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FORWARD MOMENTUM

FIA PRESIDENT JEAN TODT ON
THE CHANGING FACE OF MOBILITY
AND MOTOR SPORT



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ISSUE
#18

AUTO

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THE FIA

The Fédération Internationale de l'Automobile is the governing body of world motor sport and the federation of the world's leading motoring organisations. Founded in 1904, it brings together 236 national motoring and sporting organisations from over 135 countries, representing millions of motorists worldwide. In motor sport, it administers the rules and regulations for all international four-wheel sport, including the FIA Formula One World Championship and FIA World Rally Championship.

THE FIA FOUNDATION

The FIA Foundation is an independent UK-registered charity that supports an international programme of activities promoting road safety, the environment and sustainable mobility. It was established in 2001 with a donation of \$300 million from the FIA and is governed by a Board of Trustees. Among its activities, the Foundation participates in various UN road safety and environment related partnerships and is a member of the UN Global Road Safety Collaboration.

THE GLOBAL INSTITUTE

The Global Institute for Motor Sport Safety is an international organisation based in Switzerland that undertakes research to improve motor sport safety worldwide. As the safety research partner of the FIA, it conducts practical research at all levels of motor sport, from professional categories to grassroots racing. It aims to provide motor sport with the means to operate as safely as possible, and to use safety research for the benefit of public roads and society in general.

Dear reader,

This is a particularly important year for both pillars on which our Federation is based - motor sport and mobility. In motor sport, there have been significant changes to the regulations in two of the most popular championships, Formula One (which is also entering a new era in terms of its management) and the World Rally Championship.

On the road, even greater efforts are going into improving safety. On 10 March, a major global advertising campaign backed by JCDecaux will launch, featuring very special ambassadors. These and other topics are discussed in our cover story.

This edition also sees the launch of a series of exclusive interviews with people who play a pre-eminent role in the automotive world: the first to have accepted our invitation is the CEO of FCA and Ferrari, Sergio Marchionne. Also chatting with AUTO about his passion and interest in cars and motor sport is Prince Albert of Monaco.

Looking to the future and the past, we pick out 10 new developments from the recent CES in Las Vegas, an event which is becoming increasingly important for car constructors, while also remembering an F1 car of which I am particularly fond, the Ferrari F1-2000, with which Michael Schumacher brought the Drivers' title back to the team after an absence of 21 years. Enjoy the read.



A handwritten signature in black ink, which appears to read 'Jean Todt'.

Jean Todt,
FIA President

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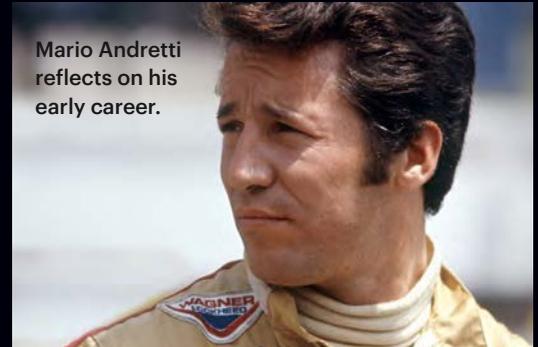
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Maurice Turrettini on the success of the Geneva Motor Show. (Above)

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POWER IS NOTHING WITHOUT CONTROL

UP
FRONT

2017 WRC

OGIER'S FLYER

This year's Rallye Monte-Carlo might have signalled the start of an exciting new era for the FIA World Rally Championship, but there was no denying the driver who has dominated the sport for the last few years.

Sébastien Ogier got his latest WRC title defence off to the perfect start with a fifth Monte-Carlo win, albeit in a different car and with a new team. The Frenchman and co-driver Julien Ingrassia took their Ford Fiesta WRC to a 2m15s victory for the M-Sport World Rally Team, with team-mates Ott Tänak/Martin Jarveoja in third.

Between them Jari-Matti Latvala/Miikka Anttila were second in a Toyota Yaris WRC, marking a successful return to top-level rallying for the Japanese manufacturer following a 17-year absence. Latvala took over the runner-up spot after Tänak encountered engine problems on the final leg of the four-day contest based mainly on the snow-covered mountains around the principality. Long-time leader Thierry Neuville fell down the order after damaging the suspension on his Hyundai i20 Coupe WRC, but went on to claim maximum Power Stage points at the finish.

The 2017 WRC cars look more visually dramatic and produce more power thanks to a raft of new technical regulations designed to offer a greater sporting spectacle.



FIESTA TIME

Sébastien Ogier's Rallye Monte-Carlo victory came on his debut for the M-Sport World Rally Team in a new-look Ford Fiesta WRC. The Frenchman is bidding for his fifth WRC crown this year.

Jaguar XKSS rebuild

MODERN CLASSIC

Sixty years ago, Jaguar launched what many regard as the world's first supercar, the XKSS. This year it has rebuilt it bolt by bolt to the exact 1957 specification, with nine models being delivered to customers around the world.

The XKSS was originally made by Jaguar as a road-going conversion of the Le Mans-winning D-type, which was built from 1954-'56. In 1957, nine cars earmarked for export to North America were lost in a fire at Jaguar's Browns Lane factory in the British Midlands; meaning just 16 examples of the XKSS were built.

Last year, Jaguar announced that its Classic division would build the nine 'lost' XKSS sports cars for a select group of established collectors and customers. Jaguar Classic's expert engineers worked with the original frames and from there produced CAD to support the build of the chassis.

Under the bonnet, the XKSS boasts a 262bhp 3.4-litre straight six-cylinder Jaguar D-type engine. Inside, everything from the wood of the steering wheel, to the grain of the leather seats, through to the brass knobs on the dashboard is precisely as it would have been in 1957.

Where the car has been brought into the modern world, however, is through improved driver and passenger safety.

"We only departed from the original designs where safety became an issue," explains Kev Riches, head of Jaguar Heritage Engineering. "Our petrol now contains a percentage of ethanol, and that would eat through the original fuel bag within a year. So to avoid fuel spills and fires, we allowed a modern synthetic material for the fuel system."





CATS WITH THE CREAM

Established Jaguar collectors and customers are believed to be paying between \$1.5-2 million each for one of just nine classic XKSSs, rebuilt to the exact 1957 specification.



UP FRONT

UP
FRONT

AUTO NEWS

In this issue, Prodrive unveils its Renault Mégane WRX challenger, FIA F3 tightens costs for 2017, Indian student wins second Watkins Scholarship, Euro NCAP marks 20 years of life-saving crash tests and the future of motor sport in the Middle East and Africa takes shape

PRODRIVE SET FOR 2018 WRX ENTRY

Motor sport outfit Prodrive is set to enter the FIA World Rallycross Championship in 2018.

The company has joined forces with Guerlain Chicherit, former Free Skiing World Champion and FIA Cross Country Rally World Cup winner, to form a new team called GCK.

Their entry is based on the Renault Mégane IV and will be designed from the ground up to the latest World RX regulations. Prodrive will design the car at its headquarters in Banbury, UK, including developing a bespoke two-litre turbocharged engine. The new Renault Mégane RX will be unveiled at the 2017 World Rallycross round in Lohéac, France, on 1 September 2017. Chicherit will continue to use the 2017 season to enter select rounds and will begin testing the Mégane RX this autumn, ready for the 2018 season start.

While best known for rallying and circuit racing, Prodrive has recent rallycross experience having developed the MINI WRX in 2013 to compete in the Global Rallycross Championship (GRC), where it won on its debut at X Games Munich. Prodrive also develops its own engines in-house and has previous experience of creating bespoke, non-production-based motor sport powertrains.

David Richards, Prodrive Chairman, said: "It has long been an ambition of ours to compete in the FIA World Rallycross Championship. It is the fastest-growing motor sport series in the world and gives us the opportunity to use all our engineering experience to create a car capable of winning the world title."



Prodrive will design the Renault Mégane RX for Guerlain Chicherit's team to enter in WRX.





FIA FORMULA 3 OFFERS ENHANCED PACKAGE FOR 2017

The FIA Formula 3 European Championship has updated its sporting regulations for 2017 in a bid to further reduce the costs of competing and establish performance equity.

