	37
x revenue multiple	2,0	4,0	5,0
x operating profit multiple	15,0	17,0	19,0
= EV (EV/Sales)	119	360	598
= EV (EV/EBIT)	98	353	699
Mean (EV)	108	357	649
+Net cash	14	53	78
=Market cap	122	410	727
Share price in 2021	4,8	16,2	28,7
Return	-42 %	95 %	246 %
Annualized return	-17 %	24 %	51 %

Profit and loss statement

Profit and loss	2016	Q1'17	Q2'17	Q3'17	Q4'17	2017	Q1'18	Q2'18	Q3'18	Q4'18e	2018e	2019e	2020e	2021e
Revenue	32,4	8,6	8,8	8,7	10,1	36,3	10,3	13,4	10,7	11,5	45,9	57,3	73,6	90,0
License sales and consulting	21,1	5,5	5,4	5,4	6,7	23,0	6,9	9,8	6,9	7,6	31,2	40,0	53,6	67,0
Maintenance income	11,3	3,1	3,4	3,3	3,4	13,2	3,4	3,6	3,8	3,9	14,7	17,2	20,0	23,0
Gross profit	-0,9	-0,8	0,0	-1,1	-0,5	-2,3	-0,9	1,8	-1,0	-1,2	-1,3	2,4	12,1	22,2
Depreciation and amortization	-0,9	-0,2	-0,2	-0,2	-0,2	-0,9	0,0	-0,5	0,0	-0,2	-0,7	-1,3	-1,1	-1,4
Operating profit excluding non-recurring items	0,1	-1,0	-0,2	-1,3	-0,7	-3,2	-0,9	1,3	-1,0	-1,5	-2,1	1,1	11,0	20,8
Operating profit	-1,7	-1,0	-0,2	-1,3	-0,7	-3,2	-0,9	1,3	-1,0	-1,5	-2,1	1,1	11,0	20,8
Net financial expenses	-0,5	-0,2	-0,1	-0,1	-0,1	-0,5	0,0	-0,1	0,0	-0,1	-0,2	-0,2	0,0	0,0
Profit before taxes	-2,3	-1,2	-0,2	-1,4	-0,8	-3,7	-0,9	1,2	-1,0	-1,5	-2,3	1,0	11,0	20,8
taxes	0,5	0,2	0,0	0,2	0,1	0,5	0,0	0,1	0,0	0,0	0,1	-0,2	-1,1	-2,1
Minority shares	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Net profit	-1,7	-1,0	-0,3	-1,2	-0,7	-3,2	-0,9	1,2	-1,0	-1,5	-2,2	0,8	9,9	18,7
EPS (adjusted)	0,00	-0,05	-0,01	-0,05	-0,03	-0,14	-0,04	0,05	-0,04	-0,06	-0,09	0,03	0,40	0,74
EPS (reported)	-0,08	-0,05	-0,01	-0,05	-0,03	-0,14	-0,04	0,05	-0,04	-0,06	-0,09	0,03	0,40	0,74

