SYMMETRY INVEST A/S

Quartix Plc

DATE	11/11/2019
TARGET:	600 EUR
Price:	300 EUR
UPSIDE:	100%

SYMMETRY INVEST A/S

CVR: 35056467 aa@symmetry.dk

Disclaimer

This report is written by Symmetry Invest A/S. The report is based on research, financial statements, interviews, field research, analyst reports etc. The report includes the opinions of Symmetry Invest A/S. This are our own opinions. Symmetry do no assure for any correctness written in this report as there could be material miscalculations, mistyping's etc. The research is often done on a 6-18-month basis before publishing. This report should in no way be seen as a buy, hold or sell recommendation of the company. Symmetry Invest A/S are an authorized alternative investment firm (FAIF) by Danish regulatory authorities. We are not authorized as an investment advisor and as such this research should in no way be interpreted as investment advice but as journalistic research and our own reasoning for owning the stock. Symmetry are in no way responsible for any losses incurred on investments based on this report. Readers of this report should interpret that Symmetry Invest A/S are holding shares in the company by the time of publishing this report. Symmetry commits not to trade in the stock in 72 hours following publishing (according to the timestamped in the report). After that, Symmetry Invest A/S keeps the right to buy or sell the stock without any further notifications about it. Our target price for the stock could change materially caused by factors either in or out of company control. We are not obligated to issue a new report or any notification should or target price change.

This report is released to the following persons:

- This report is released on our company website to investors in Symmetry Invest A/S
- The report is passed through to fellow fund managers or investment advisors around the world as it is normal for investment managers to share ideas with each other
- The report is sent to subscribers to Symmetrys quarterly newsletter registered on our website.

Symmetry Invest A/S operates under the FAIF regulation and can only do marketing of our fund to Danish FAIF accredited investors. As such, this report should in no way be interpreted as marketing for Symmetry Invest A/S.

In some cases, Symmetry will issue a follow up report on material new information about the company. But are in no way obligated to so.

Investment in stocks includes risk of loss of capital and we always recommend others to consult with an authorized investment advisor before doing investments.

Pictures and other material in this report could be protected by Copyright and cannot be redistributed.

Symmetry are not receiving payments from any company mentioned in this report beside our return on stock ownership in companies mentioned.

High growth recurring SAAS company

- Quartix is a high margin, high growth SAAS Telematics company.
- On the surface it looks like a broken growth story. But the truth is quite the opposite
- The company don't do a lot to disclose the extremely good unit economics. Investors who figures those out will see how cheap the company actually is.
- Quartix are finding additional growth opportunities to accelerate the growth rates even further.
- Quartix have the most conservative accounting we have ever seen. This on the surface makes it look more expensive than peers when the opposite is true.
- Quartix has a good capital allocation policy, investing everything they can in growth and returning all remaining money to shareholders.
- Insiders have big share ownership. CEO Andy Walters is the founder of the company and control about 37 % of the shares. Other founders still hold 18 % of the company and a leading institution owns 11 %.
- With a somehow low free float and no real analyst coverage the stock goes unnoticed despite turning SAAS KPI's that would make it trade at 2-3x the valuation in the US.

Ticker	QTX
ISIN	GB00BLZH2C83

Currency	GBP
Target	600
Latest	300
Stocks in issue (mil.)	47,8
Market cap (mil.)	144

Nøgletal (2018)	
P/E*	20,2
Dividend yield	4,9 %

*adjusted for non-cash D&A on intangibles.

Financials *(thousands GBP)*	2018	2019	2020
Net Revenue	25.706	25.449	27.994
EBITDA	8.334	6.820	7.782
EBIT	8.041	6.617	7.558
Net Income	6.860	5.454	6.164
EBIT Margin	31,3%	26,0%	27,0%

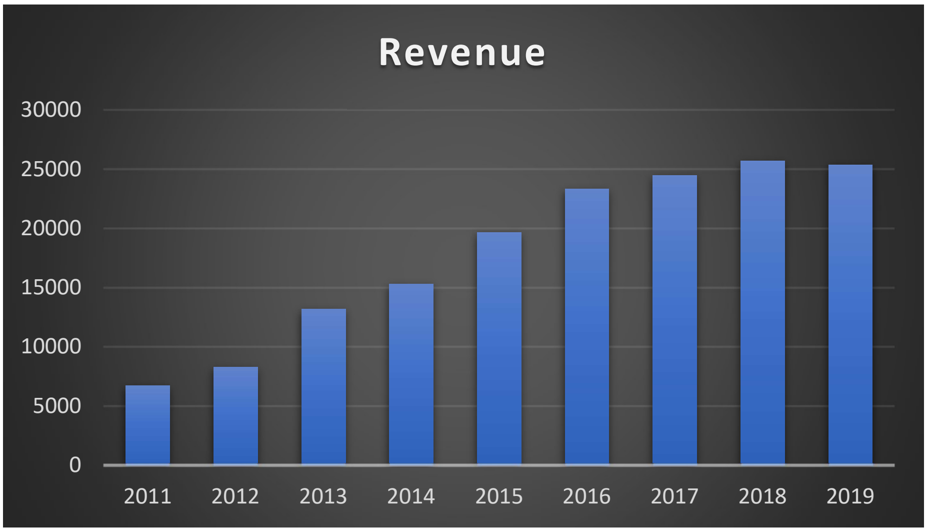
Why is it cheap?

One of the most important things in investing is to figure out why something is cheap. Quartix stock have barely moved over the last 3 years since the IPO:

When one understands why other people don't like or look into the company, its easier to figure out why our opinion differs from the rest.

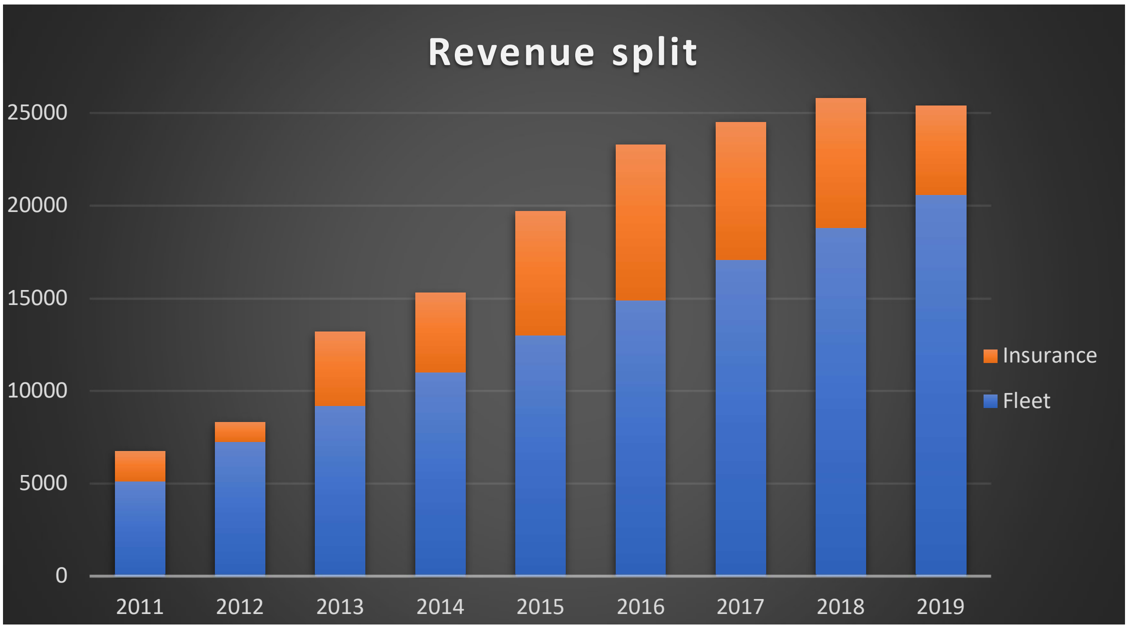
1) It's a broken growth story:

In our opinion the main reason for the cheap stock is because Quartix looks like a broken growth story:



If we take a look at the reported revenue numbers that conclusion could seem right. The revenue growth was really high from 2012 to 2016. Hereafter it has slowed down and turned negative in 2019.

The missing point here is that Quartix operates in two segments. High margin, recurring fleet revenue and low margin bumpy insurance revenue:



We have illustrated the segment revenue above. As we can see, the core fleet business has done really well over all the years and kept a nice growth rate. The much lumpier insurance revenue which is low margin had high growth from 2012 to 2016 and have then declined some. Investors who only look at the first graph would conclude that Quartix is a broken growth story, where as investors looking at the second graph can see Quartix as a high growth fleet company.

2) **The shares are expensive, where is the value?**

On the surface Quartix looks expensive for a deep value investor. Quartix trades at around 20-25 times P/E. If we combine this with the first point that the growth is gone, we can clearly see why no one wants to pay +20 P/E. But as showed before, there is still high growth occurring within Quartix.

First of all, most high growth SAAS businesses are normally not valued on P/E but instead on P/S. This is because most SAAS businesses actually loose money or have really low earnings. Quartix is different as it has 25-35 % EBIT margins despite a lot of growth investments.

Quartix at the same time has really conservative accounting (we have never seen anything like it). They practically expense EVERYTHING upfront. R&D expenses, costumers acquisition costs and even all CAPEX are expensed. This make the earnings a little depressed compared to competitors. But on a free cash flow basis Quartix trades substantially below SAAS peers.

We will dig deeper into this later on.

3) **Low free float and low dependence on "the street":**

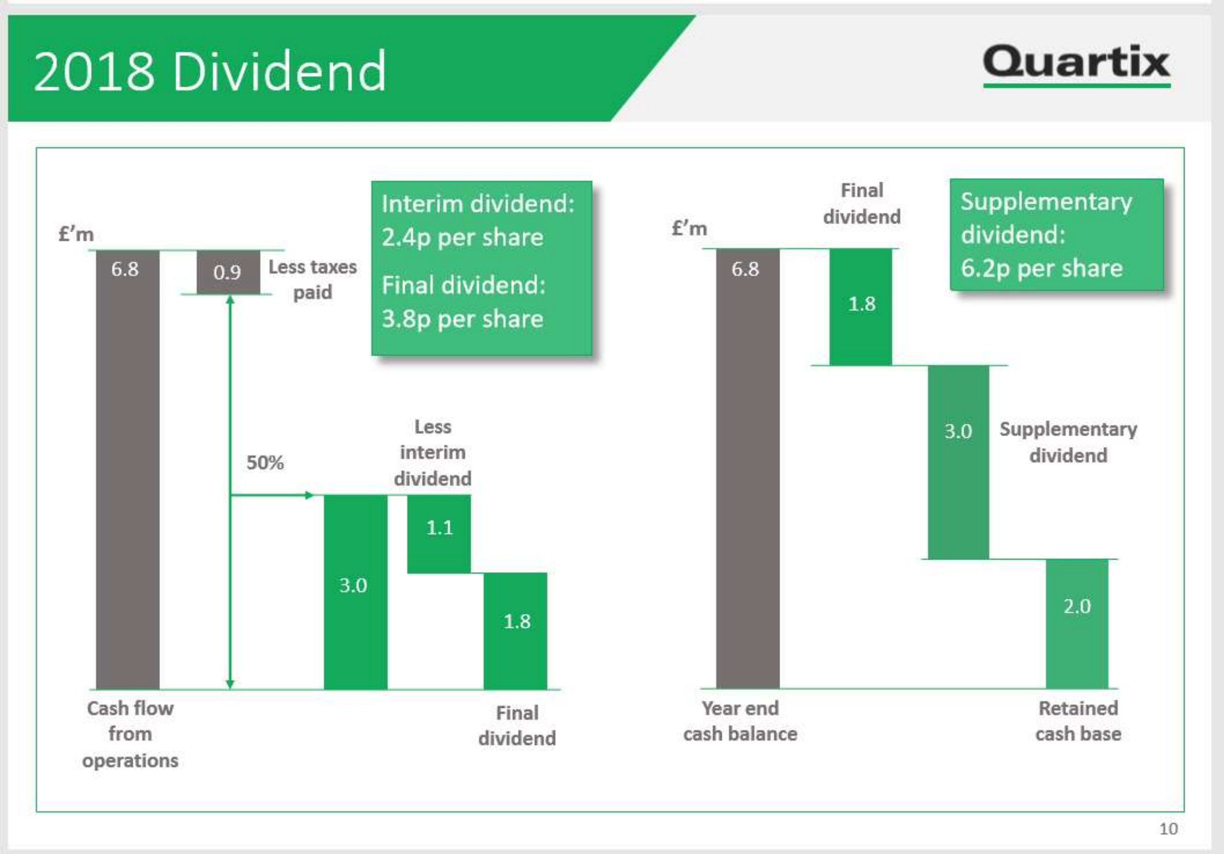
Since Quartix listed in 2014 it has not raised more equity. Neither has it raised any debt. Instead Quartix have just paid out excess cash as a dividend each year. We really much like that. But the problem of cause is, if you don't buy services from banks (fund raising, debt financing etc.) they are not likely to put analyst resources on your stock. Combined with the low free float (related to high insider ownership), means that there really aren't any analysts following Quartix. There are a few boutique firms and house brokers writing some "generic" reports, but that's it.

The consequence of this is that Quartix is not really well understood.

We think all the 3 reasons listed here are reasons why Quartix trades substantially below what we think it's really worth. We think it's only a matter of time before the market recognizes the underlying value here. As the decline in the insurance business levels of in 2020 an onwards and fleet growth accelerates, the group revenue will start to grow and keep accelerating for years to come. This could be the main driver for repricing the stock upwards.

Dividend policy:

Before spending a little more time describing Quartix we wanted to share the dividend policy of the company:



[1]

Quartix has a policy of paying out all excess cash above 2 mio. £ as a supplemental dividend. The calculation for 2018 is stated above. This dividend policy again relates to the conservative way Quartix runs the business.