An age limit of 25 years has been imposed on drivers intending to participate in the championship in 2017. The prize money fund for rookie drivers that was introduced in 2016 will remain in place this season and will be increased and expanded to also include the team and driver championships. The entry fees for teams have been reduced, with the maximum number of cars a competitor may enter for the championship remaining at four.

For engines, multiple engine manufacturers and tuners can continue to supply the teams and the homologation period for the F3 engine has been extended by two years until the end of December 2019. This will result in cost reduction as the engines will be used without further development for two more years, while the alignment of the chassis and engine homologation period assures further financial savings.

The rules on penalties for engine replacements have been reviewed for 2017. While engine changes will still be harshly penalised if considered out of performance reasons, for replacements due to mechanical or electrical failures a one-time 10-place grid penalty will be imposed on the next race the driver will compete in (instead of facing the same penalty for three races as was the rule in previous seasons). If the engine change becomes necessary following an unavoidable accident on track, no penalty will be incurred.

A staff limit for race weekends has been introduced to control costs and for sporting fairness. Teams have agreed to share information on throttle, brake and speed after the first qualifying session. Respective data from the fastest lap of the fastest driver of each of the two fastest teams will be made available to all competitors, helping smaller, less experienced teams and generating closer competition among the drivers.

These changes are in addition to the updates to the technical regulations announced at the end of 2016.

AUDI DEVELOPS TRAFFIC LIGHT COUNTDOWN SYSTEM



Audi has become the first automobile brand to connect its vehicles to a city's infrastructure by displaying traffic light phases in the car.

The car maker has hailed the initiative as a way to improve driver efficiency as well as an important step towards autonomy. It says that Traffic Light Information optimizes traffic flow, saves valuable time and reduces environmental impact, and there are plans to introduce the system into Europe.

Audi of America is working with several cities in North America to upgrade the infrastructure for V2I technology. "For the first time, our cars are exchanging data with traffic infrastructure in real time," said Andreas Reich, Head of Electronics Pre-Development at AUDI AG. "Drivers can adapt their behaviour to the situation and move through city traffic in a much

more relaxed and controlled way."

All Audi A4 and Q7 models produced for the US market since last June and equipped with Audi connect will include the V2I function. In the US, municipal traffic management centres will communicate the traffic light data to Audi's project partner Traffic Technology Services. Data is prepared and sent to the car's on-board computer via a fast Internet connection.

The first function of the Traffic Light Information V2I component is called Time-to-Green. In the Audi virtual cockpit or head-up display (left), drivers see whether they will reach the next light on green while travelling within the permitted speed limit. If not, a countdown is provided of the time remaining until the next green phase – and drivers can take their foot off the accelerator in good time.

FOUNDATION SUPPORTS EMISSIONS TEST INITIATIVE

A new FIA Foundation report calling for a global independent real-world testing initiative for vehicle emissions has been launched at the annual meeting of the US Transport Research Board (TRB).

The FIA Foundation hosted a reception at the TRB annual meeting in Washington DC to highlight the importance of its 'Safe, Clean, Fair and Green' mobility agenda. At the US event in January, Sheila Watson, FIA Foundation Deputy Executive Director, emphasized the importance of partnerships in promoting work on road safety and clean air. She introduced two initiatives supported by the Foundation to reduce vehicle emissions and save young lives, contributing to the Foundation's aim of a safe and healthy journey to school for every child.

The first such partnership is with the International Council on Clean Transportation (ICCT), which works

closely with the Foundation as members of the Global Fuel Economy Initiative (GFEI). Drew Kodjak, Executive Director of the ICCT, the organisation which uncovered the VW 'dieselgate' scandal, explained how its researchers had been examining the discrepancy in results of on-road and off-road tests in different vehicles in Europe and the US, leading to the discovery of the scandal. Kodjak stressed the important role of regulators in enforcing compliance, and the vital need for future work to reduce the capacity for such cheating because of its impact on air quality.

Also at the event Natalie Draisin, FIA Foundation North American Manager, spoke at two meetings of the subcommittee on global road safety, and presented the Foundation's focus on protecting children from unsafe roads and polluted air through its child health initiative.



Natalie Draisin, FIA Foundation North America Manager, spoke about protecting children from unsafe roads and polluted air.



INDIAN STUDENT WINS WATKINS SCHOLARSHIP

Indian student Nikil Abraham has won the 2017 Watkins Scholarship, a research position in motor sport safety jointly funded by the FIA, the FIA Foundation and the Global Institute for Motor Sport Safety.

Named after motor sport safety pioneer Professor Sid Watkins, the scholarship offers a one-year position with the Global Institute, which is the research partner of the FIA.

Abraham, who holds a Masters Degree in Automotive Engineering from the FH Aachen University of Applied Sciences, was chosen by a panel of experts including Formula One Managing Director Ross Brawn, German Motor Sport Federation Medical Director Michael Scholz and Global Institute General Manager Research Laurent Mekies.

Abraham has previously completed several periods of relevant work experience, including an internship spent analysing whiplash injuries during rear-end crashes for Toyota Motor Europe and researching single vehicle accidents with road restraint barriers at Trinity College Dublin.

"It is going to be a challenging but very interesting year and I look forward to continuing the legacy of Professor Watkins and making a real difference to motor sport safety," said Abraham.

Luc Argand, the Global Institute Chairman, added: "We are pleased to welcome Nikil to the Global Institute as our second Watkins Scholarship recipient. He will be a true asset to our team as we continue our research to improve motor sport safety worldwide."

The inaugural winner of the Watkins Scholarship, Sameer Patel, worked on several high-profile projects in F1, world rallying and other FIA championships, and has now taken up a full-time role with the FIA as a research engineer.



 The Road to Zero Coalition in the US wants to eliminate road traffic fatalities within 30 years.

FIA FOUNDATION BACKS BID TO END FATALITIES

The FIA Foundation has joined forces with the Road to Zero Coalition in the United States, which aims to end traffic fatalities in the country within the next 30 years.

The Foundation together with the John Hopkins Center for Injury Research and Policy co-sponsored a seminar called 'The Road to Zero: Research, Policy and Practice Needs' at John Hopkins University in Maryland in January. The main speaker was the Honorable Mark Rosekind, until recently Administrator of the National Highway Traffic Safety Administration.

"We lost 35,092 people in 2015," said Rosekind at the seminar. "That's the equivalent of a 747 crashing weekly for a year. If this happened two weeks in a row, we would close the entire aviation system – but when it comes to cars, we accept this." He pointed to three 'lanes' to explore in order to decrease the fatality rate: human factors, highly automated vehicles and proactive vehicle safety.

Discussing proactive vehicle safety, he pointed to Global NCAP, funded by the FIA Foundation, as a way to democratise safety particularly in areas where cars are still being produced without airbags.

Natalie Draisin, FIA Foundation Manager of the North American Office, said: "The Foundation welcomes the opportunity to contribute an international perspective to the Road to Zero Coalition. By sharing successes from other countries, we can implement proven initiatives rather than re-inventing the wheel."

UP FRONT

EURO NCAP CELEBRATES 20 YEARS OF LIFE-SAVING CRASH TESTS

Euro NCAP, the new car testing programme, last month marked the 20th anniversary of its first crash tests, revealing that in the years since its launch it has helped save more than 78,000 lives on the roads. Over the past two decades the organisation has published more than 630 safety ratings and crash-tested some 1,800 cars.

NCAP's first tests, backed by the FIA, exposed safety failings in top-selling family cars, forcing a rethink in the way vehicles were

designed to prevent accidents and save lives. Now, nine out of 10 cars sold on the European market hold a Euro NCAP rating and the motor industry actively supports the development of new requirements for the top safety ratings.

"We are very proud that Euro NCAP's programme of safety tests has achieved major, life-saving improvements in cars and helped Europe reach the lowest road fatality rate globally," said Secretary General, Michiel van Ratingen.



 For 20 years, Euro NCAP crash tests have improved car safety.



