



**POLITECNICO DI MILANO  
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**AVANTI SUV DESIGN**

Fiat design styling forward  
urban SUV design

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Thank Professor **Fausto Brevi** and **Emilio Mario Favilla**  
Giving guidance for the Avanti Project.

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## **ABSTRACT (EN)**

The project is named “Avanti” that aims to design a concept urban SUV. Based on the Fiat family styling gene to explore the Fiat forward styling language for the next 1-3 years. Using new design idea with existing resources to bring an all- new design concept for the brand.

Firstly, against the global and regional markets sales of Fiat in recent years, integrate the company's strategic decisions and five-year plan, the advantages and disadvantages of models in sales. Making an analysis of the group’s development worldwide and internal.

Proposed an idea of dual styling routes of Fiat group: one is the existing popular Fiat 500 series with the fashion and retro styling; the other one is a sense of technology and futuristic as the goal with modern styling. This could enrich Fiat group's product line, thereby winning more consumers. Meanwhile the SUV models could become the next sales growth point of group.

Project is based on group’s existing models manufacturing platform to design a different styling from the Fiat 500 series’ retro styling, that would become an all-new sporty and modern styling of urban SUV.

## **Estratto (IT)**

Il progetto chiamato "Avanti", mira a progettare un concept di SUV urbano. Partendo dall'analisi dei geni stilistici dei prodotti Fiat viene esplorato il linguaggio dello styling Fiat nei prossimi 1-3 anni. Utilizzando una nuova idea di progettazione con le risorse esistenti per portare un nuovo concept di design per il marchio.

In primo luogo, contro i mercati globali e regionali di vendita di Fiat negli ultimi anni, di integrare le decisioni strategiche della società e il piano quinquennale, i vantaggi e gli svantaggi dei modelli in vendita. Facendo una analisi dello sviluppo del gruppo a livello mondiale e interna.

Proposta un'idea di percorso duplice per lo styling del gruppo Fiat: uno è la popolare serie esistente fiat 500 con la moda e lo stile retrò; l'altro è il senso della tecnologia e del futuro con stile moderno. Questo potrebbe arricchire la linea di prodotti del gruppo Fiat, con vincendo in tal modo più consumatori. Nel frattempo i modelli di SUV possono diventare il prossimo punto di crescita delle vendite del gruppo.

Il progetto è basato su una piattaforma di modelli di produzione esistente per la progettazione di uno stile diverso dallo stile retrò della serie Fiat 500, che sarebbe un nuovo stile moderno e sportiva di SUV urbano.

# AUTO MARKET ANALYSIS



# AUTO MARKET ANALYSIS

## 2.1 Global Market of 2013 year

As the global economy recovers from the financial shocks of the last five years, the automotive industry is playing a huge role in bringing it back to life.

On present estimates the global automotive industry is worth \$800bn while analysts forecast that the global market for cars and other light vehicles will expand from 80 million units a year now to well over 100 million by 2020.

Against this backdrop it is little wonder that OEMs continue to pour investment into emerging markets. For instance VW, which wants to become the world's biggest carmaker this decade and overtake Toyota as the biggest carmaker by volume, has big ambitions in the Far East. Along with two Chinese JV partners, it is putting almost 10bn into plant investments and R&D in China in the next few years. This includes plans for seven new plants on top of the 12 it currently has. VW plans to build four million vehicles a year in China by 2018, double the existing level.

### China market blooming

China is now the world's biggest market for cars and annual sales are expected to rise from 19 million in 2012 to 31 million by 2020 as car ownership spreads to the country's interior, according to consultants AlixPartners. Over the next

seven years a market the size of Europe will be formed in inland China. And as the emerging middle class get richer so the cars they buy will get bigger too. The global market for premium cars alone is forecast to increase by up to 45 per cent over the next 10 years.

### US breathes again

The US market is coming back to life with estimates that up to a quarter of the 500,000 manufacturing jobs gained in the US since 2010 are directly attributable to the recovery of the motor industry. US car sales are presently showing double digit annual growth, particularly driven by pick-up truck sales and the four wheel drive market. Figures from Motor Intelligence show sales of four-wheel drive vehicles have risen by more than 13 per cent over the past year.

### European woes

Annual car sales in western Europe have fallen by almost a quarter since 2007, and car sales in western Europe are forecast to continue falling to 12 million in 2014 from 13.2 million in 2012. Alix say western Europe's car market will not grow until at least 2019, raising the prospect of further plant closures on the continent.

Plants operating at undercapacity remains another issue. Alix say only 42 of Europe's 100 largest car factories will be operating at more than 75 per cent capacity in 2013, down from 60 in 2011. But within Europe the figures mask

considerable variations. While there will be continued pain in France, Italy and Spain, the UK and Germany continue to perform strongly with factories operating on average at more than 80 per cent capacity. Meantime the Sports Utility Vehicle (SUV) and pick-up truck markets are showing continued strong growth.

#### Modular assembly

Modular assembly allows OEMs to produce vehicles of a different length, width and wheelbase on the same platform and thereby make different models from different brands at the same plant. The theory is that constructing a car from common building blocks then allows manufacturers to be as flexible as possible and, specifically, gives them the scope they need to differentiate models according to different global markets.

AlixPartners\* has concluded that successful automotive platforms of the future will be increasingly modular and more 'mega' with some able to accommodate as many as 10 vehicle families ranging from SUVs to sports cars, from entry-level to superluxury, and from conventional powertrain to hybrid or electric. It says the platforms will allow for significant geographic adaptations for local requirements and parts-sourcing.

Vehicle production using such platforms is set to double over the next five years, and will account for more than 88 per cent of industry growth in the period. Meanwhile, 46 per cent of total global production volume, or 46 million units, will be produced on mega-platforms by 2017.

Last year VW introduced the Modular Transverse Matrix (MTV) for its Volkswagen, Audi, ŠKODA and SEAT brands. MTV standardises many vehicle component parameters while at the same time offers access to new technologies.

For instance in future all models within the VW family could theoretically be produced on the same assembly line despite their different wheelbases and track widths. The first new vehicles to be produced based on the model are the successor to the Audi A3 and the next generation Golf

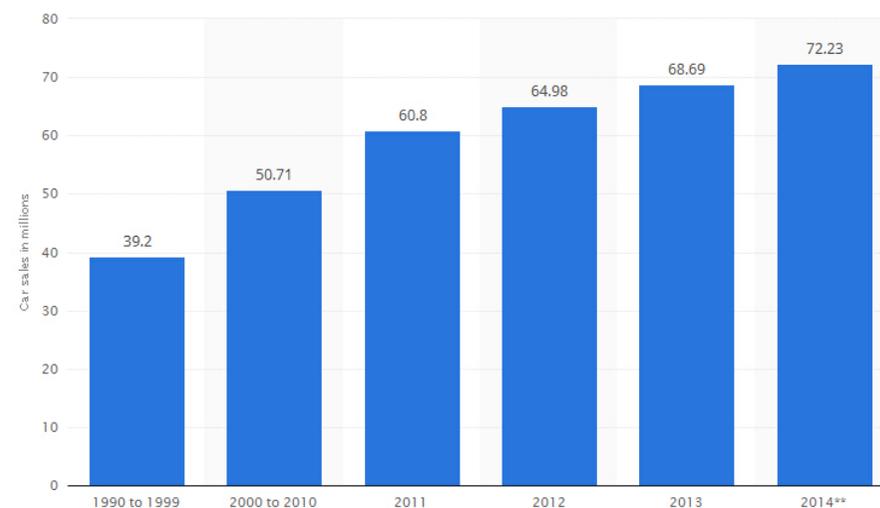
Deal volumes fell and volumes were at lower levels during 2012 than during the recession of 2008-09 as concerns over Europe's debt crisis weighed heavily on M&A activity. Automotive deal volumes fell by 18 per cent in 2012 while deal values declined by 33 per cent compared to 2011, according to PwC\*.

The firm concluded that the lingering economic situation in Europe, historically the most active region for M&A activity, took its toll on the global automotive deals market, although Asia was the largest acquirer region in 2012. However concerns over the slowdown in economic growth in China also had an effect.

Globally just 490 deals were transacted with a total disclosed value of \$30.2bn, compared to almost 600 deals in 2011. Small and mid-size deals dominated while strategic buyers accounted for an increasing share of deal volumes.

However as soon as the macroeconomic environment improves we are likely to see a wave of pent-up demand resulting in increased deal activity.

After 2010 there has been the global automotive production growth spurt, and then yearly growth rate slowed in 2014 is expected to exceed 800 one million



(Tab. 1) Global auto sales from 1990 to 2014

## 2.2 Regions Market Worldwide

Continued growth in the Asian market, the European market is saturated, the market started to recover in North America.

### China

The growth of the Chinese market represents a once-in-a-lifetime opportunity for the global industry.

Chinese customers today buy more than 20 million new vehicles a year - and more than 15.5 million cars - making it the world's largest automobile market. But demand still has a long way to go, with forecasts that consumption will top 30 million vehicles well before the end of this decade.

Most recent figures from the China Association of Automobile Manufacturers show that deliveries of cars, multi-purpose vehicles and SUVs rose 16 per cent year-on-year in the first four months of 2013 to 5.9 million units. Total vehicle sales, including trucks and buses, rose 13 per cent to 7.3 million units. Analysts expect light vehicle sales growth of about 10 per cent for the full year.

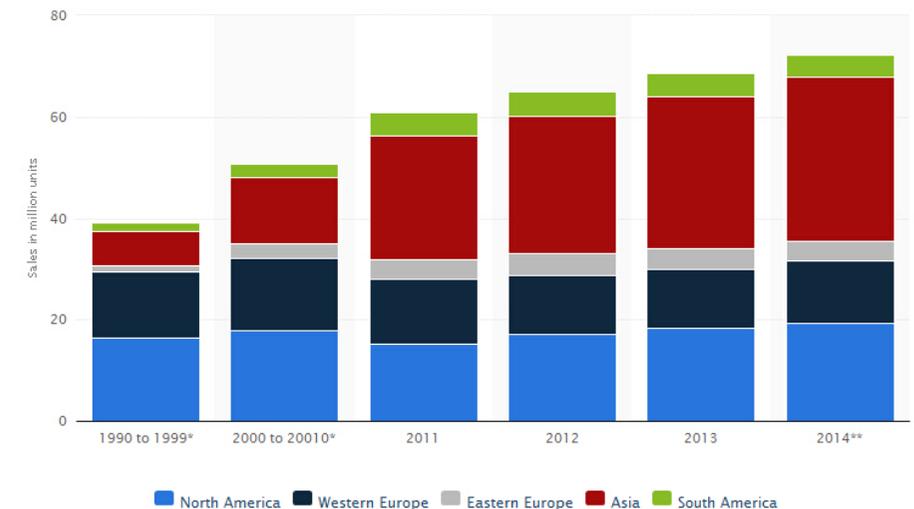
### United States

Sales continue to rise from the depths seen during the worst of the financial crisis in 2008-09. According to AlixPartners there are a number of cyclical factors now bolstering the outlook for US auto sales including a strengthening job

picture, increased homebuilding and a better overall credit situation.

### Europe

For proof of just how tough the European market has become one should look at Spain where the number of new cars sold last year was 700,000, the lowest level for almost 25 years. Even three years ago well over a million cars were still being sold in the country. In the first quarter of 2013 car sales fell 10 per cent across the EU as a whole, and even fell 13 per cent in Germany. In fact, except for the UK, all leading European car markets reported double digit percentage declines in the first quarter of 2013.



(Tab. 2) Global auto sales by regions from 1990 to 2014

## 2.3 Automakers Sales Ranking

In the past 2013, the global automotive sales reached 82.84 million, compared with 2012 increased 4.2%, the first time crossed the 80 million mark in sales.

In 2013 the white-hot competition in the global automotive market, the large multinational carmakers concentration effect is still very obvious. Data show that in 2013, only Toyota, General Motors, Volkswagen, Hyundai and Kia, Renault - Nissan, Ford 6 carmakers in global car sales accounted for the proportion of over 60%.

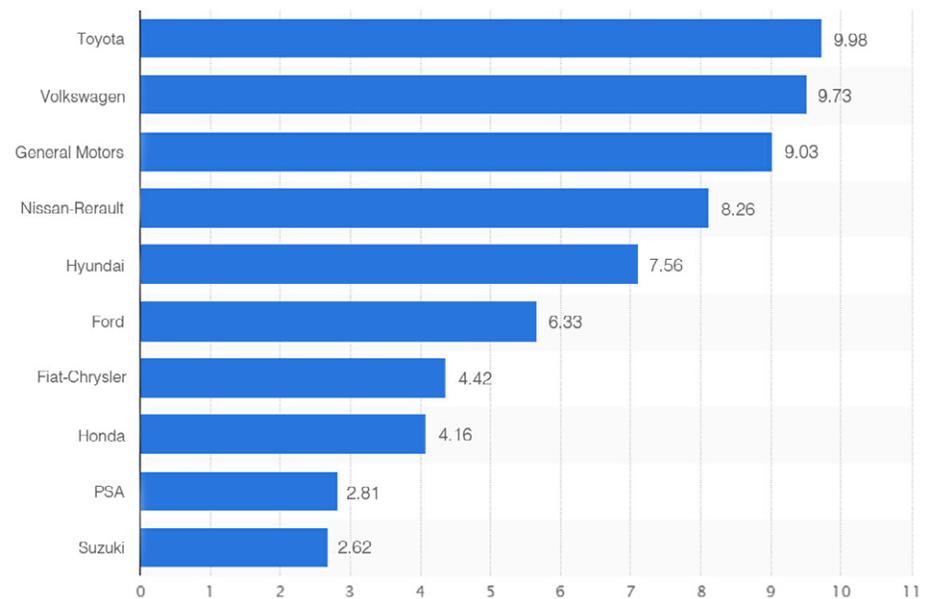
2013 Toyota (Toyota Auto) Group once again become the biggest highlight of the global auto market, with a 2013 full-year sales growth of 2% in global sales of 9.98 million achievements, beat GM (GM) car company , led the 2013 full-year global car sales charts, while nearly ten million of the sales figures for other car companies really "break 10 million units plan" will bring a lot of pressure.

2013, Volkswagen sold more than 9.7 million global market, an increase of 5%, ranking second in global sales of automotive group; in the Chinese market, with annual sales of more public 3,270,000, an increase of 16.2% results lead the automotive industry.

However, all the way to increased sales performance, they can not hide the sharp drop in net profit.

In fact, back in 2008, Volkswagen (VWAuto) Group first proposed his "ten million" program, which is the media have interpreted "public Strategy 2018",

General Motors sales to 971 million years Third, an increase of 4% over 2012. Where the Chevrolet brand sales rose 0.4% to \$ 4.98 million, Opel / Vauxhall fell 0.4 percent to 1.064 million, Buick rose 15 percent to 1.03 million. Because China and Cadillac rose 28 percent, to 250,830.



(Tab. 3) Top 10 global sales car manufacturers in 2013

# THE HISTORY OF FIAT



(Fig. 1) Fiat Brand logo evolution

## THE HISTORY OF FIAT

Fiat is founded at the end of the 1800s – a period filled with the fervor of grand initiatives, inventive spirit and new ideas and is destined to rapidly become one of the world's leading industrial groups.

1899: on July 11th, the deed of incorporation is signed giving birth to Società Anonima Fabbrica Italiana di Automobili Torino – F.I.A.T. The first car built is the 4 HP.

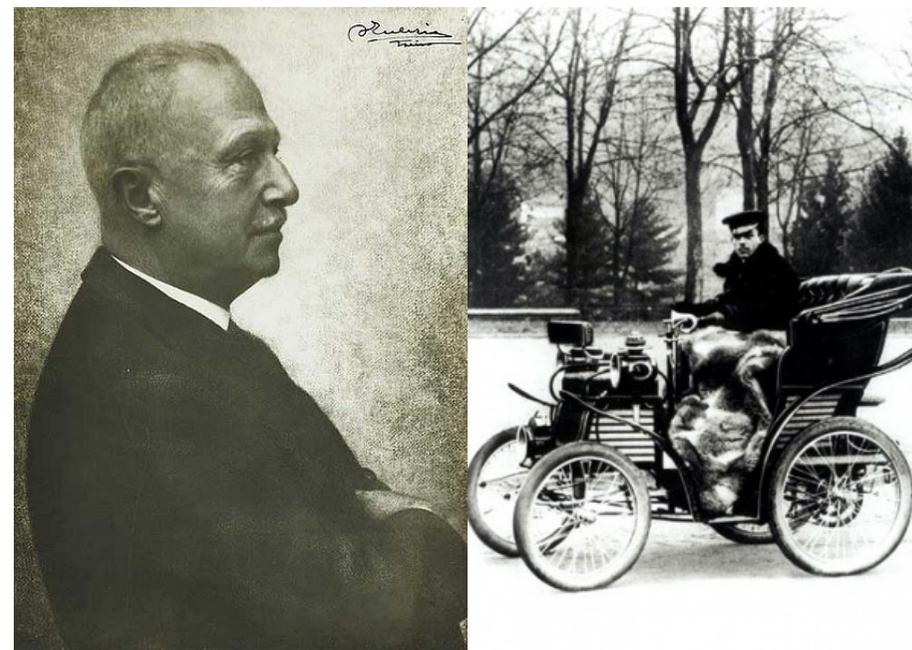
1900: the first plant is inaugurated and production reaches 24 cars a year.

1902: Giovanni Agnelli becomes Managing Director.

1903: the company is listed on the stock exchange and begins producing its first vehicles for goods transport.

1906: out of a total 8 million lire in annual sales, export sales reach 6 million lire. Auto production is expanded with the addition of the 8, 10, 12, 24, 60, 100 and 130 HP models. The company also begins making trucks, buses, trams and marine engines.

1908: the company begins manufacture of aircraft engines: the first developed is the 50hp SA 8/75, which incorporates the experience acquired on the auto racing circuit.



(Fig. 2) The company founder Giovanni Agnelli and it's first car 3 1/2 HP

In Europe, as the new century unfolds, significant economic and scientific progress continue. But the eruption of the Great War has a considerable impact on industrial activity as it is transformed to support the country's military effort.

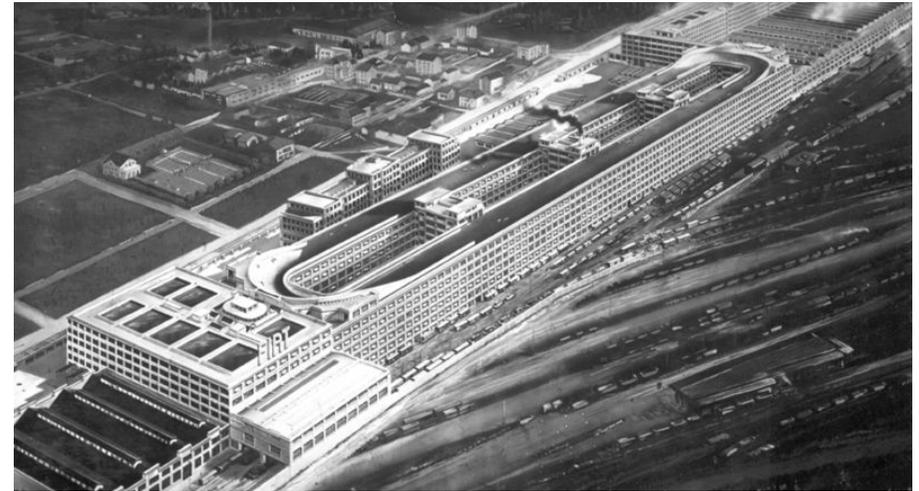
1910: six new models are launched: the 12-15 HP, 15-20 HP, 20-30 HP, 30-45 HP and the Type 5 and Type 6.

1912-1914: Fiat cars win a number of international races, such as the American Grand Prize, the Indianapolis 500-Mile Race and the Gothenburg-Stockholm Winter Cup. The first small displacement production car, the Fiat Zero, is created.

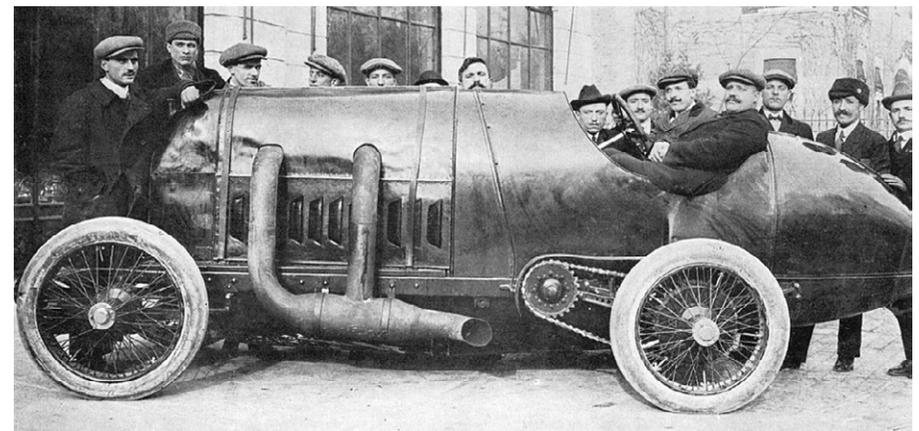
1914: as part of the war effort, almost 20,000 units of the 18BL lorry are produced and, in the years following, various aircraft engines.

1915-1917: construction begins on the Lingotto factory, the largest in Europe at the time. The Group enters the steel and railway sectors.

1919: immediately following the war, Fiat comes out with the 501 "economy", 505 and 510, as well as its first tractor, the 702.



(Fig. 3) Fiat Lingotto factory in turin



(Fig. 4) Fiat S76 "Beast of Turin" 28.5-litre engine, 290km/h.

Life in post-war Italy is marked by intense political and social conflict. These are difficult years for the Company requiring rigorous attention to cost management. In 1923, with the crisis having passed, the Lingotto factory is inaugurated and it becomes the symbol of a Fiat whose future is now inextricably linked to the concept of industrialized production. Inside the factory, the assembly line is introduced and working methods are transformed.

1920: Giovanni Agnelli becomes Chairman of Fiat.

1922: the AL biplane, Fiat's first civil aviation aircraft, takes its maiden flight. The same year, the company establishes Grandi Motori for the construction of marine engines.