1) Make a lot of investments in future growth
2) Expense all of it in the P&L instead of on the balance sheet
3) Pay out all excess cash as dividends

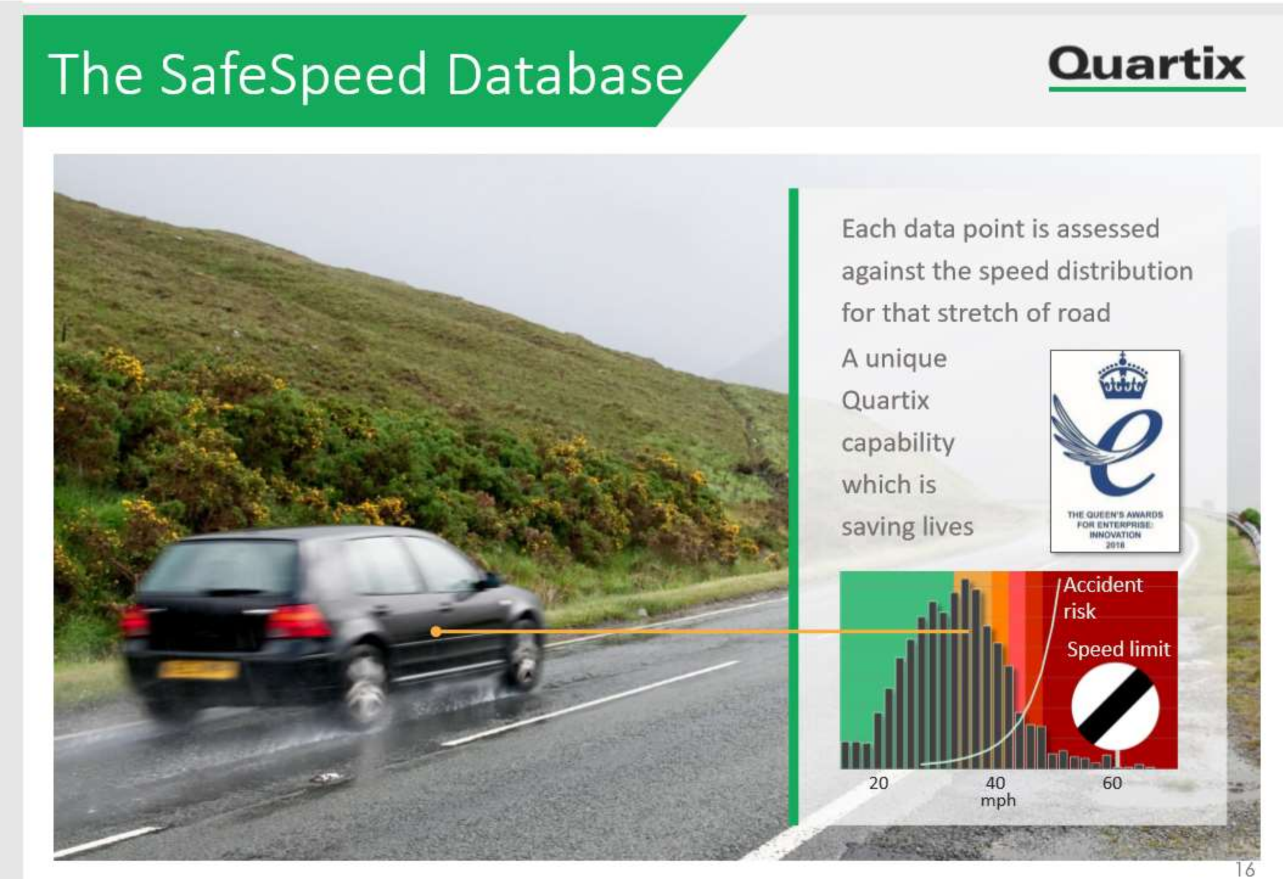
The current dividend yield for Quartix is around 4-5 %. We like to invest in a high growth SAAS company and receive a 4-5 % dividend yield as most SAAS companies normally burn trough cash and constantly do equity raises.

[1] Quartix company presentation

About Quartix:

Quartix operates in two different segments. It's the same product they sell into both segments, but costumer behavior, pricing, competition, retention etc. are different. As +90 % of the underlying value in Quartix is in the fleet business, this is where we will spend the majority of our time. But first a little introduction to the insurance business:

In the insurance business Quartix sells its telematics products mainly for young drivers. This is insurance companies that want to see how new 18-20-year-old car-owners are driving before they can price the insurance policies accurately.

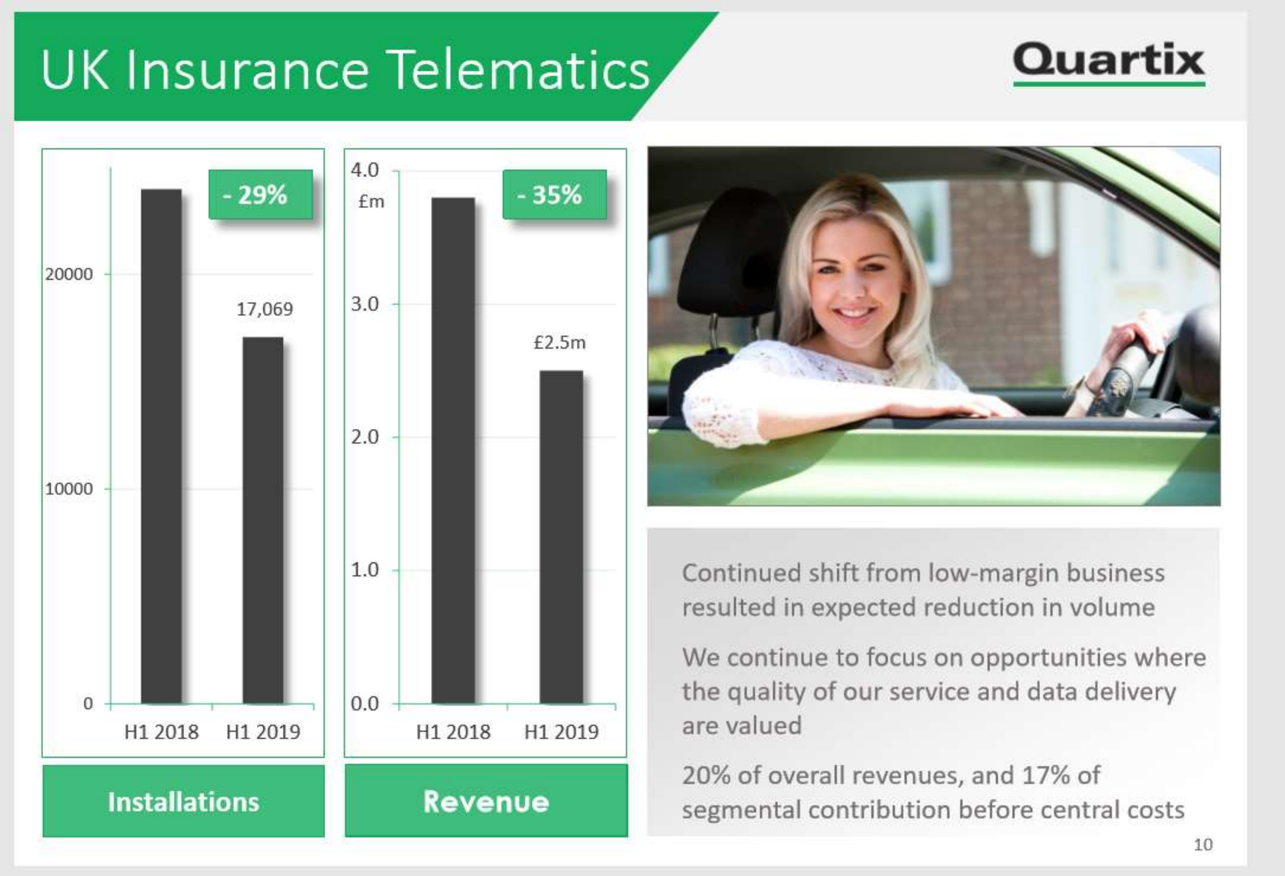


The Quartix "box" that plugs into the car measure how drivers behave in the car.

- Do they drive to fast?
- Do they "push and stop" a lot or reduce speed slowly into stops etc.
- How do they behave in bad weather situations?
- How do they behave in packed traffic situations?

The insurance companies use those data to predict how likely it is that drivers will crash their cars in the future and price the insurance policies accordingly.

The problem for Quartix is that the space is really price sensitive and contracts are short term (usually 12 month bulk purchases). This contribues to a more volatile revenue development. As Quartix focus on quality and not price, they loose contracts from time to time when newer players undercut them. A lot of times they win costumers back because the insurance companies don't get the quality they wanted or the competitor realise their prices were to low.



Over the last 2 years Quartix have lost share in the insurance market as they have focused on high margin opportunities with niche players that will pay for the product. At the same time, they have lost bulk contracts where they would not compete on price.

There is a change (as has happened before) that Quartix will win some of those contracts back again.

We think the worst hit to Quartix has happened in 2019 with a slower revenue decline in insurance in 2020 and then a flattish development thereafter.

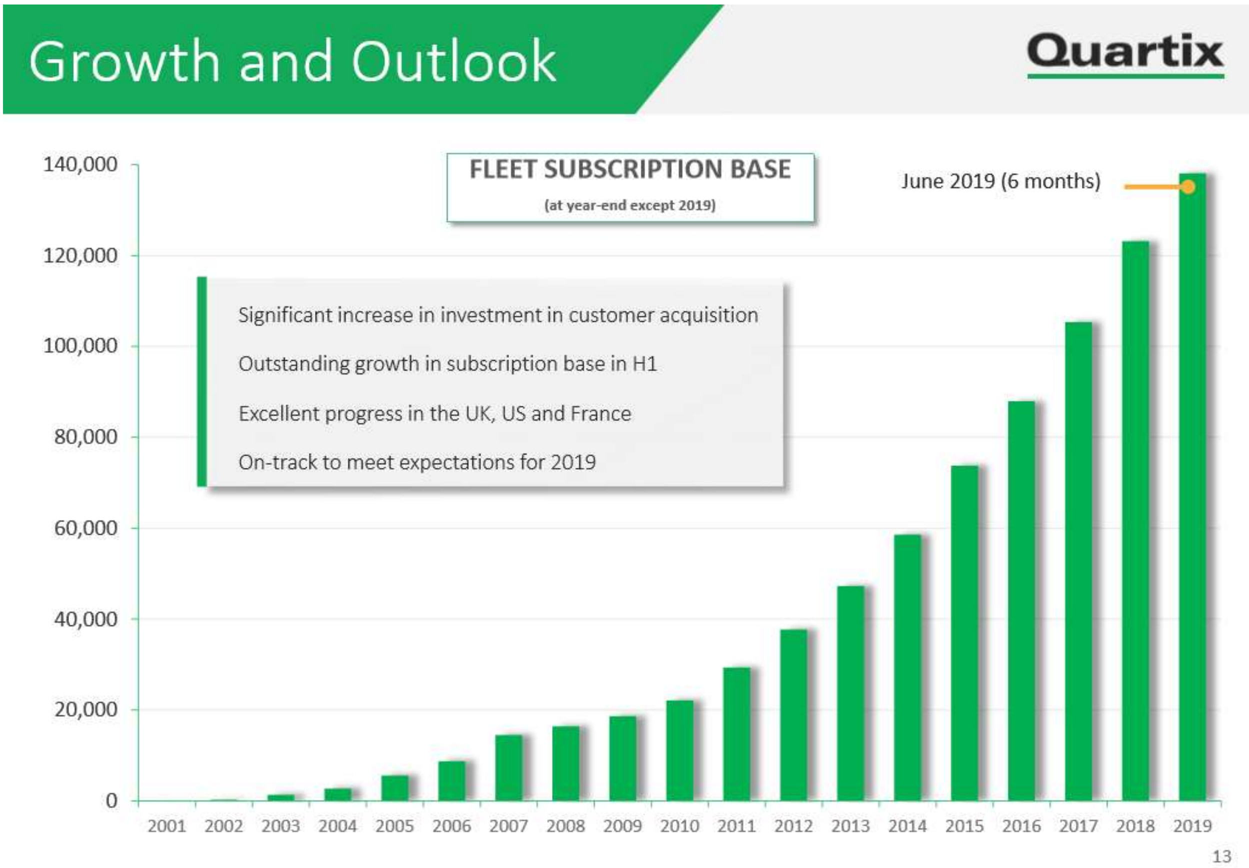
As insurance is a low margin product it doesn't have a big influence on the total valuation. As it is quite low touch and supplemental to the fleet business it does work as a good cash contributor to the overall group.

Fleet:

The main driver of future growth and profits for Quartix is the fleet business. The fleet business has several advantages:

1) It's a high margin business with operating margins (less costumer acquisitions) running at +70 %.
2) It has high costumer retentions usual at +90 % which increases fast in older cohorts
3) It is highly fragmented in costumers which means Quartix have basically 0 costumer concentrations
4) It has really good LTV/CAC ratios[2]
5) The underlying market is growing fast which means Quartix don't need to take share to grow

Before we dig a little deeper into the fleet business and how it creates value for the costumers, we wanted to show another chart. Remember on the first page we showed how Quartix looked like a broken growth story? Here is the true story about Quartix fleet subscribers:



[3]

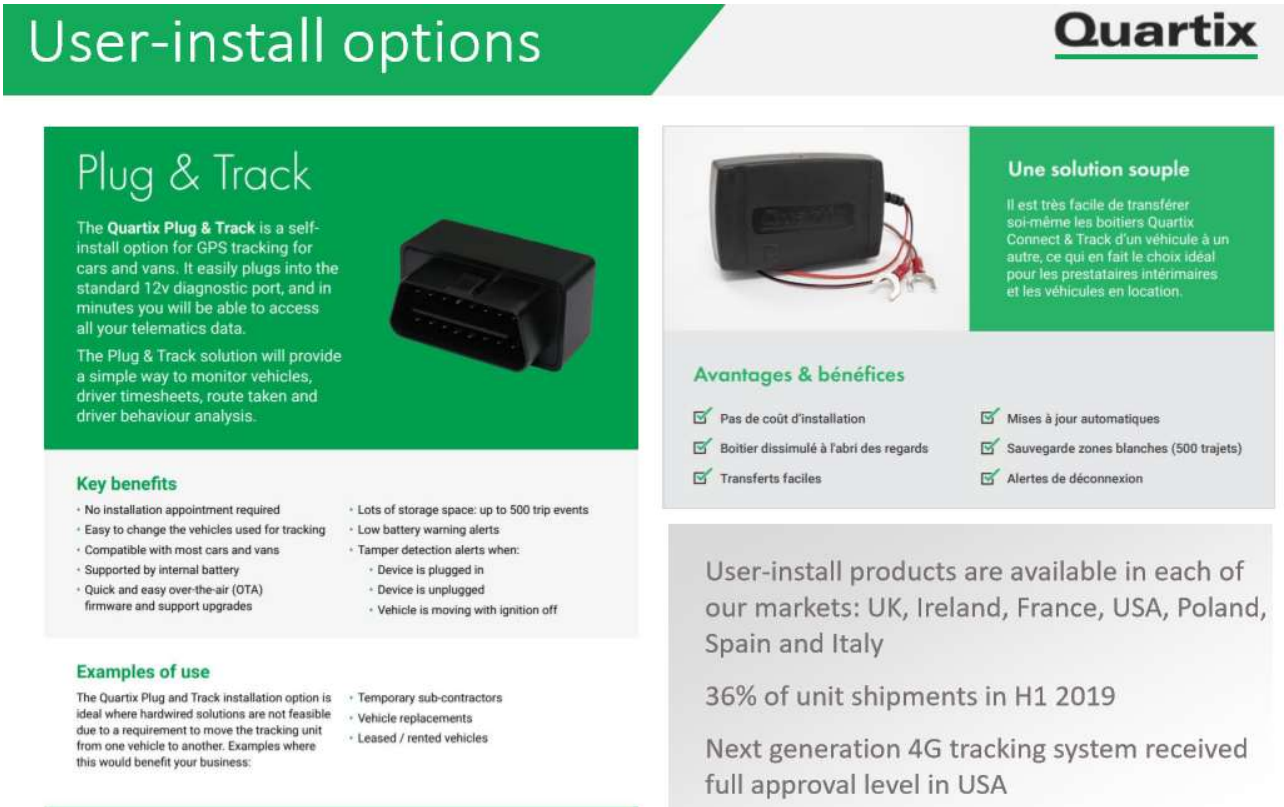
+22 % CAGR on subscribers over the last +10 years.