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The fifth edition of the FIA Sport Conference will gather the FIA's 140 National Sporting Authorities. As part of this unique event, the FIA Sport MotorEx, held for the first time in the FIA's new Logistic and Technical Centre in Valleiry (FRA) and dedicated to professional motor sport industry exhibition and networking, will bring together companies experts in their own sector.

To learn more on those unique events, Visit FIA.COM/FIA-EVENTS or contact sfillastre@fia.com



FIA President Jean Todt speaks at the MENA FIA Sport Congress in Beirut.

LEBANON HOSTS FIA SPORT REGIONAL CONGRESS

The future direction of motor sport in the Middle East and North Africa was debated in Lebanon last month as the third MENA FIA Sport Regional Congress took place in Beirut.

Hosted by FIA member organisation the Automobile and Touring Club of Lebanon, the event was opened by FIA President Jean Todt, who said: "In the Middle East and North Africa, motor sport continues to develop. In addition to the traditional, long established events on the FIA calendar – including the Formula One World Championship and World Endurance Championship – we saw in Marrakesh last year the region's first FIA Formula E race held. This round, which was part of the COP 22 climate change conference programme, was a success."

Discussions at the Congress included the pursuit of continued growth in grassroots motor sport in Middle Eastern and North African countries and the success of headline FIA events that visit the region each year. Rally in particular forms a strong part of the region's motor sport culture, and the Congress was an ideal opportunity for the region's sporting authorities to come together to propose solutions to the issues facing the discipline in the

MENA countries.

It was announced at the congress that the FIA will be sending experts to some of these rallies to test the Accident Data Recorder (ADR) system in order to better understand the specific features of accidents seen at desert events.

The objective is to enable, over time, the development of new safety equipment tailored to the particular characteristics of these renowned and respected rallies.

Delegates were also encouraged to build on recent success stories made possible by the FIA Sport Grant Programme. For example, the Young Driver Training Programme established in Lebanon last year allowed 30 young drivers to hone their track skills. As a result, four budding talents took part in a Formula 4 test, with one racer going on to compete in the British Formula 4 Championship.

Other projects in Cyprus, Jordan and Oman also benefited from these grants.

"The FIA stands alongside Clubs in the MENA region to help in developing our sport," concluded the FIA President. "This Congress held here in Beirut contributes to this dynamic and I have no doubt that the workshops offered built on these efforts."

IOC JOINS FORCES WITH FIA TO FIGHT FOR ROAD SAFETY

FIA President Jean Todt and IOC President Thomas Bach last month signed a Memorandum of Understanding concerning the promotion of joint road safety campaigns across the organisations' shared platforms and ahead of sporting events.

It has been agreed that the IOC will promote road safety across its media channels and the Olympic Movement network. This includes support for the upcoming FIA #3500LIVES campaign, set to be launched this month. A collaboration with outdoor advertising company JCDecaux, the campaign sees a number of high profile athletes promoting road safety messaging across the JCDecaux network. The roster of campaign ambassadors includes five IOC athletes: Rafael Nadal, Yohan Blake, Vanessa Low, Haile Gebrselassie, and Wayde van Niekerk.

FIA President Jean Todt said: "I am delighted to formalise co-operation with the IOC on the promotion of key road safety messages across the different channels of the Olympic Movement. The support of the IOC and its athletes can help to engage young people on this issue in a powerful way."

IOC President Thomas Bach added: "Making the world healthier and safer for all is a team effort. It is my hope that by working together, we can make a difference, in raising awareness and educating the public about the importance of road safety."



Jean Todt and Thomas Bach.



NISSAN CONDUCTS AUTONOMOUS VEHICLE TESTING IN EUROPE

Japanese motor manufacturer Nissan recently conducted its first European tests of autonomous vehicles with a public demonstration on the streets of London.

The firm has already engaged in public-road testing in Japan and the United States and the London tests allowed participants in the passenger and rear seats of one of its vehicles to experience the company's latest technology, including millimetre wave radar, laser scanners, cameras, high-speed computer chips, and a specialised human-machine interface.

"This test of Nissan's forthcoming autonomous drive technology in the demanding conditions of London streets underlines our commitment to delivering Nissan Intelligent Mobility to our customers," said Takao Asami,

Senior Vice President, Research and Advanced Engineering.

The London test follows recent announcements that upcoming versions of its Qashqai and LEAF models, will be equipped with ProPILOT autonomous drive technology to enable single lane autonomous driving on motorways. Meanwhile, last year in Japan, Nissan launched the Serena, its first model to be fitted with the technology.

Nissan also has plans for the technology to be introduced in the US and Chinese markets. A multi-lane autonomous driving technology will enable automatic lane changes on highways and is planned for introduction in 2018 while autonomous driving on urban roads and in intersections is planned for launch in 2020.

FIA HOSTS FIRST RACE DIRECTORS SEMINAR IN GENEVA

As part of the FIA's mission to support the excellence of its sporting officials, more than 160 volunteers from around the world journeyed to Geneva last month for the inaugural Race Director Seminar and International Stewards Programme.

The event covered a range of topics, including the expanding role of technology in the decision-making process, clear communication of rulings and the importance of the FIA's Race True anti-doping programme.

Opening the sessions, FIA Deputy President for Sport, Graham Stoker said: "You are our key representatives at FIA events the world over. You are the ones that exercise the exclusive sporting power our organisation has. From the moment you arrive at the circuit, everybody is looking to you."

From 2018, attendance at the event will become compulsory for all international officials filling Race Director and stewarding roles as part of the FIA's Centre of Excellence.

Commenting on the importance of the meeting, FIA President Jean Todt said: "We will continue to assist our valued volunteers in reaching professional levels in the way they hold positions as race directors and stewards. We are aware of the critical role they play in ensuring the success of our championships."



FIA Deputy President for Sport Graham Stoker.

AUTO EVOLUTION

Since our first issues in 2012, AUTO has sought to present the very best stories from the FIA's twin pillars of mobility and sport. Now, after five years, AUTO magazine is evolving and our Q2 edition, to be published in June, will see the launch of an all-new format for the magazine. In a bid to bring you even more of the best in motor sport and motoring we will introduce a new design ethic but most importantly we will

present those stories in a larger format. The magazine size will increase from its current 23cm x 30cm to 28cm x 34.7cm. Like the automobile itself, AUTO is moving with the times and the opinion of our readers on how we navigate this new project is crucial to how we will move forward. We'd love to get your feedback on the proposed changes, so please email your views to: auto@fia.com



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AUTO
ASKS

QUESTION:

IN AN AGE OF ON-DEMAND SPORTING ACTION, DO MOTOR SPORT EVENTS NEED TO BE SHORTER?

*Is it the duration of a sporting event that makes it attractive to audiences, or will pure entertainment always win the day?
AUTO sought the views of three motor sport insiders*



DAVID COULTHARD

GRAND PRIX WINNER AND TV PUNDIT

In its original form grand prix racing was a much longer event than the Formula One we know now – a race of around 306km with a total time of four hours including stoppages. Curiously that duration came about after a marathon 2011 Canadian GP, a race people still talk about as a classic. So for me it's about entertainment rather than duration.

If you look at other sports, football matches are 90 minutes long, Wimbledon finals can stretch to many hours, but are often incredibly spectacular. With both it's about the unfolding drama and F1 races are no different. There is a build-up and anticipation to a grand prix that makes it a truly spectacular event. Also, given the range of race durations we have across the season – the shortest, Monza, being about one hour and 20 minutes and the longest being Singapore at two hours – I think we have enough variation to fulfil the need for quick-fire action and longer, evolving races.

When you have a race like that 2011 Canadian Grand Prix or last year's Brazilian GP, which lasted just over three hours due to rain and stoppages, people remain excited and engaged. They talk about the incidents and accidents more than they say, "that was good, and thank god it was only an hour long".

I accept that kids are consuming things in shorter formats, but I feel they consume in that manner when they're clicking through things with their friends – finding something unusual or amusing. If they're actually playing Minecraft or whatever game they're into they can do that for hours and that's because they're engaged with it.

F1 is as popular as it's ever been. We're not seeing a drop-off in popularity, but we are seeing viewing figures declining because of a move to the pay-per-view model. The commercial rights holder put the nail in the coffin of big TV audiences because of the desire to extract greater revenue – that benefits the sport's owners and teams but not the audience, as not everyone can afford pay-per-view.