1921-1929: the decade sees the release of many models, including launch of the SuperFiat, the 519, a six cylinder luxury car, the 509 and the 503. In 1927, the 520 is offered in left-hand drive and in 1928, aluminum cylinder heads are adopted on production model cars, representing a world first. 1929 sees the arrival of the economical 514 and the elegant 525. The 1014 van is also launched: with six wheels, dual transmission and articulated chassis, this vehicle is unbeatable off road

For Fiat, the early '30s are marked by the consolidation of its manufacturing base and significant expansion abroad: from France to Spain, Poland and the USSR.

1930: the arrival of the "Littorina", the world's first railcar.

1930-1937: Fiat releases 15 more models. Some are to become milestones in automobile history: the popular 508 Balilla, the deluxe 518 and 527 Ardita, the aerodynamic 1500, the economic 500 Topolino and the 1100 "Musone".



(Fig. 5) Fiat BR.20 Bomber

With entry into the war, Fiat has to convert production to military purposes. The company dramatically reduces production of cars, while output of trucks is multiplied five-fold. Armored vehicles, airplanes and marine engines are also produced.

Italy experiences a period of economic boom and the car industry is one of the main drivers of intense growth: one car for every 96 inhabitants in 1949 becomes one for every 28 inhabitants in 1958 and one for every 11 inhabitants by 1963. Fiat now has more than 85,000 employees and car production grows six-fold over the decade.

1945-1947: Senator Agnelli dies on 16 December 1945 and Vittorio Valletta becomes chairman. Large-scale production of cars resumes, with models such as the 500B berlinetta and estate, the refreshed 1100 and 1500, and the sporty 1100S. Alongside these are trucks and buses, high-power tractors, railcars, airplanes and large marine engines.

1951: the transatlantic liner Giulio Cesare, powered by a Fiat engine, enters service and Italy's first jet, the Fiat G.80, takes flight.

1952: the high-performance 8V sports car reaches 200 kilometers per hour and the 7002 helicopter is presented.

The same year, production begins on the 682N lorry which goes on to be produced for more than a quarter of a century and becomes a milestone in transport history.

1955: Impresit, a company specialized in civil engineering founded in 1929, constructs roads, tunnels, bridges and dams, such as the Kariba dam on the Zambesi river.

1956: the new 500 and the Autobianchi Bianchina are launched. The Fiat G.91 is selected as tactical fighter for NATO.



*(Fig. 6) Fiat 500 on celebration in piazza san carlo in turin*

The decade begins with a general spirit of optimism and the economic miracle continues in Italy. Fiat experiences dramatic increase in production volumes: the number of cars constructed per year goes from 425,000 to 1,741,000; trucks from 19,000 to 64,800; tractors from 22,637 to 50,558; earthmovers from 3,000 to 6,255. Fiat doubles the number of employees to almost 171,000.

1964: launch of the two-door, five-seat Fiat 850 sedan.

1966: Giovanni Agnelli, grandson of the founder, becomes Chairman. A major agreement is signed for construction of the Vaz plant in Togliattigrad, Russia, which will produce two thousand Ziguli passenger cars a day.

1969: the company acquires Lancia and purchases a 50% interest in Sefac-Ferrari. The same year, Fiat Ferroviaria designs and produces the Pendolino, the world's first tilting train.

1970: the 128, Fiat's first front-wheel drive car, is named "Car of the Year".

FIAT group invests heavily in the south of Italy. During the same period, Fiat begins the process of decentralizing its operating activities, transforming the company into an industrial holding. Among the first companies to be established were Fiat Macchine Movimento Terra, Fiat Engineering and Iveco.

1972: Lancia begins production of the Beta, which is followed in subsequent years by the Stratos, Gamma and Delta. The same year, Lancia wins the World Rally Constructors' Championship many times

1975: Ferrari wins the Formula 1 World Championship. This triumph is repeated in 1977 and 1979.



*(Fig. 7) Gianni Agnelli became president in 1966, acquired Lancia and Ferrari*

In the Eighties, the industrial world underwent profound changes, linked above all to the development of electronics and new materials. Attention for the environment also increases and Fiat demonstrates its sensitivity by creating electric and natural gas vehicles, and setting up the Fare project, for the recycling of cars destined for demolition.

1980: launch of the Panda, which immediately becomes key player in the economy segment.

1983: at Cape Canaveral in Florida, Fiat Auto presents the new Uno, a symbol of innovation and technological rebirth for company. It goes on to win the “Car of the Year” award.

1984: Alfa Romeo becomes part of the Group.

1985: production begins on the innovative FIRE (Fully Integrated and Robotized Engine).

1987: the world’s first direct-injection diesel engine for passenger cars is developed. And in the same year, FIAT Ferroviaria constructed the high-speed train calle pendolino, that can reach a maximum speed of 280 km/h (174 mph), service top speed was 250 km/h (155 mph).

1988: the state-of-the-art research center Elasis is established at the Group’s initiative. The same year, the Fiat Tipo is named “Car of the Year”. Other cars to achieve success during the decade are the Fiat Regata and Croma, the Lancia Delta, Thema and Y10, the Alfa Romeo 164, and the Ferrari GTO, Testarossa and F40, as well as the commercial vehicles Fiorino and Ducato.



*(Fig. 8) FS ERT 450 high speed train manufactured by FIAT Ferroviaria*

In response to increasingly tough international competition, Fiat Group adopts a multi-track strategy: on one side, it invests in product and process innovation and the search for new markets outside Europe with high development potential and, on the other, it implements a plan for cost containment and internal reorganization.

1990: the Panda Elettra is the first mass-produced electric vehicle.

1993: the Company acquires the prestigious automaker Maserati and also introduces Progetto Autonomy to facilitate mobility for the disabled.

1997: the Alfa Romeo 156 becomes the first car in the world to be fitted with a diesel engine with Common Rail system, which within the space of a few years revolutionizes the market for diesel-powered cars.

1998: the Fiat Multipla, Lancia Lybra and new Punto come onto the market.

1999: the world's first automated manual transmission (Selespeed) goes into mass production. During the same year, CNH-Case New Holland is formed to create a leading global player in agricultural and construction equipment.



*(Fig. 9) Fiat Manufacturing plant, company in the fast track of growth*

During the decade, the Group goes through a profound cultural change and refocuses its activities to concentrate on the automotive sector. All brands launch new models: Fiat presents a restyling of the Punto, the new Idea, the Bravo, and relaunches the iconic 500; Alfa Romeo debuts the 159, 166, MiTo and Giulietta; for its 100th anniversary, Lancia launches the new Ypsilon; from Maranello, production begins on the innovative Ferrari F430 and 599 GTB Fiorano; and, Maserati comes out with the captivating GranSport and GranTurismo coupés.

2000: an industrial alliance is formed with General Motors that would be dissolved in 2005. Alfa Romeo brings out the 147 which is elected “Car of the Year” the following year.

2001: Fiat presents the Stilo and the following year Lancia launches the Thesis, its new flagship luxury model.

2003: after almost half a century at the helm of the company, Giovanni Agnelli dies and his brother Umberto takes over as Chairman. Fiat invents the MultiJet technology and the SDE, the smallest direct-injection diesel engine ever produced.

2004: Umberto Agnelli dies and the Group’s new leaders are appointed: Luca Cordero di Montezemolo as Chairman, John Elkann as Vice Chairman and Sergio Marchionne as Chief Executive Officer. The Panda wins the “Car of the year”

2005: Fiat Group returns to profitability and the 16v 1.3 MultiJet engine is named “Engine of the Year”.

2007: at the end of January, Fiat launches the new Bravo. In March, one of the most prestigious sports car brands in history, Abarth, is relaunched with its reinterpretation of the Grande Punto. On July 4th, the new Fiat 500 hits the market and becomes an instant success. In 2008, it is named “Car of the Year”

2010: John Elkann becomes Chairman of Fiat who is the grandson of Gianni Agnelli The company launches two important innovations, the TCT (Twin Clutch Transmission) technology and the TwinAir, the world’s first high-tech two-cylinder engine.



(Fig. 10) New Fiat 500 from 2007

FIAT STYLING GENE



# FIAT STYLING GENE

## 4.1 The Past Classic Models

The FIAT Group has more than 100 years of history, that birth a countless classic cars, and also created countless brilliant. The next we will list and analysis those classic models.

### Fiat 4Hp

The 4Hp was the first car to be produced under the Fiat name. The car used a 679 cc engine which could propel the small vehicle to a top speed of 35 km/h (22 mph).

### Fiat 501

The 501 was the first model to come out of the Fiat plant after the conflict ended. It started production in 1919 and it came in two versions, the S and the SS. When production came to an end in 1926, some 47,600 models of the 501 had been made.

### Fiat Topolino

This was one of the smallest cars in the world at the time it came out, being powered by a 569 cc four cylinder engine. The car was produced in three models until 1955 when it was pulled out of production. It was replaced by the Fiat 600 which would constitute inspiration for the new Fiat 500.



(Fig. 11) Fiat 3 1/2 HP



(Fig. 12) Fiat 501



(Fig. 13) Fiat Topolino

### Fiat 2800

The 2800 was synonymous back in the day with class and luxury. Part of this was due to the fact that important such as King Vittorio Emanuele II and the Pope. Another part of this exclusivity was due to the small number of cars that were produced, between 1938 and 1944 just 624 units were made.

### Fiat 8V

Only 114 cars were produced and there were several versions available. The cars weren't a commercial success but on the racing track they performed well.

### Fiat 600

The FIAT 600 is a city car produced from 1955 to 1969. Measuring only 3.22 m (10 ft 7 in) long, it was the first rear-engined Fiat and cost the equivalent of about 6,700US\$ in today's money. The total number produced from 1955 to 1969 at the Mirafiori plant in Turin was 2,695,197

### Fiat 500

Launched as the Nuova 500 in July 1957,[2] it was a cheap and practical town car. Measuring only 2.97 metres (9 feet 9 inches) long, and originally powered by an appropriately sized 479 cc two-cylinder, air-cooled engine, the 500 redefined the term "small car" and is considered one of the first city cars.



(Fig. 14) Fiat 2800



(Fig. 15) Fiat 8V



(Fig. 16) Fiat 600



(Fig. 17) Fiat 500

### Fiat Dino

The Coupe version was released after the Spider model. It shared the same 2.0 liter 160 hp V6 engine with a 5-speed manual transmission. In 1969, the engine's displacement was increased to 2.4 The Coupe version was designed by Bertone, whereas the spider was penned by Pininfarina.



(Fig. 18) Fiat Dino

### Fiat 130

The saloon was launched in 1969 and replaced the Fiat 2300. The car was modern for its time, having independent suspension on all four wheels, power steering and disc brakes on all wheels. Also, this was the first Fiat to use an alternator instead of an direct-current generator.



(Fig. 19) Fiat 130

### Fiat Campagnola

The first generation was introduced in 1951 and lasted until 1973. This second model is known as the "Nuova Campagnola" or the 1107 and was also introduced in a military version starting with 1976. The second generation lasted until 1987.



(Fig. 20) Fiat Campagnola

### Fiat Argenta

On the underside of the car, an anti-roll-bar was fitted on the rear axle and the front axle was widened by 40 mm (16 in). Cosmetically, the wheels were changed in design and so were the mirrors.



(Fig. 21) Fiat Argenta

### Fiat Tempra

Development for the Tempra took place alongside the Alfa Romeo 155 and Lancia Dedra, being based on the Fiat Tipo platform. The Tempra was available as a 4-door saloon (in South America this car was also sold in a 2-door version).

### Fiat Tipo

The grille and the headlamps were redesigned and are really the only way to tell the cars apart. Safety regulations meant that the body was updated with stiffer body panels and a driver airbag as standard. At the end of production in 1995, the Tipo was replaced with the Fiat Bravo.

### Fiat Marea

When it was released in 1996 it was regarded as the replacement for the Fiat Tempra. Later, the car would be replaced by Fiat Stilo Multiwagon and Fiat Linea. Marea was built initially in Italy, but later production was moved in Brazil and Turkey for the local markets. The car was facelifted in 2001.

### Fiat Stilo

The front grille of the car was modified and the rear air vent was removed altogether. On the inside, the fabric of the seats was changed and the electric mirror controls were relocated.



(Fig. 22) Fiat Tempra



(Fig. 23) Fiat Tipo



(Fig. 24) Fiat Marea



(Fig. 25) Fiat Stilo

### Fiat Bravo

This car was designed by the Fiat Style Center where they used CAD engineering and computer simulations in order to optimize performance. New engines were added to the line-up and an overboost function.



(Fig. 26) Fiat Bravo

### Fiat Punto

A couple of new technologies on board (like the start/stop function) and lower CO2 emissions, thanks to smaller engines like the 0.9-liter TwinAir turbocharged petrol unit. The design showed little improvement, mostly around the front bumpers alongside some new alloy wheels.



(Fig. 27) Fiat Punto

### Fiat Panda

Fiat has thus launched a replacement in the form of the new Panda, The body shape is relatively unchanged, but the design has changed into a sort of Fiat 500 for grownups. With over 2 million Fiat Pandas having been made, the little car is one of the most successful models in its segment.



(Fig. 28) Fiat Panda

### Fiat 500

Exactly after 50 years that the first Fiat 500 was released, The design is specifically made to look retro and is inspired by the Fiat Trepuno. The platform is the same as the new Ford Ka and is produced in Poland. It was available with a 1.2, 1.3 Multijet and 1.4 liter engine coupled with a 6-speed manual gearbox that was shared with the Panda 100HP.



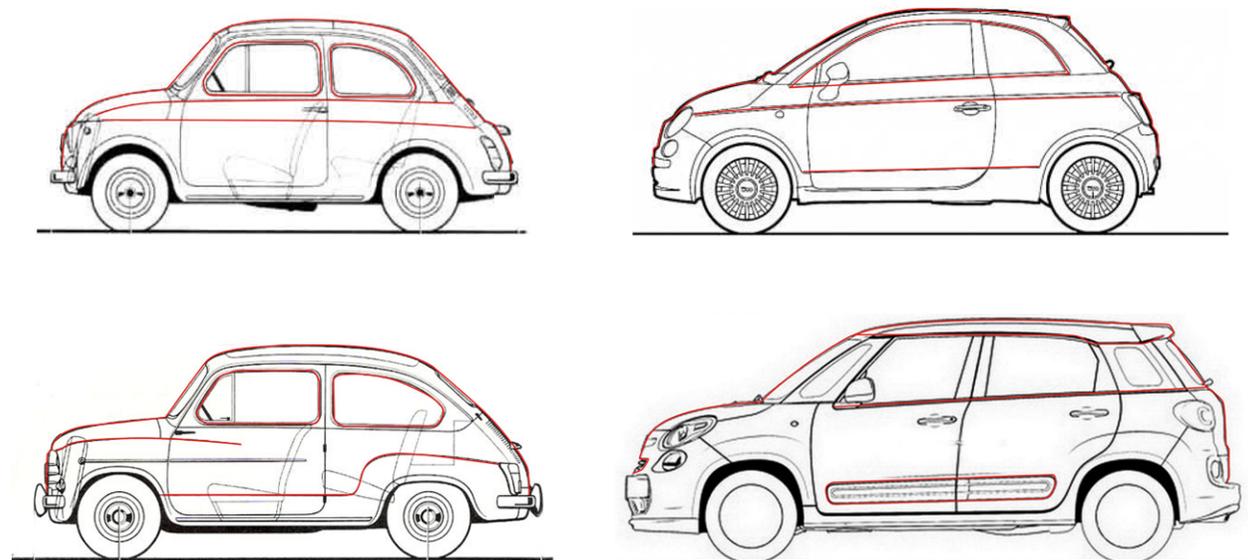
(Fig. 29) Fiat 500

## 4.2 Fiat Styling Analysis

### Fiat 500 Serie

The classic 500 series of small family cars, who has 60 years of history. The brand new Fiat 500 followed the design of 1957 Fiat 500 essence. And achieved great success, the new Fiat 500 fiat became the spiritual leader.

The new 500 models to keep the contour shape of the 1957 model, full of retro style. Have to say in a small car with retro design, is a very clever strategy.

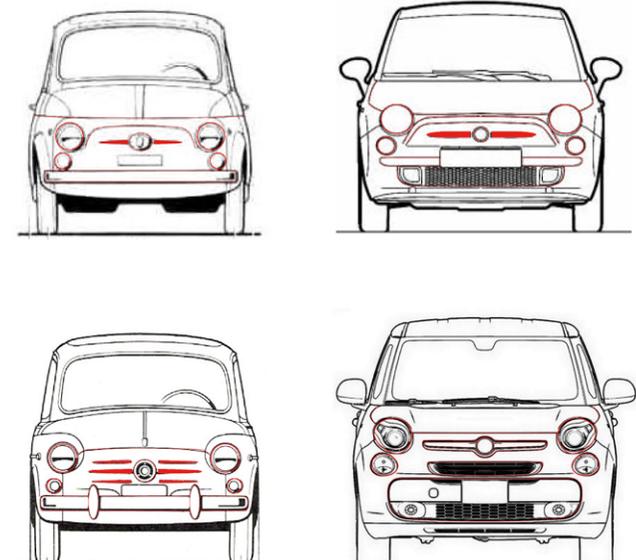


(Fig. 30) The wireframe side profiles of Fiat 500 series

Side lines inherited the classic hatchback styling and short front and rear suspension, front hood tilt angle consistent. Throughout the entire side of the body equally classic waistline, also quite engaging.

Four front face is round lamp shape, a pulse transmission horizontal chrome trim, on a convex lines on the new 500 to get a better interpretation.

Two cars together, you would immediately know their relationship.

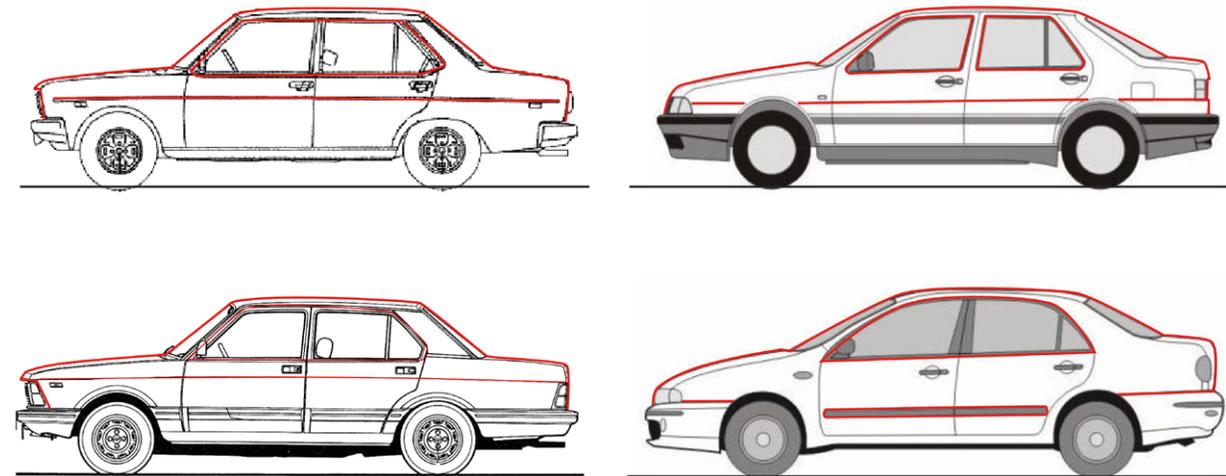


(Fig. 31) The wireframe front profiles of Fiat 500 series

## Fiat Sedan

Fiat on the sedan design also has a deep knowledge. According to the historical significance from it to the nearest 131 croma and marea, not difficult to find a lot of styling gene has been extended, the family feeling is obvious.

When we look at the side style design, we will find the waist design is an obvious family genes, D-pillar styling is continued until Marea models. From 131 to Marea, the sides become more rounded contours, scratch-proof body around a feature article also fiat cars, more is taken into account practicality.

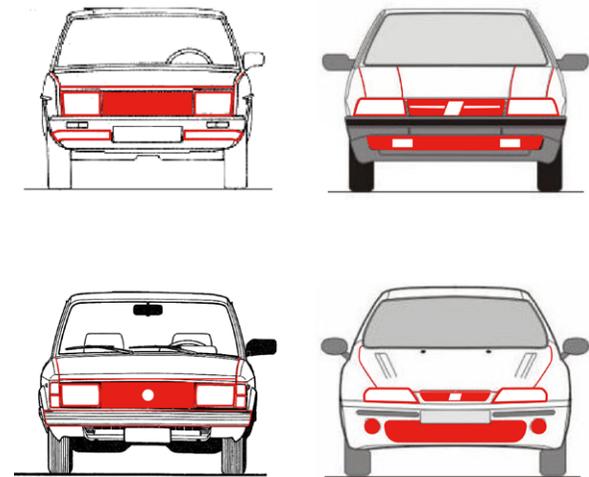


(Fig. 32) The wireframe side profiles of Fiat Representative sedan

Fiat on the sedan design also has a deep knowledge. According to the historical significance from it to the nearest 131 croma and marea, not difficult to find a lot of styling gene has been extended, the family feeling is obvious.

When we look at the side style design, we will find the waist design is an obvious family genes, D-pillar styling is continued until Marea models. From 131 to Marea, the sides become more rounded contours, scratch-proof body around a feature article also fiat cars, more is taken into account practicality.

Front styling, more elongated headlights,. Air intake becomes smaller.