[2] Lifetime value / costumer acqustion cost
[3] Quartix H1 2019 presentation

What is fleet telematics?

A fleet telematic solution is a small hardware box that plugs into cars and vans. The boxes have GPS tracking and constantly sends data to the cloud where Quartix software procesesses it.

The box can be installed through Quartix extensive installer network or through self-install. As the self-intall solution has been made much more user friendly over time it has gained more traction. Which also lowers upfront cost for Quartix as they don't have to pay installers.



When the device is plugged into the car the fleet owner can track the usage of the car through access to Quartix software. Quartix charges 0 upfront cost for the units and the installs etc. The only payment to Quartix are the monthly subscription fee that is paid per box.

The device is easy to change between vehicles. If you sell one vehicle and buy a new one its easy to shift it. If your vehicle is on maintaince and you have a rental car its easy to change it etc.

What does fleet owners then do with the software?:

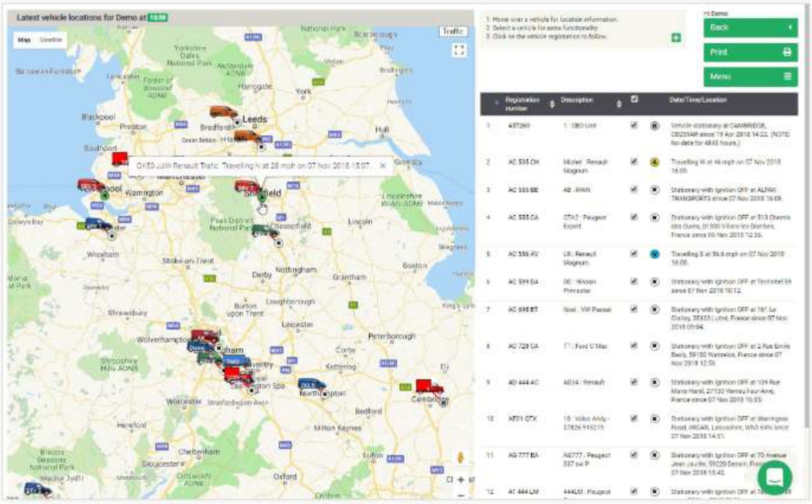
They use it to track where all their vehicles is at the moment:

See where your vehicles are right now

Track your vehicles and drivers in real time using any internet-connected device. No need for additional software – everything is accessed over the web.

With our Google-backed tracking map, you can access all your vehicle and driver information to see timesheets and daily route maps.

- Pinpoint location of vehicles
- Follow them on Google maps
- Analyse daily activity



This have a lot of advantages for the business as:

1) If they get a new service order they can see where the nearest vehicle is
2) The map uses traffic data and track not only distance but also time to arrival.
3) If thieves don't know the box is installed the owner can locate a stolen vehicle.
4) Vehicle owners can track the fleets "off work" to see if employees use vehicles unauthorized

It also tracks daily start and finish on different locations.

Daily vehicle logs

Identify where stops were made and what time jobs or deliveries were completed. Driver logs show all individual journeys on a given day, with 'start' – 'finish' times, distance travelled and idling time for each trip.

Adjustable level of detail to suit your needs, for example, stops with ignition on and short movements around a site can either be shown or filtered out.

Custom Location Names and Job References – adding your own custom address location names is easy to configure. These names replace the street addresses on your customised reports, making it easy to identify sites that you visit regularly.

Links to locations and routes – clicking on any place name takes you to the location map, and the magnifying glass next to each trip takes you straight to the daily route map for that trip.

This makes it easier to bill clients when you have a lot of "small jobs" as you have details when you arrived and leaved again and thereby time spent on the job.

Vehicle owners can also see how much time the driver spends on the gas station etc. (was he taking on gasoline for 5 minutes or playing slot machines for 1 hour at work etc.).

Owners also have the option to track driver behavior. Does employees drive within speed limits, slows down speed into stops etc. A daily report is generated for each vehicle with colors easily illustrating actual speed vs. speed limits:

Daily vehicle route maps

Quartix shows you all the journeys and routes taken on a day, with each way-point marked for direction and speed. Create your own 'custom locations' for regular customer sites to quickly see driver routes are within proximity of these locations. Click on the way-points for more detail on speed or zoom to exact location using Google Street View.

The parts of the route where the national speed limit was exceeded are clearly displayed by indicating the national speed limit sign.

Zoom into those locations or hover over the way marker to see actual speed versus speed limit.

Quartix also allows for individual reports using a driver ID. This is important in shared vehicles where the business owner wants to know which person are driving which vehicles at which times etc.

Individual driver reports

Driver ID is an additional subscription option available with InfoPlus.

Shared vehicles

Quartix Driver ID gives you the ability to identify drivers when vehicles are shared and generate reports based on the drivers as well as vehicles.

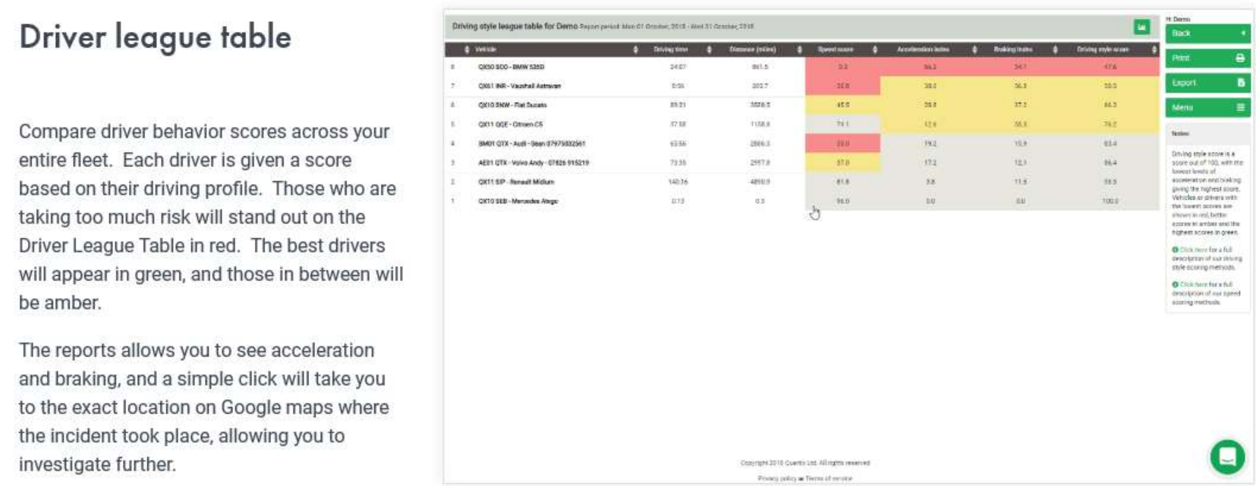
Personal mileage

Driver ID also allows you to differentiate between business and personal mileage. If, for example, you allow trusted employees to use the vehicle at the weekend or evening for personal use, you may not want to include this as "business" mileage.

Learn more about our Driver ID option.

Quartix also make driver profiles in each of their vehicles. They can then create a profile for each driver and index driver behavior against each other.

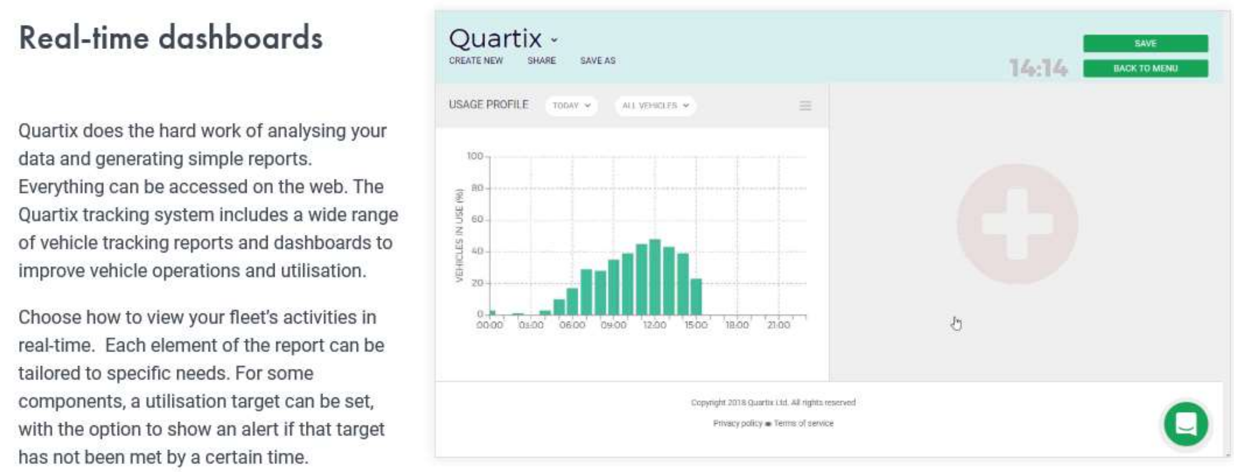
Owners can then get an alert and see how their drivers behave in comparison to the whole Quartix fleet:



https://www.quartix.net/product/driving-style/

As better driver behavior will save the car on fuel and maintaince its an important tool for owners to use as it saves them money.

Quartix has developed a lot of management tools that help management optimize the vehicle fleet.



Real-time dashboards help management optimize vehicle utilization. This helps management with opportunities to improve efficiency by knowing where to share vehicle, where to shift vehicle, what vehicles stands still the most etc.

Another optimisation is route analysis:

Route Analysis

Route analysis this key management tool is of particular value to fleets operating from multiple depots, or with groups of vehicles covering different areas. The Weekly Route Chart provides an overview of mobile workforce activity in any selected week, displayed clearly on a colour plot online. This enables you to identify route inefficiencies and overlaps.

Key business benefits of route analysis:

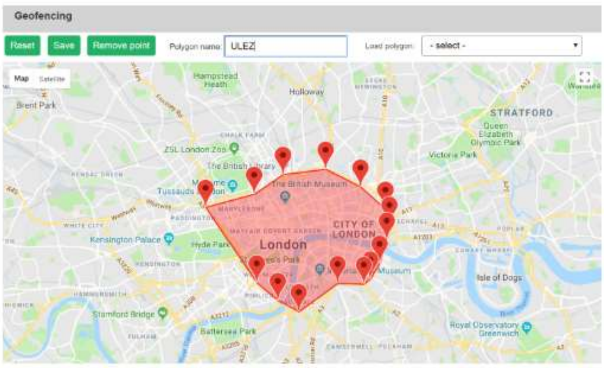
Cost savings with the easy identification of journey duplication and overlap by vehicles from adjacent depots. Removing these inefficiencies will result in greatly reduced fuel expenditure and maintenance costs.

Streamlining of fleet whilst retaining excellent standards of customer service through raised levels of operation.

More efficient allocation of service/delivery calls through improved insight into longer term fleet activity.

Optimum allocation of new clients to specific depots, based on a graphical overview of current routes.

This can yield significant savings by shortening time in vehicle and thereby longer time which is billable at costumers. What Quartix normally see are a lot of vehicles basically driving in the same areas and don't take efficient routes to the nearest visit. Sometimes vehicle A visit costumer X and vehicle B visit costumer Y. But Quartix software identifies savings if instead vehicle A had visited costumer Y and vehicle B costumer X etc.



Define mandatory or prohibited zones

Establish the rules for each zone. In mandatory mode, the vehicles must be inside the defined zone during the designated times; in prohibited mode, they must not enter the zone. For example:

A business owner wants to be sure that employees are not returning home during the working day.

Solution – Designate the driver's home as a 'Quartix Named Location: Prohibited Zone' on weekdays between 8:00 am and 6:00 pm.

A city fleet manager needs to make sure that her vehicles remain within the city boundary at all times.

Solution – Create a geofence around the city and set it as a mandatory zone. Any vehicles that leave the zone will trigger an alert.

This also makes it possible for management to define which zones each vehicle are allowed to drive within. Thereby detecting unauthorized uses of the car. Management can then set up alerts on SMS, Email etc. that alert them every time a vehicle gets outside the defined zone.

Fleet management:

Quartix have integrated their system with FleetCheck which offers fleet owners a comprehensive offering to reduce vehicle cost. Its takes time away from drivers and give less paperwork and more efficiency:

Do more with your Quartix data

No more relying on spreadsheets or paper-based systems, FleetCheck makes it easy to manage all your vehicle and driver data in one place.

- Track MOT dates
- Road tax
- Driver licence details
- Vehicle safety checks
- Fuel usage
- DVLA penalty points
- Driver training information

The Fleetcheck system has verified different methodologies to save fuel. Lower fuel cost saves money for fleet owners and help on their environmental intentions.

Proactively manage your fuel

Included in the InfoFleet package, FleetCheck integrates with the Quartix tracking system to help you reduce your fuel consumption. FleetCheck provides:

- Vehicle and driver fuel allocation for costing and MPG breakdown
- MPG analysis to identify problem vehicles/drivers
- CO2, NoX and Particulate Matter (PM) reporting to support with FORS requirements
- Links to your fuel card information offering a complete picture
- Transparency of maintenance issues causing you excessive fuel consumption
- Tools to monitor driver behaviour and highlight fuel-heavy driving habits
- The ability to reliably identify potential instances of fuel theft

The system identifies the reason a vehicle has excessive fuel usage. That could be maintaince problems, driver behavior, route planning etc. It gives users different tools to optimize and improve fuel efficiency which in the end saves money for the fleet owner.

Vehicle tracking can improve the operation of fleets significantly, in terms of cost-saving, risk management and improving productivity. The accurate reporting of live and historic vehicle locations enables fleet managers to improve customer service by providing accurate ETAs and transparent updates to customers. It also enables businesses to send their nearest asset to a location, reducing customer waiting times. Of course, being able to pinpoint the location of each vehicle 24-hours a day offers a significant security benefit in the event of an asset being stolen.

One of the most well-known benefits of vehicle tracking is its ability to reduce fuel consumption. Through driver behaviour monitoring, drivers are able to adopt smoother driving techniques. By eradicating poor driving styles such as harsh acceleration, heavy braking and speeding, fleets can typically experience savings of up to 15% in fuel costs. The adoption of better driving techniques also makes fleet drivers safer on the roads, reducing wear and tear and lowering the risk of vehicles being involved in accidents.

