GROUP 3

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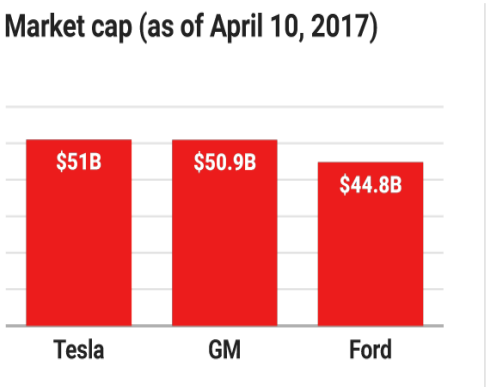
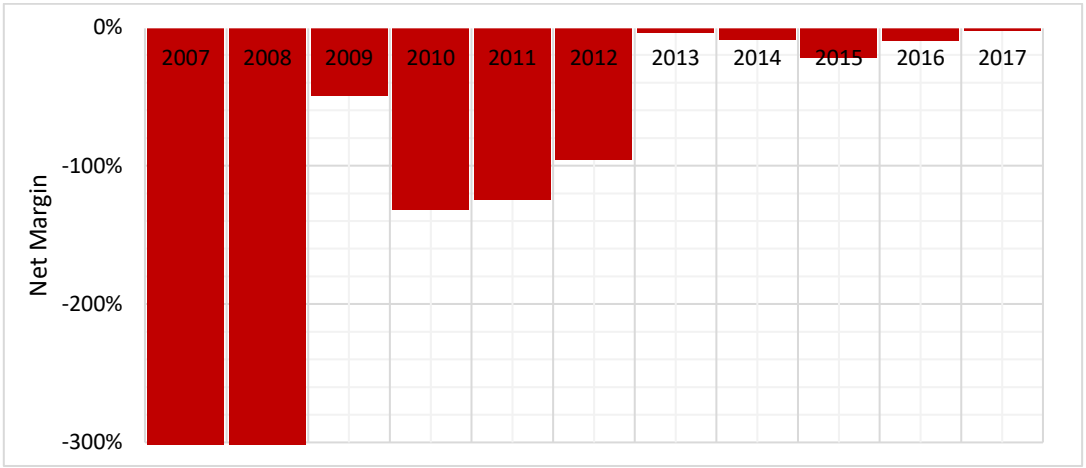
Introduction

If you had been working as a taxi driver in New York at the beginning of the 20th century, you would have probably been roaming down the untarmacked roads riding on a full electric vehicle. At the turn of the century, 38 percent of American automobiles were powered by electricity, 22 percent by petrol and the rest ran on steam. After this period of robust coexistence, combustion engines took over the other technical regimes, becoming overwhelmingly dominant and managed to relegate EVs to 0.15 percent of market share as at the end of 2016,[1] basically a rounding error within the automotive industry.

Today, whether electric vehicles will once again prevail over the combustion engines is a matter of uncertainty. Since there is more petrol than we once thought, thanks to fracking and deep-water drilling, petrol-powered automobiles will not be an ersatz due to a future lack of oil supply, but because electromobility will be more convenient under all perspectives[2]. As a result, such transition is not a matter of natural resources as once thought, but rather of technological performance. Today, if radical innovation seems to be partly taking place in the automotive sector again, major responsibility is to be attributed to Tesla, whose market capitalisation has recently surpassed the major US automakers', as *graph 1* shows[3].



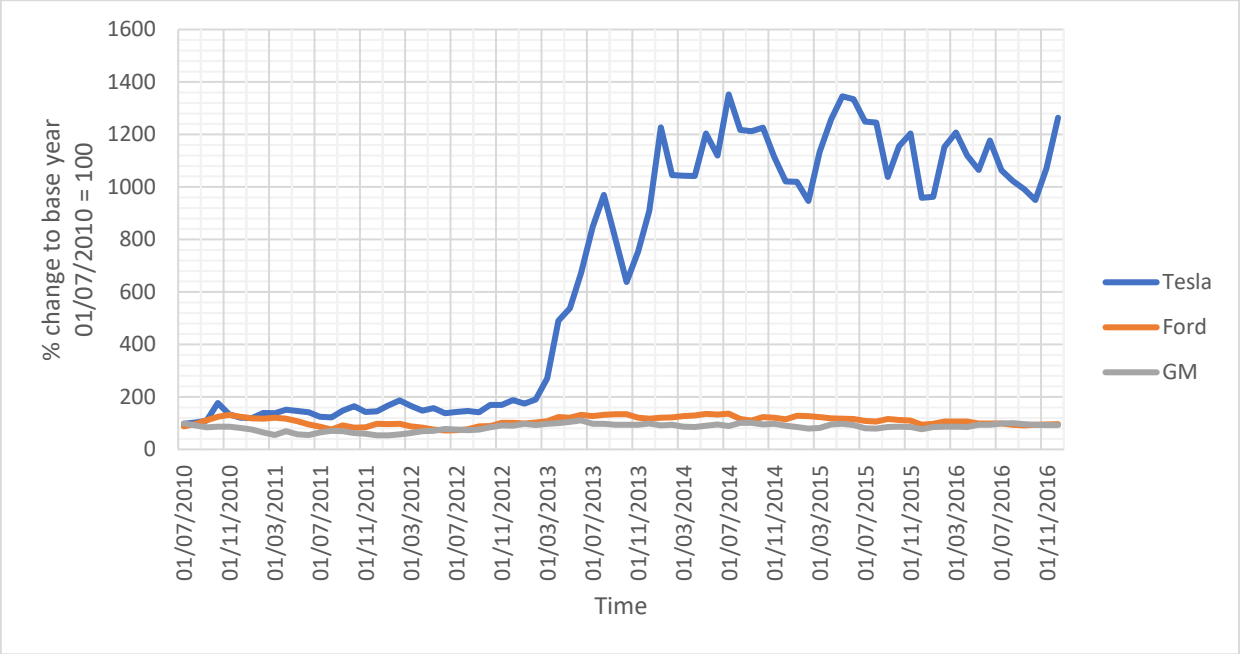
Consequently, Tesla has an exceptional success amongst investors, especially considering how recently it was established. However, the Californian company has yet to record a profit as at Q2 2017.