(Fig. 32) The wireframe front profiles

## Fiat Small Cars

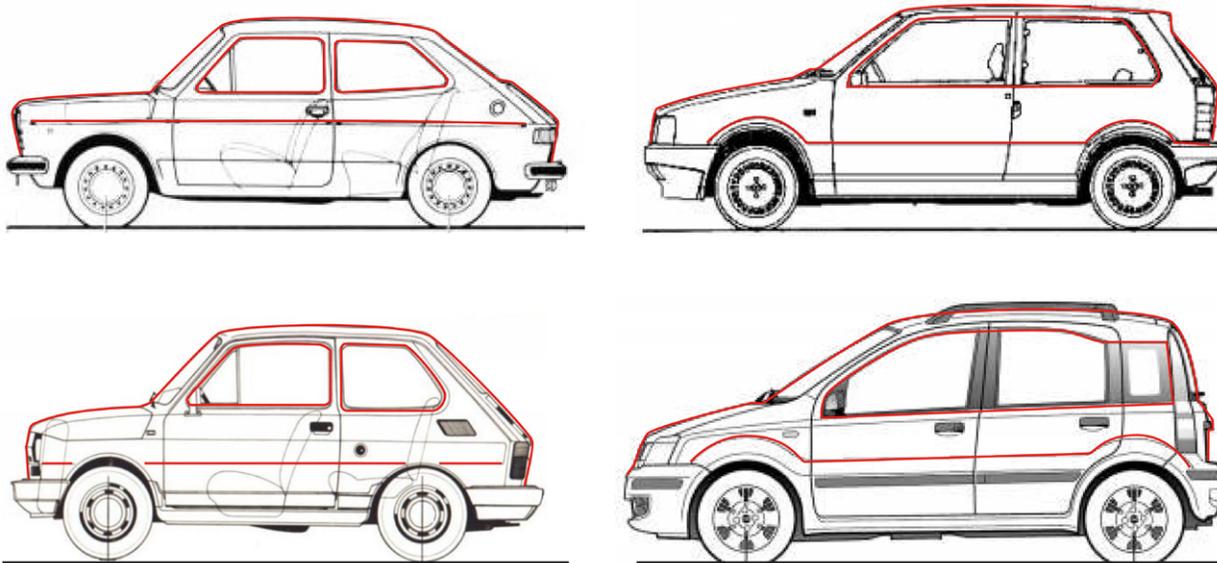
Fiat specializes in small car design, there are well reflected from the pedigree topolino, also made countless brilliant. 127 models from the beginning to now Panda models, and a strong design change occurred.

Side of the body, the 127 to the Tipo, the side wheel tractor lines consistent classic hatchback shape, but slowly increase in size, styling the A-pillar and D-pillar has continued. Windows are basically the same shape. The Panda adopted a new modeling language, hidden D column

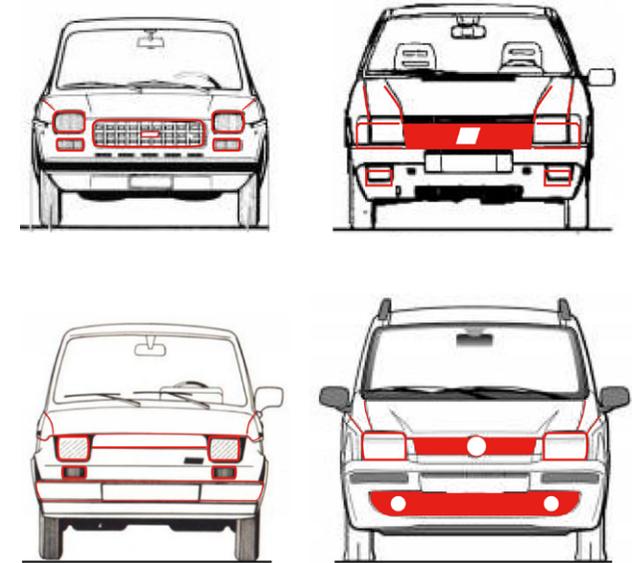
is used, the tilt angle D-pillar is also reduced, increased interior space.

Family genes shape of the front face remains relatively complete, the classic square headlights and intake grill square. The same shape fog lamps have been retained.

Unilateral design mirrors until the Panda model was replaced by bilateral mirrors.



(Fig. 33) The wireframe side profiles of Fiat Representative Hatchback



(Fig. 34) The wireframe front profiles

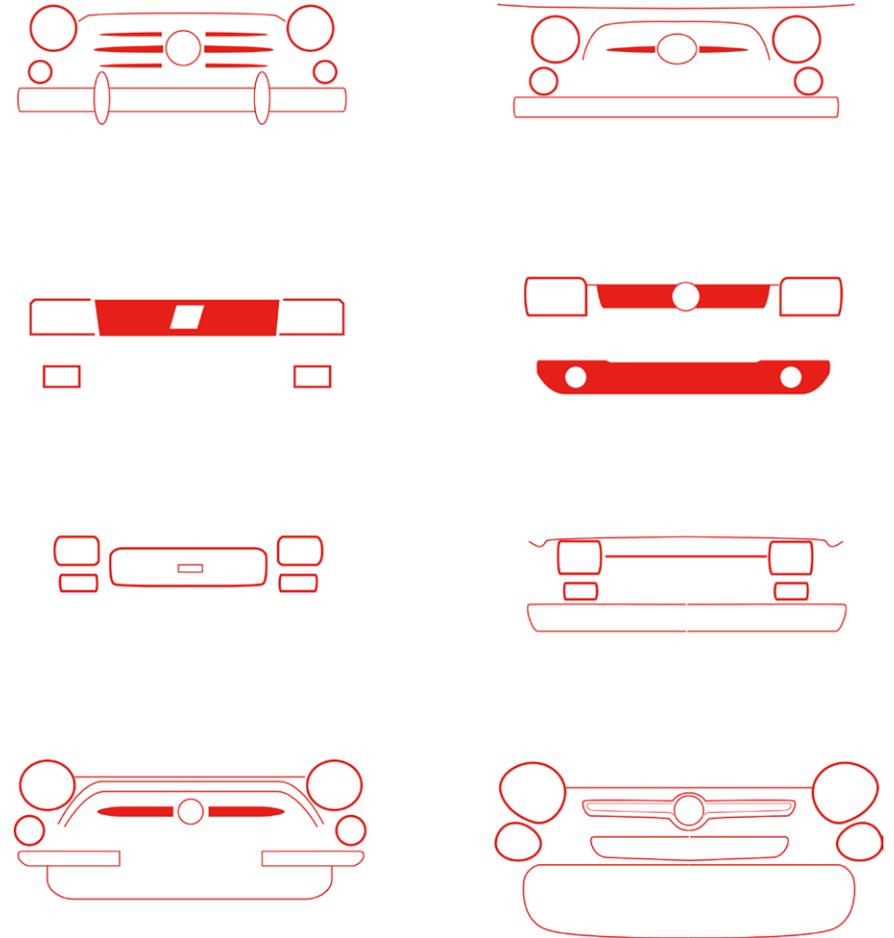
### 4.3 Styling Evolution

Here are four representative models. The classic styling Fiat 500 series, and popular styling Panda, Tipo series.

We can find 500 family has followed the classic four round lights shape, with classic chrome bar grille, that has become the most classic family styling genes of 500 series.

Except the 500 series, there is another styling series, is more tough, and this is the Panda, Tipo series.

Square headlights and rectangular grille are the sign of this series. Avanti project is plan to adopt this style, and adding a new styling language, making it shiny again.



(Fig. 35) Styling Evolution

# FIAT STRATEGIC ANALYSIS

**FCA**

FIAT CHRYSLER AUTOMOBILES

# FCA STRATEGIC ANALYSIS

## 5.1 FCA Group 2013 Sales Results

Fiat-Chrysler sold 4,3 million cars in 2013. That's 4% more than a year earlier. After the several posts regarding the results by brand, models and countries.

The growth is driven by the area in NAFTA and APAC which more than offset moderate contractions in LATAM and EMEA.

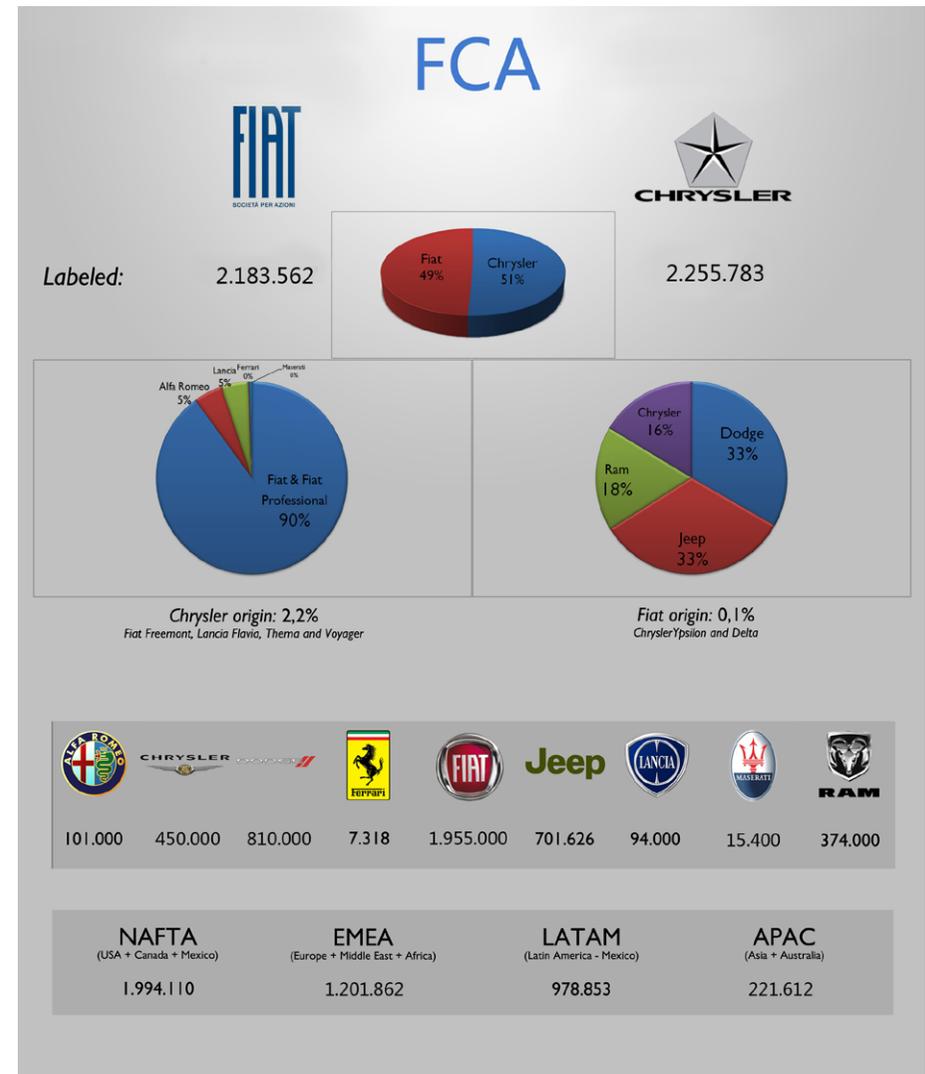
Includes Fiat Professional and Abarth sales. Fiat-Chrysler's official report for 2013 results indicates that the company sold more than 4,3 million units in 2013.

Fiat brand counts for a big part of the sales and is ahead of any other Chrysler brand.

Nevertheless the sales are mostly concentrated in North America. Asia-Pacific is still a very small market for the group. Click on the brand to see 2013 results: Alfa Romeo, Chrysler brand, Dodge, Ferrari, Fiat brand, Jeep, Lancia and Maserati.

In FCA Group, the 49% of the cars sold by the group had a Fiat, Alfa, Lancia, Maserati or Ferrari logo. This doesn't mean that they were all genuine Fiat Group cars. From them a massive 90% correspond to Fiat brand cars.

In the case of Chrysler the distribution by brands is much more balanced. This analysis considers the Dodge Dart as a genuine Chrysler car, and the Fiat Viaggio as a genuine Fiat



(Fig. 36) Each brand of FCA global sales in 2013 year

Almost half of total sales took place in USA, Canada and Mexico. Most of them are Chryslers.

LATAM is almost at the same level of EMEA. Their distribution by countries is extremely concentrated in one market: Brazil in LATAM and Italy in EMEA. In both regions Fiat takes the lead.

In Asia, Chrysler is more popular thanks to the Jeep models in China and Australia. 53% of Fiat-Chrysler sales correspond to cars manufactured in NAFTA region.

I was able to gather information for 72 markets. However, the group is present in more countries.

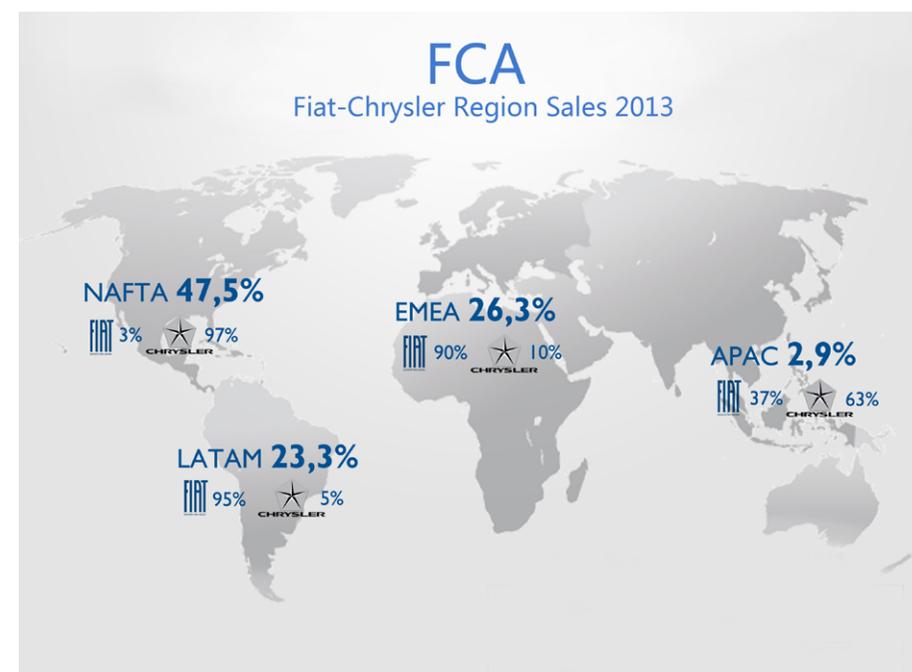
USA, Brazil and Italy lead. Turkey, Argentina and China have gained more relevance. Australia, Japan and South Africa are also in a good position. It isn't good that the first Asian market occupies 11th place.

Italian car sales continued to fall in 2013. Total PC market fell 7% as a consequence of the financial crisis, unemployment problems and uncertainty about immediate future. Here there are the main insights about last year results

Italy is now Europe's 5th largest car market, if Russia is included. Last year only 1,3 million units were sold, half the number sold in 2007.

Italians prefer small cars as almost 50% of the market correspond to city cars and B-segment hatches.

However, SUVs continued to gain share thanks to the small ones. As it happened in France, Italian consumer is shifting from regular B-Segment to B-SUV. MPVs surged thanks exclusively to the Fiat 500L, but it is a segment that loses share.



(Fig. 37) FCA region sales in 2013 year

## Europe

Fiat Group posted European sales of just under 741,000 vehicles with market share at 6%, reflecting trading conditions in Italy, which was the worst performer among the 5 major European markets with vehicle registrations down 7.1% from the 2012 level. For the month of December,

Group sales totaled nearly 52,000 vehicles, representing a 2.3% year-over-year increase. The Group's best performing markets were the UK, where sales were up 12.2% for the year (vs. 10.8% for the industry), and Spain, which saw a 13.7% increase (vs. 3.3% for the industry).

Fiat brand's European sales were just under 573,000 vehicles for the year, with share up 10 basis points to 4.7%. In December, sales totaled 39,000 vehicles (+4.4%) and share was 4.1%.

The brand posted increases in all major markets. In France, sales were up 9.5% for the full year (vs. a 5.7% decline for the industry) and 3.5% for December. In the UK, there was a 20.2% increase for the year and 21.7% for December. Spain was 28.8% higher for the year and 38.7% for December. In Germany, December sales were up 3.0%.

The brand's leading models continued to perform well with the 500L ranking first in its segment for both December (segment share of nearly 20%) and the full year (over 73,000 units sold).

The 500 was the number one selling car in the A segment for both December (12,000 units; 15.3% share) and the full year (+10.9% to 162,000 units; ~14% share). The model has been extremely successful throughout Europe with 3 out of 4 being sold outside Italy.

The new Panda family also performed well in its first full year since launch (in 2012). With more than 153,000 units sold, it ranked second in the A segment with a 13.15% share.

Lancia/Chrysler, European sales totaled nearly 75,000 vehicles for the year, with market share at 0.6%. For the month of December, brand sales were up 2.1% year-over-year to 5,700 vehicles and share was 0.6%.

The Lancia Ypsilon performed particularly well with sales 70% higher in December and 3.3% for the year.

Alfa Romeo closed the year with 64,400 vehicles sold and European market share at 0.5%. In December, sales totaled more than 4,500 units with market share at 0.5%. The brand recorded particularly strong performance in Poland (+70.1% over 2012), Austria (+27%), the UK (+7.9%) and Switzerland (+8.7%). In Italy, sales of the MiTo increased by more than 33%, boosted by the new 2014 version consolidated its leadership in the 3-door hatchback segment.

For the Group's luxury brands, Ferrari and Maserati, European sales totaled more than 4,000 units for the year.

## United States

Main insights about USA car market and the FCA performance during 2013:

- US car market continues to grow thanks to SUVs mainly.
- GM and Toyota lost market share in favour of Ford, Nissan and FCA. Very bad for VW Group and Hyundai.
- As it happens in Europe, small SUV is the best performer in terms of growth. Large MPVs and SUVs didn't do that well.
- USA is FCA's largest market counting for 41% of its global sales. The group increased its share 0,15 bp.
- FCA's amazing growth was possible thanks to the Ram pickup, and the large SUVs. More than 50% of FCA sales in USA corresponded to both segments.
- Moderate volume growth for C segment thanks to the Dart.
- The group has a strong position in MPV segments, and A-segment thanks to the 500 and the lack of many competitors.

A big part of FCA total sales growth during 2013 is due to the great performance in USA. The Group sold 151.000 more cars in that year, and its sales advanced 9,1% in an overall market with sales 15,58 million units, up 7,5%. This means that FCA market share jumped from 11,43% to 11,60% in 2013.

This amazing result was possible thanks to trucks and SUVs

and in the case of FCA thanks to the RAM and Jeep Brand. The SUV boom continues as Americans keep shifting to this kind of cars leaving their sedans back, and Jeep was the SUV most popular Brand, rising its registrations by 3,4% as the growth experienced by all models was severely affected by the lack of the Jeep Liberty model during a big part of the year. Nevertheless the new Jeep Cherokee started very well and sold almost 26.000 units in only 3 months.

Dodge Brand was in the positive side (+14%) while Chrysler and Fiat brands sales fell 2% (the 2013 Chrysler 200 and 300 are getting old) and 1% (the Fiat 500L helped to offset the Fiat 500's drop). USA counted for 41% of FCA global sales in 2013, against 39% in 2012.

## Aisa

Vehicle shipments in APAC (excluding JVs) totaled 163,000 units for 2013, representing an increase of 58% over the prior year. Regional demand rose year-over-year led by growth in China and Australia, while India and South Korea were down versus the prior year.

Group retail sales, including JVs, totaled 199,500 units, up 73% over the prior year driven by strong performance in China and Australia, compared with a 9% growth for the industry. By brand, Jeep sales were up 26% versus the prior year. Fiat brand posted growth of 40,700 units for the year, reflecting sales performance for the Chinese-produced Fiat

launched in late 2012. Dodge brand sales were up 5 times over the prior year, driven by the re-launch of the Dodge Journey in China in early 2013.

In China, the world's largest car market is still a minor one for FCA in terms of sales volume. Even though the group increased its registrations by 90% to 112.263 units of Jeep, Fiat local, Maserati and Ferrari.

The sales of Fiat Viaggio in China, began in September 2012, are exceeding expectations.

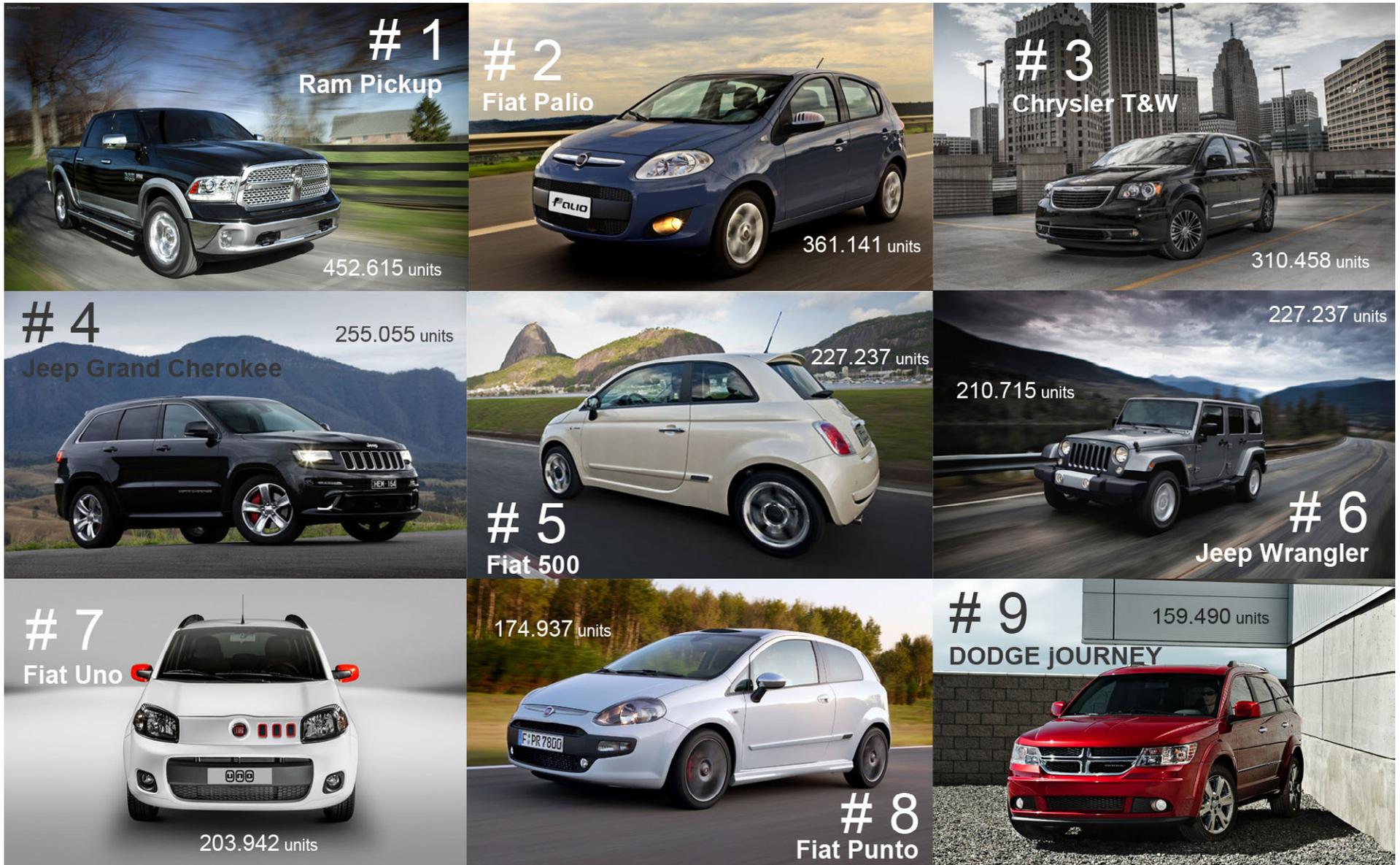
The Gac-Fiat joint venture aims to increase this to 15,000 cars sold in 2012, at the rate of production of the 200 Fiat Viaggio a day. The Fiat Viaggio plays in China's biggest and most dynamic car segment, the C, mostly controlled by a large range of sedans from Volkswagen, General Motors, Toyota and some local Chinese manufacturers.