Advanced vehicle tracking systems now also have diagnostic capabilities. Fleet and transport managers can receive diagnostic fault codes remotely through a telematics web portal. By having access to vehicle health issues, underlying service and maintenance issues can be addressed before fleets experience downtime and any associated financial losses, and the inability to operate as efficiently as possible. Vehicle health updates can even help fleet managers to predict breakdowns before they happen.

Further cost reductions can be made through route optimisation and scheduling. Route optimisation systems take into account how many vehicles are owned by the business, what deliveries must be mad and algorithms calculate how the delivery schedule can be completed using the least amount of vehicles and in the lowest cumulative mileage.

Telematics behaves as an effective risk management solution and enables fleet managers to comply with relevant regulations. A mixture of solutions such as tachograph analysis and insight into driver hours and breaks, or automated vehicle checks, remove many of the lengthy processes associated with driver and vehicle compliance. Companies that use telematics to monitor and regulate driver behaviou can also experience significant reductions when it comes to renewing their insurance premium. [4]

[4] http://www.drivetimeuk.co.uk/compare-vehicle-tracking/

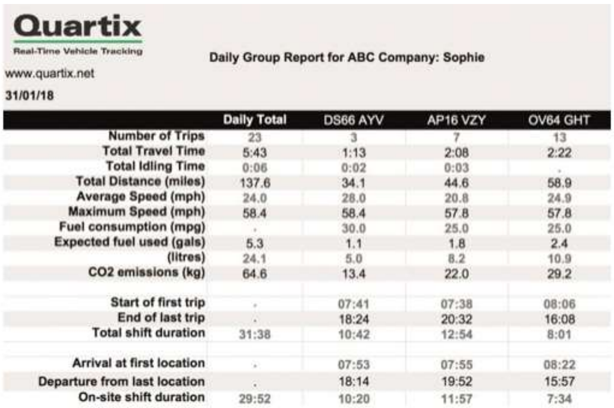
Vehicle safety checks made easy

Tired of chasing paper check sheets? Streamline your vehicle inspection process with the FleetCheck Mobile App. The app enables drivers to submit safety checks, access support information and view key vehicle information. FleetCheck Mobile:

- Integrates fully with your FleetCheck account
- Eliminates paper-based checksheets saving you valuable time
- Allows drivers to instantly upload and send photographic evidence of damage and defects
- Lets you design your own custom checksheets
- Provides instant visibility of missed inspections
- Reports on time taken for each safety check
- Shows vehicles that have moved without a check completed

The system also organize and integrates maintaince reports on each vehicle. This can costumize when vehicles need safety checks, how long is has been since last maintainance check etc. At the same time it creates damage reports etc. that is used as documentation.

All the reports from the Quartix software can be costumized and extracted to excel etc. Some costumers prefer to configure the data in excel or add it into other systems they use.



Quartix
Real-Time Vehicle Tracking
www.quartix.net
31/01/18

Daily Group Report for ABC Company: Sophie

	Daily Total	DS66 AYV	AP16 VZY	OV64 GHT
Number of Trips	23	3	7	13
Total Travel Time	5:43	1:13	2:08	2:22
Total Idling Time	0:06	0:02	0:03	-
Total Distance (miles)	137.6	34.1	44.6	58.9
Average Speed (mph)	24.0	28.0	20.8	24.9
Maximum Speed (mph)	58.4	58.4	57.8	57.8
Fuel consumption (mpg)	-	30.0	25.0	25.0
Expected fuel used (gals)	5.3	1.1	1.8	2.4
(litres)	24.1	5.0	8.2	10.9
CO2 emissions (kg)	64.6	13.4	22.0	29.2
Start of first trip	-	07:41	07:38	08:06
End of last trip	-	18:24	20:32	16:08
Total shift duration	31:38	10:42	12:54	8:01
Arrival at first location	-	07:53	07:55	08:22
Departure from last location	-	18:14	19:52	15:57
On-site shift duration	29:52	10:20	11:57	7:34

Timesheet Reports in Excel

Daily Vehicle Group Report

Save admin time and check actual overtime hours versus reported overtime. You can estimate expected fuel consumption versus actual fuel claims and eliminate any unauthorized fuel claims. The timesheet workbook provides a detailed sheet, per vehicle group, for each day of the week. (See image on your left).

Key management information includes:

- Mileage and fuel usage
- Maximum speeds
- Shift times
- Total driving time
- Time spent at each site

The telematics industry:

Over our research period we have read a lot of industry reports about the telematics industry and future developments and growth rates. As always, there is some degree of uncertainty regarding future projections, but we think the outlook is pretty robust. We have listed some quotes from the reports below:

The global telematics market is expected to grow at a compound annual growth rate (CAGR) of 20.7% over the next five years, with developments in North America leading the way.

A report titled "Telematics Market - Growth, Trends and Forecast (2019 - 2024)" observed the trend that telematics solutions are being considered more on driver behavior and safety, not just for the vehicle location and routing capabilities. [5]

In recent years, companies have adopted fleet telematics technologies at an accelerating rate. Around 15 percent of vehicles now come with telematics installed as standard, and there are estimated to be 100 million telematics units in operation around the world. The global market for fleet telematics hardware, software, and services is forecast to grow at around 23 percent per annum for the next six years, becoming a $75 billion industry by 2025. [6]

Market Outlook:

The global commercial telematics market size can touch USD 42 billion by 2023. It can display a CAGR of 18% from 2017 to 2023. Rising number of subscribers coupled with companies investing in telematics as a medium of communication are likely to drive market growth. Services and full-fledged solutions by company experts can augur well for the market. In 2014, Vodafone Group acquired Cobra Automotive Technologies S.p.A. and will provide the complete range of telematics services and security solutions to the automotive and insurance sector. [7]

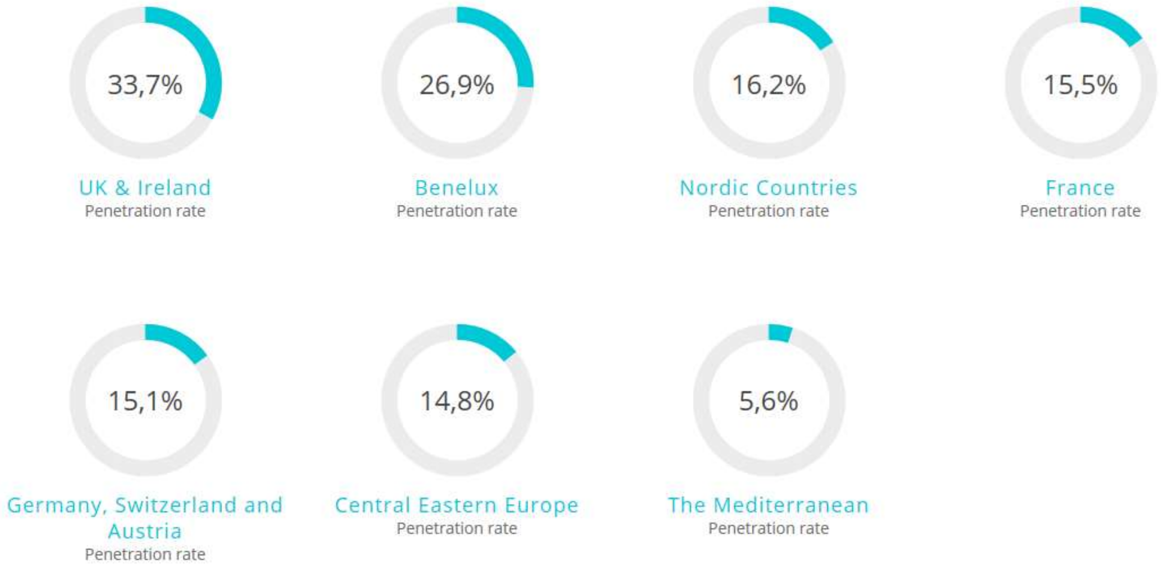
The reports and research we have read estimates around a 18-23 % growth CAGR for the next few years. This is optimistic assumptions and we caution somehow about those projections. Some of that revenue growth comes from the adoption of video telematics into the fleet. Some users find it valuable to have live video surveillance of their fleet. Such a solution has much higher cost thereby increasing total $ market growth. On the other hand, continued competition should deliver modest ARPU erosion from other players.

[5] https://www.automotive-fleet.com/335471/global-telematics-market-to-see-growth-over-next-five-years
[6] https://www.mckinsey.com/business-functions/operations/our-insights/driving-value-from-fleet-telematics
[7] https://www.globenewswire.com/news-release/2019/07/26/1892238/0/en/Commercial-Telematics-Market-Demand-is-Projected-to-Witness-a-Rapid-Growth-by-Forecast-to-2023-Commercial-Telematics-Industry-Analysis-by-Type-Solutions-End-Users.html

If we look into different markets, the US are the most saturated market. It is estimated that about 40 % of the potential TAM is already using a telematics solution which dampens the US growth rate somehow.

That’s not really a big problem for Quartix in the US as they only have a tiny fraction of the market share. The driver for Quartix in the US is that competitors seems slow in both product development, marketing etc. As a nimble player that adapt to different costumer preferences and pricing trends Quartix are able to keep taking market share in the US.

If we look at the different European markets the UK is also by far the most saturated market.



[8]

Of the other countries Quartix targets, France, Poland etc. are much less saturated. And Spain and Italy are extremely underpenetrated markets where Quartix hopes they can achieve good growth levels.

[8] http://1-telematics.com/telematics-industry/

The sales model:

Quartix uses 3 different sales channels to win new costumers. Quartix have success in all channels. It of course varies a lot between periods which channels are most successful. It also varies on geography. Like in France they have had huge success with resellers, while in the US the direct sales team are performing well. Price comparisons is a place they are really good and efficient in the UK. The good thing is they can use knowledge and learning curves between markets and channels to improve efficiency in all channels.

- **Direct sales**

At the direct sales channels Quartix have a dedicated sales force located in Newtown UK and Chicago US. Quartix have developed a high performing call center that use different lead channels to acquire new costumers. Quartix have done a lot of operational improvements over the years in this channel like optimizing lead buying, make better conversion rates for each lead etc.

- **Price comparisons**

Quartix use different price comparison sites to gain market share. This is especially in the UK and in France they have been good at this. In the US they are working on improving this. To win costumers from price comparison sites you need to be best on price in relation to the product/features you offer. To win here you need to be really efficient.

On the fleet side some of the bigger comparison sites are:

www.drivetimeuk.co.uk/compare-vehicle-tracking/
https://www.expertmarket.co.uk/vehicle-tracking

And on the insurance side:

https://www.gocompare.com/car-insurance/telematics-car-insurance/

Quartix have worked with price comparison sites for a long time and gained a lot of knowledge about how to get high conversion rates from the leads. When and how fast should you contact leads from comparison sites? When should you follow up? What should your main selling points be?

- **Resellers**

The last channel Quartix uses is a reseller network. This takes time to build up but works well over time because its pure no-cure no-pay models. This is a channel that Quartix will work to improve over time especially in new countries like USA and France.

Another part is the follow-up and retention strategies. As we will show later on, a big part of the gross additions comes from existing costumers scaling up. So even through its important to win new costumers, its at least as important to both retain costumers and help them scale up to more and more vehicles until they utilize Quartix over their whole fleet. Costumer support and effective follow up is also an important retention strategy. The biggest reason for churn is new sign-ups that just never take the time and energy to commit to using Quartix. This could be a costumer that goes to a comparison sites and afterwards sign up to Quartix. They download the software and install it into 2-3 vehicles. But they never really take the management time to learn to use the system effectively. This is one of the most important tasks for Quartix costumer support teams. To proactively manage sign-ups afterwards and make sure they are up and running well. Because that’s really what decides the growth for Quartix. When a vehicle owner signs up for 3 vehicles, will they then churn off or expand to 20-30 vehicles over time?

One of the main competitive advantages for Quartix is that they can sell to all over Europe and USA from one location in Newtown in UK. Because of the multinational citizens in the UK Quartix are able to hire French Speaking, Spanish Speaking, Polish Speaking people etc. They are able to locate all of those sales people in the same sales office in Newtown. The sales office therefore can be managed really effective. Its easier to train, recruit and retain good people. This makes it possible for Quartix to sell to Poland, Spain, France etc. directly from the UK without the need to establish local offices. With the growth of self-install installations, they neither have to set up an installer network in those countries.

This is not something to underestimate. The lean sales force is the reasons they can be a price leader and keep high retention and still make a lot of money for themselves.

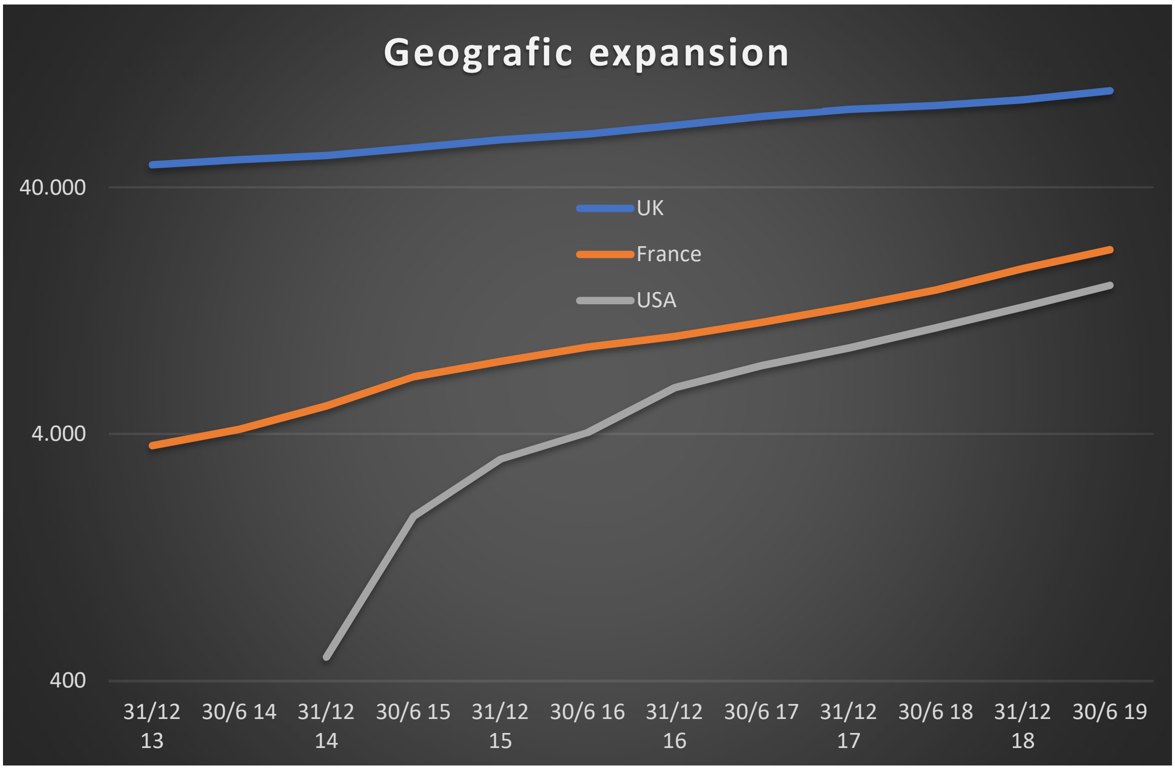
One positive thing about a lot of the channels is that they are performance based. A lot of the negatives with SAAS businesses is that they work well as long as they run smoothly. They can hire new sales people, train them and make good and stable LTC/CAC returns etc. But most companies have problems scaling down the CAC when the LTV goes down. That's because most companies are reluctant to terminate sales people, marketing initiatives etc. as they have trained and invested in those. They always believe the market and competitive position will return and will just accept lower LTC/CAC ratios short term (that always turns out to be long term).