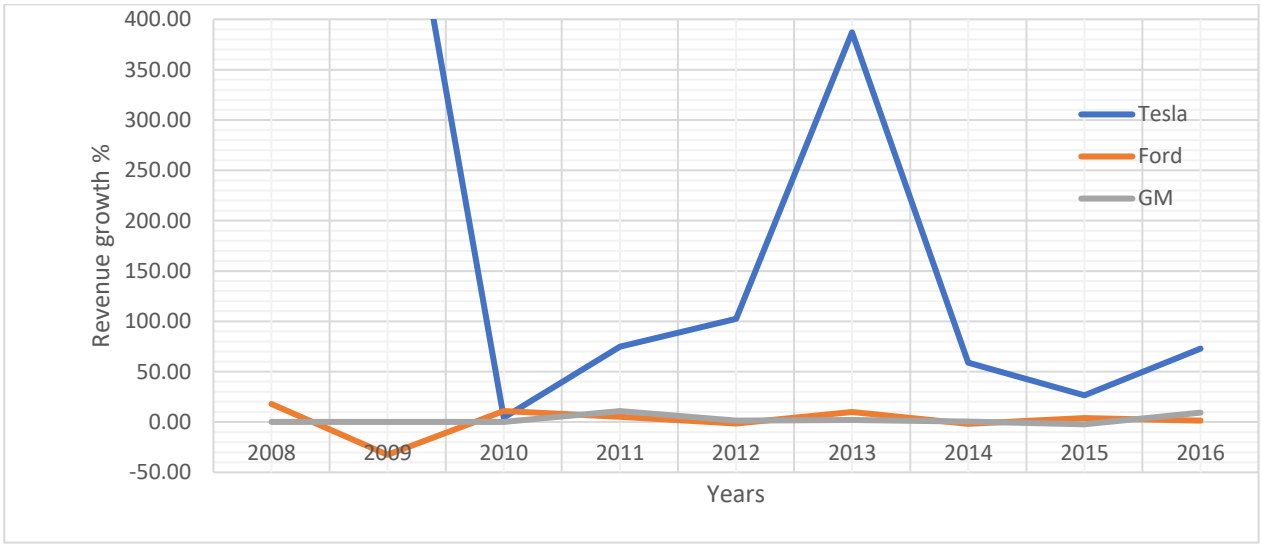


Therefore, past data does not justify the trust that shareholders have in the company. While it is true that

[1]Randall, T. (2016). *Here's How Electric Cars Will Cause the Next Oil Crisis*. [online] Bloomberg.com. Available at: https://www.bloomberg.com/features/2016-ev-oil-crisis/?cmpid=yhoo.headline [Accessed 1 May 2017].
[2]Ibid
[3]DeBord, M. (2017). *Tesla's soaring stock price is causing investors to overthink everything*. [online] Business Insider. Available at: http://www.businessinsider.com/tesla-stock-price-confusing-investors-2017-5?IR=T [Accessed 1 May 2017].

past performance is not indicative of the future, it also is difficult to conceive such a high value in a company that has never been profitable. Furthermore, when comparing sales with other American OEMs within the US market, Tesla is far from reaching its competitors, although growth rates are extremely fast[4][5].





The question that arises from the financial analysis is foregone: how is Tesla's value justified? Are investors irrational? Maybe but highly unlikely so: there must be something additional the previous data is just missing out.

The following dissection of the company will start from its very offering, continuing by its vision and mission and ending by the company's policies on patents and complementary assets.

[4]Nasdaq.com. (2017). *Ford Motor Company Common Stock (F) Historical Prices & Data - NASDAQ.com*. [online] Available at: http://www.nasdaq.com/symbol/f/historical [Accessed 1 May 2017]. Same process and site for the other companies.

[5] Finance.yahoo.com. (2017). *TSLA : Summary for Tesla, Inc. - Yahoo Finance*. [online] Available at: https://finance.yahoo.com/quote/TSLA?p=TSLA [Accessed 1 May 2017]. Same process and site for other companies.

Offering and Offering development

The main obstacles for battery-powered cars to be accepted in the mass-market were the limited range of its batteries, the long time that it takes to recharge, the need to emplace a sufficient number of battery stations and the requirement for owners to replace the battery pack at a huge cost after several years of use.

These four challenges have seemed insurmountable — at least in the near term — and consigned electric cars to the status of a boutique industry selling to local commuters.[6] The company's efforts have been directed towards this route: not only has it succeeded in cracking down the first three points but partially managed to make significant strides towards their solution.

As obvious as it may seem, the offering evolution path that the company has followed is very astute. Their first-ever vehicle, the Roadster (right), was indeed targeting a niche, namely the innovator and enthusiasts, which demanded technology and performance: therefore Tesla had managed to cover consumers which were unserved and articulated, just as CTO Mr Straubel wrote on the manufacturer's official blog in 2008:*"We have such an entrepreneurial and highly technical customer base"*[7]. The accessibility of the price, given the market segment, along with fair range, made it a success for the newly born firm. Drawing a comparison with competitors, when Mercedes released the SLS AMG Electric Drive five years later, the battery technology was the same present in the already aged Roadster (grating a 60 kWh power output) but pricing in began at €416,500[8] versus the more modest €84,500[9] of the latter. Indeed, only 100 units were sold. The same applies to Audi R8 e-tron[10], launched in 2016, which proved to be a commercial failure as well and had to be discontinued, given the absurd base price of $1.1m. Evidently, the German manufacturers were missing out on both the user's needs and substantially overpriced their products, therefore targeted a niche within a niche, made up by an extremely restricted customer base.