For me, that's a more relevant argument. Are you chasing audiences that are still there but just don't have access?

Physically, F1 should be about the drivers having had to work hard enough for them to get out looking tired. MotoGP is a much shorter format at the pinnacle of motorbikes. Again not to diminish MotoGP, but if we had a 40-minute grand prix is it really going to be any better?

FELIX ROSENQVIST

FORMULA E DRIVER

I think some races may feel very long because the action is not there, but there are also those exciting races that you wish were a bit longer. To make shorter races is not necessarily the key.

You have to look at each discipline with a different perspective. For example, I definitely don't think rallies should be shorter. In rallying, it's a big adventure with endurance and the crew that finishes all the stages the fastest is the winner.

In a world where everything is instant and everything is online, I think Formula One could be seen as being behind. When it comes to putting up YouTube clips, Instagram, Facebook and so on, the viral spread is not there and that's because of the traditional TV rights model Formula One operates under. It feels as though it is purposely limiting people from sharing what's going on.

If you have clips that can go viral, then it can be a lot like football around the world. Some people will sit and watch football for 90 minutes but in the end there may be one moment that is very interesting and everyone will watch that one clip on YouTube the day after. We are missing that viral aspect and it's a big loss.

Formula E has been quite good in the way they are thinking about the media and reach through sharing highlights and replays. It obviously doesn't have the spread yet that Formula One has, so the difference has to be made in F1 first, but I think they could learn a lot from Formula E at the moment. They have understood the way you have to treat your fans to have a sustainable media model in the same way that major American sports do.



OLIVER CIESLA

FIA WRC PROMOTER

Rallying itself is not only the World Rally Championship. Under the roof of the FIA you also have cross-country rallying or events such as Dakar that feed the endurance element the sport can have, or that the sport can predominantly focus on.

Then we have other rally competitions like the European or world championships that do not necessarily also focus on the same attributes. They can focus on other elements, such as speed, reliability, aspects that a manufacturing brand would like to be associated with.

Those elements all have to be considered in your events. How can I translate those things to an audience? What is the media possibility for me to bring that sport to the fan? And here, we learned that if I have a large number of stages each weekend that allows me to frequently tell stories about the start, split times and the finish; to tell those stories again and again. This creates more traffic, more attention and this is what teams and sponsors want.

However, with 300km-long competitive stages and all the liaisons, WRC events still have more than 1000-1200km per weekend, so the tradition is maintained.

And that's important, because that duration provides income opportunities for event organisers. The more stages they have, the more hospitality, the more viewing opportunities there are, the more media content a promoter can produce and sell.

In the past couple of years our strong focus has been on building the digital platforms and establishing a relevant TV format, and after four years I think that has worked pretty well as we've seen continuous growth in broadcast hours, online users and TV audiences.

For me, that's the essence. It's not about total duration; it's about the shape of that time frame. Throughout the weekend we need to deliver information on a continual basis on digital platforms but also create a solid television package such as what we are doing with the Power Stage live or the event highlight show, features that create so much media attention that it's worthwhile putting them on TV.

What would we like to do in the future? We feel that an important element for growth would be to increase the number of events, giving us the opportunity to have more events in different time zones beyond Europe and to bring rallying to more people, to ignite the passion for a rally by visiting a location once or twice and for it to be accessible. That's what we need to help this sport get a foothold in new markets.



**TECH
REPORT**

F1 crash tests

BARRIER BREAKTHROUGH



New high-speed barriers have been implemented at Formula One circuits in 2017, following tests by the Global Institute for Motor Sport Safety

TEXT: MARC CUTLER



For Carlos Sainz Jr, it was all over in a few seconds. The Spaniard lost control of his Toro Rosso at Turn 13 during the third practice session of the 2015 Russian Grand Prix, glanced off the nearside wall damaging his brakes and slammed nose-first at high speed into the barrier at the far end.

He hit that barrier head-on at 153km/h, one of the highest impact speeds measured in Formula One in the last few years, and came to a complete stop in about four metres. The Accident Data Recorder on his car registered a deceleration peak of 42G, but thanks to the absorption properties of the barrier Sainz Jr was unhurt.

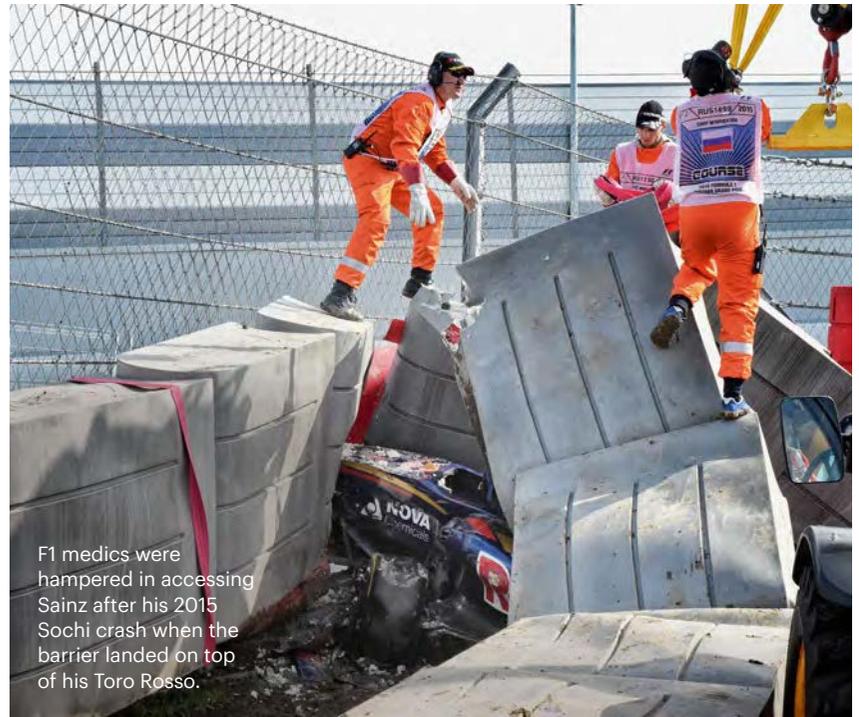
The only problem was that it was difficult for the F1 medical team to know this as the first row of the barrier came to rest on top of the front of the car and driver during the impact.

This is a situation the FIA wants to avoid in future as it could cause problems in cases where a driver has to be removed from a car in short time because of fire or serious injury. So this is why it tasked its research partner, the Global Institute for Motor Sport Safety, with investigating solutions.

UNDERSTANDING THE ACCIDENT

The first thing the Global Institute had to do was understand why the barrier behaved in that way. Did the car 'submarine' under the barrier or was there another reason for it to end up on top of the driver?

"It looked like the barrier had worked well so we were confused by what had happened and why it was looking like the car went



F1 medics were hampered in accessing Sainz after his 2015 Sochi crash when the barrier landed on top of his Toro Rosso.



The trolley is embedded in the barrier after one of the full scale impact tests.

under the barrier,” says Global Institute General Manager Research, Laurent Mekies.

After conducting a full analysis of the crash using data recorded from the car, Global Institute Senior Research Engineer Andy Mellor studied additional videos of the impact to understand more. By going through the footage frame-by-frame, he found that the barrier started to go up a couple of tenths of a second after the first contact with the car.

“This was a huge finding because this proved that the car could not have simply submarined the barrier, something else had happened,” says Mekies.

In fact, it revealed that the lifting occurred at very low energy levels, especially during the rebound phase, which was mainly introduced by the bending of the metal Armco behind the barrier in the last part of the impact. This led to an intense five weeks of testing, involving fully recreating the accident at Dekra’s test facility in Eggebek, Germany, to find a solution.

TESTING GROUND

“The first step was trying to reproduce what happened [in Sochi] because if you don’t reproduce it with your testing facilities then you are unlikely to be able to mitigate it,” adds Mekies. “So we set up testing with a full-scale barrier and a trolley at the same weight as an F1 car with a real F1 nose.”