We therefore like that a lot of Quartix' CAC are performance based. Resellers are of because performance based. They get a commission when they sell Quartix products. Price comparison sites also have a lot of performance-based payments build into it. As Quartix only pay when they win the "lead" based on price and quality etc. There is some risk related to conversion as Quartix would still pay for the lead even if they are not successful in converting the lead to a costumer. The last channel is the direct channel which is less performance based. But even here they buy leads from different channels. They can scale those up and down quite quickly based on price, conversation rates, performance etc.

And on the people cost there is always bonus and commissions structures on top of base salaries.

Geographical expansion:

One of the main growth drivers for Quartix over time are international expansion. Over the first 10+ years Quartix only had a presence in the UK. Since then they have expanded first to France and then to the US. Both countries have performed really well over the last 2 years growing at a high rate.



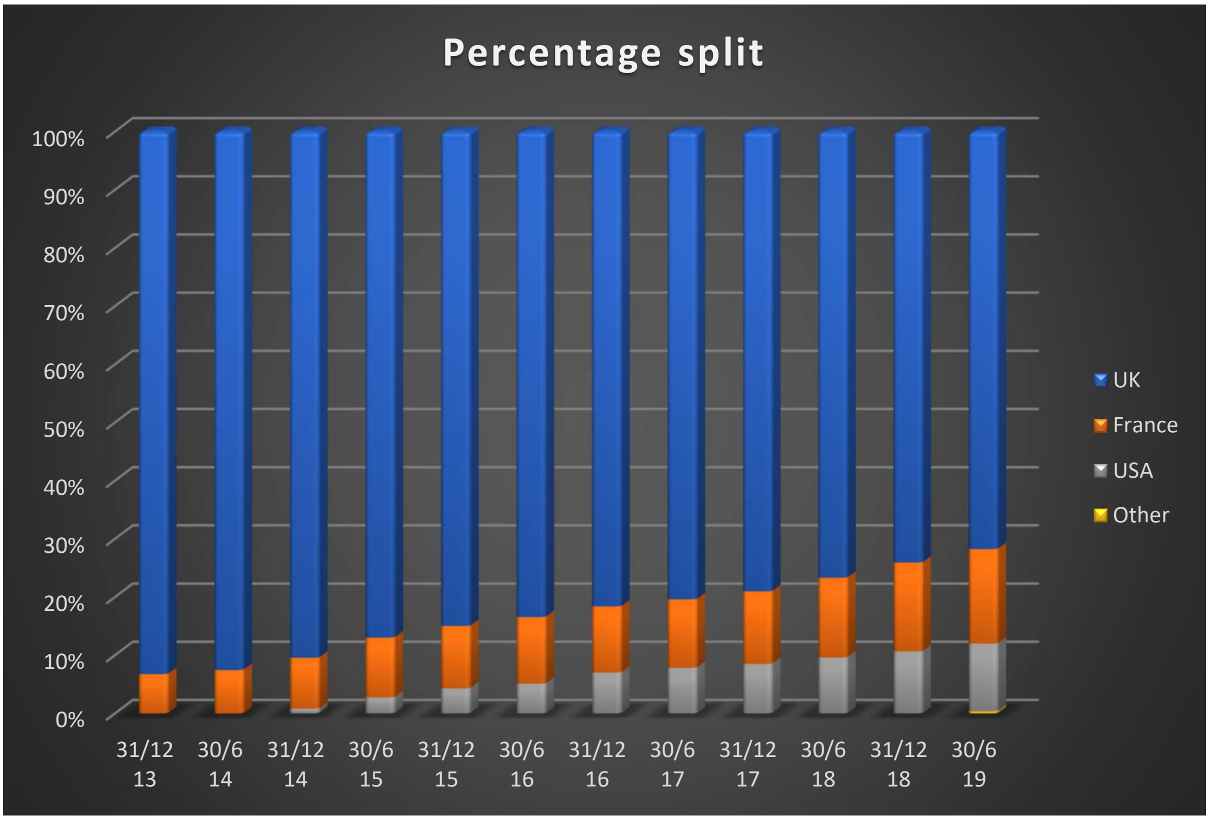
Recently in H1 2019 they also entered Ireland, Poland and Spain. They have already set up local websites for the Italian market and the German market with marketing to follow at a future time. The start in Spain and Poland in H1 2019 has so far went well.

As we wrote earlier, we like the geographical expansion because it can be done with a local sales force and support staff run from the UK. That creates a lot less risk as its basically just a different language.

As Quartix over the first +10 years grew the subscriber count at a +20 % CAGR from the UK alone there is a limit to how much they can grow by only being in the UK. Recently we have seen the market mature to a more 10-15 % YoY growth level. But with France and the US picking up and growing 30-50 % YoY the company average looks good.

With the launch of additional countries in 2019 the market opportunity as a whole still looks really promising for Quartix.

We can see the same picture even better when looking at the geographic mix in percentage each year:



As we can see the huge growth in France and USA are making it a proportionally higher and higher chunk of the revenue split. With the other segment making a small contribution I H1 2019.

More markets give Quartix options to accelerate the growth level in the future. Even beyond the recent 22-23 % CAGR. If they can keep and accelerate momentum in the US and France at a +30 % rate while building up the new markets and keeping UK at a +10 % level, it will not take long for the whole group level to start accelerating again.

Quartix also plans to use the new Spanish site to attract the Latin American US population. There is a huge group of small SME’s in the US that are run by the Spanish speaking community which Quartix can now address with a Spanish website and Spanish speaking sales and support teams.

Competition:

Of publicly traded Telematics peers the only pure plays are MixT Telematics and Induran. Mixt telematics are based in South Africa and have +50 % of their revenue coming from Africa with the rest mainly from US and some parts of Europe. Induran are based in Israel and have huge exposure to Latin American countries like Brazil and Argentina. Quartix don't see those two as direct competitors as its rare they compete for the same costumers in the same markets.

One of the bigger companies that Quartix from time to time do compete with is Teletrac Navman. Teletrac is owned by the Fortive conglomerate and as such we don't have a lot of data on Teletrac specific. Besides doing fleet management software they also develop jobsite software and transport management software.

Of other bigger companies is Trimble Telematics and Pointer Telocation. Those are also smaller parts of bigger corporations. Pointer do a lot of Trailer, Cargo, Cointainer telematics also which is not an area where Quartix competes.

Some of the smaller players could be Carma Systems, TomTom, Verizone, FleetManager, NexTraq and Causeway Telematics

Here is Andy's response to us:

> Without naming specific competitors, I would generalise by saying that the larger/ more traditional competitors pose less of a challenge than local, price-competitive players. Our strategy is based on becoming a cost-leader in the market and we focus as much on improving our internal processes for cost-effectiveness as we do for the pricing we quote customers. It is true

There are some bigger competitors with much bigger R&D budgets etc. But those are nut nimble, effective organizations.

Then we have some small players with somehow really simple technology that mostly compete on price. Those are mainly in the UK.

Some could argue it's a bad thing for Quartix to be "squeezed" between the bigger players with higher R&D budgets and the smaller players who compete on pricing.

But Quartix don't think so. They have really found a sweet spot in their position. They are big enough to invest in R&D and build out the organization while paying for a public listing. But still small and agile enough to take significant market share away from the bigger guys.

The good thing is of cause that the telematics market is an overall growth industry. Then they don't fight for existing costumers (as there is quite high retention throughout the industry) but more who takes the largest chunk of the new costumers.

In general, the telematics market is a huge growing market with a lot of different players. We like the fact that it's a competitive market where Quartix have already shown its ability to gain share. This shows to us that Quartix is able to fight for market share.

ARPU:

An important topic about Quartix is the ARPU development over the last 5-10 years. This was initially one of the reasons we hesitated buying into Quartix in the first place.

Over the last 5 years since IPO the subscriber base has grown around 22 % per year. But the fleet revenue has only grown around 16 % per year. The 6-percentage point difference each year has been a declining ARPU.

1) **Lower input prices**

One of the reasons for the lower ARPU has been lower input cost that has been passed through to the costumers. Andy mentioned to us that the hardware cost for the "box" have declined from around 300 $ to around 70 $ for example. But also, the uptake in self-installs have put lower cost on Quartix to installers.

Other cost that have declined significantly is broadband, satellite, GPS, Google Maps costs etc. Quartix and competitors have passed that through to costumers as they got them.

2) **Costumer mix**

Another thing is the mix. The ARPU is quite identic for UK in GBP as they are for France in EUR and USA in USD. As France and US then grow faster and become a bigger part of the mix it erodes some of the group ARPU even through the individual country ARPU are better.

3) **Sales model**

Another point regarding the ARPU has been the transition from an on-premise solution where Quartix sold the hardware and then charged a subscription fee to one that is purely SAAS. As some competitors are still using the old method and some are still in transition its hard to know the real ARPU development across the board. Here is what Andy Walters told us about that subject:

> It is very difficult to compare companies/ competitors in this market, as many of them have been late in switching to a full subscription model. We did this in 2010 – prior to that we sold the hardware and charged a separate subscription fee. Many American companies do that still, and we have UK companies who are still making the transition. So if you look at their ARPUs you may be looking at some companies which are still on that upward curve as they stop selling hardware up-front.
>
> For us, prior to 2010 our standard subscription charge was around £10.90, and at that time we were also receiving up to £500 for the tracking system and installation. Once we switched to a model of zero up-front charge and a pure subscription model our ARPU slowly shifted from £10.90 to just over £16 per unit as the new model took effect. But since then price erosion in the market has obviously brought this downwards. We monitor pricing in each market closely and we don't think we are leaving "7% on the table". Some of the more traditional/ larger competitors seem, however, to be trying to cling on to market pricing as it was a couple of years ago – this is largely where we have been successful in gaining market share this year. Their model seems to be to try to use more engineering/differentiation and other overheads to try to maintain their pricing at a level which we feel is unsustainable.

4) **Promotions and costumer acquisitions**

The company does also admit that they have used their operational excellence to offer discounts and promotions to win new costumers. As Quartix have seen such good KPI on their subscribers so far, they used this to offer good prices on price comparison sites etc. to win new subscribers.

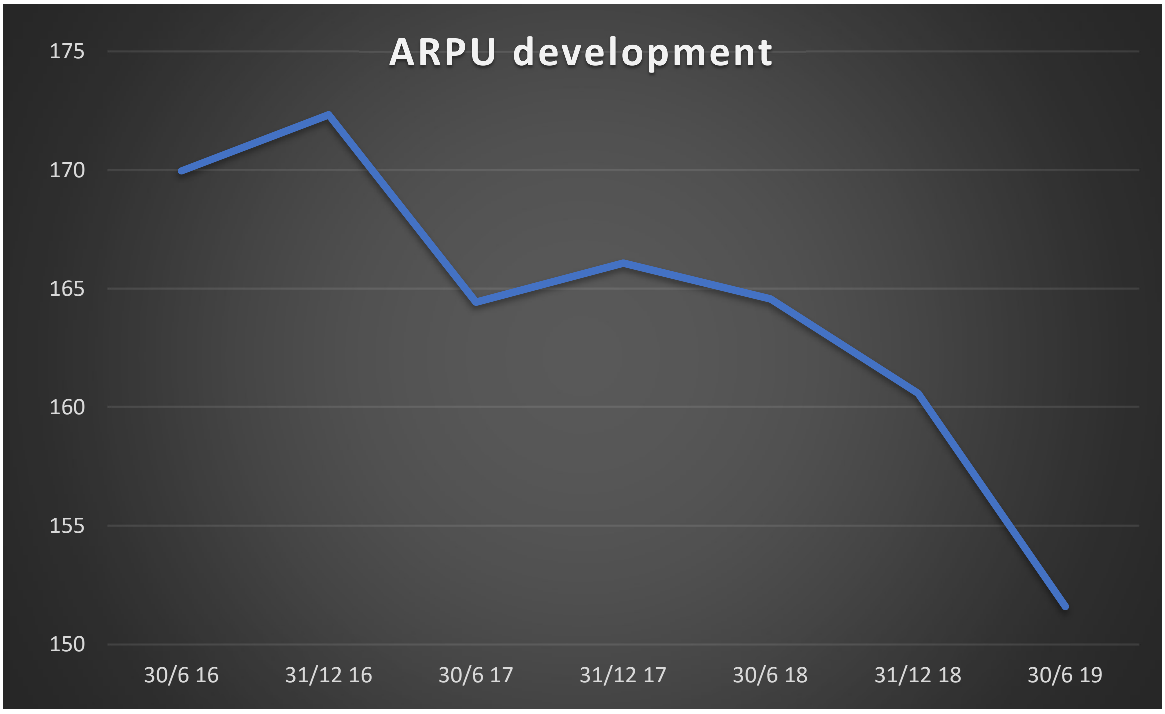
This is one of the strategies of Quartix. They want to be cost leader and the most efficient run company. They will use that cost leadership to be lowest on price to capture market share. Some investors think it's a good thing to have pricing power. We agree with that if you can use that pricing power and still have high retention rates. But cost leadership is in our opinion also a wide moat. This not only help win new costumers, but also retain existing costumers better as they would need to pay a higher price if they change provider. It's the Amazon way!

When we talked to Andy Walters about the subject, he responded this way:

> Without naming specific competitors, I would generalise by saying that the larger/ more traditional competitors pose less of a challenge than local, price-competitive players. Our strategy is based on becoming a cost-leader in the market and we focus as much on improving our internal processes for cost-effectiveness as we do for the pricing we quote customers. It is true to say that self-installation has provided a significant reduction in cost per unit also, as this removes not only the cost of carrying out installations but also the internal costs of arranging them.

5) The starting point

Another point was the starting point for Quartix. Andy mentioned for us that some of the first costumers paid around 40 GBP per month per vehicle. Now those are down to 12-14 GBP per month. So, a lot of that decline are clearly in the past as we are close to a more natural floor. And as we also wrote above there is also the transition from a hardware + SAAS sales to a clean SAAS model.



If we then look at the YoY development in the ARPU we can see it below:

ARPU 12m			170	172	164	166	165	161	152
YoY					-3,3%	-3,6%	0,1%	-3,3%	-7,9%

We will note that we should not read to much into the H1 2019 drop yet. The reason for the drop was the huge acceleration in gross additions to the base. So, there was a lot of subscribers this 6 month that did not have a full 6-month contribution to revenue.