Tesla underwent an enlargement of its offering by introducing the Model S in 2012, which placed itself at the top of luxury sedan segment within the US market. The Model S (left) range capabilities (and X, which shares the same platform of the S) stand in clear contrast with the remaining EVs, as later discussed in entry timing.

[6]Halla, A. (2017). *Piecing Together the Tesla Strategy Puzzle*. [online] Harvard Business Review. Available at: https://hbr.org/2015/09/piecing-together-the-tesla-strategy-puzzle [Accessed 28 Apr. 2017].

[7] Tesla.com. (2017). *Roadster Efficiency and Range*. [online] Available at: https://www.tesla.com/blog/roadster-efficiency-and-range [Accessed 28 Apr. 2017].

[8] Szondy, D. (2017). *Mercedes-Benz SLS AMG Coupé Electric Drive – the world's fastest production electric supercar*. [online] Newatlas.com. Available at: http://newatlas.com/mercedes-benz-sls-amg-coupe-electric-drive/24320/ [Accessed 28 Apr. 2017].

[9] Squatriglia, C. (2017). *Tesla Finally Turns A Profit*. [online] WIRED. Available at: https://www.wired.com/2009/08/tesla-profit/ [Accessed 28 Apr. 2017].

[10] Siu, J. (2017). *Audi Quietly Discontinues All-Electric R8 E-Tron – Again - HybridCars.com*. [online] HybridCars.com. Available at: http://www.hybridcars.com/audi-quietly-discontinues-all-electric-r8-e-tron-again/ [Accessed 28 Apr. 2017].

"*Model S is designed […] to be the safest, most exhilarating sedan on the road. […] Model S accelerates from 0 to 60 mph in as little as 2.5 seconds. Model S comes with Autopilot capabilities designed to make your highway driving not only safer, but stress free."*[11] This is how Tesla's website describes its product and we think there is not a better fit for it. "*Tesla has certainly set a positive impulse because they do not say electromobility is renunciation [of power] and about 'granola image', but on the contrary: that is power and enthusiasm. And that is the right way."*[12] Zetsche, Daimler's CEO has been recently quoted. Indeed, the Model S is a bundle of technological superiority, safety and performance, features that the above-mentioned vehicles lack (therefore placing itself on a higher point on the technology trajectory with respect to the latter). The Model S target was not only early enthusiasts but early adopters, the so-called visionaries and thus increasing the potential customer base. The introduction of the Model X (up right), which substantially shares the same technology, powertrain and batteries of the Model S, the company was able to cover a fundamental segment of the North American, with relatively low costs of development and consequent advantages deriving from economies of scale, which accounts for more than half of the total national automotive sales.[13] As at the last quarter, the Model X sold 18,223 units, whereas the Model S 29,421.[14]

The firm's new compact car, the pre-sales record Model 3, targets directly the mainstream customer: as a result, the offering evolution of the company, after the initial launch of the Roadster, has been aimed towards extending its reachable customer base, following the demand trajectory of various consumer groups, always making sure that the product was built upon the specific customer group they were targeting and met sufficient demand: this is because if even one of its vehicles would have turned out to be a commercial flop, it would have probably meant the end of the company.

As obvious as it may seem, starting off with a luxury sports car created the fundamental brand recognition and associated electromobility to power and enthusiasm is something that no manufacturer has ever dared to do. In parallel, the movement from the luxury segment to the compact one with the aim of generating high sales deriving from the reputation gained, is once again a big novelty introduced by the Californian company: others tend to the opposite, as the FCA with the 500e and Nissan with the LEAF; even further, those who did launch luxury EVs (such as the aforementioned Audi or Mercedes) then failed to extend offering to lower-end customers.

Complementary offering

Tesla has recently begun producing the Powerwall: it consists in a big battery pack, sharing the same technology of those found in the company's cars. This may possibly bring about a revolution of housing energy production: the extra production of electricity does not have to be reintroduced to the power network to then be repurchased, but can be stored and used when need, either to recharge the car or for domestic usages.

In this respect, the acquisition of Solar City, largest solar energy services provider in the US, is a big indication of the direction that the company is trying to follow: electromobility is best effective when associated with clean energy production. At such point, electric vehicles become completely sustainable and really have no additional economic and environmental impact. This might mean shift of focus on the core

[11] Tesla.com. (2017). *Model S | Tesla*. [online] Available at: https://www.tesla.com/models [Accessed 28 Apr. 2017].

[12] Lambert, F. (2017). *'Tesla has freed the electric car from its granola image', says Daimler CEO*. [online] Electrek. Available at: https://electrek.co/2017/03/24/tesla-electric-car-granola-image-daimler-ceo/ [Accessed 28 Apr. 2017].

[13] Online.wsj.com. (2017). *Auto Sales - Markets Data Center - WSJ.com*. [online] Available at: http://online.wsj.com/mdc/public/page/2_3022-autosales.html [Accessed 28 Apr. 2017].

[14] Autonews.com. (2017). *New Automotive News Data Center*. [online] Available at: http://www.autonews.com/section/datacenter11 [Accessed 28 Apr. 2017].

business from car manufacturing to energy providing, as later discussed.

Knowledge management

Tesla's knowledge creation process is something incredible: in a market dominated by huge players, that have access to financial, technical and human resources like no one else on the planet, they were able to develop an incredibly solid and widely varied knowledge base in the EV market, becoming a landmark.
"Our goal: to accelerate the advent of sustainable transport by bringing compelling mass market electric cars to market as soon as possible."[15]

Instilling a knowledge vision is one of the most important elements for the knowledge creation. Tesla was able to change the image of EV and to create its powerful meaning. From the past image of the electric car as an ugly but green car, to a brand new image: the high performance sport car. This new vision of the EV is extremely important because it allows Tesla to build its brand awareness and to be known all over the world as one of the best and affirmed EV maker. With his vision the company was also able to act motivational: it imagines a future where electric vehicles will dominate the automotive market and where renewable energies will replace the traditional ones. This means that Tesla did not see the EV market only as an opportunity (like the other automakers) but as a sustainable and highly possible future. Tesla didn't launched few electric car just to follow the recent trend in the automotive market, but indeed it created this very trend from scratch. These efforts made the company most compelling both for customers and employees, allowed it to attract the best human resources and to create a strong link between the brand and the EV market.