Fiat in China in 2013 reached 200 dealers covering 126 cities across the country. The sales of Fiat Viaggio are also positively influencing even those of Freemont, which together with the Fiat Bravo and Fiat 500 is imported and sold in China.

China became FCA's 5th largest market ahead of any European one (Italy excluded).

2013	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>FCA</b> FIAT CHRYSLER AUTOMOBILES	313,5	299,2	381,5	367,6	390,2	366,4	344,6	341,1	342,5	330,4	328,4	349,8	4.155,2
<b>WORLD SALES</b> % on 2012:	13,4%	-2,2%	1,2%	11,2%	8,8%	0,8%	3,0%	-0,9%	2,0%	1,3%	5,2%	3,5%	▲ 3,8%
<b>EMEA</b> % on 2012:	69,2	64,8	92,2	79,6	87,5	82,5	73,4	47,1	76,3	70,5	66,9	65,0	874,9
<b>NAFTA</b> % on 2012:	142,3	162,8	202,7	189,4	203,1	190,2	172,7	194,2	169,0	165,1	170,6	185,8	2.147,7
<b>LATAM</b> % on 2012:	88,9	61,0	72,1	84,8	83,8	77,8	82,1	82,5	77,6	76,3	70,9	75,1	933,1
<b>APAC</b> % on 2012:	13,1	10,6	14,5	13,8	15,8	15,9	16,4	17,3	19,6	18,5	20,0	23,9	199,5
	83,8%	21,7%	38,0%	68,9%	88,8%	66,9%	97,2%	95,9%	83,6%	82,5%	65,1%	89,1%	▲ 72,8%

(Tab. 4) FCA global monthly sales by region in 2013 year



(Fig. 38) Top 9 best-selling models in FCA Group

## 5.2 FCA 5-Year Plan(2014-2018)

Fiat has outlined its targets for the next few years, and they are ambitious to say the least. CEO Sergio Marchionne announced the separation of Fiat's automotive business—which includes Alfa Romeo, Lancia, Ferrari, and Maserati, as well as Chrysler—from the rest of the company.

The remaining part, Fiat Industrial, is less glamorous, but its sales of trucks, farm tractors, and construction machinery make it more profitable.

Sergio Marchionne has high hopes for Alfa-Romeo, Maserati, Fiat and, of course, Ferrari, but it is the American side of the company that is projected to deliver most of the growth. Jeep, in particular, is forecast to grow from last year's record sales of 731,565 to a full 1.9m by 2018, as FCA aims to sell 7m vehicles compared with 4.4m last year.

If it hits that ambitious target the world's seventh-largest carmaker could move up "one step higher in that ranking" according to Sergio Marchionne.

Fiat

Fiat is looking to simplify its range, binning the Sedici crossover and Bravo family hatchback in favour of a new member of the 500 family, on sale later this year. The 500X is the sister car to the Jeep Renegade and will be a more

utilitarian crossover take on the 500L compact MPV.

A fleet of new Fiats are due on-stream from 2015, with the European market set to receive a family hatchback, saloon and estate family – believed to be an enlarged version of the Panda. A 'compact CUV', due to arrive in 2017, is believed to be a Qashqai-rivalling Panda SUV, while an all-new Panda will arrive in 2018.

According to a chart plotting out Fiat's global product plans up until 2018, a 'speciality' model will arrive in late 2015. The timing of that, and the fact that there's no mention of a new Spider in Alfa's product plan, suggests that the sports car being co-developed with the Mazda MX-5 and built in Japan will no longer be badged as an Alfa Spider, but will wear the Fiat or Abarth badge.

Fiat is targeting a production rise from 1.5m annual units today to 1.9m by 2018.

Read more: <http://www.autoexpress.co.uk/flat/86887/flat-chrysler-outlines-five-year-product-plan#ixzz3J3RmagdN>

Alfa Romeo

Marchionne says Alfa Romeo will add a number of new/redesigned vehicles, including the new Giulietta, a new MiTo subcompact, crossover and SUV models, a sedan, and a

Spider convertible. By 2014, Marchionne expects Alfa to account for 500,000 annual sales worldwide. That's up from about 100,000 in 2009.

The U.S.-market launch is planned for late 2012, with the first models being a mid-size sedan and sport wagon—they may wear the Giulia name—plus a crossover model based on the Giulietta platform.

Alfa Romeo is to tear up its lacklustre current range in favour of a new range of rear-drive and all-wheel drive global cars that 'are benchmarked against the best that the German automotive industry has to offer'. The engines and cars are to be built in Italy, ranging from a family hatchback replacement for the current Giulietta to a BMW 3 Series rivals and a 5 Series executive saloon rival.

It's just two of eight new products though – including a two new crossover SUVs and the promise of a Cloverleaf flagship, thought to be a hotter 4C, in 2015. The Mito supermini will not be replaced, Alfa has announced.

If the plan bears fruit, Alfa predicts its global sales volume will rocket from 74,000 cars today to over 400,000 by 2018.

#### Maserati

Maserati has confirmed it will build the Alfieri sports car that was revealed in concept form at the 2014 Geneva motor show. A coupe version will arrive in 2016, with an Alfieri

Cabrio due in 2017, giving Maserati a pair of rivals to the Jaguar F-Type, and Porsche 911.

The Alfieri will come with a 404bhp twin-turbocharged V6 powering the rear wheels, this time available exclusively with all-wheel drive.

A replacement for the larger GranTurismo coupe will appear in 2018, packing a twin-turbocharged V8 engine delivering 552bhp. Rear-wheel drive will be standard-fit, in contrast to the rear and four-wheel drive Alfieri. Also confirmed was the engine line up of the Levante SUV, due in 2015.

The Maserati is hoping to boost sales from 15,400 in 2014 to 75,000 units by 2018.

#### Chrysler

In 2016, a new entry-level Chrysler 100 compact saloon will arrive, aimed at stealing sales from C-segment favourites like the Ford Focus, VW Golf and Skoda Octavia. It follows the new larger 200 saloon, which is on sale now.

Chrysler's large MPV model, the Town & Country (badged as Grand Voyager in the UK), will remain on sale through until 2018. A plug-in hybrid version is promised for 2017, while an all-new large 4x4 model also packing hybrid tech is on the horizon for 2018. 2018 brings a new mid-size crossover

Chrysler, priced above the 200 saloon.

The expanded Chrysler range is aimed at swelling sales from 350,000 today to 800,000 by 2018.

#### Jeep

Jeep is plotting a 20 per cent boost in sales between 2013 and 2018, lifting production from 789,000 units to 1.9m cars by 2018.

The largest slice of growth will be swallowed by small, compact SUVs – the area where the new Renegade will compete from late 2014. It'll be refreshed in summer 2017, when Jeep also intends to release an all-new Grand Cherokee, and a replacement for the iconic Wrangler.

Before then, Jeep's big news is a new mid-size family 4x4 that'll replace the Compass and Patriot models in spring 2016.

Finally, a new flagship model, set to be called Grand Wagoneer, will join the Jeep range in mid-2018, aimed at fighting established large SUVs like the Land Rover Discovery, Mercedes GL, and upcoming BMW X7.

#### Dodge/Ram

Dodge, according to the plan, will also add a small "B-sedan/hatch" to its lineup in 2018, followed by next-generations of its Challenger and Charger later that year. Dodge earlier this

year unveiled a refreshed version of the Challenger and a new version of the Charger during the New York International Auto Show.

Both the Charger and Challenger were strong sales performers during 2013. Last year, the Charger recorded its best annual sales since 2007, while the Challenger posted its best annual sales ever.

Other vehicle refreshes in the plan include the Viper sports car in 2015 and Durango SUV in early-2017.

The Ram pickups, the light duty Ram will get a minor update in 2015 and a major one in 2017. The heavy duty segment gets updated in 2016 and again in 2018. Ram's brand is looking to increase volume by about 34 percent over the next five years. It currently moves about 463,000 trucks and vans annually in North America; it expects to hit 620K by the end of 2018.

FCA expects Dodge/Ram sales to increase to 1.2 million units sold by 2018.

	2012	2013	2014	2015	2016
<b>CHRYSLER</b>					
<b>Jeep</b>		 D-SUV  COMPASS  G.CHEROKEE			
<b>RAM</b>	 RAM LD	 ProMASTER  RAM HD  CHASSIS CAB			
<b>DODGE</b>	 DART	 			
<b>SRT</b>	 VIPER	 G. CHEROKEE			
<b>FIAT</b>	 500 ABARTH  500 BEV	 500L	 AVVENTURA  LINEA  OTTIMO		
<b>ALFA ROMEO</b>					

**Chrysler produced**

 new  
 refresh

**FIAT produced**

 new  
 refresh

**Change vs. 2009 Bus Plan**

 add  
 move x yrs  
 drop

(Tab. 5) FCA Group 5-years production plan

## 5.3 Fiat - Chrysler Merger

From the beginning of the partnership between Chrysler and Fiat, it seems like in short terms Chrysler is in advantage, but from a long term perspective, Fiat is the true winner. This can also be seen from the current FCA status.

Before the partnership, Chrysler was in deep trouble. Its marketplace was overtaken by Japanese brands, and its own production value and quality is not up to standard. After collaborating with Daimler-Benz AG, the troubles did not disappear.

During the 90s, its product quality and customer satisfaction has fallen behind to other competitors. After cooperating with Fiat, reconstruction of equity structures, activation of United States Code Title 11, and massive restructuring has saved them from bankruptcy.

Even though The Fiat Group is a very large company, but poor management between 70s and 80s does not make its future too promising.

Both Fiat and Chrysler get a hold of what they wanted after becoming strategic alliances. During the 2008-2009 global depression, issues arose such as manufacturing cost, gas overprice and America's recession has made a fatal stroke to Chrysler. Especially at 2009 May, not only Chrysler is under crucial financial crisis, but also in rapid decline of

market share, fallen off from global auto industry.

Chrysler survived solely through the collaboration with Fiat, by take advantage over Fiat's Europe's sales network. On the other hand, the partnership helped Fiat exchange and improve their mechanical skills with Chrysler, and also broaden its sales network in Europe and North America.

Fiat is well-known for making "Compact Car" models in Europe, but its market in North America is much less promising.

At the same time, Fiat's market and development strategy has encountered technical and quality standard issues, by allying with Chrysler, not only does this improve and exchange their techs and resource allocation, also it helps them to improve their strategy and market development. It will definitely help Fiat to accelerate its pace to enter North America auto market.

In the first stage, the formation of alliance : 2009 April Chrysler announced plans for a global strategic alliance with Fiat. At the same year September, Fiat claims to own 20% of the Chrysler stakes, and possibly raise to 51%.

Chrysler barely survived after leaving Daimler. But, strategic alliance is far away from satisfying Fiat's appetite. From the beginning, Fiat wants to annex Chrysler to enter North

America market.

Back in 2009, Fiat group actively acquire Chrysler Group stakes, and in recent years continuously holding in hand the share of Chrysler group. In the current state they claim to own over half of the stake.

Recently there are news about Fiat is negotiating with Voluntary Employee Beneficiary Association (VEBA) to purchase the remaining shares.

In the end, the integration completed. 2014 January 1st, Fiat Group announced, purchased 41.4616% of the stakes, and plan to complete this transaction before 2014 January 20th. As a result, including the 58.5% of the share that Fiat holding in hands plus the 41.4616% recently purchased, Fiat has reached their goal of holding almost 100% of Chrysler's shares.

After the annexation, Fiat has become the 7th largest Automobile group in the world.

They not only have Fiat and Chrysler two major brands; also the Alfa Romeo, Ferrari and Maserati, under Fiats group; Jeep, Dodge. Ram, and few more brands under Chrysler. Fiat now owns 16 brands, 77 research and development centers and 158 Factories.

FCA's growth plans won't come cheap, though, and

Marchionne will need to be at his persuasive best if analysts are right with predictions that the group will need to raise more capital to pay for his 48-billion-euro investment plan.

Fiat took management control of bankrupt Chrysler in 2009 and completed its buyout this year. It is now combining all of its businesses under Dutch-registered FCA, which will have a U.K. financial domicile and small London headquarters, with operations centers in Turin and Detroit.

To be sure, these kinds of changes could make FCA walk further and better.

## 5.4 FCA vs VW Group

### Passion and reasonableness

The two words that describe even nations, cultures. Is part of the personality of people and lately of products. Of course no one has to choose, as most of us are passionate in some cases, while more rational in others. That's good, because life is full of situations that require a good mix of both.

Automotive world is part of this discussion as cars became part of life of lot of people and somehow they reflect the personality of their owners. Passion and reasonableness fit perfectly with my analysis of how I see Fiat Group and VW Group and their eternal rivalry.

The analysis doesn't consider their size, technologies or the way they are facing the future. I think the only common thing between Fiat and VW is that they make part of auto industry. That's all. I don't want to make a comparison because they are so different in their way of conceiving a car that makes no sense to say that one company is better than the other one.

The goal here is to analyze both companies from the point of view of their idea of what a car is, and therefore the relation there is between what they offer and what their customers are. As I said before, both sides of the brain have strong influence on people's behaviour and the way we buy products. Cars became part of that and that's why all auto

makers offer us several options to fulfill our expectations. However most of them have their own personality from the moment they create a concept car till the moment they sell it.

Geneva 2013 is a good example. VW's the XL1, a 3.88 m long hybrid coupe with the latest technology to become a referent of efficiency for future cars. Weight: 795 kg; CO2 emissions: 24 g/km. Fiat group's main event was the presentation of the Alfa Romeo 4C: the lightest entry sporty car available with 4 hp/kg. VW points on fuel efficiency. Fiat points on efficiency for fun. Two body languages, two different messages. Two different worlds



(Fig. 39) Different emotion of design an auto, Alfa Romeo 4C vs VW XL 1

### Passion (Double-edged sword)

Fiat Group is Italy. A 500, a Giulietta or a Quattroporte are part of a company that makes part of a culture full of peculiarities that is closer to latin behaviour. It means that these cars are conceived and built under the Italian style: from the heart. Latin culture means passion.

When Fiat thinks of a car it uses more its passional side, and it means that Fiat adds more emotion to its creations. They enjoy making cars, and they don't conceive them as common means of transport.

A car means feelings, love, hate, fun for an Italian. Of course this way of making a car has evolved according to what the market wants from a vehicle.

In their cars anyone can see how the designers, engineers and marketing people had fun creating them. They may be right or wrong (it all depends on the point of view), but they certainly added passion to their work, making of it a unique piece.

Fiat Group is a reflection of Latin culture: to live life feeling it. That explains why they dare to propose cars other manufacturers wouldn't do. It explains why their passion for making cars has taken them to unknown situations that sometimes have bad results. Or who else would dare to produce and sell a car like a Multipla? I'm not saying that this way of creating and selling cars makes of Fiat Group

better or worse than its competitors. It makes it unique.

The Multipla is an example of how Italians dare no matter the final result. It was a flop outside Italy, but it was unique, original and a great idea. A rational creator wouldn't had ever conceived it.



(Fig. 40) Passion emotion design, Fiat Multipla

Reasonableness (Minimize risks)

In the other hand there is VW Group as the most visible player of a group of auto makers that use more the rational part when conceiving a car.

Volkswagen is German and therefore, in my opinion, more rational, more careful. Its goal is to produce the right car for the right people.

VW understands the majority of customers as it creates the car most of them look for. Cars don't mean the same as in Italy. Germans from VW look for optimization of processes, for efficiency above all. Then, their cars are closer to a high-end industrial product: good and efficient, with a decent package.

The opinion: VW cars are excellent... products. VW as part of that Northern Culture (Germany, Scandinavia, Anglo-saxon countries) follows the idea that things must always work. While they focus on results they look how to minimize risks. It's the way they do it to obtain good results, such as the ones VW is having nowadays.

This way isn't better or worse than others. If passion makes of Fiat Group a unique car maker, excellent work makes of VW Group one of world's most profitable car makers. And profits count a lot.

The Golf is the perfect example of marketing: it is good as product, at promotion, at price and at place (distribution). It also explains the way VW works: evolution instead of revolution. The car is pretty much the same since its launch more than 30 years ago. Efficiency is the key.



*(Fig. 41) Rigorous emotion design, VW Golf series 1-7 generation*

From the point of view of sales, VW's formula is better. There is no doubt about it: the German group sells around 25.000 per day in the whole world against 11.000 for Fiat Group.

The success can be explained by several reasons, from which one comes from current discussion:

- Cars are still an important product in life of people. They are important because they aren't only the most comfortable way of daily transportation, but because they aren't a disposable product.

- A car continues to be a non-affordable good for most people, so the purchase decision is mostly based on a deep analysis of the advantages and problems of a specific model. This can partly explain the success of a 'conservative' brand as VW.

- Not everybody is crazy about cars. In fact most people don't care about it till they realize they need one. And when that moment arrives, as they don't really care and they don't want to risk, most of them take their decision based on what the market tells them to do. This decision comes along with the fact that passion doesn't count when buying a car (for a big part of population). Of course, I am not saying that passion has the same meaning for everybody. For example, there are people who enjoy driving a trailer.

- if rationalism is the main driver for the majority of population buying a car, then it is quite understandable VW success.



(Fig. 42) Same position models comparison between FCA and VW

For me, VW and Fiat are the steak and the new dishes. Sure, is good to have the steak as you won't probably have problems with it and you'll be properly fed. But, I am more into the idea of trying new things no matter the result. Of course, I must eat to survive and I love the steak. However my passion for cars can be explained by the cook that always prepares the best steak, and the cook that always tries new ingredients, new plates. I like the steak. But I love new plates. With cars I'm more passionate than rational, and that explains all.

PROJECT

# AVANTI PROJECT

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FIAT design styling forward. Inheritance and evolution  
All-new sporty SUV design



# PROJECT

## 6.1 Market Position

Fiat plans from 2010 called for many new models, however, all were canceled except for the Panda and MPV (Fiat 500L) models due to poor economic conditions.

This is in response to abysmal European car sales - the lowest in more than 20 years. Sales across the region have fallen for six consecutive years.

Fiat has been particularly hard hit because of its traditional reliance on European and Italian auto sales in contrast to Volkswagen who has a larger international footprint and is taking advantage of better US and Chinese market conditions.

What is even more alarming is the European market isn't expected to recover for maybe another four or five years.

Fiat's plan to focus on two of its most profitable cars is the company's way of riding out the storm and breaking even in the most expeditious time frame.

Concentrating on the 500 and Panda will also free up resources so Fiat can invest in high margin Alfa Romeo models.

It is notoriously expensive to build cars in Italy and these high profit cars are key to keeping Fiat's Italian factories running. All told, Fiat is expected to invest \$12.3 billion (9 billion euros) in new models in the coming years.

### Europe SUV Market

The midsized SUV segment remains stable, growing just 1% in 2013, which still compares favorably to an overall-market decline of 2%.

No surprises for the top two spots, as the Nissan Qashqai and Volkswagen Tiguan remain firmly in place.

The same can be said for the new Nissan X-Trail, which will show a totally different design than the outgoing model. It will no longer be a body-on-frame SUV, but a unibody crossover, taking styling cues from its smaller sibling Qashqai. As a result, it should be able to become a worthy competitor to the RAV4, CR-V and Outlander.

The new generation Jeep Cherokee has done the same thing as the X-Trail: switching from a truck-chassis to a car-chassis, with softer and more rounded styling. It will be introduced in Europe this year, after it has launched successfully in North America.

### U.S. SUV Market

This is a simplified look at the rising popularity of SUVs and crossovers in America. So think of it this way: in an overall market that produced a 7.5% year-over-year improvement, SUV and crossover sales were up 11.6%.

There were meaningful improvements introduced in

October's ranking of vehicle sales. Prior year figures now include the actual numbers from last year, not just the percentage increase from last year. As a result, we've also included vehicles like the Suzuki XL7 and Dodge Nitro, nameplates which collected sales in 2012 but not this year. At any time, click the Rank column to return to the original format.

If you're on a mobile device, you may need to choose the full version of the site (at the bottom of the page) in order to use the sortable function.

#### China Market

In the year of 2013, the accumulative total sale of SUVs reached 2.6 million units, up 53.8 percent year-on-year. According to the China Association of Automobile Manufacturers, the sales of SUVs in the Chinese market is predicted to be over 4 million units in 2020.

That market share could rise as high as 25 percent in coming years, according to Yale Zhang, managing director of Auto Foresight, a research firm in Shanghai. That would be double the size of SUVs' 12.5 percent share of the U.S. market last year.

Italy's Fiat SpA, a latecomer to China, is hoping an SUV will help it gain a foothold in a market where it set up its first joint venture just three years ago. Product Freemont.

In the Chinese market, bigger is better. Consumers are attracted by the SUV's far range of vision, safety, comfort and ability to go off road.



(Fig. 43) Top 3 best-selling SUV in 2013 year worldwide

## Fiat SUV Action

I think Fiat should make action in the SUV market, for now, to launch SUV more responsive to market demand, and could make higher profits than the economic small car.