Global Institute’s researchers undertook five test sessions – one recreating the accident and the rest testing the theories behind the barrier development. These took place over the course of five weeks, spread throughout 2016, with the stated aim of having the updated solution ready in time for the 2017 season. Simulations had already shown that 2017 cornering speeds would be up to 40km/h faster in high-speed corners, so barrier protection would be even more important.

Matteo Piraccini, Senior Research Engineer for the Global Institute, who led the project and managed these tests, says: “As soon as we were able to replicate the conditions of the Sainz crash, this was our reference, our starting point, and it was used to investigate deeply each aspect of barrier behaviour during single phases of the impact.”

This meant using the same specification of Armco at the back and the same barrier set-up with the same TecPro elements. Every detail of the configuration had to be accurate.

“The nose we used in the construction was a 2015 F1 nose [as per the Sainz crash] because one thing with developing a new barrier is also developing the interaction between the front crash device and the barrier itself. So we didn’t want to run the risk of introducing a new variable. We performed a 90-degree full-scale test targeting the same impact speed of the crash at Sochi.”

This was achieved using a pulley system, which fired the trolley at the barrier. The trolley was fully equipped with sensors, which were synchronized with high-speed cameras placed around the test area to ensure the correlation between data analysis and video.

Having successfully recreated the accident with a comparable level of deceleration peak, Piraccini soon discovered that to mitigate the lift-up tendency of the barrier during the rebound phase the main area to develop was not only the barrier configuration, but also the TecPro elements themselves. The solution was to give each element a lower centre of gravity, increased weight and a stronger internal structure, all of which would help to prevent the element from leaving the ground.

To achieve this, Piraccini worked with TecPro to develop the internal structure of the element. The new solution is heavier than before meaning that the element’s centre of gravity is now lower. At the same time, the new layout increases the strength of ▶

FROM SPEED TO SAFETY

Matteo Piraccini has been involved in Formula One for over 16 years. He started out as a Research and Development engineer for Minardi in 1999 and then continued with Toro Rosso when Dietrich Mateschitz became the new team owner. He went on to become a transmission specialist, a quality manager and ultimately chief designer of the car on the mechanical and systems side.

Now he is using this experience to help on the safety side of the sport as Senior Research Engineer for the Global Institute for Motor Sport Safety.

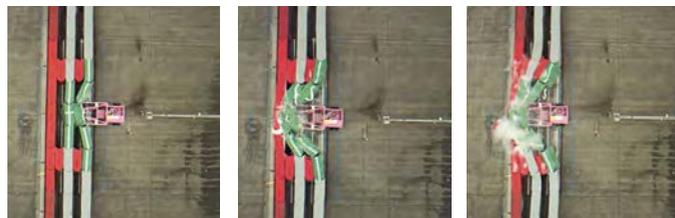
“This background is really important for me because having worked on the car design side it is much easier for me to jump on problems,” says Piraccini. “In this

particular case, knowing how car devices like the front nose can behave in an impact with the barrier has been crucial to investigate the Sochi accident in the first part of the research activity.”

Piraccini is relishing his new role. “It’s exciting for me to understand how massive the job is outside car design, which is something that I never thought about [before],” he says. “All the people who are working in Formula One are concentrated on the car performance, which is fine, but I did not expect to see so big an effort to guarantee safety outside the car.

“Motor sport safety is an exciting challenge for me, because it is based on a high level of engineering integrated with pure science and a lot of passion.”

TECH REPORT



“WE INVESTIGATED EACH ASPECT OF BARRIER BEHAVIOUR DURING SINGLE PHASES OF IMPACT.”

MATTEO PIRACCINI

Tests carried out by the Global Institute led to a design update for the TecPro elements.



the full internal structure, while improving the element's anti-penetration capability.

"Thinking about the Formula One nose like a knife, with the new element it is less easy for it to penetrate the internal structure because the new solution gives it more strength," explains Piraccini. "We are not talking about a brand-new barrier, we are talking about a natural step forward of the barrier that was designed and tested in the past, and which was already approved. This is the solution to mitigate a particular problem, increasing also the absorption properties of the barrier during an impact."

READY FOR RACING

For the 2017 F1 season it has been important that those circuits with high-speed corners implement these new barriers.

"We are not asking them to replace everything, just update the barriers where we think there is a critical area, considering a few elements in that critical area. We are talking about a minimum but important change in a few corners."

FIA F1 Race Director Charlie Whiting is particularly pleased that this project has been completed in time for the start of the new season. "I think it was important to get this project finished in preparation for this season as it will help circuits adapt more easily," he says. "Although when we embarked on the development we didn't know how fast the cars would be of course, we have a much better idea now."

With faster cars and wider tyres, the 2017 F1 season is set to be an exciting one. And with the implementation of new barriers in the highest speed corners it is set to be safer too. ■

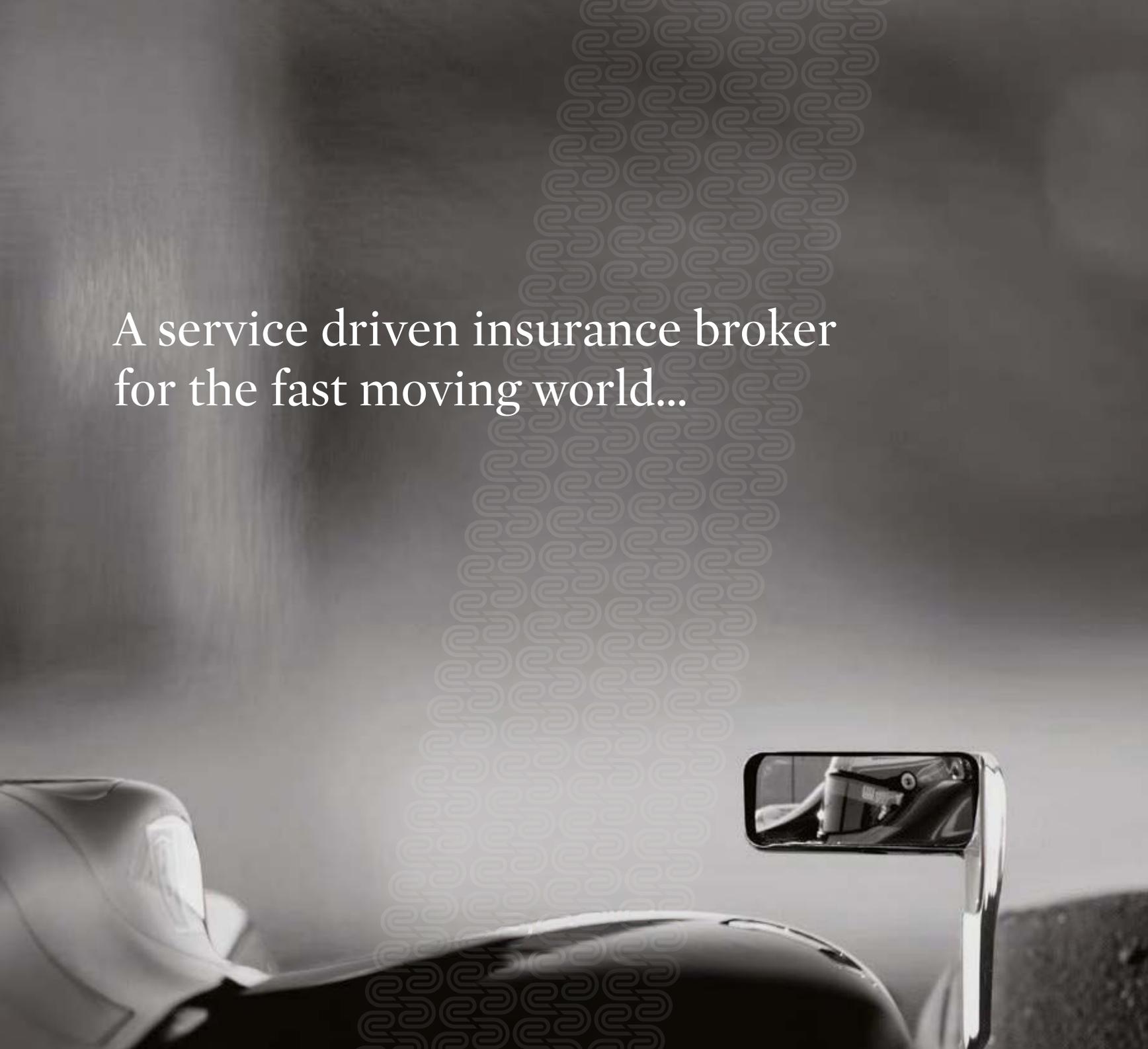
BARRIER FOR ALL SPEEDS

Once the new barrier solution was developed, Global Institute researchers continued testing to ensure the new element worked consistently for different barrier configurations. At the same time this gave them the opportunity to develop a guideline for TecPro barriers on all circuits and to explain the best ways to safely arrange barriers to protect drivers during crashes at different speeds.