"I am the first to admit that neither I, my co-founder, Marc Tarpenning, nor Elon Musk, is an automotive engineer". Martin Eberhard
At the beginning in the 2006 the founders of Tesla were aware that they did not have any human, financial or technical resources, in other words, they were aliens of the automotive market. So they realised that they needed partnerships with existing firms to be able to bring their first car "to the market quickly and efficiently". When Tesla decided to produce Roadster, he formed a partnership with Lotus that helped the company with the design, engineering, technology and assembly of the first vehicle. At the end of this partnership Tesla was able not only to learn how to produce sports cars, but some of Lotus' automotive engineers decided to work for Tesla. [16] Tesla definitely acquired technical and human critical resources. Tesla was then able to start the production at a greater scale of model S, forming 3 different partnerships. The first one was with Daimler in 2010, that invested (by acquiring nearly 10 percent of Tesla) and helped to develop core parts of the vehicles.[17] The second one was with Toyota that invested 50 million in the IPO and sold its factory in Freemont to Tesla[18], and finally the last one was with Panasonic that agreed to develop batteries with the firm.[19] All of these partnerships allowed Tesla to leverage know-how and other companies' infrastructure,

[15]Tesla.com. (2017). The Mission of Tesla. [online] Available at: https://www.tesla.com/blog/mission-tesla?redirect=no [Accessed 28 April 2017].
[16] Lotus Position | Tesla. 2017. Lotus Position | Tesla. [ONLINE] Available at: https://www.tesla.com/blog/lotus-position. [Accessed 28 April 2017].

[17] Strategic partnership: Daimler acquires stake in Tesla | Tesla. 2017. Strategic partnership: Daimler acquires stake in Tesla | Tesla. [ONLINE] Available at: https://www.tesla.com/blog/strategic-partnership-daimler-acquires-stake-tesla?redirect=no. [Accessed 28 April 2017].
[18] Steve Gelsi. 2017. Toyota's investment to help Tesla IPO: analyst - MarketWatch. [ONLINE] Available at: http://www.marketwatch.com/story/toyota-investment-adds-jolt-to-tesla-ipo-2010-05-21. [Accessed 28 April 2017].

[19] Panasonic Enters into Supply Agreement with Tesla Motors to Supply Automotive-Grade Battery Cells | Tesla. 2017. Panasonic Enters into Supply Agreement with Tesla Motors to Supply Automotive-Grade Battery Cells | Tesla. [ONLINE] Available at: https://www.tesla.com/blog/panasonic-enters-supply-agreement-tesla-motors-supply-automotivegrade-battery-c?redirect=no. [Accessed 28 April 2017].

saving time and money.
Today the culture itself is different in Tesla: their approach is less oriented toward drawing the project and much more on trying and selecting what works.
Toyota executive stated, *"Tesla is a lot different. They get the standards and specifications set, and then change it on the fly. They spend more time in the validation phase. We spend more time in up-front planning"*. Flexibility is a keyword for the company, which seeks constantly customer's feedback to improve the car and the services around it. As Musk stated *"You've got to go through major design iterations to achieve a mass market product and that's why we are trying to get there as quickly as possible*". Therefore, if the first approach was to make partnerships allowing Tesla to acquire know-how and other companies' infrastructure, today's strategy is to internalize all production stages, as its stance in battery production.

Open Sourcing

"If a company is relying on patents, it's in a weak position. They're not innovating fast enough. You want to be innovating so fast that you invalidate your prior patents." Elon Musk

On 12 June 2014 Elon Musk wrote a post on Tesla blog, announcing the next unexpected move of the company (pictures in next page show how all the patents were replaced with an image).

"*Tesla Motors was created to accelerate the advent of sustainable transport. If we clear a path to the creation of compelling electric vehicles, but then lay intellectual property landmines behind us to inhibit others, we are acting in a manner contrary to that goal. Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology. […] Technology leadership is not defined by patents, which history has repeatedly shown to offer indeed small protection against a determined competitor, but rather by a company's ability to attract and motivate the world's most talented engineers. "We believe that applying the open source philosophy to our patents will strengthen rather than diminish Tesla's position in this regard.*"[20]

At first sight the choice of going "open source" with all its patents might look like pure madness for any company beyond software, but of course Musk is not mad at all. First, it is important to notice that Tesla's patents can only be used in "good faith", essentially meaning in a way that it cannot harm the company. In addition, having access to all the patents is not the same thing as having the ability to replicate the products immediately, it could take time for other competitors to produce the technology.[21]

[20]Tesla.com. (2017). *All Our Patent Are Belong To You*. [online] Available at: https://www.tesla.com/blog/all-our-patent-are-belong-you?redirect=no [Accessed 28 Apr. 2017].
[21]Knowledge@Wharton. (2017). *What Tesla Gains from Giving Out Its Patents -- K@W*. [online] Available at: http://knowledge.wharton.upenn.edu/article/whats-driving-teslas-open-source-gambit/ [Accessed 28 Apr. 2017].