The Compact SUV segment, which is forecast to grow to 500,000 sales in Europe by 2015, up from 154,461 last year, according to consultancy IHS Automotive.

The new SUV will join the 500's fast-growing portfolio. At about 4200mm (nearly 14 feet), fits between the 4150mm 500L five-seat small minivan and the 4350mm seven-seat 500L Living.

The new SUV will be underpinned by the Compact Wide architecture that debuted last year on the Jeep Cherokee or Alfa Romeo Giulietta.

If the new SUV get the right ride and handling and we get the right fuel economy -- and I'm convinced we will -- not only will we be competitive in what is the emerging B-SUV segment, you're going to see hatchback and sedan buyers in B and C segments looking at that vehicle as a competitive alternative.

The new car will be positioned in terms of C-segment SUV. In the term of performance is higher than 500X. is believed to be a Qashqai-rivalling SUV.

From the design point of view, the new will be the beauty-stylish mid-size SUV option inside the group's range, and is

styles with 500L and 500X. Even though the 500L has done a very good job becoming Europe's best-selling small MPV, but it didn't achieve the goal of being associated to the popular Cinquecento.

Now is a good opportunity to change the design style. The two styling to accommodate more markets. Existing retro style is suitable in Europe, but in America and China markets is not appropriate, so the new styling language is for the global market.

It will more sports, more young, more global. in the future it should also be positioned as the premium-fancy-sporty Italian car to make a difference with existing.

## 6.2 Technical of Project

### Platform

The new car will use the FCA Compact U.S. Wide (CUSW) belong to the Compact - Platform. It is the platform of the Jeep Cherokee and the Alfa Romeo Giulia.

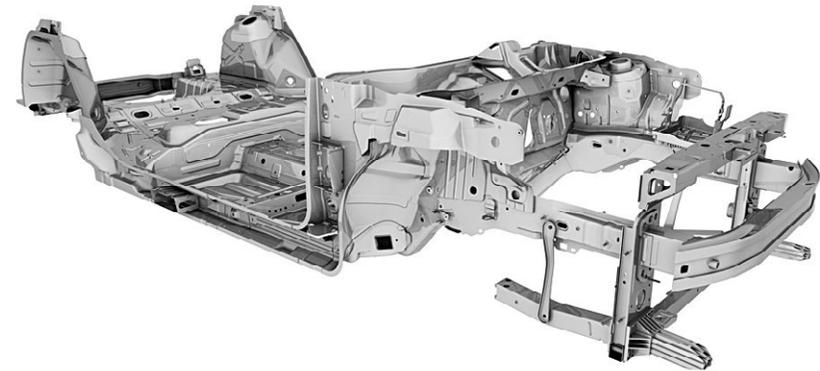
The interchangeable modules make the basic platform suitable for vehicles of differing lengths up to 4.92 metres (16.1 ft).

The Compact platform was developed by engineers of the Fiat group for the construction of small family cars (compact cars) and large family cars (mid-size cars) with front-wheel drive or four-wheel drive. The first incarnation of this platform was the Alfa Romeo Giulietta which was unveiled in 2010. Fiat has invested 100 million euros into the construction of the Compact Platform.

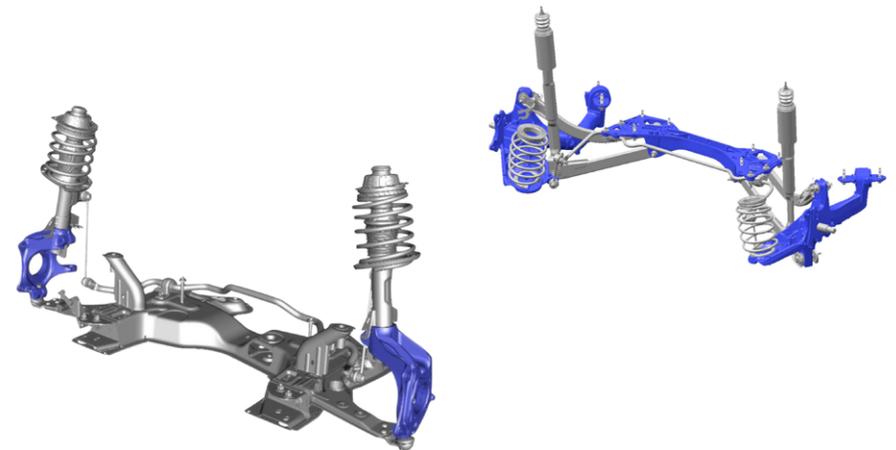
It is developed in Turin, Italy, the Compact platform was designed to adapt to future cars of both the Fiat and Chrysler group.

Fiat engineers used the C-platform (used by Fiat Stilo, Bravo and Lancia Delta) as a starting point and developed a new high-performance platform that uses only a central part of

the floor from the old C-platform. The frame composition is 84% high-strength steel (as opposed to the old C-platform, 65% of which was high-strength steel) and 4% aluminum.



(Fig. 44) Flat SUSW platform chassis



(Fig. 45) Front MacPherson and rear independent multilink suspensions

## Suspension

The front suspension uses MacPherson aluminum Evo struts and is 4 kilograms (8.8 lb) lighter than the previous steel struts (used in Fiat Bravo).

The rear suspension uses an independent multilink suspension and each of them consists of two lateral links with an aluminum longitudinal arm that mounts the hub and spring. Using aluminium rather than steel, which has a higher density, enabled a total combined weight-savings in the suspension bits of 14 kilograms.

The framework for the rear seats and the magnesium alloy cross member reduced weight by 35% in comparison to earlier cars.

## Engine

The engine range, combined with the platform, consists of the compact four-cylinder petrol 1.4 Fire, 1.4 Multiair, 1,750 TBi turbocharged, the 2.0 or 2.4 Chrysler GEMA engine, the 3.2 or the 3.6 Chrysler Pentastar V6 engine, and the diesel 1.6 Multijet and 2.0 Multijet.

Fiat and Chrysler plan to build about 1 million vehicles a year by 2014 based on this platform.

Eight upcoming Chrysler Group vehicles are planned to be built on Fiat's Compact Wide platform, including the replacement for the Jeep Liberty.



*(Fig. 46) Fiat 1.4 Multiair engine*

## Power system

Under the background of today's energy crisis, energy saving vehicles is increasingly important. The Hybrid Vehicles has become a major trend in auto development.

A hybrid vehicle is a vehicle that uses two or more distinct power sources to move the vehicle. The term most commonly refers to hybrid electric vehicles (HEVs), which combine an internal combustion engine and one or more electric motors. However, other mechanisms to capture and use energy are included.

Sales of plug-in electric vehicles (EV) and plug-in hybrids in the U.S. grew by nearly 100 percent in the last year, finishing just under 100,000 units.

The 84-percent jump from 2012 to 2013 represented 96,702 plug-in vehicle sales, according to the Electric Drive Transportation Association.

In fact, the hybrid idea has long history more than 100 years.

Several common types of hybrid system:

- Hybrid electric vehicle (HEV)
- Fuel cell vehicle (FCV)
- Plug-in Hybrid electric vehicle (PHEV)
- Electric vehicle (EV)

The new SUV's power system we will focus on mature technic of HEV and PHEV. We do an analysis of them.

## Series Hybrid

This is the simplest hybrid configuration. In a series hybrid, the electric motor is the only means of providing power to get your wheels turning. The motor receives electric power from either the battery pack or from a generator run by a gasoline engine.

A computer determines how much of the power comes from the battery or the engine/generator set. Both the engine/generator and regenerative braking recharge the battery pack. The engine is typically smaller in a series drivetrain because it only has to meet average driving power demands; the battery pack is generally more powerful than the one in parallel hybrids in order to provide remaining peak driving power needs.

This larger battery and motor, along with the generator, add to the cost, making series hybrids more expensive than parallel hybrids.

## Parallel Hybrid

In a parallel hybrid vehicle, the single electric motor and the internal combustion engine are installed such that they can power the vehicle either individually or together. In contrast to the power split configuration typically only one electric motor is installed. Most commonly the internal combustion

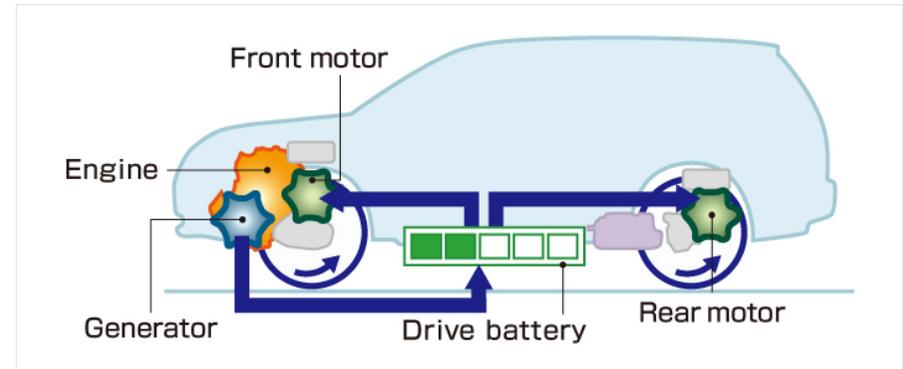
engine, the electric motor and gear box are coupled by automatically controlled clutches. For electric driving the clutch between the internal combustion engine is open while the clutch to the gear box is engaged. While in combustion mode the engine and motor run at the same speed.

### Plug-in Hybrid

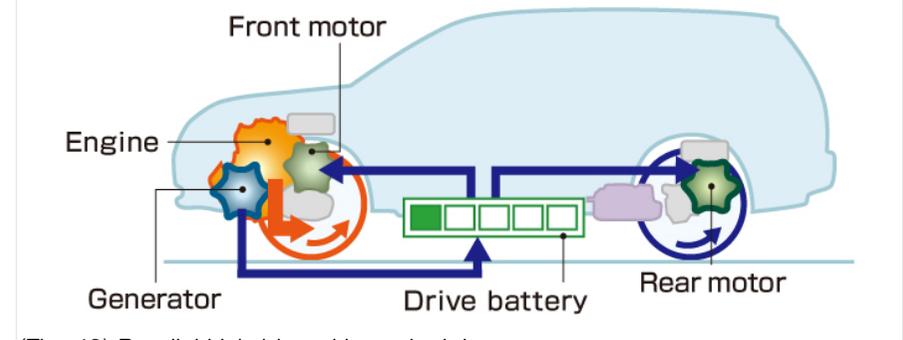
Another subtype of hybrid vehicles is the plug-in hybrid electric vehicle (PHEV).

The plug-in hybrid is usually a general fuel-electric (parallel or serial) hybrid with increased energy storage capacity, usually through a li-ion battery, which allows the vehicle to drive on all-electric mode a distance that depends on the battery size and its mechanical layout (series or parallel). It may be connected to mains electricity supply at the end of the journey to avoid charging using the on-board internal combustion engine

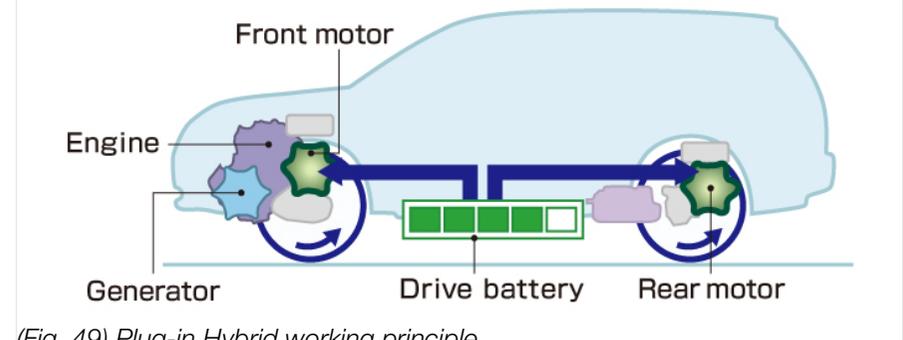
This concept is attractive to those seeking to minimize on-road emissions by avoiding – or at least minimizing – the use of ICE during daily driving. As with pure electric vehicles, the total emissions saving, for example in CO<sub>2</sub> terms, is dependent upon the energy source of the electricity generating company.



(Fig. 47) Series Hybrid working principle



(Fig. 48) Parallel Hybrid working principle



(Fig. 49) Plug-in Hybrid working principle

PHEV is more efficiency

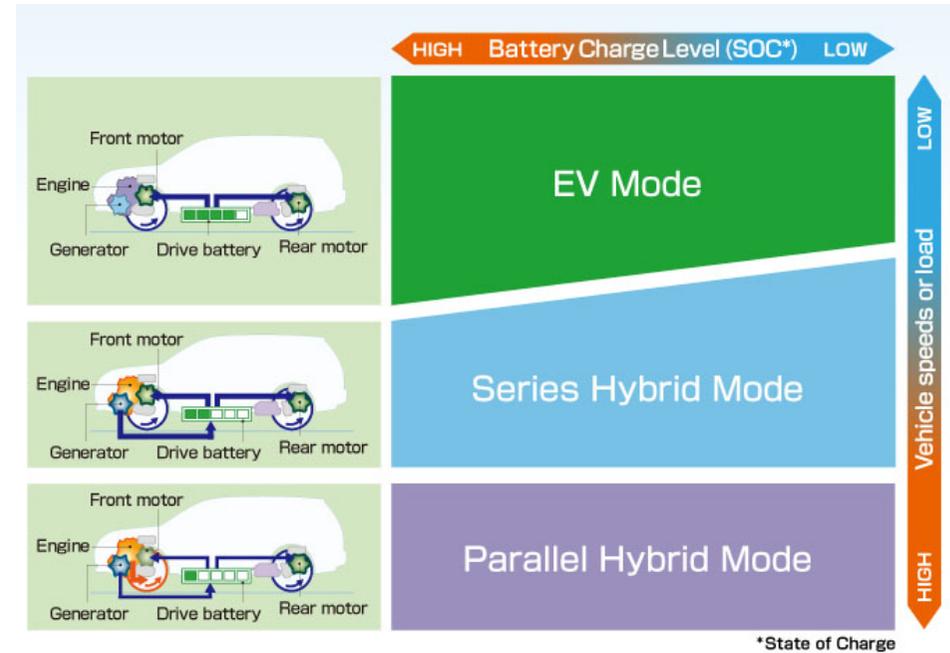
The Plug-in Hybrid EV System provides energy conservation, and at the same time offers driving that is comfortable, safe and reliable.

When driving at medium- to low-speeds, the Plug-in Hybrid EV System stays in EV Mode, driving the vehicle through its electric motors using electricity from the drive battery.

When the remaining energy in the drive battery gets low, the Plug-in Hybrid EV System's switches to Series Hybrid Mode where its gasoline engine automatically starts and generates power for the electric motors.

When driving at high speeds, the Plug-in Hybrid EV System switches to Parallel Hybrid Mode which also uses the power of the gasoline engine to drive the vehicle as its engine operates more efficiently than its electric motors at high RPM.

Furthermore, when a vehicle with the Plug-in Hybrid EV System is decelerating, it switches to the Regenerative Mode which uses the motors as power generators to recharge the drive battery. In this way, the Plug-in Hybrid EV System optimally controls each of the driving modes so it provides the versatility to drive as a 100% electric vehicle, use the engine to charge the drive battery, or drive using the motors and the engine at the same time, based on driving conditions.



(Fig. 50) Performance and efficiency comparison

	Motor	Engine	Situation
EV Mode	Drive	Not Used	City driving
Series Mode	Drive	Power Generation	Uphill / Acceleration
Parallel Mode	Drive	Drive+Power Generation	Highway driving

(Fig. 51) Plug-in hybrid work status in different road conditions

Considering the new auto position is urban SUV. And As the 2017 deadline approaches of WLTP(The Worldwide harmonized Light vehicles Test Procedures )define a global harmonized standard for determining the levels of pollutants and CO2 emissions, fuel or energy consumption, and electric range from light-duty vehicles (passenger cars and light commercial vans).

Also the average carbon dioxide emissions by 2021 EU regulatory requirements for the 95 grams per kilometer. Existing small-displacement turbocharged engine is difficult to deal with the new test procedures limit, like Japanese cars that start over to create a naturally aspirated engine is clearly not feasible. Thus, the plug-in hybrid system excellent fuel economy and emissions performance will become in the face of European cars WLTP regulations and EU emission regulations limiting dual straw.

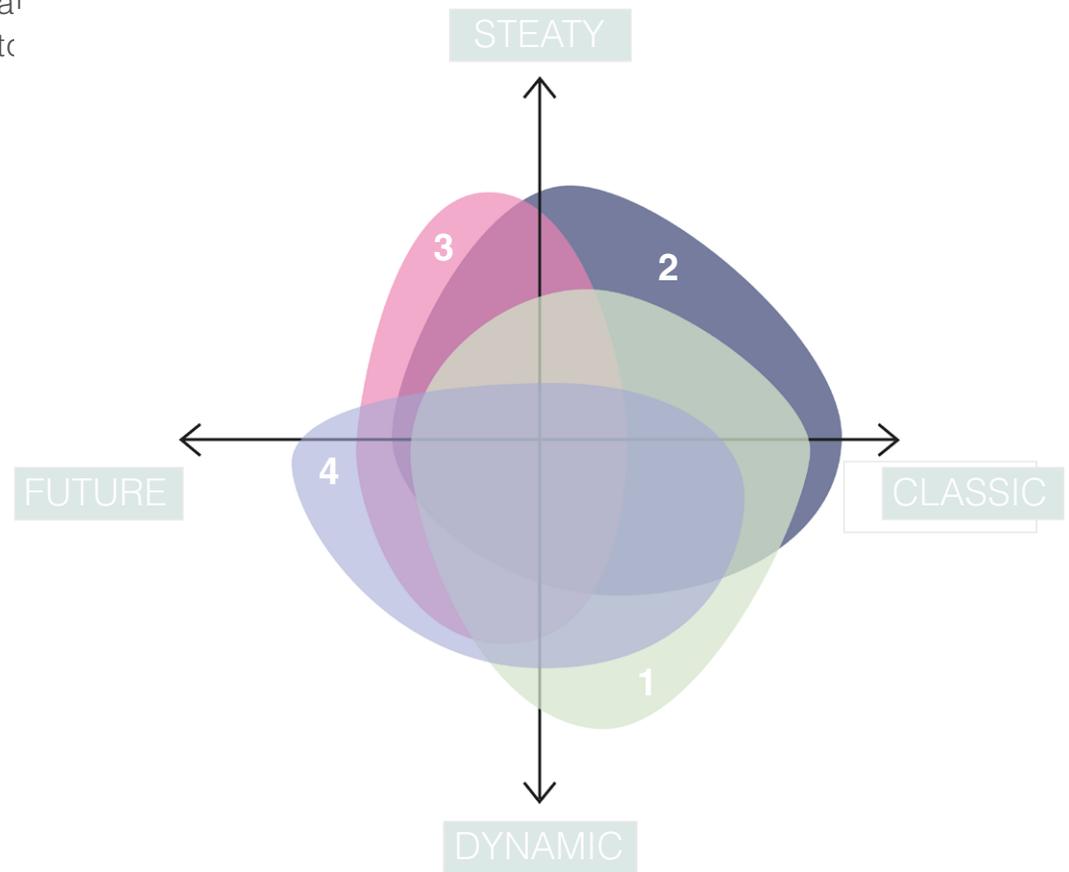
New energy and new energy related industries have begun to take shape, the cost is significantly decreased. In other words, the European car prices into the plug-in hybrid electric field does not need to put too much R & D costs.

It is foreseeable that, under the new test procedures WLTP and the EU stringent emissions regulations , European brands will usher in a plug-in hybrid type of concentrated outbreak.

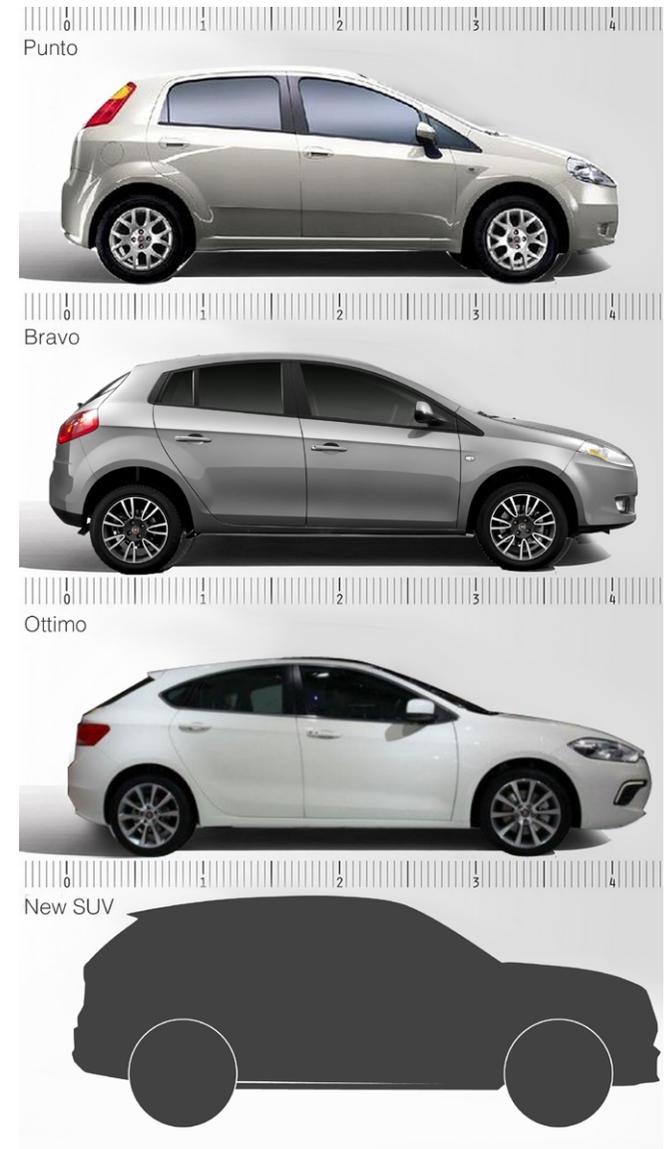
## 6.3 Styling Idea of Project

Visualization scale

Visual scale diagrams to express the visual experience of Fiat 500, Fiat 500L, Fiat Bravo and Fiat Viaggio. More intuitive to reflecting styling position of each car.