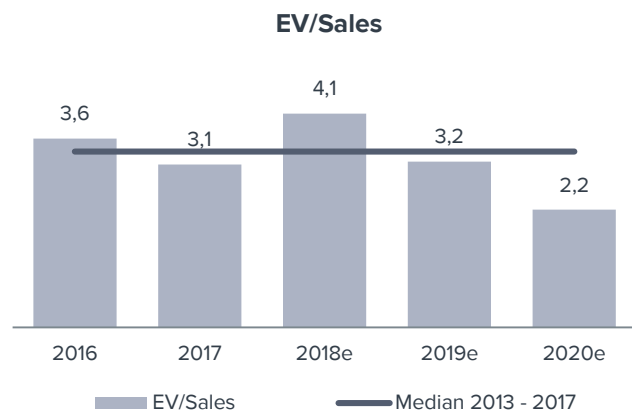
Key figures	2016	Q1'17	Q2'17	Q3'17	Q4'17	2017	Q1'18	Q2'18	Q3'18	Q4'18e	2018e	2019e	2020e	2021e
Revenue growth -%	20,3 %	20,9 %	-1,6 %	17,0 %	14,1 %	11,9 %	19,5 %	52,2 %	23,1 %	13,5 %	26,6 %	24,7 %	28,6 %	22,3 %
Adjusted revenue growth-%	-95,3 %	-324,3 %	-125,8 %	64,5 %	128,4 %	-3916,7 %	-6,8 %	-803,2 %	-23,7 %	107,8 %	-35,4 %	-154,7 %	870,1 %	88,8 %
Gross margin-%	-2,7 %	-8,9 %	0,5 %	-12,7 %	-4,5 %	-6,3 %	-9,2 %	13,7 %	-9,2 %	-10,8 %	-2,9 %	4,2 %	16,4 %	24,6 %
Adjusted EBIT-%	0,3 %	-11,8 %	-2,1 %	-14,9 %	-6,9 %	-8,8 %	-9,2 %	9,9 %	-9,2 %	-12,7 %	-4,5 %	2,0 %	14,9 %	23,1 %
Net result -%	-5,3 %	-11,9 %	-3,3 %	-13,4 %	-7,2 %	-8,9 %	-9,2 %	9,3 %	-9,2 %	-13,0 %	-4,8 %	1,4 %	13,4 %	20,8 %

Source: Inderes

Valuation summary

Valuation	2016	2017	2018e	2019e	2020e	2021e
Share price	5,62	5,21	8,30	8,30	8,30	8,30
Number of shares, millions	20,8	23,8	23,8	24,3	24,8	25,3
Market cap	117	124	197	197	197	197
Enterprise value (EV)	117	113	188	181	166	144
P/E (adj.)	>100	neg.	neg.	>100	20,8	11,2
P/E	neg.	neg.	neg.	>100	20,8	11,2
P/FCF	neg.	11,4	neg.	61,1	15,1	9,0
P/B	14,2	6,1	10,9	9,0	5,7	3,8
P/S	3,6	3,4	4,3	3,4	2,7	2,2
EV/Sales	3,6	3,1	4,1	3,2	2,2	1,6
EV/EBITDA (adj.)	neg.	neg.	neg.	75,2	13,7	6,5
EV/EBIT (adj.)	>100	neg.	neg.	>100	15,0	7,0
Payout ratio (%)	0,0 %	0,0 %	0,0 %	0,0 %	37,6 %	54,1 %
Dividend yield-%	0,0 %	0,0 %	0,0 %	0,0 %	1,9 %	5,1 %

Source: Inderes



Peer group

Peer group valuation MEUR	Share price	Market cap MEUR	EV MEUR	EV/EBIT		EV/EBITDA		EV/Sales		P/E	
				2019e	2020e	2019e	2020e	2019e	2020e	2019e	2020e
Adobe Inc	228,29	96911	97697	25,1	20,2	23,0	18,8	10,0	8,5	29,1	23,5
Microsoft Corp	101,31	686768	638610	17,8	15,6	13,8	12,1	5,8	5,3	23,0	20,3
Oracle Corp	47,26	147141	155155	10,3	10,0	9,5	9,1	4,5	4,4	13,7	12,7
Red Hat Inc	174,24	26994	25756	36,6	30,9	33,2	28,4	8,7	7,6	49,1	43,6
Dassault Systemes SE	101,80	26165	24479	20,2	18,3	18,4	16,6	6,4	5,9	29,5	26,5
Autodesk Inc	130,07	24659	25107	94,8	32,7	74,7	29,7	11,3	8,9	131,9	40,3
ANSYS Inc	144,92	10536	9896	18,4	16,7	17,7	16,1	8,2	7,5	25,5	23,1
PTC Inc	81,90	8499	8813	34,4	24,6	27,5	20,8	7,5	6,6	47,1	31,4
Synopsys Inc	84,47	11011	10793	15,9	14,1	13,2	12,3	3,7	3,5	19,8	17,4
Basware Oyj	39,60	576	587			2935,2	234,8	3,9	3,6		
CDK Global Inc	48,99	5547	7649	12,3	11,2	10,0	9,1	3,7	3,6	13,2	11,5
Vitec Group Plc	1185,00	600	648	9,7	8,7	7,9	7,4	1,4	1,3	12,9	11,7
Nuance Communications Inc	14,17	3517	5039	10,5	9,9	9,4	9,7	2,8	2,7	11,3	10,5
QAD Inc	40,75	666	556	37,9	35,6	27,0	26,4	1,9	1,8	54,5	55,7
Materialise NV	21,70	947	940	83,2	68,6	30,4	26,1	4,5	3,9	118,1	82,5
Qt (Inderes)	8,30	197	188	160,0	15,0	75,2	13,7	3,2	2,2	248,4	20,8
Mean				30,5	22,7	216,7	31,8	5,6	5,0	41,3	29,3
Median				19,3	17,5	18,4	16,6	4,5	4,4	27,3	23,3
Diff-% to mean				730 %	-14 %	308 %	-17 %	-29 %	-48 %	810 %	-11 %