Karl Ulrich, Wharton's vice dean of innovation and professor of operations and information management, says Tesla's offer is not particularly substantial. "*I don't believe Tesla is giving up much of substance here*" he notes. "*Their patents most likely did not actually protect against others creating similar vehicles*."[22]

Despite Ulrich's statement, the motivations behind this strategy are more subtle. It is true to a certain extent that licenses do not protect any company completely from its competition, actually when it comes to engineering, rivals usually find a way to work around them. Others and Musk himself pointed out that engineers are the secret for success and not a portfolio full of licenses, and until Tesla will continue to attract the best in circulation thanks to its roots in Silicon Valley, the know-how retained and licenses become less important.[23]
Maybe it is true that this choice will eventually save lots of time and money used otherwise for lawsuits, but defining the intellectual property system useless and the decision "risk-free" is an exaggeration.[24]

Tesla's move is a bid at establishing an industry standard, which could help a new technology diffuse more rapidly. It has become clear from the past that an industry fragmented by differing standards would have had more hurdles to growth because of incompatibility issues.[25]
The single most important economic principle when we talk about open source is that demand for a product increases when the price of its complements decreases so smart companies will try to commoditize their products' complements.[26]
Back in 1981, when IBM licensed the operating system PC-DOS from Microsoft, Microsoft was very careful not to sell an exclusive license. This made it possible for Microsoft to license the same thing to Compaq and the other hundreds of OEMs who had legally cloned the IBM PC using IBM's own documentation. Microsoft's goal was to commoditize the PC market. Very soon the PC itself was basically a commodity, with ever decreasing prices, consistently increasing power, and fierce margins that make it extremely hard to make a profit.
Another example is netscape, which open sourced its web browser from day one. Netscape gave away the browser so they could make money on servers. Browsers and servers are classic complements. The

[22]Knowledge@Wharton. (2017). *What Tesla Gains from Giving Out Its Patents -- K@W*. [online] Available at: http://knowledge.wharton.upenn.edu/article/whats-driving-teslas-open-source-gambit/ [Accessed 28 Apr 2017].
[23]Ibid
[24]Ibid
[25]Ibid
[26]Joel on Software. (2017). *Strategy Letter V*. [online] Available at: https://www.joelonsoftware.com/2002/06/12/strategy-letter-v/ [Accessed 28 Apr. 2017].

cheaper the browsers, the more servers you sell. This was never as true as it was in October 1994.[27]

Musk is clearly taking inspiration from the software world, given his experience in such business, and is trying to doing the same in the electric car industry. But what is its product? And what is trying to commoditize? Although so far we have analysed its current offering and the knowledge management used into its development, it is true that Tesla's core business have been and still are cars, but if the company succeeds at commoditize electromobility, its future products might rely substantially in the infrastructure previously set up and the production batteries:[28] in a near future it could offer its supercharger network to Chevy, Ford or other OEMs and charge them around $15. From this point of view, it could effectively constitute a proper monopoly.[29]

In addition, on July 29, 2016, it was held the grand opening of the Gigafactory 1, which once reached full regime could drive down manufacturing costs for lithium ion batteries by 30 percent and lead to a supply of batteries never seen before.[30] By 2020, the Gigafactory could produce more lithium ion batteries annually than were produced worldwide in 2013 and surely far more batteries than it could ever use in its cars. And that is because Tesla might sell these to other car companies, for their fleets of EVs. In conclusion, creating an environment where your products can strive is always a good move, but monetizing the environment where the products of the rivals will thrive is an excellent move.[31]

Entry timing

The key factor for the aforementioned strategy was Tesla's entry timing. This is because it is a new entrant in automotive, but also a pioneer of a new emerging trend within the same market.
It was founded in 2003, just 14 years ago, and for this reason it may be seen as an "infant" company compared to other big player in the industry like Ford, General motors or Fiat Chrysler which have respectively 114 years, 109 years and 92 years. For this reason, Tesla's case is now studied all over the world as the example of a successful new entrant in a business with high entrance barriers and well established incumbents. Ford Executive Chairman Bill Ford commented about Tesla "*It's really hard to start a company, particularly in the auto business, and be successful….My hat's off to them*". The factors that make it so difficult to enter in the automotive market are the huge initial investments required, large economies of scale, well-established incumbents which spend billions of dollars to improve constantly their technology and products.[32]

Yet, although Tesla is the new entrant in the industry, it is for sure a pioneer in the field of EV, not in the sense that is the first to develop an electric car, which existed from the 20th century but in the sense that the technology they adopted was disruptive. As Robert Lutz from General Motors explained, "*All the geniuses here at General Motors kept saying lithium-ion technology is 10 years away, and Toyota agreed with us—*

[27]Joel on Software. (2017). *Strategy Letter V*. [online] Available at: https://www.joelonsoftware.com/2002/06/12/strategy-letter-v/ [Accessed 28 Apr. 2017].
[28]Harvard Business Review. (2017). *Piecing Together the Tesla Strategy Puzzle*. [online] Available at: https://hbr.org/2015/09/piecing-together-the-tesla-strategy-puzzle [Accessed 28 Apr. 2017].
[29]Anon, (2017). *Tesla on Patents: Open Source Altruism or Shrewd Business?*. [online] Available at: http://www.ipwatchdog.com/2014/07/08/tesla-on-patents-open-source-altruism-or-shrewd-business/id=50331/ [Accessed 28 Apr. 2017].
[30]Tesla.com. (2017). *Tesla Gigafactory | Tesla*. [online] Available at: https://www.tesla.com/gigafactory [Accessed 28 Apr. 2017].
[31]Harvard Business Review. (2017). *Piecing Together the Tesla Strategy Puzzle*. [online] Available at: https://hbr.org/2015/09/piecing-together-the-tesla-strategy-puzzle [Accessed 28 Apr. 2017].
[32]Stringham, E., Miller, J. and Clark, J. (2015). Overcoming Barriers to Entry in an Established Industry: Tesla Motors. *California Management Review*, 57(4), pp.85-103.

and boom, along comes Tesla". The company has excellent knowledge on battery packs and management systems. It provided the Roadster with thousands of laptop Lithium-ion cells and assembles them into a performance and cost optimized battery pack.[33] Nevertheless, the company based in Palo Alto is well aware of the resources of its competitors, and for this precise reason they know that their survival depends on their ability to anticipate and then avoid direct competition with giants. If the automotive industry would start to invest seriously in EV, it would be very hard for Tesla to succeed. However, if Tesla does not manage to survive as car manufacturer, it could still exploit the huge complementary offering thanks to his position "standard technology" gained from his entrance as number one.