(Fig. 52) Visualization scale diagram



(Fig. 53) Two different directions of Fiat styling design

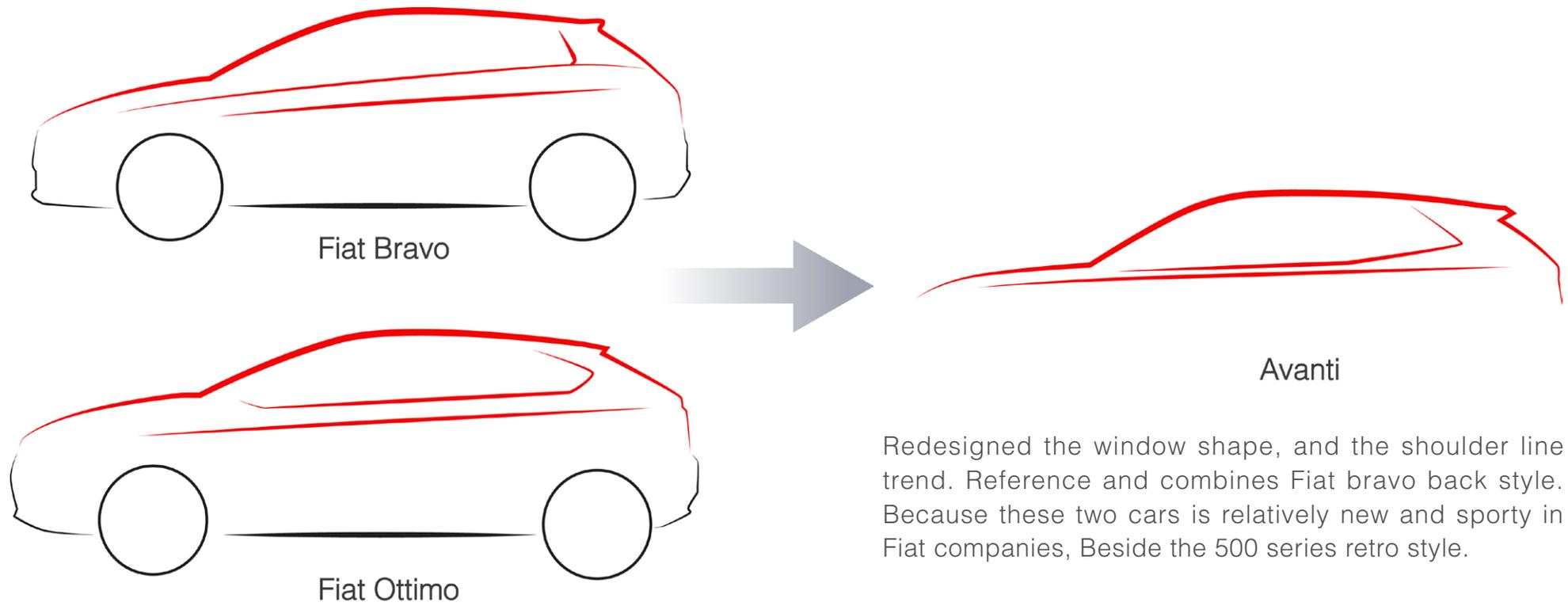
## 6.4 Concept



(Fig. 54) Moodboard

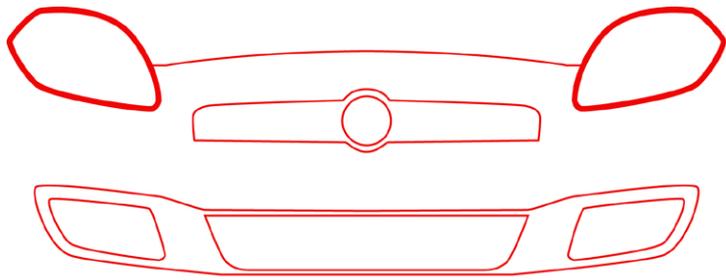


(Fig. 55) Persona board

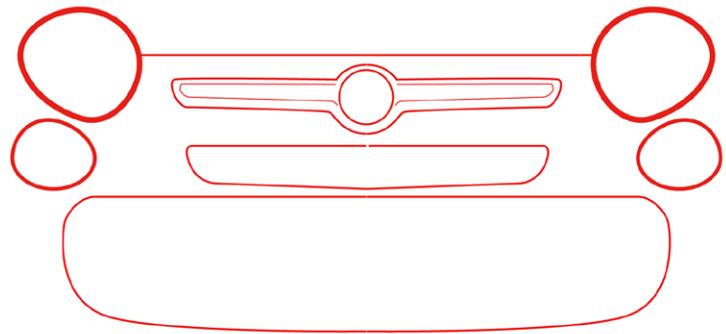


Redesigned the window shape, and the shoulder line trend. Reference and combines Fiat bravo back style. Because these two cars is relatively new and sporty in Fiat companies, Beside the 500 series retro style.

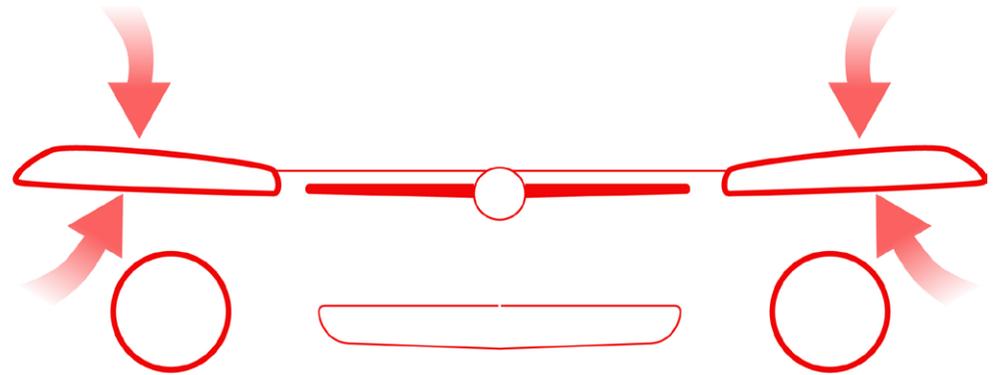
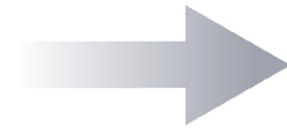
(Fig. 56) Sidev



Fiat Bravo

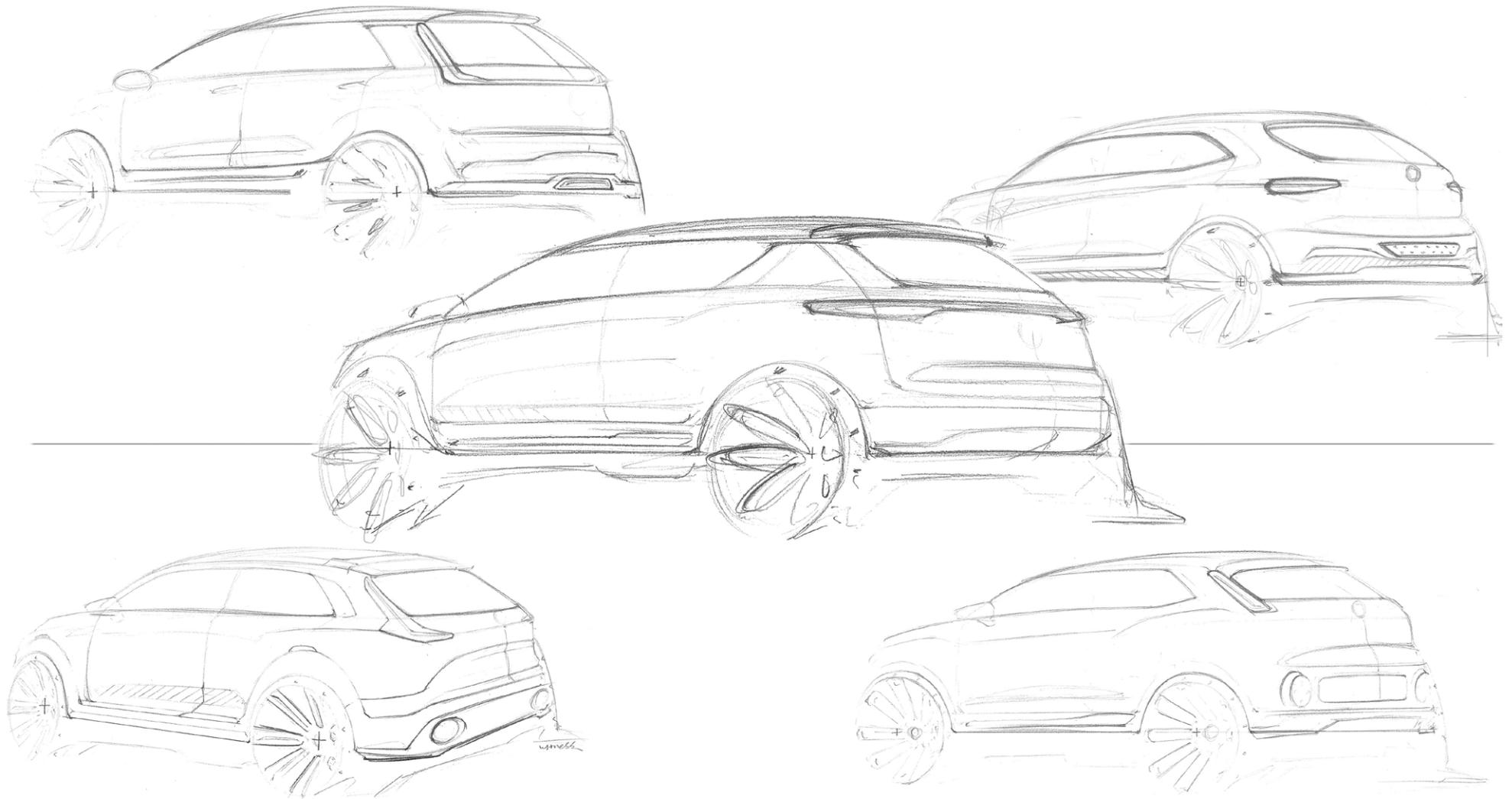


Fiat 500L

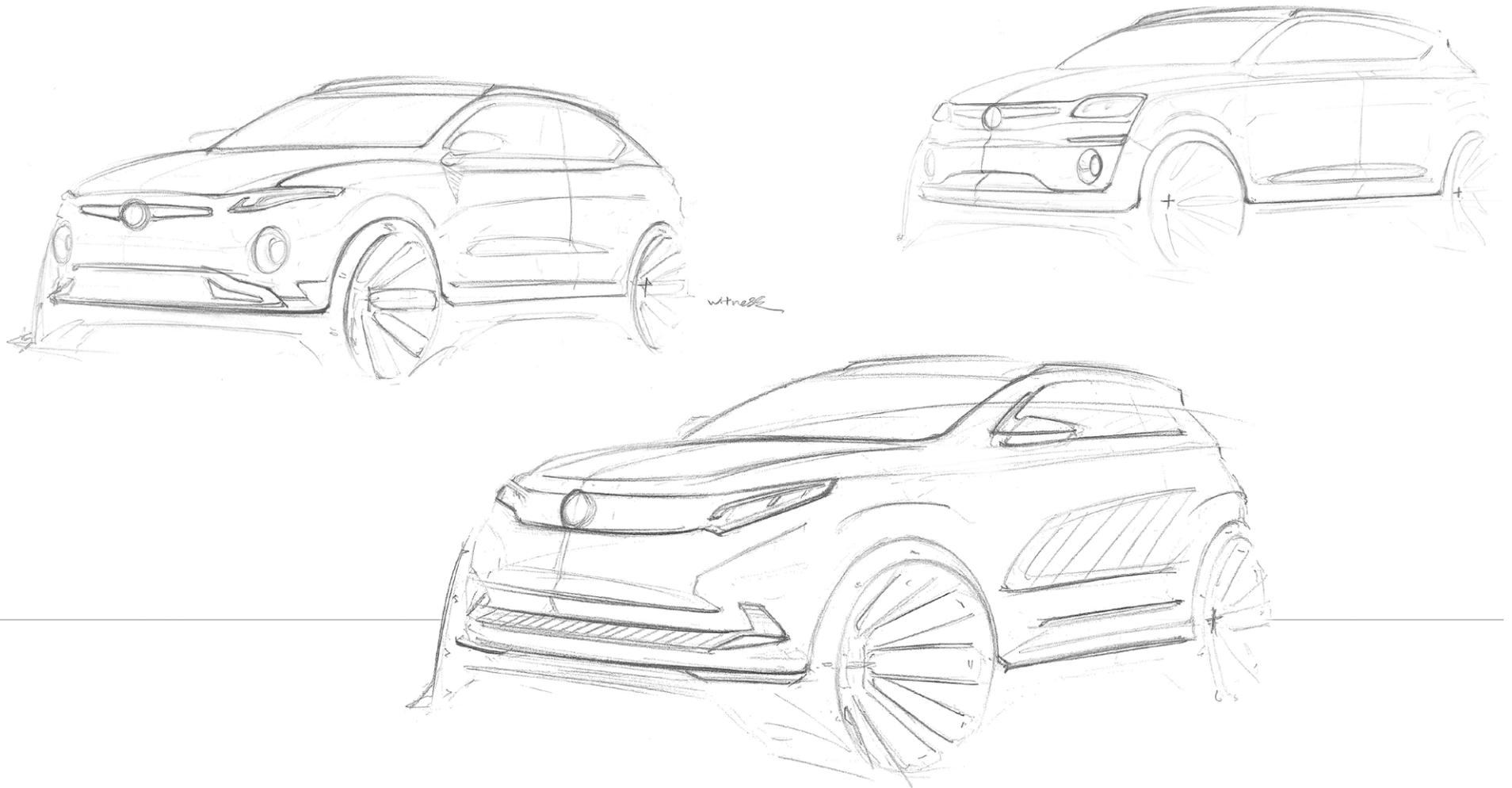


Retains the fiat classic four lights, while the transverse elongated headlamps, creating a modern and future visual effects.