Source: Thomson Reuters / Inderes. Notice: Market cap used by Inderes does not account for own shares held by the company.

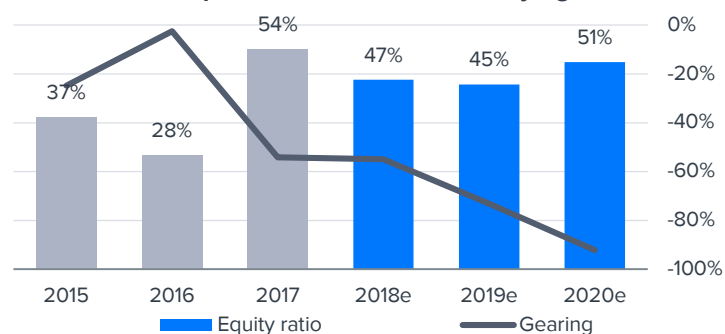
Balance sheet

Assets	2016	2017	2018e	2019e	2020e
Non-current assets	13,4	14,9	15,2	15,0	14,1
Goodwill	6,6	6,6	6,6	6,6	6,6
Intangible assets	5,4	5,0	5,0	4,7	4,7
Tangible assets	0,6	1,1	1,3	1,5	1,7
Associated companies	0,0	0,0	0,0	0,0	0,0
Other investments	0,0	0,0	0,0	0,0	0,0
Other non-current assets	0,0	0,2	0,0	0,0	0,0
Deferred tax assets	0,9	2,1	2,4	2,2	1,1
Current assets	16,0	22,6	23,7	33,2	54,0
Inventories	0,0	0,0	0,0	0,0	0,0
Other current assets	0,0	0,0	0,0	0,0	0,0
Receivables	9,6	10,9	13,8	17,2	22,1
Cash and equivalents	6,4	11,7	10,0	16,0	32,0
Balance sheet total	29,4	37,5	38,9	48,1	68,1

Source: Inderes

Liabilities & equity	2016	2017	2018e	2019e	2020e
Equity	8,3	20,3	18,1	21,9	34,7
Share capital	0,5	0,5	0,5	0,5	0,5
Retained earnings	-1,6	-4,4	-6,6	-5,8	4,1
Hybrid bonds	0,0	0,0	0,0	0,0	0,0
Revaluation reserve	0,6	0,5	0,5	0,5	0,5
Other equity	8,7	23,7	23,7	26,6	29,5
Minorities	0,0	0,0	0,0	0,0	0,0
Non-current liabilities	0,8	1,5	1,1	1,1	1,1
Deferred tax liabilities	0,3	0,3	0,3	0,3	0,3
Provisions	0,0	0,0	0,0	0,0	0,0
Long term debt	0,1	0,4	0,0	0,0	0,0
Convertibles	0,0	0,0	0,0	0,0	0,0
Other long term liabilities	0,5	0,8	0,8	0,8	0,8
Current liabilities	20,4	15,7	19,7	25,2	32,4
Short term debt	6,2	0,3	0,0	0,0	0,0
Payables	14,2	15,4	19,7	25,2	32,4
Other current liabilities	0,0	0,0	0,0	0,0	0,0
Balance sheet total	29,4	37,5	38,9	48,1	68,1