Complementary Assets

The automotive industry and its major players rely heavily on complementary assets, namely: suppliers, after-sales support and distributors. In particular the latter can play a major role in the selling process of cars and despite that it is handled by external subject which own the customer directly. In this respect, Tesla is perfectly aware that it cannot compete with such highly retained complementary assets, and therefore has tried to go down an untraditional road, by developing a completely different distribution channel, which does not need an intricate web of dealers.

As a matter of facts, Tesla sells only through his internet site. If tomorrow you wake up and take the decision to buy a Tesla you will find a physical place to do a test drive and admire a pre-configured vehicle, but that is it. You will have to order one, make a down payment (which is also used to finance its construction so that Tesla does not have to incur in debt seeking) and then wait for it to be delivered[34]. Through, the relationship with the customer is much more direct, there are no intermediary channels between you and Tesla. And if in the old world, the car-maker with more dealers has the greatest "fire-power", the Palo Alto company navigates around the problem and declares the dealers network useless.

In addition to that, the company decided not to invest a single penny in advertising since in Musk's opinion is a waste of resources. Eventually they will advertise ads created by fans in a contest![35] Again, the main point is that complementary assets value is retained by Ford and General Motors and for this reason it makes no sense for Tesla to try to build the whole complementary assets starting from scratch.

As we mentioned above Tesla made a huge effort to internalize all the production, and it worked hard also on the after-sales relation side. First point to note is that electric vehicle need much less maintenance than gasoline vehicle for technical reasons. Second the unique upgrade strategy which Tesla had developed and is now perfectioning. The cars can receive upgrades over the air like smartphones, and constantly improve their performances on many different aspects, as the autopilot just to mention one. The company continues to identify approximately 20 Model S enhancements every week. "Mostly, these are little tiny nuance things that most people wouldn't notice," said Musk. "But, it is a continuous improvement process. That's why I say, when people say, when should they buy Model S? Like what model year? It's like, we don't really have model years. We keep improving the car. If you want to wait until the car stops improving, you'll be waiting forever."[36]

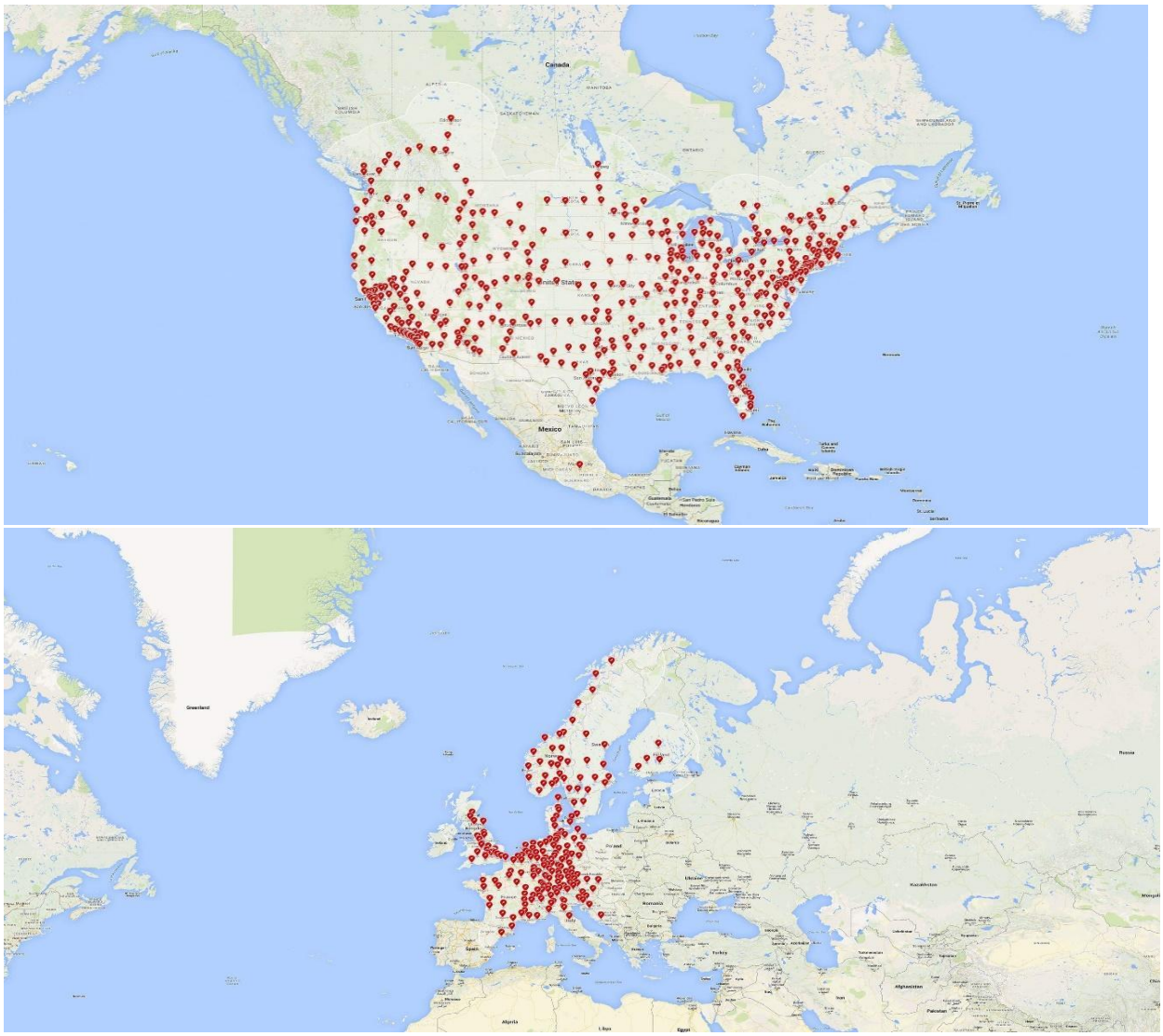
[33]Stringham, E., Miller, J. and Clark, J. (2015). Overcoming Barriers to Entry in an Established Industry: Tesla Motors. *California Management Review*, 57(4), pp.85-103.