(Fig. 57) Front profile evolution of the project



(Fig. 58) Sketch of concept



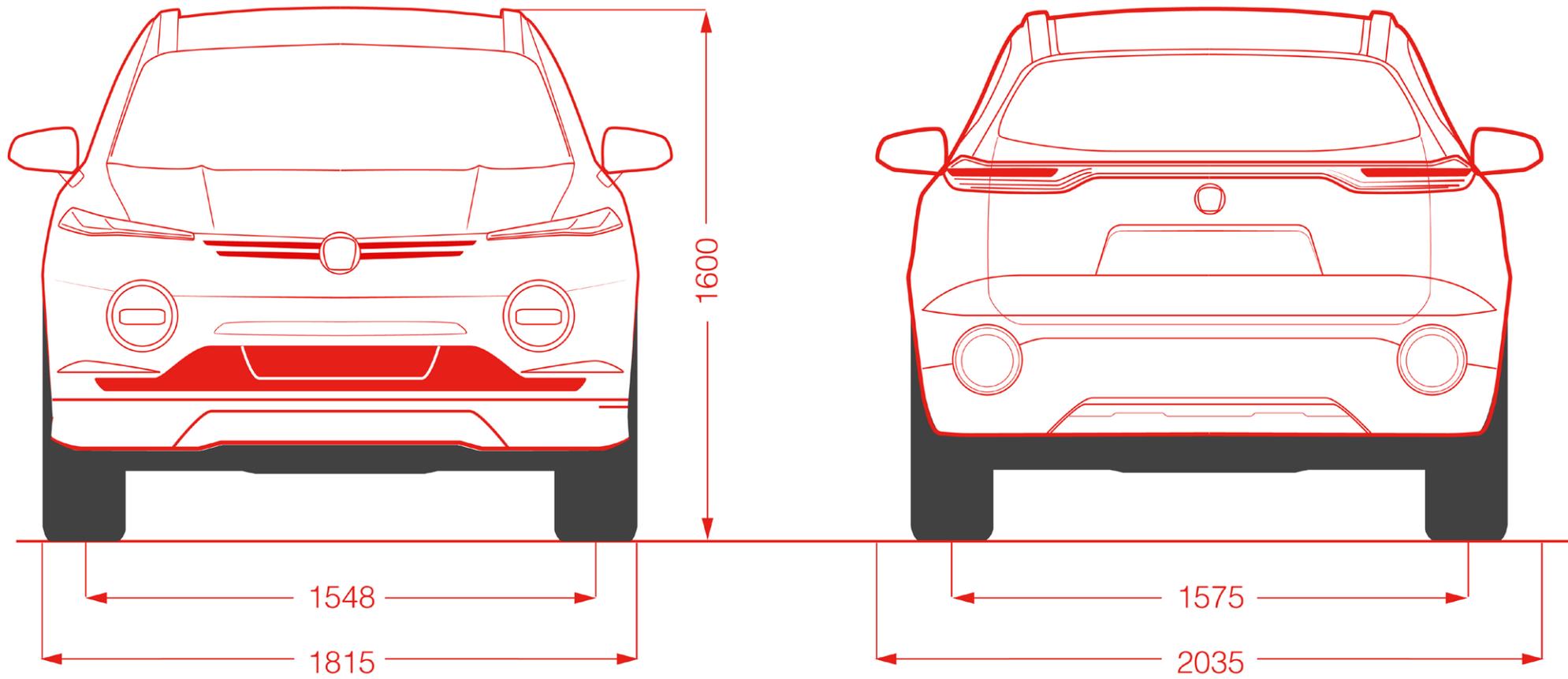
(Fig. 59) Sketch of concept



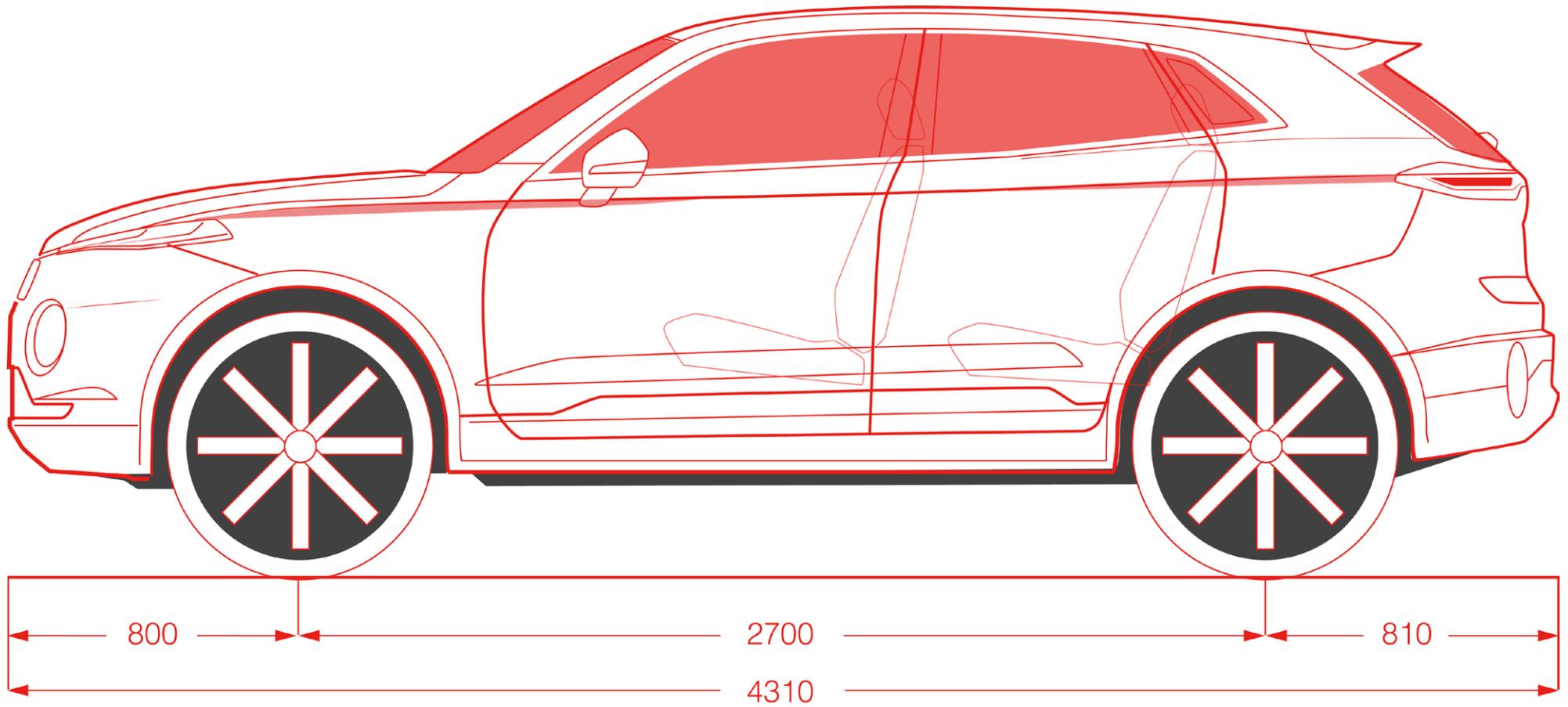
(Fig. 60) Final Sketch of concept



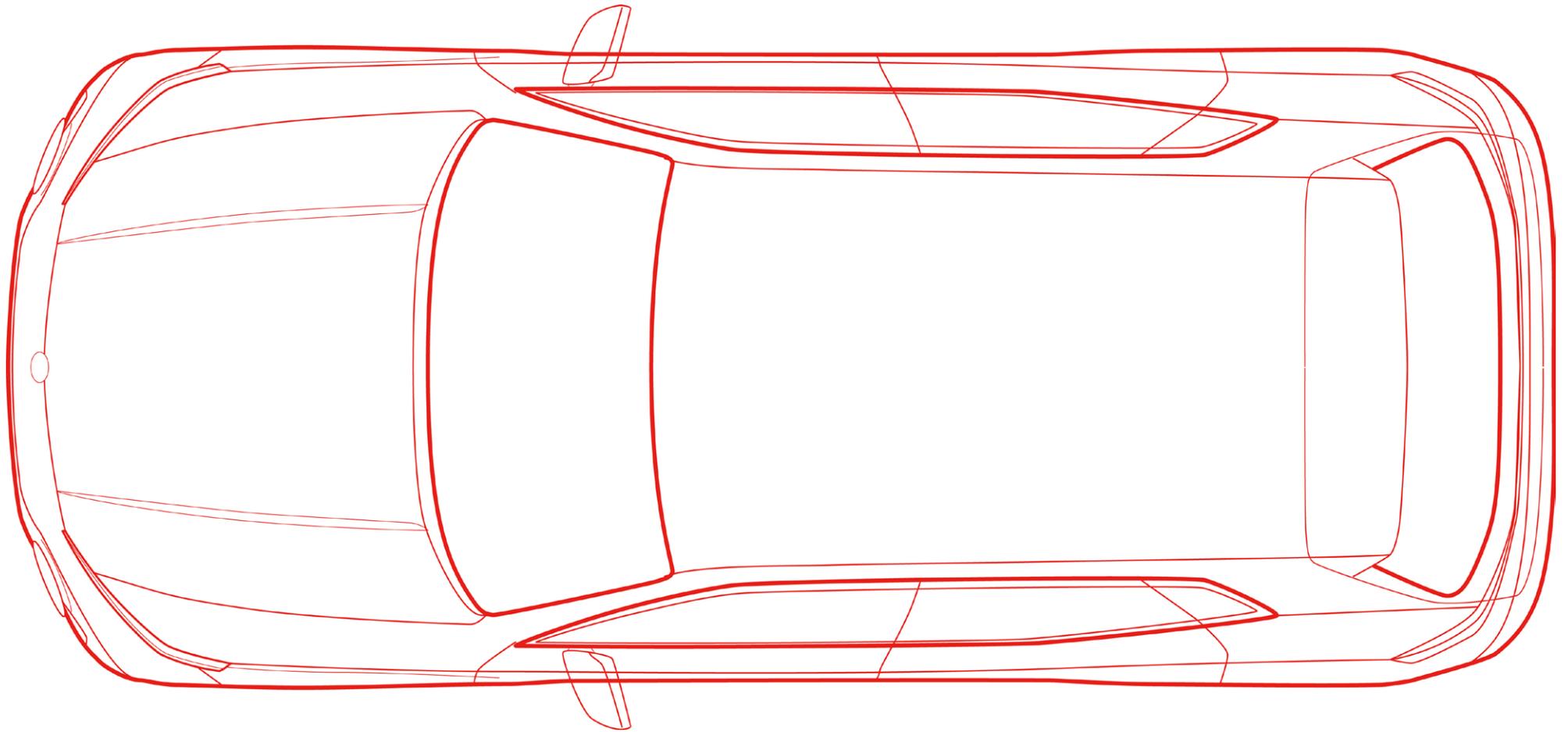
*(Fig. 61) Final Sketch of concept*



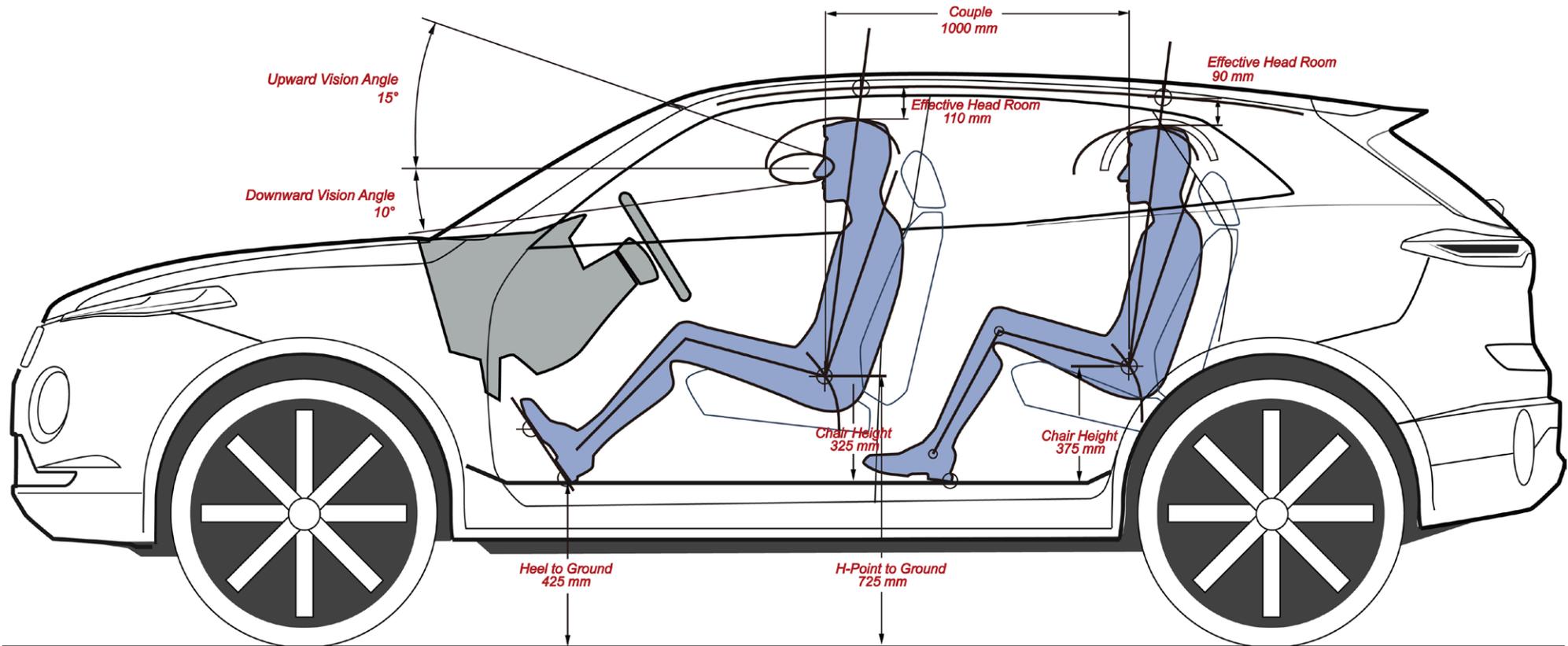
(Fig. 62) Blueprint of Avanti



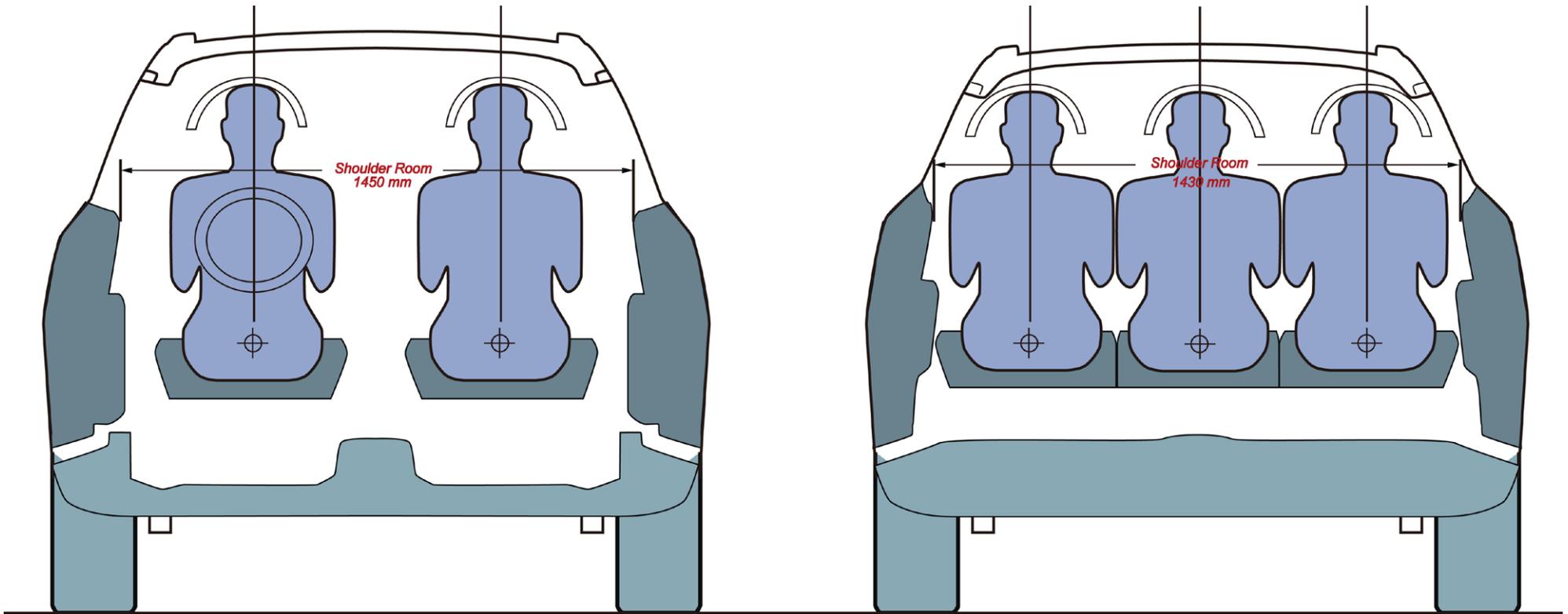
(Fig. 63) Blueprint of Avanti



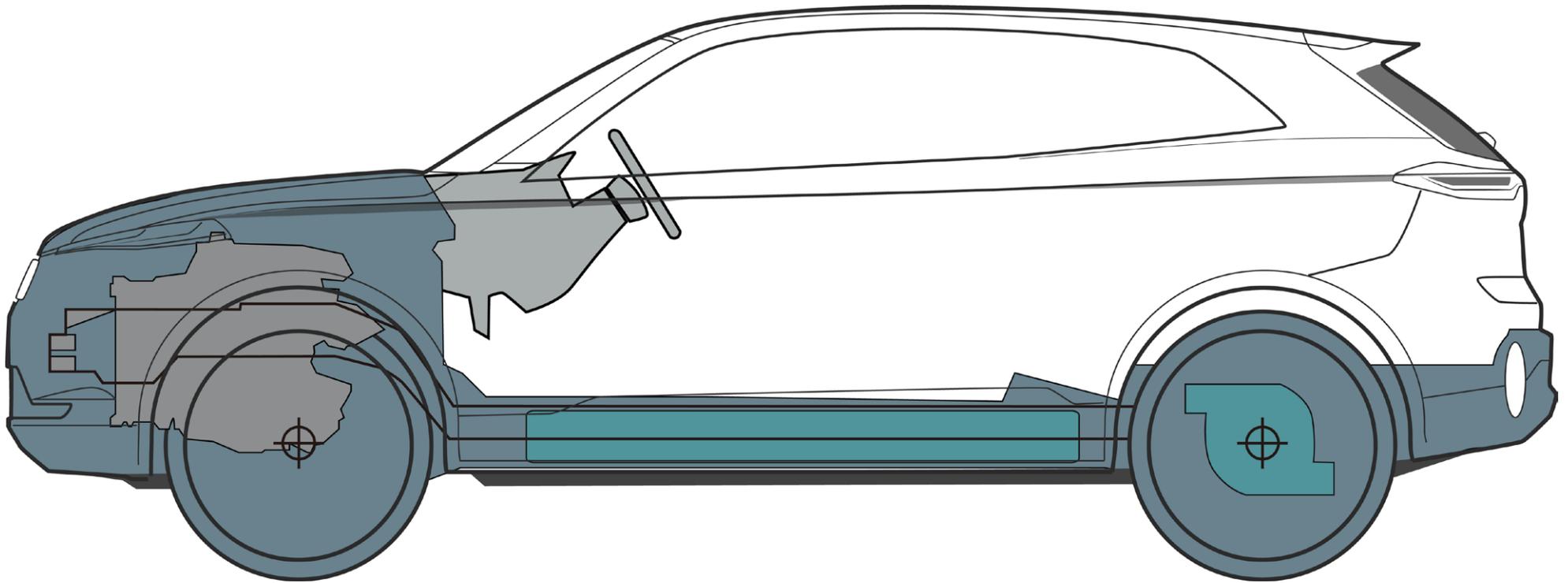
*(Fig. 64) Blueprint of Avanti*



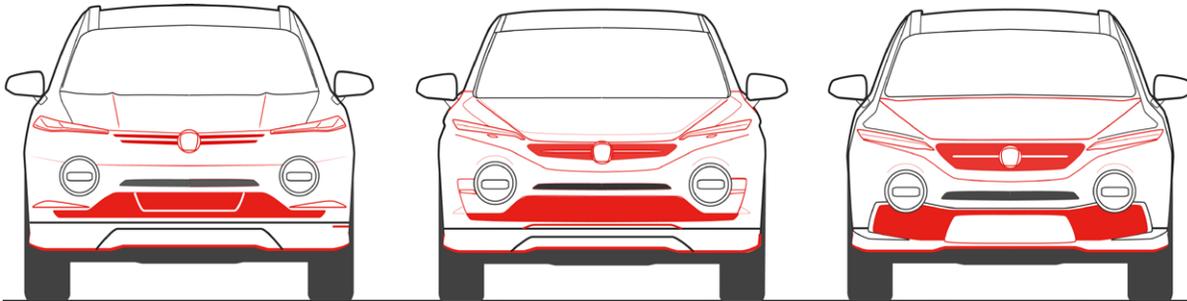
(Fig. 65) Side H-points of Avanti



(Fig. 66) Lateral H-points of Avanti



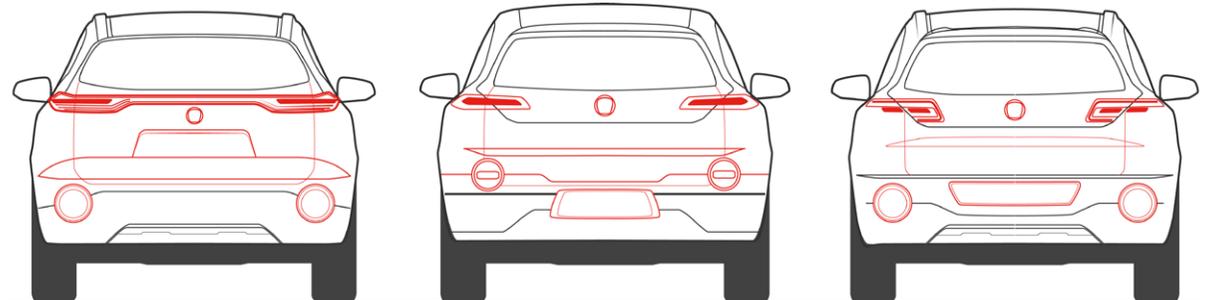
(Fig. 67) Powertrain anatomy



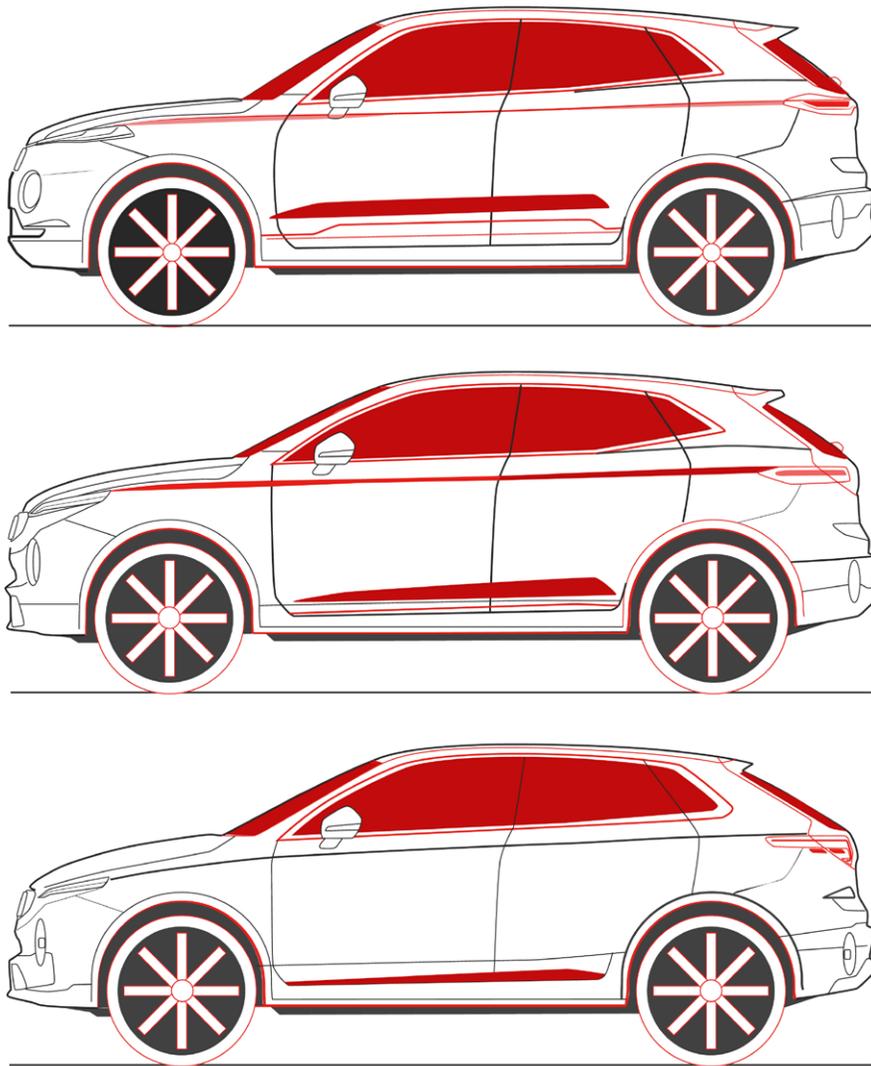
Making a comparison with different shapes of front light, upper air intake grille, lower air intake, headlights daytime lights and fog lamps.

*(Fig. 68) Front proposal comparison*

Styling comparison with tailamps, license plate holder and exhaust outlet.



*(Fig. 69) Rear proposal comparison*



(Fig. 70) Side proposal comparison

Identified the main side profile shape, made three different styling detail comparison chart to study which option is most appropriate. The red areas are the different shapes of proposals.

Proposal 1:

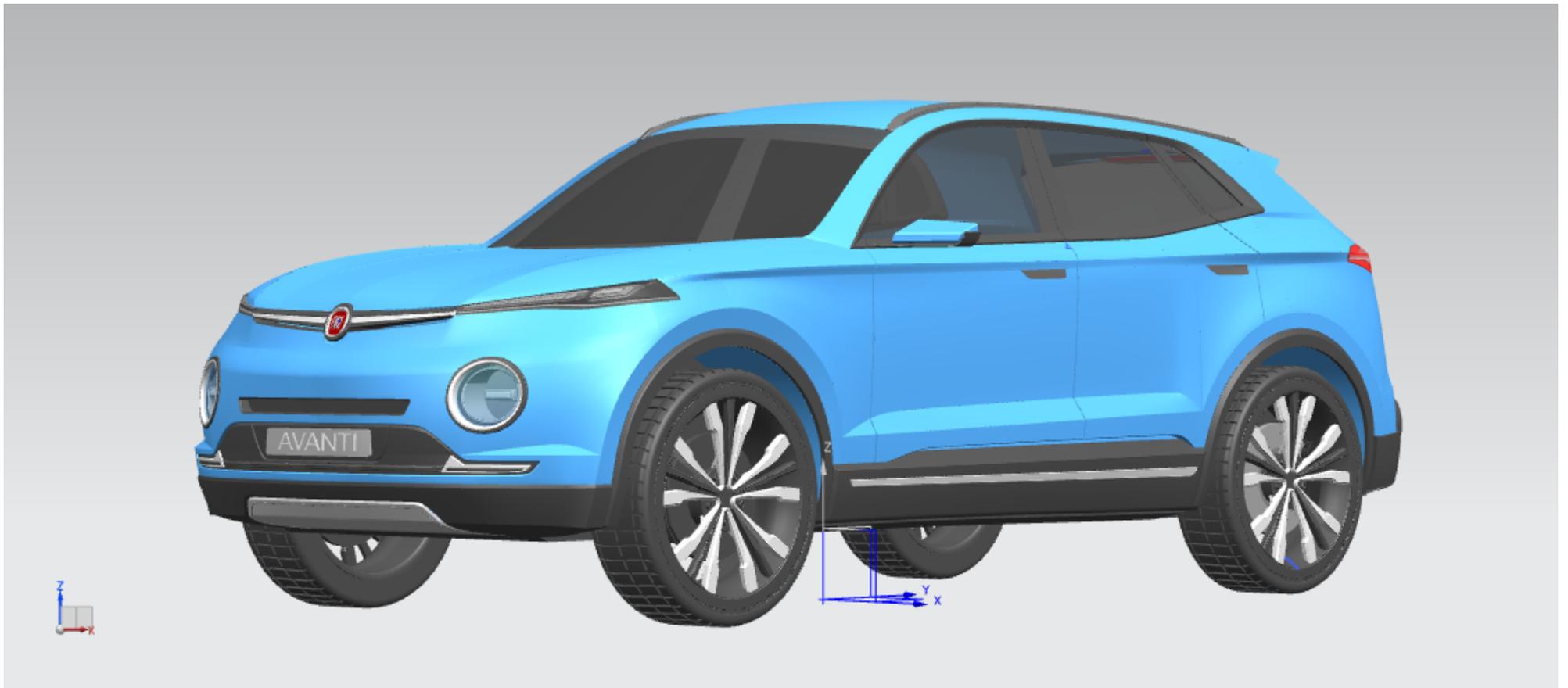
Side windows tilted slightly upward after the B-pillar, to create a whole car a kind of upward momentum, but also makes the rear part of the even more dynamic.

Proposal 2:

D pillar tilt angle increased, while reducing the upper rear spoiler, tail light using more straight and simple shape. Lower pedals position, played the role to lower visual center of gravity of the body.

Proposal 3:

larger tilt angle of D-pillar, similar hatchback hatchback styling. Position in the crossover model. The shape of the side windows is more smoothly.