In conclusion we think the worst have been passed so far regarding the ARPU. We think the H1 2019 was an outlier do to mix and strong growth. And the recent trend of more like 3-4 % ARPU decline is more likely going forward than the 5-6 % we have seen in the past. And we don't think the ARPU decline is such a big worry. When Amazon charges lower and lower prices (declining ARPU) to win more volume, investors love it. Why should it be any different when Quartix use their cost leadership to lower prices and gain market-share. If they can grow subscription base a +20 % then we should not worry if ARPU declines 5 %, the net revenue growth is still + 15 % per year.

Unit economics:

One of the most important parts of valuing a SAAS company is to understand the underlying unit economics that drives the growth engine.

We think one of the reasons that Quartix is so cheap, is that the true unit economics are not well understood. First of all, Quartix does not do a lot of to disclose important SAAS KPI's. H1 2019 was the first quarter in which they split out the costumer acquisitions (CAC) in their P&L. We have followed Quartix a long time. We knew that when a SAAS company can grow the subscriber base at +22 % a year, while expensing all expenses and still keep a +25 % EBIT margin, then the unit economics are really good. But as Quartix did not split it out, we were not comfortable underwriting the story. After the H1 numbers came out we could start to calculate the unit economics.

1) Retention rates

The first "falls narrative" about Quartix is the attrition numbers Quartix disclose in their reports:

> [1] Attrition is calculated as the difference between the number of new unit installations and the increase in active subscriptions between 1 July 2018 and 30 June 2019, expressed as a percentage of the mean subscription base between those two points in time: (38,740-25,551)/125,305 = 10.5% [9]

Even through the calculation is factually correct, in our opinion it overstates the true churn in the portfolio. There are some reasons for this:

- As Quartix grow a lot there will naturally be a higher churn as cohorts naturally improve retentions as they grow.
- The attrition/churn numbers are based on the number of vehicles and not costumers.

As some costumers grow and add more vehicles while others scale down it create some vehicle attrition.

- The attrition numbers are gross numbers, not net numbers.

Normally when a costumer with 50 vehicles sign up, they start with let's say 5 vehicles. What normally happens is that some costumers churn away, but the ones who stay upgrades from 5 to 50 vehicles and becomes much more valuable.

- Some costumers operate in cyclical industries with ups and down cycles and different order books.

We think it's more valuable to look at the net churn by:

(Net additions from existing costumers – churn of existing vehicles) / prior base of vehicles

This is a topic we will dig deeper into later on, but lets first take the 10,5 % churn reported for accurate:

[9] Quartix H1 2019 results

As mentioned Quartix started in H1 2019 to split up the costumer acqustion costs in its financial results:

Segmental analysis **6ms to 30 June 2019** Unaudited	Customer Acquisition £'000	Fleet Telematics Services £'000	**Total Fleet £'000**	Insurance £'000	**Total Business £'000**
Recurring revenue	-	9,389	**9,389**	-	**9,389**
Other sales	175	527	**702**	2,461	**3,163**
Total revenue	175	9,916	**10,091**	2,461	**12,552**
Sales & marketing	(2,084)	(385)	**(2,469)**	-	**(2,469)**
Equipment, installations, carriage	(1,029)	(613)	**(1,642)**	(1,343)	**(2,985)**
Costs of Service	-	(995)	**(995)**	(201)	**(1,196)**
Profit before central fleet costs	**(2,938)**	**7,923**	**4,985**	**917**	**5,902**
Central fleet costs			**(359)**	-	**(359)**
Segmental profit			**4,626**	**917**	**5,543**
Central costs					**(2,035)**
Adjusted EBITDA					**3,508**
Share based payments					**(134)**
Depreciation					**(191)**
Operating profit					**3,183**
Finance income receivable					**19**
Finance costs payable					**(11)**
Profit before taxation					**3,191**

[10]

The segment analysis split the business up between the Flee segment, the acqustion segment and the insurance segment.

It is worth nothing, that in our analysis (to be conservative) we estimate that all the sales & marketing money goes into the fleet business. While in reality there probably is a small part that goes into the insurance segment. But better safe than sorry.

We also deduct the central fleet cost in our fleet recurring EBIT % calculation as we don't assume those scale with revenue.

Quartix is still a small listed company. It should have high scalability on the central cost going forward, but we don't underwrite that in our model.

[10] Quartix

Using those numbers, we can then calculate the CAC on new subscribers and the all-in EBIT margin % on existing costumers:

	6m	6m	6m
	30/6 2018	31/12 2018	30/6 2019
Subs pr.	105.314	112.530	123.157
Add	15.220	16.235	22.505
Churn	-8.004	-5.608	-7.581
Subs UL.	112.530	123.157	138.081
Revenue	8.960	9.456	9.916
ARPU	164,5	160,5	151,8
CAC	-2.050	-2.385	-2.938
CAC/SUB	134,7	146,9	130,5
Attrition FY	12,00%	11,90%	10,50%
Churn%	-7,6%	-5,0%	-6,2%
Revenue	8.960	9.456	9.916
COGS	-515	-578	-613
Marketing	-356	-356	-385
Other	-1.073	-910	-995
Central	-276	-299	-359
EBT	6.740	7.313	7.564
Margin %	75,2%	77,3%	76,3%

[11]

Above we have illustrated the number of subscribers, the gross additions, gross churn and ultimo base for each period.

If we then use the CAC on the previous page, we can calculate the CAC/gross addition for each period. It is really encouraging that Quartix has rising gross additions close to 50 % YoY in H1 2019 but done so with a lower CAC/SUB

The yearly attrition numbers (12 months annualized) is shown. We also calculated the 6-month churn.

We can then also calculate the EBIT margin for the "repeat business". Those margins have averaged around 75-77 % for the last 18 months. Included in this figure is also all the central fleet cost, the GOCS (hardware replacement etc. for existing base) etc. The only thing not included are the PLC level cost and some small shares-based payments and depreciation (primarily leasehold).

[11] Symmetry Invest calculation

We then build a model around those input data to calculate the lifetime value for the recent cohort:

	0	1	2	3	4	5	6	7	8	9	10
Subs pr	0	10.000	8.950	8.010	7.169	6.416	5.743	5.140	4.600	4.117	3.685
Add/churn	10.000	-1.050	-940	-841	-753	-674	-603	-540	-483	-432	-387
Subs ul.	10.000	8.950	8.010	7.169	6.416	5.743	5.140	4.600	4.117	3.685	3.298
Revenue	759	1.381	1.187	1.020	876	753	647	556	477	410	352
ARPU	152	146	140	134	129	124	119	114	110	105	101
EBIT	579,1	1.053,5	905,1	777,7	668,2	574,1	493,3	423,8	364,2	312,9	268,8
Margin	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%
LTV	**7.673,3**										
CAC	-1.305										
LTV/CAC	**5,9**										

	11	12	13	14	15	16	17	18	19	20
Subs pr	3.298	2.952	2.642	2.364	2.116	1.894	1.695	1.517	1.358	1.215
Add/churn	-346	-310	-277	-248	-222	-199	-178	-159	-143	-1.215
Subs ul.	2.952	2.642	2.364	2.116	1.894	1.695	1.517	1.358	1.215	0
Revenue	303	260	224	192	165	142	122	105	90	40
ARPU	97	93	89	86	82	79	76	73	70	66
EBIT	231,0	198,5	170,5	146,5	125,9	108,2	92,9	79,8	68,6	30,8
Margin	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%
LTV										
CAC										
LTV/CAC										

Our calculation uses a 20-year period - where after we calculate a termination (not a terminal value). Remember there is already factored in additional hardware expenses etc. in the 76,3 % margin.

We calculate an LTV/CAC ratio of 5,9x for this cohort.

In our calculation we include a 4 % yearly decline in ARPU over the next 20 years. We think this is really conservative as Quartix is now priced really competitive already

It is worth mentioning here that if we include a flat ARPU over 20 years instead of the 4 % decline the LTV/CAC for the cohort goes up to 7,5.

Another important point is to look at the payback period of the CAC. This is relevant to estimate the IRR on the investment and not only the LTV/CAC:

At the end of year 2 (after 18 months) the total contribution sits at 1.633. This is 25 % higher than the CAC. The data indicates that the payback period for each CAC is less than 18 months (probably somewhere around 15 months). We again want to emphasize that this is the true cash payback and not some economic payback competitors use when they depreciate the COGS over a long lifetime.

We were then able to establish the LTV/CAC ratio for the last 3 6-month periods where we have the data to do so:

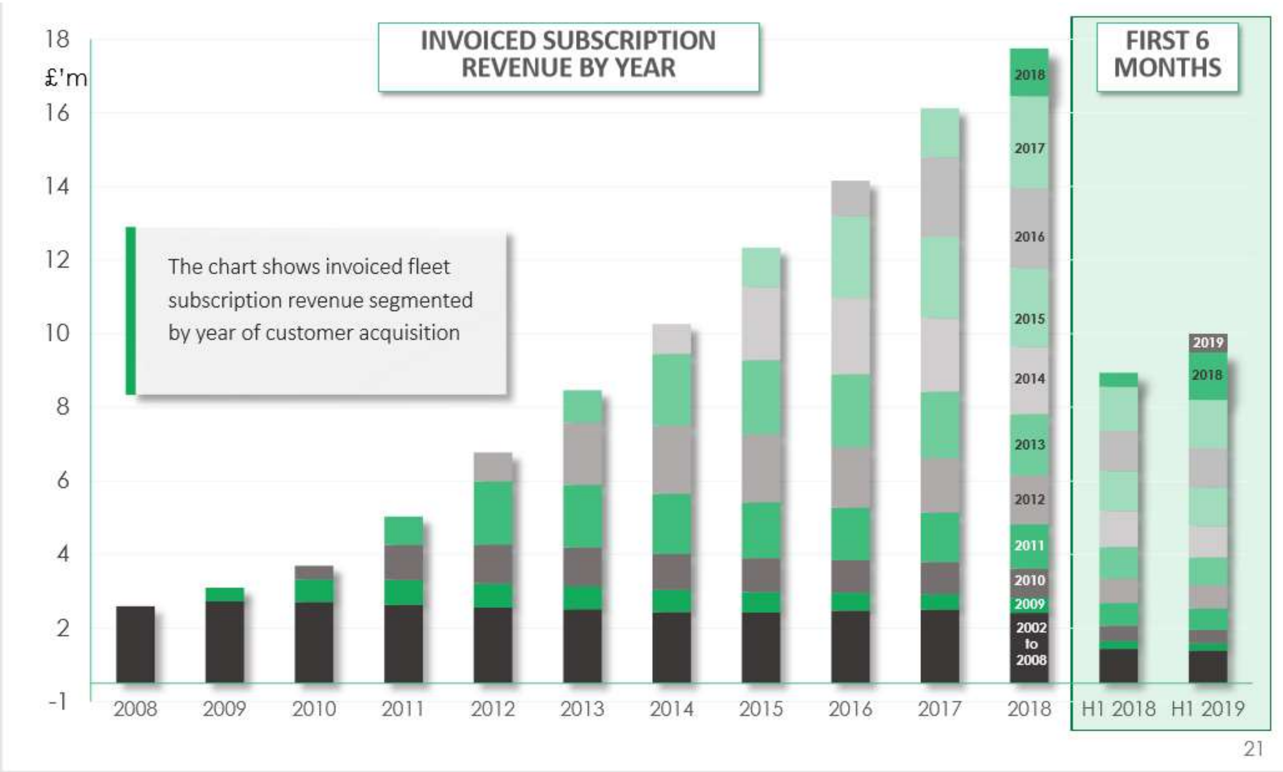
	6m	6m	6m
	30/6 2018	31/12 2018	30/6 2019
LTV/CAC	**5,7**	**5,6**	**5,9**

Using this approach, we get an LTV/CAC ratio for the 3 cohorts ranging between 5,6 and 5,9. This is really good unit economics as most subscription companies would probably say that more than 3-4x is acceptable. If we remember that this is using really conservative assumptions like a 4% yearly ARPU decline and a total 20-year termination with all cost expensed upfront – we think it shows how good the unit economics really is in Quartix.

We also like a lot that Quartix have found ways to increase the CAC over the last year. Both in established markets and in new markets. With a bigger TAM and expanding channels we would love for Quartix to significantly increase CAC at those high returns.

But even through we think 5,6-5,9 LTV/CAC are really impressive we still thought we did miss something. Why can they grow 22 % per year on subscribers with a 25-30 % EBIT margin?

The answer is in the churn rate. As we have said before we think the attrition/churn rate published are significantly overstated. The primary reason for this is that existing costumers scale up over years. There is a lot of organic gross additions each year to the base which offset the gross churn for the existing base. But how do the cohorts then perform?



We think the above chart is the most important one. It shows the revenue each year for each cohort based on the acqustion year. If we were to take the official 10-12 % yearly churn + 4-5 % ARPU decline each year, then each cohort would have to decline the £ revenue by some 14-17 % each year. But as we can see from the chart above that is not the case here.

A good example is the 2001-2008 cohort (which are shown together in the black line). Costumers acquired through 2001-2008 basically spend the same amount of revenue each year throughout the 10-year period from 2009-2018.

Remember in my former LTV/CAC calculation on the previous page I assumed that the cohorts would end permanently after 20 years. But here we can see a cohort of costumers with an average of around 13-14 years basically have 0 decline in the yearly revenue. And this despite the ARPU decline over the period.

So, what's going on here?

The important thing to understand is the average costumer behavior. When Quartix acquire 10 new costumers they usually build a base of 3-5 vehicles and try the product. So around 40 vehicles in the acquisition year. Then over the next 3-5 years some costumers don't like the product, don't grow their business or leave Quartix for other reasons. Those 5-8 costumers would then leave Quartix with their 20-30 vehicles. But the 2-4 costumers who stays with Quartix will normally be the successful businesses that adopt Quartix throughout their total fleet. Some costumers then expand from 5 to 40-50 vehicles over time.

When we talked to Andy Walters about this subject, he actually mentioned that in some of the oldest cohorts they have 1 single of those costumers today that is larger than the entire cohort was in the acquisition year. This shows how valuable it is for Quartix to expand the business with existing successful costumers even through there is a high initial churn in the cohorts.

This also explains why we believe the published churn/attrition numbers by Quartix are really irrelevant. The important figure to look at is the organic gross additions – gross churn. To understand how the net addition/net churn for the existing base is instead of looking at the gross churn.