Development of balance sheet key figures



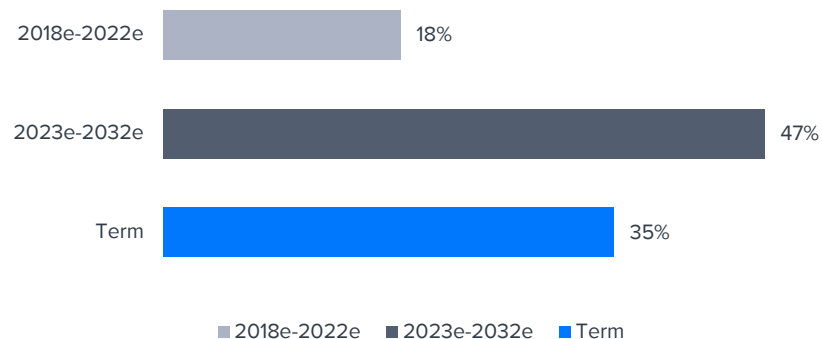
DCF model

DCF model	2017	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e
EBIT (operating profit)	-3,2	-2,1	1,1	11,0	20,8	23,0	25,0	27,1	30,4	32,1	35,3	36,4	37,1	37,4	37,2	31,6
+ Depreciation	0,9	0,7	1,3	1,1	1,4	1,4	1,5	1,7	1,8	1,9	2,2	2,4	2,6	2,8	3,0	3,2
- Paid taxes	-0,7	-0,2	0,0	0,0	-0,9	-2,3	-3,7	-5,4	-6,0	-6,3	-7,0	-7,2	-7,3	-7,3	-7,3	-6,1
- Tax, financial expenses	-0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-0,1	-0,1	-0,1	-0,1	-0,1	-0,2	-0,2	-0,2
+ Tax, financial income	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
- Change in working capital	-0,2	1,5	2,0	2,3	2,3	2,0	2,0	2,3	2,3	2,3	2,4	2,3	2,3	2,1	2,0	0,7
Operating cash flow	-3,2	-0,1	4,4	14,4	23,5	24,0	24,8	25,7	28,4	29,9	32,7	33,8	34,6	34,8	34,7	29,1
+ Change in other long-term liabilities	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
- Gross CAPEX	-1,2	-0,7	-1,2	-1,3	-1,6	-1,9	-2,4	-2,7	-2,6	-3,0	-3,2	-3,5	-3,6	-3,8	-3,9	-3,5
Free operating cash flow	-4,1	-0,8	3,2	13,1	21,9	22,1	22,4	23,0	25,8	26,9	29,5	30,4	30,9	31,1	30,8	25,6
+/- Other	15,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
FCFF	10,9	-0,8	3,2	13,1	21,9	22,1	22,4	23,0	25,8	26,9	29,5	30,4	30,9	31,1	30,8	25,6
Discounted FCFF		-0,8	3,0	10,9	16,5	15,2	13,9	13,0	13,3	12,6	12,5	11,7	10,8	9,9	8,9	6,7
Sum of FCFF present value		243	244	241	230	213	198	184	171	158	145	133	121	110	100	91,6
Enterprise value DCF		243														
- Interesting bearing debt		-0,7														
+ Cash and cash equivalents		11,7														
-Minorities		0,0														
-Dividend/capital return		0,0														
Equity value DCF		254														
Equity value DCF per share		10,7														

Wacc	
Tax-% (WACC)	20,0 %
Target debt ratio (D/(D+E))	10,0 %
Cost of debt	6,0 %
Equity Beta	1,30
Market risk premium	4,75 %
Liquidity premium	1,50 %
Risk free interest rate	3,0 %
Cost of equity	10,7 %
Weighted average cost of capital (WACC)	10,1 %

Source: Inderes

Cash flow distribution



Summary

Income statement	2015	2016	2017	2018e	2019e
Revenue	26,9	32,4	36,3	45,9	57,3
EBITDA	2,7	-0,9	-2,3	-1,3	2,4
EBIT	1,8	-1,7	-3,2	-2,1	1,1
PTP	1,6	-2,3	-3,7	-2,3	1,0
Net Income	1,0	-1,7	-3,2	-2,2	0,8
Extraordinary items	0,0	-1,8	0,0	0,0	0,0