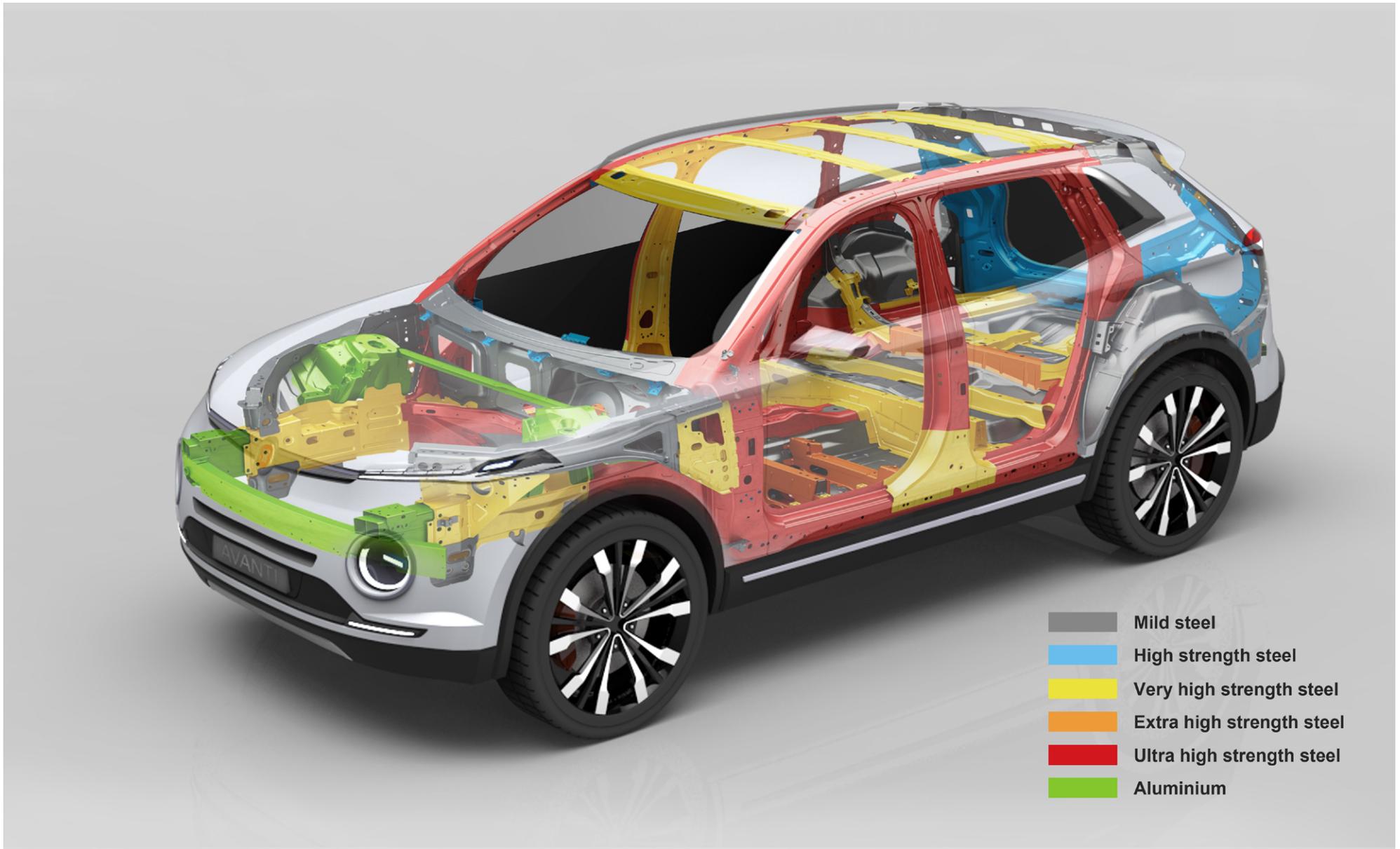
(Fig. 71) 3D digital model built by Unigraphics NX



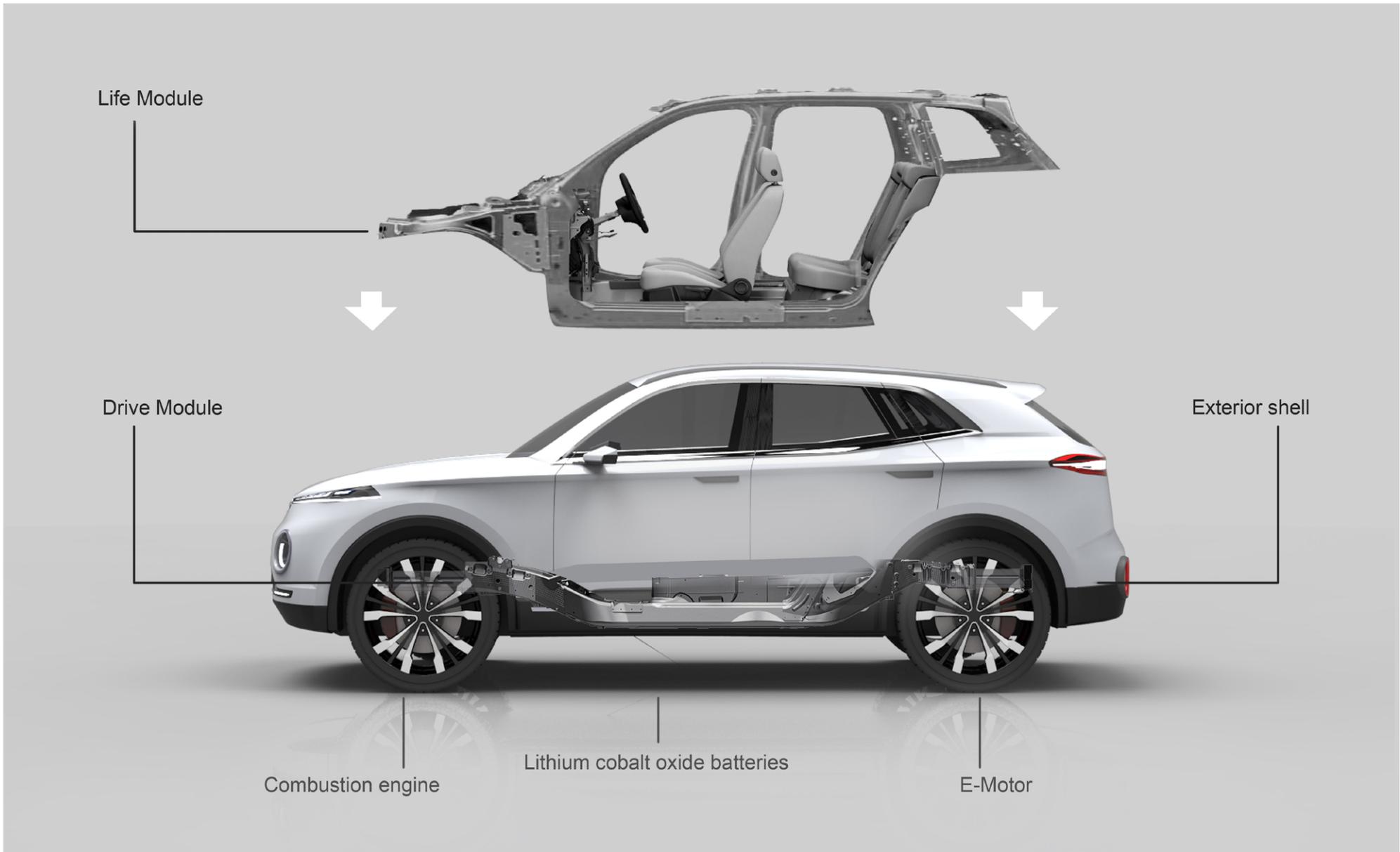
*(Fig. 72) Render perspective 1*



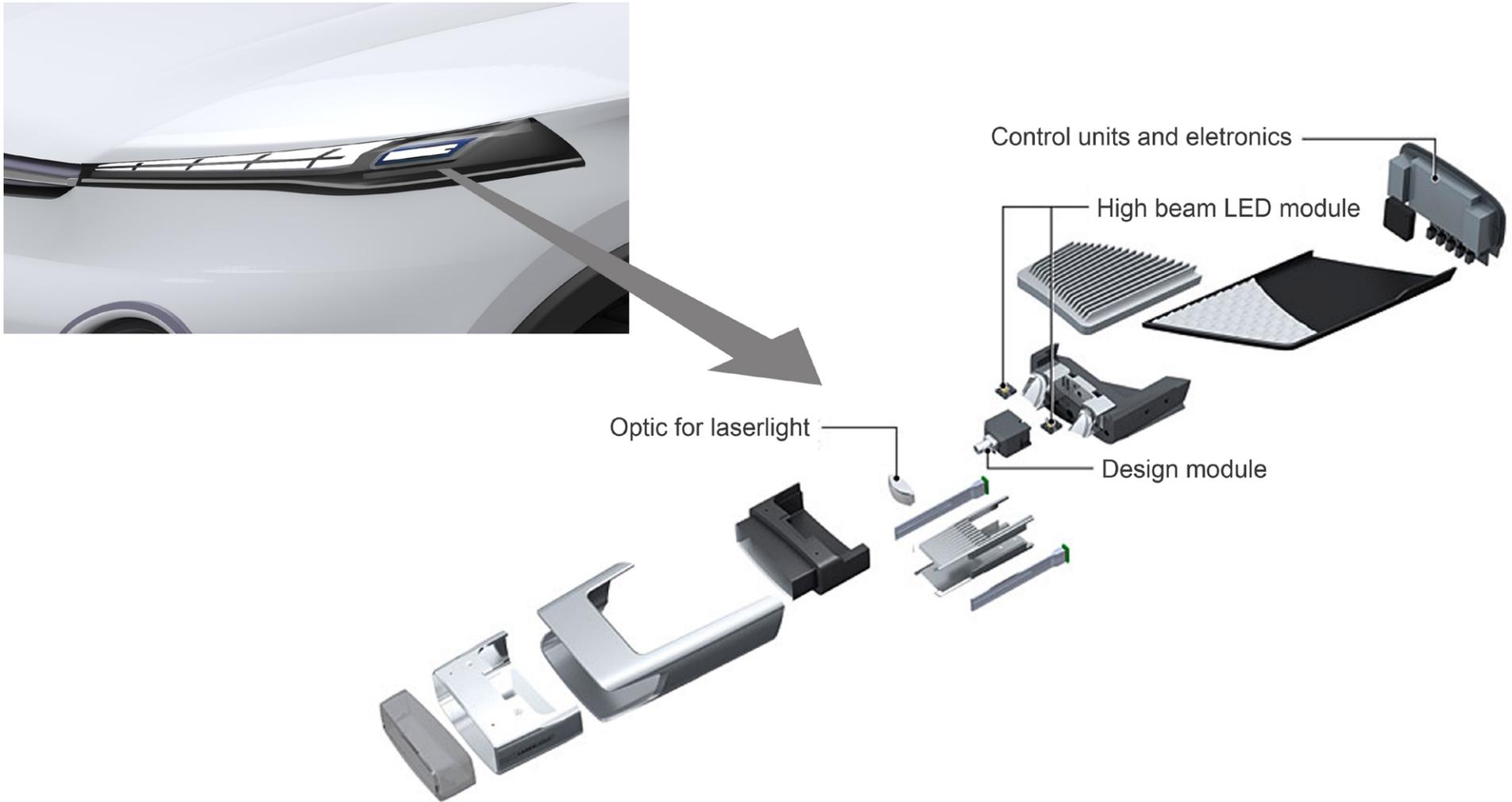
*(Fig. 73) Plug-in hybrid powertrain anatomy*



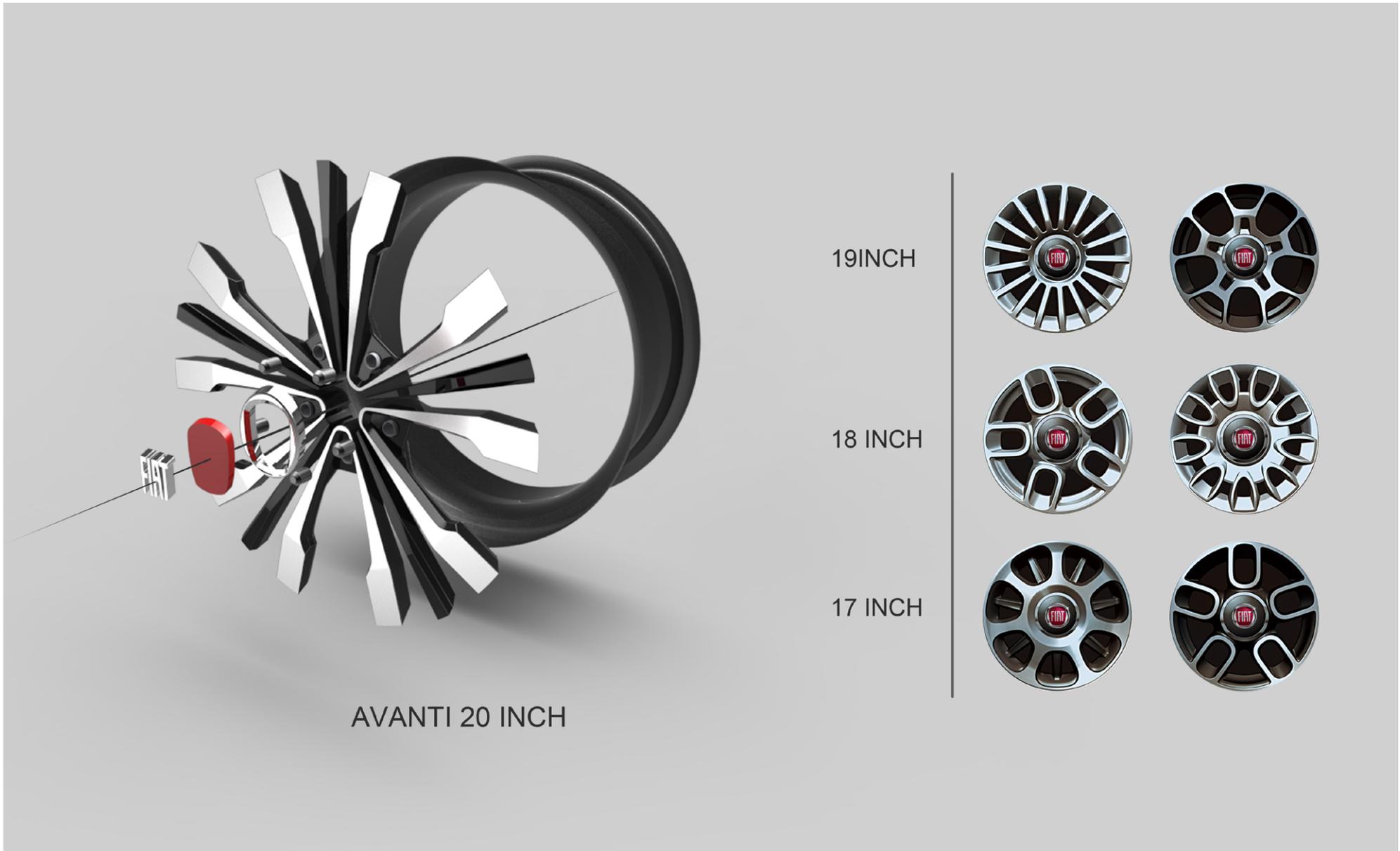
(Fig. 74) Body structure materials



(Fig. 75) Body structure and modular production



(Fig. 76) Laser light technique and explosion view



(Fig. 77) Wheel hub design and proposals



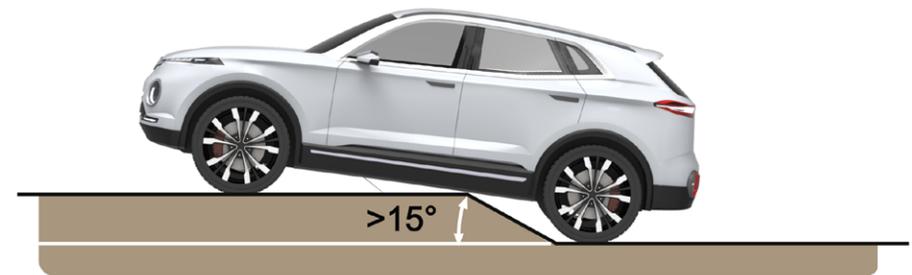
(Fig. 78) The lighting modes of headlight group



(Fig. 79) The lighting modes of Taillight group



Ground Clearance



Ramp angle

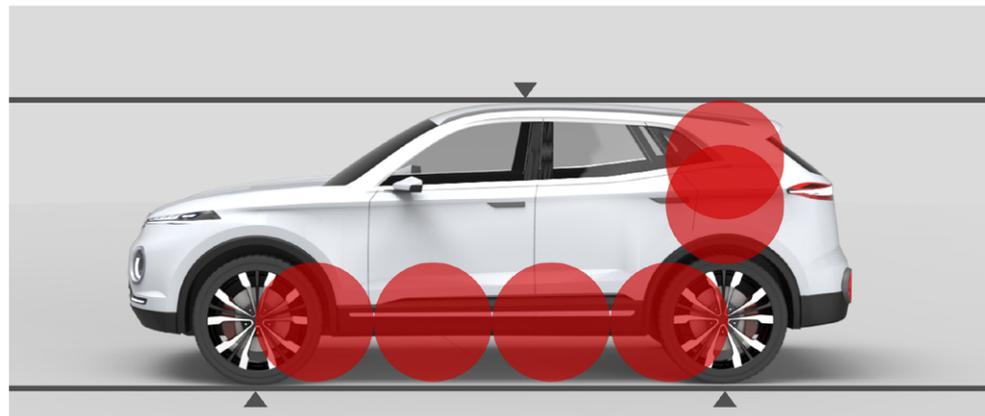


Approach angle



Departure angle

(Fig. 80) Road conditions through performance



(Fig. 81) Body proportions



*(Fig. 82) Quick Charging for plug-in hybrid*



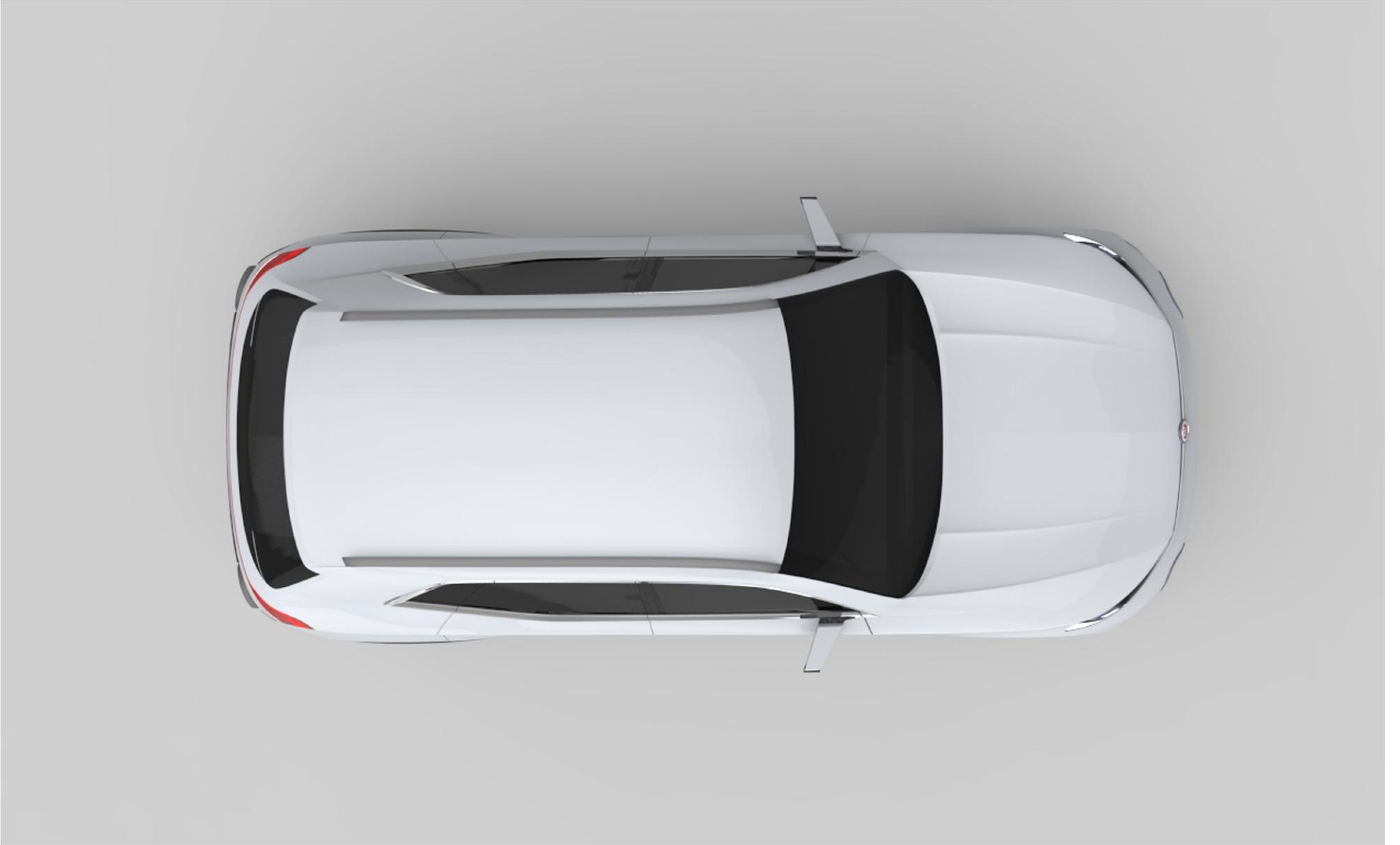
*(Fig. 83) Render perspective 2*



*(Fig. 84) Render perspective 3*



*(Fig. 85) Render perspective 4*



(Fig. 86) *Render top view*



(Fig. 87) Render partial view 1



(Fig. 88) Render partial view 2



(Fig. 89) Render perspective 5



(Fig. 90) Render perspective 6

AVANTI



The "**AVANTI**" project aims to design a concept **urban sporty SUV**. Based on the Fiat family styling gene to explore the Fiat **forward styling language** for the next 1-3 years. Emerged an idea of dual styling design ways for Fiat brand. "AVANTI" is to make the sense of technology and futuristic modern touch. Distinguished Fiat 500 series with the fashion and retro looks. Using **new ideas from the existing resources to bring out an all new styling design direction for the brand.**

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