We can then use the cohort data to see the revenue in each year from each cohort:

		Revenue										
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cohort	2008	2,11	2,28	2,28	2,2	2,13	2,02	1,93	1,938	2,02	2,019	1,93
	2009		0,44	0,62	0,7	0,69	0,62	0,62	0,578	0,48	0,439	0,44
	2010			0,35	0,97	1,06	1,05	1,05	0,969	0,92	0,878	0,83
	2011				0,79	1,76	1,76	1,67	1,496	1,41	1,361	1,27
	2012					0,79	1,76	1,93	1,899	1,71	1,537	1,41
	2013						0,97	1,92	1,99	2,02	1,844	1,67
	2014							0,88	2,027	2,11	2,063	1,84
	2015								1,199	2,28	2,283	2,2
	2016									0,97	2,239	2,24
	2017										1,349	2,55
	2018											1,33
	2019											
		2,11	2,72	3,25	4,65	6,43	8,17	10	12,1	13,9	16,01	17,7

[12]

Above we have listed the sale in £ for each year for each cohort. This shows the total development as well as the good retention on each cohort.

[12] Symmetry based on public Quartix data

If we then use those data to calculate the actual £ retention for each cohort we get the following data:

Retention	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average
2008	100,0%	96,1%	97,0%	94,8%	95,7%	100,3%	104,2%	100,0%	95,7%	**98,2%**
2009		114,1%	98,9%	88,6%	100,0%	94,0%	83,6%	90,9%	100,0%	**96,3%**
2010			109,6%	99,5%	100,0%	91,9%	95,1%	95,2%	95,0%	**98,1%**
2011				100,0%	95,0%	89,7%	93,9%	96,9%	93,5%	**94,8%**
2012					110,0%	98,3%	90,2%	89,8%	91,4%	**95,9%**
2013						103,6%	101,5%	91,3%	90,5%	**96,7%**
2014							103,9%	97,9%	89,4%	**97,1%**
2015								100,0%	96,1%	**98,1%**
2016									100,0%	**100,0%**
2017										

[13]

Those numbers are really good retentions numbers. Over the different cohorts the average has been around 96-97 %. And its important to remember that those numbers are revenue not unit numbers. If we remember we have had 4-6 % declining ARPU over the period, the unit retention from the cohorts have actually been higher than 100 % on most periods. This show the benefit of growing organically with exciting costumers that more than offset the churn.

As we expect the ARPU erosion to slow down a bit in the coming years we can enter a scenario with +100 % £ retention on old cohorts.

We can then calculate the yearly organic additions from existing customers on average over the last years:

Revenue Retention:	97%
ARPU	-5%
Attrition	-12%
Organic growth	**14%**

Using that figure we can then look into how many of the gross additions come from organic and how many come from paid new additons:

Attrition	12%
Net growth	22%
New Additions	34%
Hereoff organic	-14%
Paid additions	20%
% of new addition	**59%**
CAC	130,5
CAC new	**221,9**

As the figure show around 59 % of the gross additions come from new subscribers where as 41 % come from organic growth of existing subscribers.

[13] Symmetry based on public Quartix data

If we then assume that all the CAC goes to new subscribers (then we are quite conservative to assume its free to add organic additions) we can take the 130,5 CAC/subscriber and recalculate the true CAC/paid subscriber. That figure then ends up at 221,9 £ per paid subscriber.

If we then were to recalculate the LTV calculation, we would end up on something like this:

year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Revenue	760	1.474	1.430	1.387	1.346	1.305	1.266	1.228	1.191	1.156	1.121	1.087	1.055	1.023	992	963	934	906	878	852	Terminal
£ Retention		97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	97,0%	5x
EBIT	579,9	1.125,0	1.091,2	1.058,5	1.026,7	995,9	966,0	937,1	909,0	881,7	855,2	829,6	804,7	780,5	757,1	734,4	712,4	691,0	670,3	650,2	3.250,9
Margin	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	76,3%	
LTV	**20.307,3**																				
CAC	-2.219																				
LTV/CAC	**9,2**																				

Here we still use a 97 % revenue retention on the cohorts. That basically assume a 4-5 % constant ARPU decline over the coming 20 years, a number we think are highly conservative.

When we look at our LTV/CAC ratios we are in the 9-10x. That is extremely good subscription numbers. We think the truth are a lot closer to this 9-10x level than our first 5-6x calculation.

But no matter how we look at it, Quartix is a company with some extremely good SAAS KPI. The only negative has been the ARPU development which we have discussed at length earlier.

A funny “off-topic”:

When we showed our calculations to Andy Walters and asked him about why the 2011-2012 cohorts had slightly worse retention rates than the other cohorts, the answer was quite surprising to us:

- As London was the host for the Olympics in 2012 there was a big need for Fleet Telematics to control traffic around that event. Those vehicles churned off as the Olympics ended.

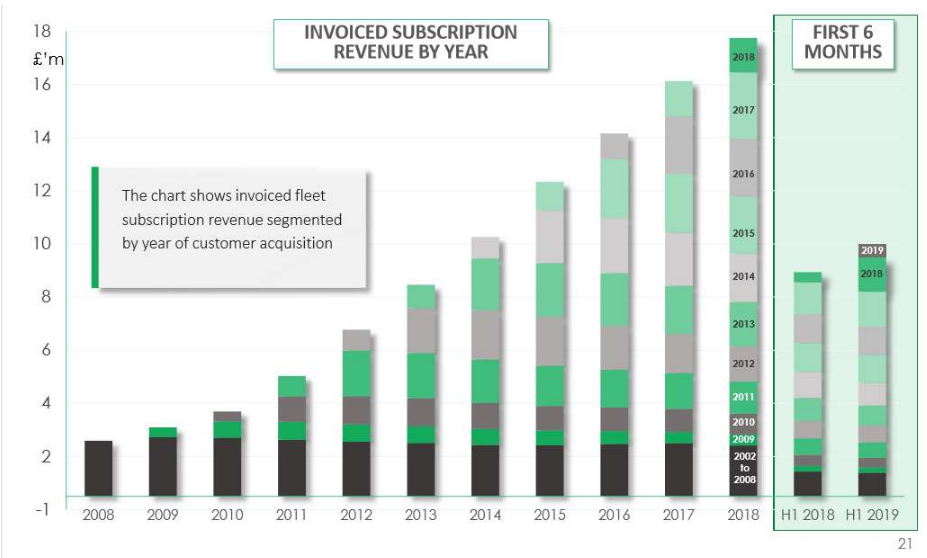
We understand that some people will think of those LTV/CAC calculations as theory and a lot of moving parts. And therefore, not something really useful. As we will show on the next page, they are anything but.

Another way to look at it is the actual realized LTV for the existing cohorts:

	Total	EBIT	CAC	LTV/CAC
2008	22,9	17,5		10+
2009	5,6	4,3	0,5	8,5
2010	8,1	6,2	0,8	7,7
2011	11,5	8,8	1,2	7,3
2012	11,0	8,4	1,5	5,6
2013	10,4	8,0	1,9	4,2
2014	8,9	6,8	2,6	2,6
2015	8,0	6,1	3,1	2,0
2016	5,4	4,2	3,8	1,1
2017	3,9	3,0	4,1	0,7
2018	1,3	1,0	4,6	0,2

The numbers above are not projections. It's the already realized accumulated sales and EBIT contribution for each cohort compared to the CAC.

If we look at the older cohorts like the 2009-2011 cohorts, we are already sitting on +7 in LTV/CAC at the end of 2018. And we can remember from the chart below that those cohorts are still very mature and will generate additional contribution for years to come. When we look at the realized numbers a few years from now its highly likely that the mature cohorts will sit at a +10 LTV/CAC ratio.



At the end of 2018 the 2015 cohort had already delivered a 2x return or a 100 % return in 3 years. The 2016 return had already earned all the CAC + some after 2 years.

Risk factors:

It is important for us to understand the underlying risk factors in an investment. In regards to Quartix we have the stability and high visibility into recurring revenues and high £ retention as a stabilizing factor which essentially lowers the risk in the investment case a lot.

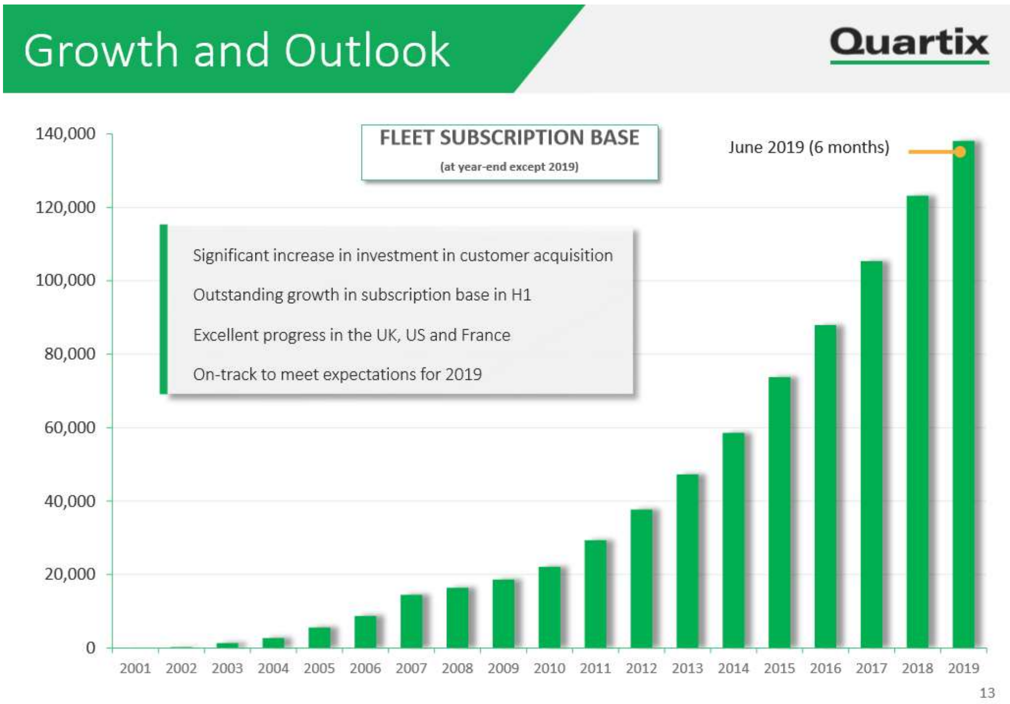
- Recession/Brexit?

One risk factor is a global recession and/or a hard Brexit (which could lead to a UK based recession on its own). As the portfolio are still skewed towards the UK (even through it diversifies quickly) a UK recession will hit the company.

What typically takes place in a recession is that retention rates go down and churn rates goes up. As some of Quartix costumers gets into financial pain and some of them maybe goes bankrupt the churn will go up. Andy mentioned to us that the gross attrition in the financial crisis went from 10-12 % normally to more like 15-20 % over the two years (2008-2009). Another factor is that it gets harder to sign up new costumers. When the economy is bad, making new investments is not the focus of must management teams. Even though it’s a low-cost decision that ultimately saves the company money it just moves down the priority lists in crisis times.

To understand Quartix exposure to a recession it makes sense to look at what happened in the financial crisis of 2008-2009. Because that was really a perfect storm for Quartix. It was the hardest recession/economic downturn since the great depression. Further Quartix was exposed somehow hard to construction in 2006-2007, a sector that was hit hard in the crisis.

So, what happened to Quartix?



As we can see from the chart above Quartix grew a lot from 2001-2007. A lot of that growth came in the construction space as the building sector was booming. As the housing sector in the UK turned down there was a lot of churn in that segment. This slowed the overall growth for Quartix in 2008 and 2009 until it picked up again in 2010 and started to grow a lot again in 2011 and after that. But the main point we take from this chart is that Quartix actually managed to keep growing throughout the worst recession in 100 years. Even with a hard hit to the construction business in the

UK Quartix managed to grow the subscriber base in both 2008 and 2009. We think that kind of tested the business model well.

Going forward Quartix is a lot better positioned should the UK head into a recession. According to our talks with Andy, Quartix have significantly lower exposure to the housing sector now. And the exposure they do have are mainly in maintaince sectors like plumping, electricity etc. and not in new construction. They also have a lot higher exposure to other industries including ground maintaince, garden services, safety vehicles, home services. And costumers also include public costumers now.

Another point related to Brexit is the UK currency. As the vast majority of Quartix expenses are in GBP, a significant decline in the British pound would actually benefit the competitive situation for Quartix when they sell into other countries.

The biggest long-term risk for Quartix regarding a Brexit would be the long-term ability to attract different nationalities to their UK sales offices. As we mentioned before a huge part of the competitive advantage Quartix enjoys now is the fact that they can sell into a lot of markets from a single location in the UK without the need to establish physical offices throughout Europe. Even through that would not affect the residents already living in UK (no short-term risk) it would affect nationalities moving to the UK and therefore the ability to attract multinationals to work for them in the future.

- Competition:

As we mentioned before the telematics industry is highly competitive. But it is also a growing industry. The cake to split grows fast each year. The main competitive issue for Quartix relates to the technological development. As the competitors are much larger than Quartix and some of the owned by conglomerates, they have deep pockets they can use to invest in R&D. So far this has not been an issue for Quartix product wise. But there is a risk that those companies at some point in the future will use those deep pockets to create a technological advantage.

There could also be a risk that competitors would use their deep pockets and size to be aggressive on pricing and costumer acquisitions. But because Quartix are run so efficient it would mean that competitors would need to accept losses to grow and take share from Quartix.

We don’t see any immediate competitive risk to Quartix, but it’s a topic investor needs to constantly keep an eye on.

yes

- Geographical expansion:

As we wrote previously Quartix have now embraced on a geographical expansion strategy to accelerate growth rates. With more countries and expansion also comes more risk. So far Quartix have managed this well going into France and USA. With entry into Spain, Poland, Ireland, Germany and Italy a lot more expansion is to come.

The main point to remember is that Quartix does not build offices and sales forces etc. in those countries. They basically set up local websites in local languages. The sales force and support staff will still be polish, Spanish, Italian speaking people located in the UK.

The main task and risk are to expand the reseller network in those countries, the installer networks and build trust in local price comparison sites. From the company perspective the risk will be to manage a lot of different language and cultures at the same location in UK and still keep a uniformed Quartix culture.

- Pre-installs:

One of the bigger long-term risks would be if Car companies developed and created pre-installed telematics solutions into cars. Or partner with some of the major players in the industry. This is also something to monitor closely. It is estimated that about 5-10 % of cars today are produced and delivered with some sort of Telematics solutions pre-installed.

We don't see this as a short-term risk to Quartix over the next 3-5 years. But it's a development we need to monitor if the pre-install levels reach a higher number. Because if pre-installs in new cars reach a higher number then it could pose a problem as older cars churn out.

But in the end price will still play a role. Even if a van has a self-installed 30-40 $ month telematics solutions installed, the van owner at some point would consider shifting to a 10-15 $ per month solution if they can get the same product. So even through we see pre-installs as a long-term threat to costumer acqustion, we think price and product quality are what matters in the end.

Management:

Quartix was founded by Andy Walters which today is still the CEO and largest shareholder. The 3 other co-founders Andrew Kirk, William Hibbert and Kenneth Giles are no longer working at Quartix but is still big shareholders.
Andy is a hands-on CEO with good experience and a long-term view. In all our phone conversations, email correspondence etc. with Andy we got a good impression of a founder that cares deeply for the company. When we met Andy in London, we walked through the business in dept with him. We were impressed with the knowledge he had about all the details and moving parts, how the sales channels worked, the R&D department, the competitive landscape etc. As a big owner and the founder, he has a long-term view of how to create value for Quartix.