"The result is that currently, in parallel to the tyre barrier guideline, we have got a TecPro barrier guideline that is

able to give another reference in terms of barrier set-up and different configurations at different impact speeds," says Matteo Piraccini, Senior Research Engineer for the Global Institute.

"This covers a wide range: from 52km/h low-speed shunts to heavy, 165km/h accidents. On one side it is enough for the circuits because we are not always asking for the strongest barrier, but by analysing corner-by-corner, we are asking for the right barrier that is safe and not more if it is not needed."



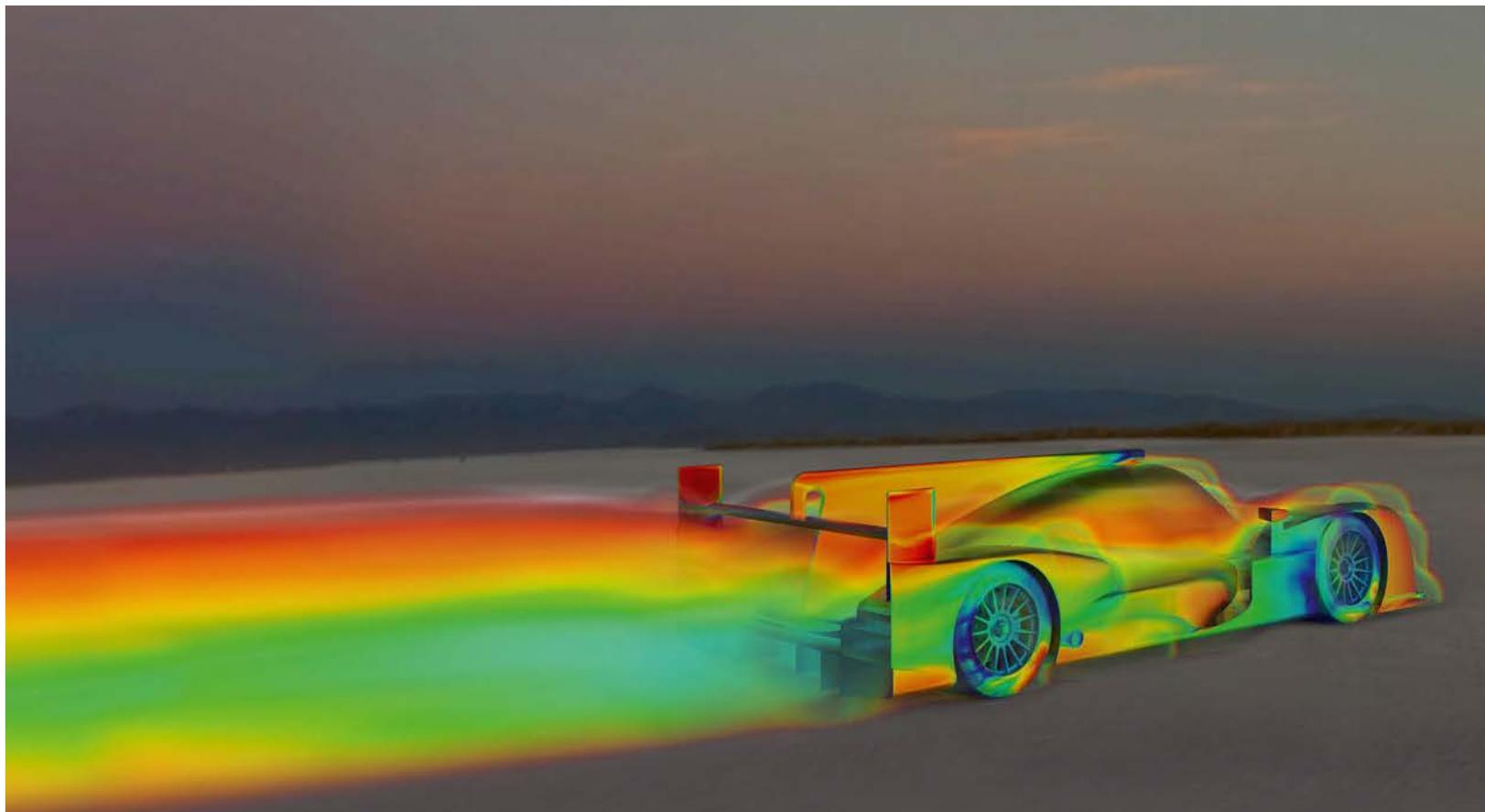
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**TECH
REPORT**

Sports car safety

LAUNCH EXPERTS

The FIA is working with computer simulation specialists to find solutions that will further prevent car launches in LMP1 and other high-speed categories

TEXT: MARC CUTLER

A sudden spin can be disastrous in motor sport. A good result can be lost and reputations ruined in the blink of an eye. But in the case of LMP1 cars, a high-speed spin can make the risk of a violent airborne crash a distinct possibility.

The danger of an LMP1 or other high-performance machine going airborne due to a sudden change in the forces acting on the car at top speed has been an occasional and dramatic problem for sports car drivers in the past. As a result of that risk, huge progress has already been made in recent years to try to prevent these sudden launches, with devices such as the shark fin engine cover, aerodynamically sculpted rear areas and special holes around wheel-arches introduced via regulation updates.

But the sudden airborne scenario remains a danger that is never far from the minds of drivers racing in the LMP1 category of the World Endurance Championship at Le Mans and other famous high-speed circuits around the world, and so the FIA is continuously working to limit the risk of such accidents. This is why the governing body recently joined forces with the Global Institute for Motor Sport Safety to conduct a new study to further minimise the risk of LMP1 cars taking off in the event of a spin or accident.

“We needed to accurately understand the conditions that lead to high lift force and ultimately take-off, especially with regard to Le Mans prototype-style cars,” says Bernard Niclot,

FIA Technical Director. “These cars can become unstable especially as the car is spun around in high-speed, high-velocity situations and we wanted to shift upwards the critical speed at which these aerodynamic instabilities occur, so that we minimise the likelihood of any further such instances.”

To help with this the FIA enlisted the expertise of leading simulation software provider Exa, which works with top automotive manufacturers including Tesla, Jaguar Land Rover, BMW, Ford and Volkswagen. Exa’s software is used to quickly and accurately predict, and – in the case of this study – recreate real-world conditions using aerodynamic and thermal management simulations.

To complement Exa’s software, a neutral LMP1 chassis was used for a new study to fairly represent all the manufacturers currently competing in the category. The simulations that were conducted recreated the most severe cases of cars spinning when previously running in straight-line situations and then becoming airborne, and were based on previous real-life incidents.

Part of the challenge of the study, according to Stéphane Létot, Exa’s Managing Director Western Europe, was to get precise results from the software as it recreated the dramatic conditions – very high speeds or yaw rates – that LMP1 cars encounter when racing flat out.

“These extraordinary conditions combined with the unusual, edgy shape of the race car made the transient full vehicle simulation very complex and challenging,” says Létot. “So to provide the

“THIS STUDY HAS CERTAINLY LEVERAGED THE FULL CAPABILITIES OF OUR SOFTWARE”

STÉPHANE LÉTOT, EXA

expected results with pinpoint accuracy, we had to utilise the broadest parameters of our simulation code as well as put in the broad experience of our and the FIA’s engineers. We can certainly say that this study leveraged the full capabilities of our software.”