[34] Tesla.com. (2017). *Buy a new Tesla today | Tesla*. [online] Available at: https://www.tesla.com/new?model=ms [Accessed 12 May 2017].

[35] San Francisco Chronicle. (2017). *Tesla's bold approach to advertising: Don't do it*. [online] Available at: http://www.sfchronicle.com/business/article/Tesla-s-bold-approach-to-advertising-Don-t-6843488.php [Accessed 12 May 2017].

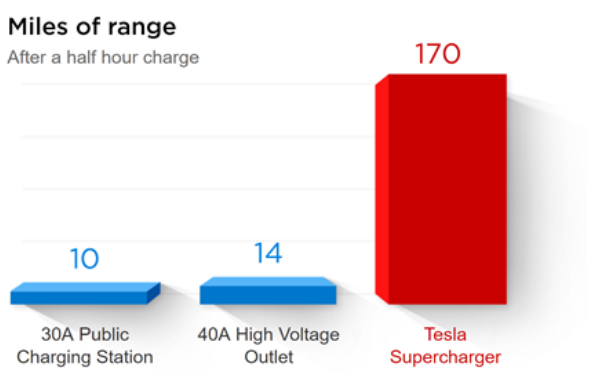
[36] Harvard Business Review. (2017). *Lessons from Toyota's Long Drive*. [online] Available at: https://hbr.org/2007/07/lessons-from-toyotas-long-drive [Accessed 12 May 2017].

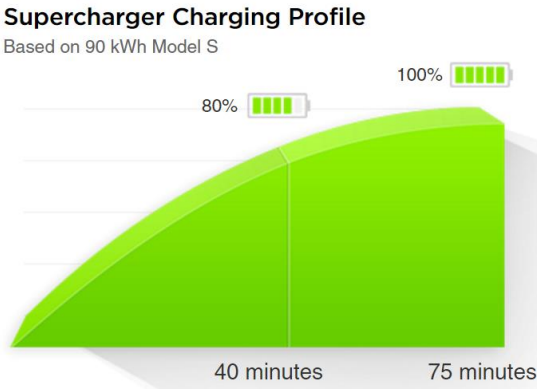
Tesla supercharger network



Imagine a family that would like to travel from Los Angeles to San Francisco on vacation but they cannot use their electric car because it simply has not enough power to drive those long ranges. Luckily every Tesla owner is allowed to charge their car on the road at Tesla's supercharging stations or upon arrival at Tesla's destination chargers for free. Only thirty minutes of charging provides Tesla cars with additional 170 miles of range, while a complete charge requires more. This means that only during a normal lunch break a Tesla vehicle can be charged enough to make a trip like the family demands.[37]

[37] Tesla.com. (2017). *Supercharger | Tesla*. [online] Available at: https://www.tesla.com/supercharger?redirect=no [Accessed 28 Apr. 2017].





Tesla is well aware of the fact that a strong ecosystem is necessary for the spreading of electric vehicles, given the numerous disadvantages, such as slow recharging and scarcity of stations if compared to gasoline station network. For this precise reason, Tesla is investing heavily in superchargers in US, Europe and Asia. Currently the network consists on 842 supercharger stations with 5431 superchargers placed strategically along highways or principal roads to make long distance trips possible (as shown in the previous page).[38] Besides superchargers on highways, the company concentrated its efforts on cities, and has the intention to substantially increase the offering in the future.

A good example is New York City. Tesla never installed a Supercharger in Manhattan, one of the richest and most densely populated cities on Earth. Instead, it installed hundreds of lower-powered Destination chargers since the city is more of a destination, where you stop for longer periods of time. Currently, they plan on adding three Supercharger stations in Manhattan and several more in other boroughs.[39]

So far, Tesla is virtually the only car manufacturer to massively deploying its own charging infrastructure while other automakers rely on third-party networks. However, Tesla's latest Supercharger plans eclipse anything done by those third-party networks until now.[40] Moreover, it has recently revealed details of its plan to continue the expansion of its network, which remains a top priority for the company. Tesla began in 2017 with 5,000 Superchargers around the world, according to an update to the company's blog, and by the end of the year, it plans to have 10,000 of them, as well as 15,000 Destination chargers, which are charging stations at hotels, resorts and restaurants (which currently only amount to 9,000).[41] Is this hurry caused by the revenue that superchargers generate? Not at all. In fact Tesla refused to extract any profits from them, and probably they will not for a long time. Until January 15th, 2017 charging your car at these stations would have cost you nothing. From the beginning of this year they announced that drivers will pay for the electricity and also small fee will be charged, to induce drivers to "refill" the batteries at home in order to avoid congestions. The electricity's price of course depends on the Supercharger location and the company has intention to charge it only for cars sold after this very date. Moreover, Tesla has announced that all the revenues generated by these fees will be reinvested in the expansion of the network.[42]

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[38]Tesla.com. (2017). *Supercharger | Tesla*. [online] Available at: https://www.tesla.com/supercharger?redirect=no [Accessed 28 Apr. 2017].

[39]Lambert, F. and Lambert, F. (2017). *Tesla's new Supercharger strategy is a major shift that will enable urban EV ownership*. [online] Electrek. Available at: https://electrek.co/2017/04/24/tesla-supercharger-strategy-urban-ev-ownership/ [Accessed 28 Apr. 2017].

[40]Lambert, F. and Lambert, F. (2017). *Tesla's new Supercharger strategy is a major shift that will enable urban EV ownership*. [online] Electrek. Available at: https://electrek.co/2017/04/24/tesla-supercharger-strategy-urban-ev-ownership/ [Accessed 28 Apr. 2017].

[41]Ferris, R. (2017). *Tesla will double number of Supercharger stations in 2017*. [online] CNBC. Available at: http://www.cnbc.com/2017/04/24/tesla-will-double-number-of-supercharger-stations-in-2017.html [Accessed 28 Apr. 2017].