Andy Walters
Chief Executive Officer
Andy Walters founded Quartix in 2001 with three colleagues. Prior to that he was Managing Director of a subsidiary of Spectris plc for 6 years and had spent 15 years with Schlumberger in the UK and France, where he was marketing director of the payphones and smart cards division. Andy holds an MA in electrical sciences from the University of Cambridge.

Jim Warwick
Non-Executive Director
Jim Warwick was until 31 December 2016 Chief Operating Officer at Abcam plc, a global leader in the supply of innovative protein research tools, having originally joined as Technical Director in 2001. Prior to that, he worked on IT, software and web development initiatives for telecommunications consultancy group Analysys Limited. Jim holds an MA in Computer Science from the University of Cambridge.

Dan Mendis
Chief Financial Officer
Dan Mendis joined Quartix in 2017. He was previously Head of Finance (Ruminant) at AB Agri Ltd, a subsidiary of Associated British Foods plc, before which he spent four years with Domino Printing Sciences plc in two different Group roles. Dan holds an MEng in Engineering Science from the University of Oxford, where he also represented the University at cricket, and is a member of the Institute of Chartered Accountants.

The only “negative” we could say was that it did not seem that Andy fully understood the SAAS unit economics. He was clearly impressed with some of the work we had done into this subject and agreed with us that the company should scale up the sales and marketing department with such good KPI.

It is also our impression that a lot of the numbers rest with Dan Mendis which is now both the CFO and COO of Quartix. Dan is guy that Andy had known for years. He has impressed Andy a lot since he joined Quarter in 2017 as CEO. Which was also the reasons he was promoted to COO recently. We had a good impression of Dan as well when we spoke with him.

The main shareholders in Quartix are long term in nature. Besides the 4 founders there are some long-term institutional shareholders:

Name	Number of shares	Percentage (%)
Andrew John Walters*	17,855,986	37.25%
Liontrust Investment Partners LLP	5,477,417	11.43%
Andrew Martin Kirk	4,009,853	8.36%
William Arthur Hibbert	2,663,000	5.56%
Black Rock, Inc.	2,612,707	5.45%
Kenneth Vincent Giles	1,871,800	3.90%

We think it's a good situation to become a minority shareholder alongside founders and long-term institutions. When the biggest owners invest for the long-term and want to build a business

Valuation:

As we have written several times, we think the Quartix story is misunderstood. The same goes with the valuation. We use Mixt Telematics and Induran as benchmark. They are not competing directly with Quartix in the same markets, but they are also publicly listed peers we can use as a benchmark.

If one only looks at the headline P/E numbers it looks like this:

	MixT	Ituran	Quartix
P/E	20,6	10,5	20,9
P/E TTM	17,4	16,7	22,1

As Quartix expenses all their CAPEX and costumer acquisitions upfront this disports the comparison somehow. If we look at some additional figures, we get another picture:

	MixT	Ituran	Quartix
P/E	20,6	10,5	20,9
P/E TTM	17,4	16,7	22,1
P/FCF	22,9	17,5	20,4
3 year subscription CAGR	13%	10%*	22%
Workin Capital % of revenue	0%	10%	-15%
*estimated organic growth			

As we can see here if we use FCF as the comparison Quartix basically trades in line with peers. We think this is a more useful figure than accounting earnings when the companies use different accounting rules.

We would highlight that we think Quartix deserves to trade at a multiple to peers for different reasons

1) The subscriber growth rate is significantly higher for Quartix than for peers. The same goes for the revenue growth rates.
2) Mixt have around 50 % of their revenue coming from Africa, while Ituran have a huge part of the business from Israel and Latin America. Quartix have their revenue from UK, France and USA. As such the revenue comes from more developed markets. Then there is not a huge currency risk as there is for both Mixt with the south African Rand and for Ituran with both the Israeli Shekel and the Brazil and Argentine currencies.

We think the best way to look at Quartix is to look at a bear, base and bull case:

1) **Bear case**

In the bear case we assume Quartix are not able to grow their business. They simply lower their marketing budget to 5 % of revenues. Based on our calculation that would be enough to drive a modest 2 % revenue growth. With the lover investment in sales & marketing the EBIT margin will go up to around 50 %.

2) **Base case:**

In our base case we simply assume that the company will continue as it has done in the past 10 years. Growing around 15 % per year while paying all incremental cash out as dividends. At current price that would give around a 5 % dividend yield.

3) **Bull case**

In our bull case we assume that Quartix are able to take all their current earnings and deploy it into growth. Historically Quartix have been able to achieve a 32 % EBIT margin while spending around 26 % of their revenue on sales & marketing. And growing revenue at a +15 % rate. In our bull case we assume that the company instead of investing 26 % into sales & marketing lifts that to 58 %. With some deterioration in incremental return on investment that would double the growth rate to 30 % per year while achieving a 0 % EBIT margin.

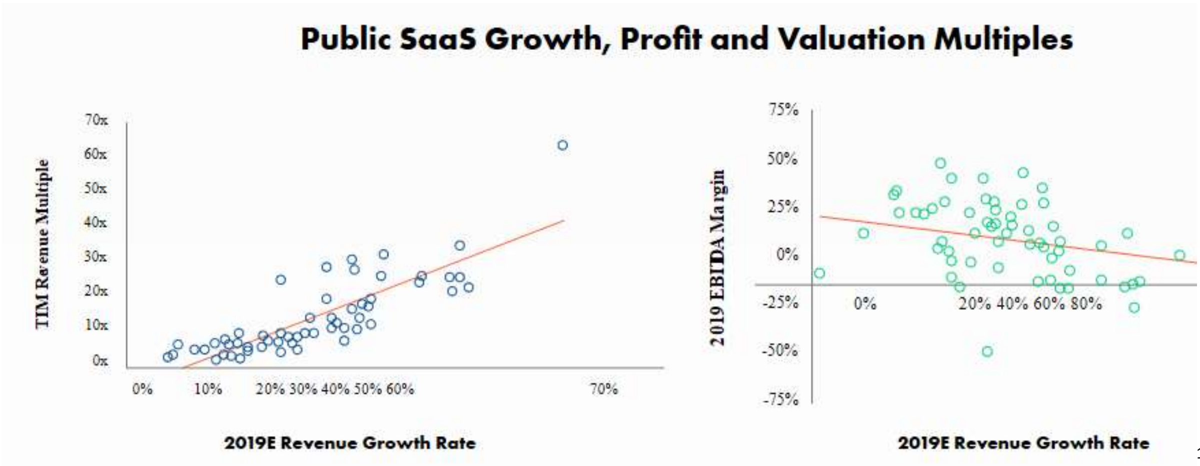
In summary:

	Revenue growth	Dividend yield	Total Carry
Bear	2%	8%	10%
Base	15%	5%	20%
Bull	30%	0%	30%

We think this shows how cheap Quartix really is on current price. Even in our bear case scenario an investor would achieve a 10 % carry investing in Quartix at current levels. With the stock market at record heights a 10 % carry would be a good investment, especially with an 8 % dividend yield. Even in a bear scenario we don't think there is much downside in the stock as the current earnings and dividend yield of 5 % put a natural floor under the stock.

How should we then value Quartix?

Below we have listed the valuation of other publicly traded SAAS peers.



[14]

As we can see from the picture to the right most SAAS companies have around a 0 % EBIT margin, especially the ones with higher growth. This compares to Quartix margin of +30 %. If we then look at the left-hand column the stock multiple is around 5-15 % for most of the SAAS peers with some high growth companies trading even higher. We think Quartix would fit well into this 5-15x revenue multiple.

If we look at Quartix 2020 revenue of 29 mio. GBP we would end up like this:

Sales	Multipel	Valation	Per share	**Upside**
29	5	145	300	**0%**
29	10	290	600	**100%**
29	15	435	900	**200%**

We use a 10x multiple as a fair value for the stock based on the base case. We think the 5x would fit well with our bear case and the 15x with our bull case.

With the strong margins and good LTV/CAC ratios we would argue that Quartix should trade at the upper end of that valuation range.

[14] https://openviewpartners.com/expansion-saas-benchmarks/#.Xb7SUG5FyUk

If we take a broader look at some of the other SAAS peers it looks like this:

Company	Ticker	Revenue LTM	EBITDA LTM	Cash Flow LTM	Market Cap	Debt	Cash	Enterprise Value	EBITDA Margin	YOY Growth	Nov 18 EV/Rev
Instructure	INST	$184	-$49	-$16	$1,250	$0	$117	$1,133	-27%	37%	6.17x
Mindbody, Inc	MB	$212	-$12	$2	$1,600	$246	$326	$1,520	-6%	33%	7.18x
Shopify	SHOP	$854	-$48	$10	$15,570	$0	$1,570	$14,000	-6%	68%	16.40x
Xactly	XTLY	---	---	---	---	---	---	---	---	---	---
Nutanix	NTNX	$1,160	-$237	$93	$7,450	$430	$934	$6,945	-20%	51%	5.99x
Apptio	APTI	$212	-$15	$16	$1,150	$108	$249	$1,009	-7%	22%	4.75x
Blackline	BL	$204	-$18	$13	$2,290	$0	$115	$2,175	-9%	37%	10.68x
Coupa Software	COUP	$219	-$37	$28	$3,840	$169	$443	$3,565	-17%	38%	16.27x
Okta	OKTA	$326	-$120	-$11	$6,310	$264	$536	$6,038	-37%	59%	18.54x
Alarm.com	ALRM	$376	$72	$48	$2,240	$69	$106	$2,203	19%	26%	5.86x
Alteryx Inc	AYX	$162	-$14	$20	$3,200	$168	$331	$3,038	-9%	53%	18.71x
Amber Road	AMBR	$82	-$6	$1	$254	$22	$8	$269	-8%	7%	3.28x
Appian Corporation	APPN	$207	-$31	-$27	$1,620	$0	$50	$1,570	-15%	42%	7.59x
Blackbaud	BLKB	$830	$142	$188	$3,470	$480	$29	$3,921	17%	10%	4.73x
Callidus Software	CALD	---	---	---	---	---	---	---	---	---	---
Channel Advisors	ECOM	$128	-$4	-$2	$320	$2	$51	$271	-3%	9%	2.11x
Cloudera	CLDR	$411	-$176	-$24	$2,180	$0	$378	$1,802	-43%	33%	4.38x
Ebix	EBIX	$430	$144	$85	$1,770	$610	$135	$2,245	33%	34%	5.22x
Ellie Mae	ELLI	$463	$68	$123	$2,360	$0	$243	$2,117	15%	18%	4.57x
Everbridge Inc	EVBG	$123	-$31	$6	$1,520	$92	$106	$1,506	-26%	38%	12.26x
FireEye	FEYE	$776	-$145	$11	$3,580	$939	$1,080	$3,439	-19%	6%	4.43x
HealthStream	HSTM	$255	$29	$39	$849	$5	$166	$689	11%	7%	2.70x
J2 Global	JCOM	$1,160	$422	$359	$3,530	$1,010	$357	$4,183	36%	17%	3.61x
Kinaxis	KXSCF	$144	$34	$36	$1,690	$13	$175	$1,529	23%	14%	10.63x
Medidata Solutions	MDSO	$611	$90	$87	$4,280	$90	$199	$4,171	15%	20%	6.82x
Mimecast	MIME	$282	$16	$51	$2,140	$73	$149	$2,063	6%	39%	7.31x
Mulesoft	MULE	---	---	---	---	---	---	---	---	---	---
NantHealth	NH	$89	-$51	-$50	$173	$198	$29	$341	-58%	-10%	3.85x
Paycom Software	PAYC	$498	$118	$176	$7,340	$35	$55	$7,321	24%	30%	14.70x
Paylocity Holding	PCTY	$378	$32	$98	$3,310	$0	$137	$3,173	8%	26%	8.40x
Q2 Holdings	QTWO	$215	-$12	-$1	$2,280	$178	$279	$2,179	-6%	25%	10.12x
Tabula Rasa Healthcare	TRHC	$170	$15	$15	$1,590	$10	$7	$1,592	9%	56%	9.39x
Talend	TLND	$176	-$31	$308	$1,870	$1	$93	$1,778	-18%	40%	10.07x
The Trade Desk	TTD	$380	$90	$56	$5,490	$0	$142	$5,348	24%	51%	14.07x
Upland Software	UPLD	$121	$25	$6	$702	$159	$19	$842	21%	47%	6.93x
Workiva	WK	$226	-$54	-$2	$1,480	$19	$81	$1,418	-24%	17%	6.29x
Yext	YEXT	$199	-$68	-$21	$1,840	$0	$125	$1,715	-34%	37%	8.64x
Zix	ZIXI	$68	$14	$15	$355	$0	$18	$338	20%	7%	5.00x
Adobe Systems Inc	ADBE	$8,570	$3,090	$4,940	$117,160	$1,880	$4,940	$114,100	36%	24%	13.31x
Microsoft Corp	MSFT	$110,360	$44,960	$43,880	$825,650	$87,510	$133,670	$779,490	41%	23%	7.06x
Mongo DB	MDB	$192	-$109	-$43	$3,970	$211	$523	$3,658	-56%	---	19.03x
Sendgrid	SEND	$128	$6	$16	$1,610	$17	$182	$1,444	5%	---	11.26x
Dropbox	DBX	$1,250	-$363	$356	$9,670	$168	$982	$8,856	-29%	---	7.08x
Zuora	ZUO	$206	-$54	-$22	$2,240	$18	$180	$2,078	-26%	---	10.10x
Docusign	DOCU	$602	-$292	$81	$6,670	$0	$819	$5,851	-48%	---	9.71x
SmartSheet	SMAR	$141	-$39	-$18	$2,450	$8	$211	$2,246	-28%	---	15.93x
Zscaler	ZS	$190	-$20	$17	$4,900	$0	$299	$4,601	-10%	---	24.20x
SurveyMonkey	SVMK	$234	$1	$52	$1,400	$410	$43	$1,767	1%	---	7.57x
Average		**$2,208**	**$646**	**$776**	**$18,316**	**$1,432**	**$2,270**	**$17,478**	**-4%**	**30%**	**8.91x**
Median		**$347**	**-$12**	**$36**	**$2,890**	**$90**	**$204**	**$2,597**	**-6%**	**30%**	**8.29x**

crunchbase [15]

Those data are from November 2018. Today the median multiple is closer to 10x vs. 8-9x a year ago.

If we look at those peers it is worth noting that the median EBITDA margin was -6 %. That compares favorably with the +30 % EBITDA margin that Quartix holds. Quartix has a somewhat lover growth rate at 15-20 % compared to the 30 % for the peer group.

We can see no reason that Quartix should not at least trade at the median valuation as the peer group at 10x revenue.

[15] https://about.crunchbase.com/blog/saas-valuations/