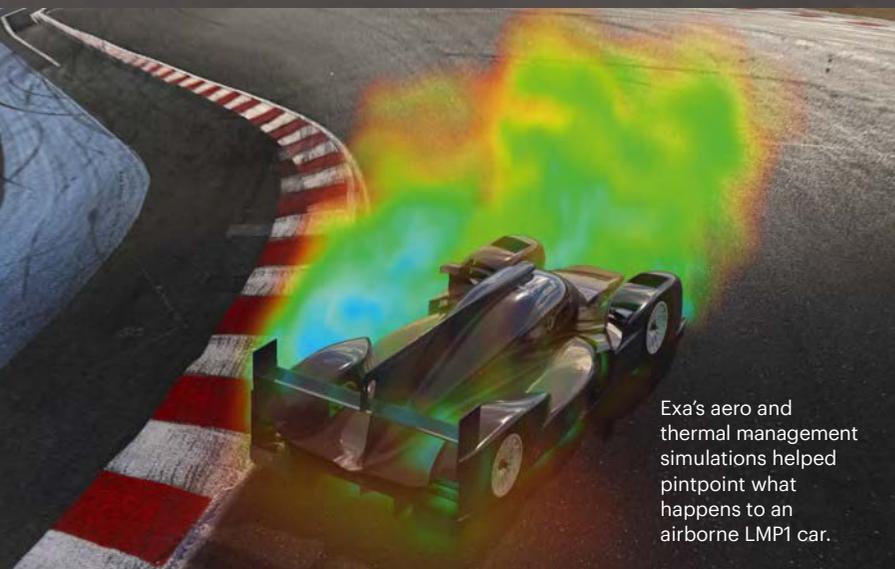
Before the study took place active aerodynamic systems were considered, but the simulation software found that passive solutions are equally effective.

As a result, the FIA has modified the LMP1 regulations for the 2017 World Endurance Championship season to try and reduce the risk of cars suddenly becoming airborne. This is achieved via the removal of legality panels on the front of the car. Another potential solution, which is still being considered by the manufacturers, is a new series of panels that would block the air passing over the floor of a car and through its rear diffuser to make sure it remains on the ground in the event of a high-angle spin.

“This would be a huge improvement,” says Niclot. “Now we have to find exactly how we implement it in real life. We are very happy with what we have been able to achieve from our cooperation with Exa.”

Thanks to the accurate results that were produced during the simulations, the LMP1 manufacturers positively accepted what was revealed. The FIA is now planning to conduct further research with Exa to improve the look of future LMP1 cars.

“Due to the accuracy of the results, the project concluded with the manufacturers having full confidence in the methodology used by the FIA and in Exa’s expertise in the field,” Niclot adds. “Everyone acknowledged the success of the collaborative effort, and that shows great promise for cooperation on further projects in future.” ■



Exa’s aero and thermal management simulations helped pinpoint what happens to an airborne LMP1 car.

AUTO
FOCUS

Car technology

THE FUTURE ON SHOW

Las Vegas' vast annual Consumer Electronics Show is fast becoming the automotive industry's go-to venue for showcasing its visions of future mobility. The 2017 show was no exception. AUTO looks at 10 of this year's most intriguing debuts

TEXT: JUSTIN HYNES



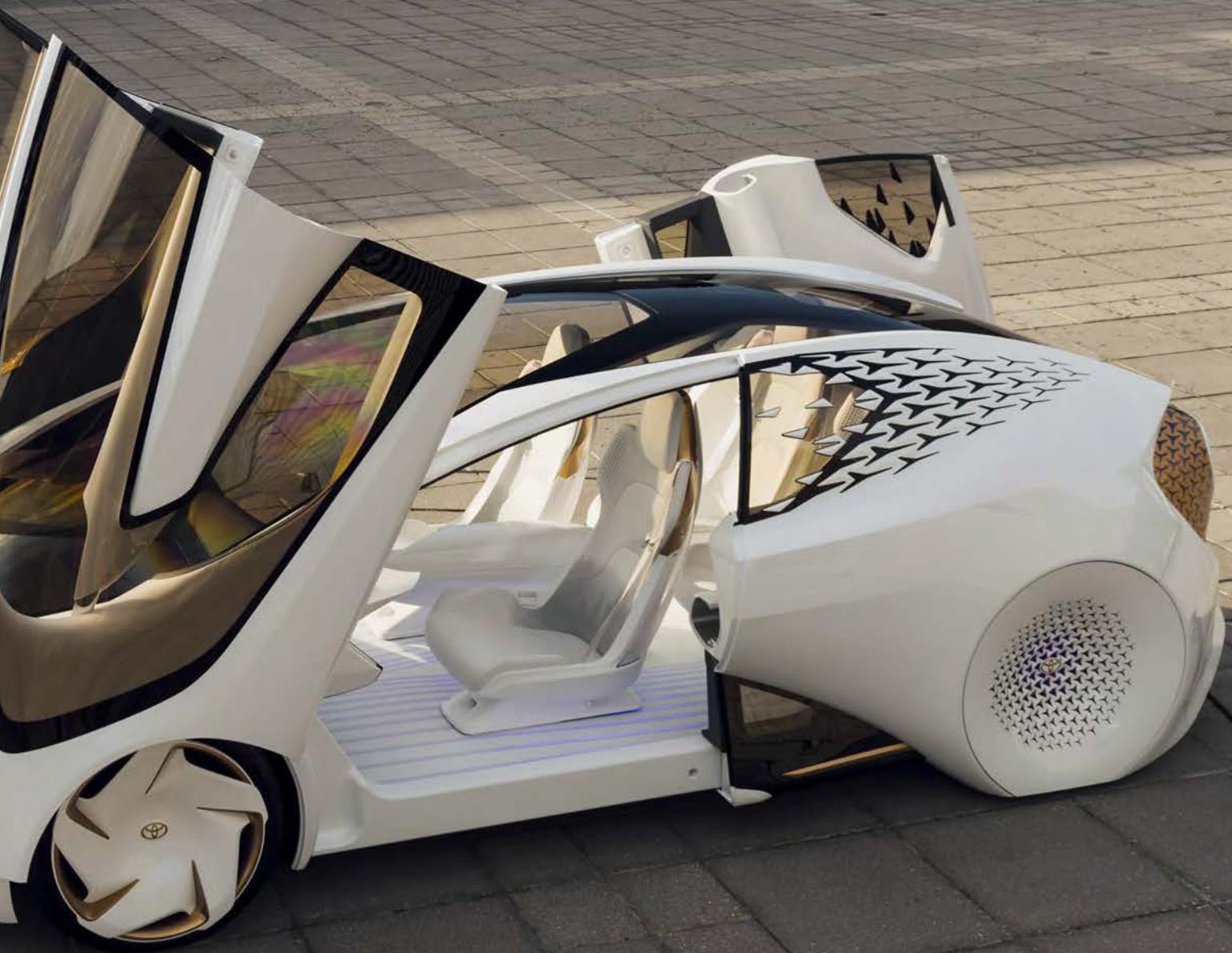
TOYOTA CONCEPT-i

Concepts of emotion and well-being were high on the agenda at the US-based Consumer Electronics Show, but Toyota perhaps explored the notion furthest with its Concept-i vehicle, which is designed to “foster a warm and friendly user experience.”

Created by Toyota’s California subsidiary Caltex Design Research, the concept car winks at onlookers and can display messages on its exterior (such as warnings to following cars). The company also says

that “thanks to the car’s advanced automated driving technologies, people with all levels of ability can enjoy the ride.”

“You’re still in charge of the car,” the company adds, “but through biometric sensors, Concept-i can detect what you’re feeling. That information is then analysed by the car’s AI. That’s when the automated features kick in. The AI will analyse your emotion, make a recommendation and, if necessary, take over and drive you safely to your destination.”