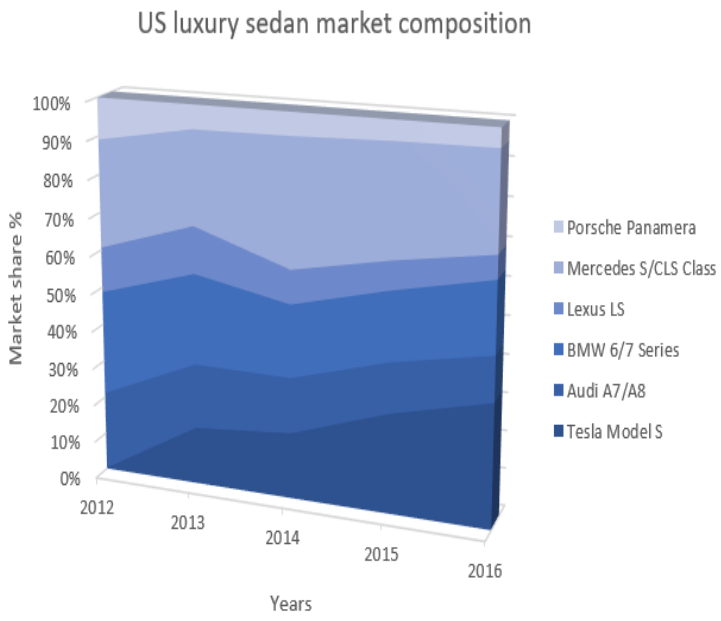
[42]Gluckman, D. (2017). *If you're buying a new Tesla, here's how much Supercharging will cost you*. [online] Autoblog. Available at: http://www.autoblog.com/2017/01/13/new-tesla-supercharger-fees/ [Accessed 28 Apr]

Often for great innovations a favorable environment is necessary and for electric cars this is true as well. It's very hard to imagine a world full of electric cars but without chargers in the street. Tesla knows that, and at the same time knows that being the owner of the fastest charger will be a tremendous advantage in the future if the electric vehicle will spread. Fighting the range anxiety, making life for its customers easier and thus the electric car more feasible is just the tip of the iceberg, the network is a long term investment.

Both established and disruptive initiatives depend on an array of complementary elements: technologies, services, standards, regulations to deliver on their value propositions. The strength and maturity of the elements that make up the ecosystem play a pivotal role in the success of new technologies.[43]
Building a solid and capillary network is of utmost importance for Tesla since it's facing two different challenges: developing an innovative enough car that will withstand competitor's constant improvements while investing heavily in expanding their network of Superchargers, in order to avoid robust resilience.

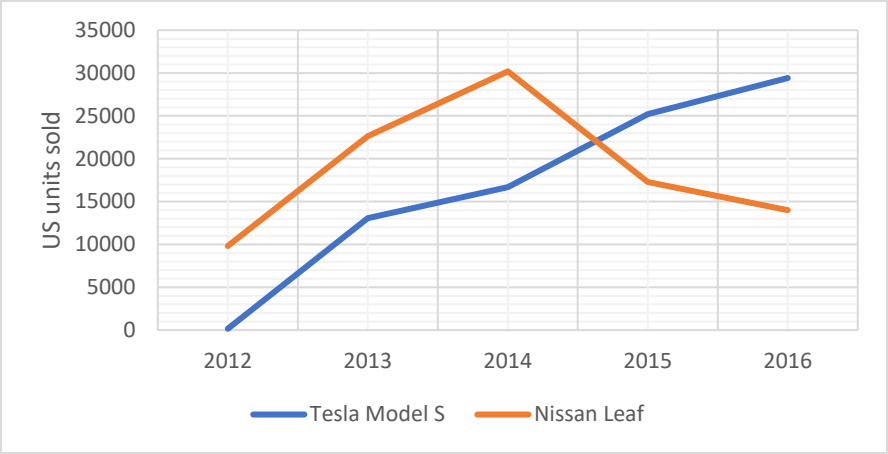
Conclusion

While EVs still represent a minute share of global sales, it is notable how the Model S has achieved more market share in recent years than any other luxury sedan car in its market. Neither one of its main competitors, including Audi's A7/A8, BMW's Series 6/7 or Mercedes' Class S/CLS, have managed to out-sell Tesla in 2016.[44]



[43] Harvard Business Review. (2017). *Disruption: It's Not the Tech, It's the Timing*. [online] Available at: https://hbr.org/2016/11/right-tech-wrong-time [Accessed 1 May 2017].
[44] Autonews.com. (2017). *New Automotive News Data Center*. [online] Available at: http://www.autonews.com/section/datacenter11 [Accessed 28 Apr. 2017]. Data also available at: http://carsalesbase.com/car-sales-us/

This means that robust coexistence is already occurring within such segment of the market and that the company's policies are already paying off. When compared to its main rival in the electric vehicles market instead, the Nissan-Renault alliance still remains the manufacturer that has sold most electric cars. However, Tesla is rapidly catching up, having sold more than double the cars Nissan's Leaf model sold in 2016 in the US[45].



These accomplishments clearly outline once again Tesla's success the result of many different factors coming together, which are all unique to Tesla. Its strong mission and dedicated vision, in combination with its extremely powerful knowledge management and superior ecosystem compared to its rivals, make Tesla stand out from the crowd. This has until now been reflected mainly in Tesla's stock price and the confidence Tesla's investors have for the future they together believe in. Its current market capitalization is therefore not only the result of Tesla's recent sales figures, but mainly due to the fact that Tesla's investors share the same outlook for the future as the company itself, given that the volume of sales still remain scarce when compared to the overall industry, despite the meaning attached such data. In particular, they firmly believe that strategic elements such as Tesla's decision to go open-source will payoff in the future once the technology is "closed" again. The resulting nearly monopolistic position would be translated into higher profit margins.

[45] Ibid