Balance sheet	2015	2016	2017	2018e	2019e
Balance sheet total	23,9	29,4	37,5	38,9	48,1
Equity capital	8,9	8,3	20,3	18,1	21,9
Goodwill	6,6	6,6	6,6	6,6	6,6
Net debt	-2,2	-0,2	-11,0	-10,0	-16,0

Cash flow	2015	2016	2017	2018e	2019e
EBITDA	2,7	-0,9	-2,3	-1,3	2,4
Change in working capital	-0,6	-0,5	-0,2	1,5	2,0
Operating cash flow	1,5	-1,7	-3,2	-0,1	4,4
CAPEX	-0,2	-0,5	-1,2	-0,7	-1,2
Free cash flow	1,1	-2,6	10,9	-0,8	3,2

Largest shareholders	% of shares
Ingman Development Oy Ab	21,7 %
Keskinäinen Eläkevakuutusyhtiö Ilmarinen	10,1 %
Aktia Asset Management	7,5 %
Keskinäinen Työeläkevakuutusyhtiö Varma	4,7 %
Kari Juhani Karvinen	4,3 %
Jyrki Hallikainen	3,6 %

Source: Inderes, Share holder information: Modular Finance AB

Per share data	2015	2016	2017	2018e	2019e
EPS (reported)		-0,08	-0,14	-0,09	0,03
EPS (adj.)		0,00	-0,14	-0,09	0,03
OCF / share		-0,08	-0,13	0,00	0,18
FCF / share		-0,13	0,46	-0,03	0,13
Book value / share		0,40	0,85	0,76	0,90
Dividend / share	0,00	0,00	0,00	0,00	0,00

Growth and profitability	2015	2016	2017	2018e	2019e
Revenue growth-%	32 %	20 %	12 %	27 %	25 %
EBITDA growth-%	-237 %	-132 %	163 %	-42 %	-280 %
EBIT (adj.) growth-%	-190 %	-95 %	-3917 %	-35 %	-155 %
EPS (adj.) growth-%			-2919 %	-32 %	-136 %
EBITDA-%	10,2 %	-2,7 %	-6,3 %	-2,9 %	4,2 %
EBIT (adj.)-%	6,6 %	0,3 %	-8,8 %	-4,5 %	2,0 %
EBIT-%	6,6 %	-5,4 %	-8,8 %	-4,5 %	2,0 %
ROE-%	11,7 %	-20,0 %	-22,6 %	-11,4 %	4,1 %
ROI-%	18,1 %	-14,0 %	-18,1 %	-10,6 %	5,7 %
Equity ratio	37,4 %	28,1 %	54,1 %	46,5 %	45,4 %
Gearing	-24,8 %	-2,6 %	-54,2 %	-54,9 %	-73,1 %

Valuation multiples	2015	2016	2017	2018e	2019e
EV/S	neg.	3,6	3,1	4,1	3,2
EV/EBITDA (adj.)	neg.	neg.	neg.	neg.	75,2
EV/EBIT (adj.)	neg.	>100	neg.	neg.	>100
P/E (adj.)		>100	neg.	neg.	>100
P/B	0,0	14,2	6,1	10,9	9,0
Dividend-%		0,0 %	0,0 %	0,0 %	0,0 %

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Recommendation	Upside potential*
Buy	> 15 %
Accumulate	5 - 15 %
Reduce	-5 - 5 %
Sell	< -5 %

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Recommendation history (>12 mo)

Date	Recommendation	Target price	Share price
14.3.2017	Accumulate	7,50 €	6,81 €
28.4.2017	Accumulate	7,80 €	7,04 €
11.8.2017	Accumulate	7,80 €	6,88 €
24.10.2017	Accumulate	7,50 €	6,68 €
15.1.2017	Accumulate	6,40 €	5,58 €
19.2.2018	Buy	7,00 €	5,50 €
30.4.2018	Buy	7,50 €	5,94 €
10.8.2018	Buy	9,50 €	8,30 €
2.11.2018	Buy	10,00 €	8,16 €
9.1.2019	Buy	10,00 €	8,40 €



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