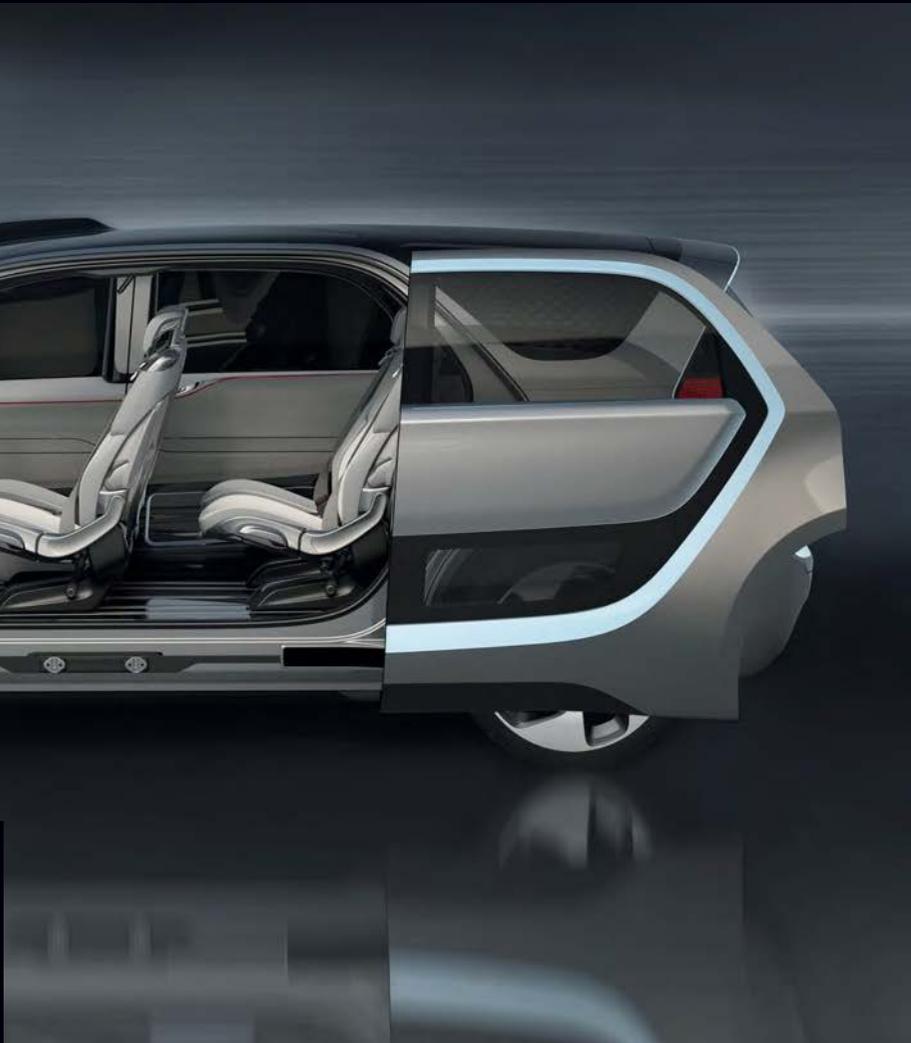




CHRYSLER PORTAL

US car maker Chrysler targeted the idea of the vehicle as a bridge between work and home with its electric Portal concept. Featuring sliding doors, the car has a large interior space that thanks to seats mounted on parallel tracks can be configured to the user's preference.

It's semi-autonomous, but can be upgraded to full autonomy, which then affords driver and passengers the ability to tap into its vehicle wireless network to access a range of Cloud-based applications. The Portal concept is estimated to have a range of more than 400km on a full charge, while DC Fast Charge (350 kW) recharges the battery pack to 240km of range in less than 20 minutes.



BOSCH CONCEPT CAR

It wasn't just full-scale auto makers that brought their innovations to CES. Automobile electronics supplier Bosch showed off its vision of the future of connectivity, creating a concept by which "products will become partners, companions and personal assistants." The theory is based on research conducted by the company that suggests connected vehicles will give people who drive a lot the opportunity to use nearly 100 hours each year in a more efficient and relaxed way.

The Bosch concept relies on facial recognition technology to recall stored user preferences such as mirror position, temperature and favourite radio station. The car's interface is controlled via a touch display and gesture control, while Cloud-based services enable video conferences, or allow drivers and passengers to locate parking, plan shopping trips and control connected devices at home. "If the car is connected to the smart home or the smart city via the Cloud, there will be measurable benefits," says Bosch board member Dr Werner Struth. "Connectivity is turning the car into an assistant on four wheels."





FORD AND ALEXA

Right across CES 'robot' personal assistants were a big talking point and the automotive world has lost no time in embracing the trend. Ford announced it is to partner with Amazon to integrate the tech firm's Alexa Cloud-based voice assistant into its vehicles beginning this summer. On cars equipped with the system, users will be able to control climate, navigation, entertainment and even do shopping through natural conversation. Alexa can also manage to-do lists, make calls, and can control lighting and security systems at home when paired with a compatible smart home device. Ford isn't alone in bringing such assistants on board – VW and BMW are also to include the technology in some models.



AUTO FOCUS

MERCEDES-BENZ CONCEPT EQ

Mercedes showed its all-electric EQ concept car at CES, first unveiled at the Paris Motor Show. The concept is the first of a standalone EQ brand of the group, with the name standing for Electric Intelligence. According to Mercedes, EQ offers a comprehensive electric mobility ecosystem of products, services, technologies and innovations. The spectrum ranges from electric vehicles to wallboxes and charging services to home energy storage units. With a range of up to 500km, the Concept EQ is not just fully

electric – it is also fully autonomous.

"The mobility of the future at Mercedes-Benz will stand on four pillars: connected, autonomous, shared and electric. Concept EQ is the logical fusion of all four pillars," says Dr Dieter Zetsche, CEO of Daimler AG and Head of Mercedes-Benz Cars. "The emission-free automobile is the future. And our new EQ brand goes far beyond electric vehicles. EQ stands for a comprehensive electric ecosystem of services, technologies and innovations."



MERCEDES-BENZ FIT AND HEALTHY

Designed to maximize well-being during drive time, Mercedes-Benz's Fit and Healthy concept adds a variety of new systems to a current S-Class saloon car. "Our vision is that Mercedes-Benz drivers should arrive at their destination feeling better and fitter than when they got in the vehicle," says Ola Källenius, the company's Head of Group Research and Car Development. The system includes seats that move with the body to alleviate fatigue and feature built-in massage functions. Heart-rate sensors on the steering wheel let drivers know whether they're stressed, while the car can interact with a wearable wristband that measures users' vital signs.

"There is a close correlation between safety and well-being: a person who feels safe feels better, and a person who feels well drives more safely," adds Anke Kleinschmit, Head of Group Research at Daimler. One key aspect of the new system is increased privacy. A prerequisite for all services is that customers receive transparent information and decide what data is collected for which purpose.



BMW HOLOACTIVE

The German car maker chose CES to unveil its HoloActive Touch system, a holographic virtual interface. Projected inside the cabin the interface acts like a virtual touchscreen; its free-floating display is operated using finger gestures and confirms the commands with what the driver perceives as tactile feedback. BMW also presented a vision of how car interiors might appear in the future with its i Inside Future sculpture, a feast of wood and composite materials. BMW's designers have abandoned the idea of the driver-centric cockpit and instead opted for a connected living space where passengers can stay busy on the Internet or simply relax.



HYUNDAI MOBILITY VISION CONCEPT

One of the more radical concepts on show at CES was Hyundai's Mobility Vision concept, in which the car is effectively part of your home, physically 'docking' with a driver's house, physically 'docking' with a driver's house. In Hyundai's words, the concept "suggests how the car could shed the image of a conventional vehicle, integrating itself with the living space when docked, before becoming a mobile living space when customers need to move around."



FARADAY FUTURE

The US start-up has had a somewhat rocky genesis and it didn't get much smoother at CES when its first production car, the FF91, failed to obey self-parking commands set by its billionaire Chinese backer Jia Yueting during a live demo.

That glitch aside, the FF91 is a Tesla rival with an impressive set of statistics. It boasts 1,050hp on demand and can accelerate from 0-60mph in 2.39 seconds, while the Tesla Model S P100D reaches

60mph in 2.5s. In addition to the ample power, the company's Senior Vice-President Nick Sampson told showgoers that the car would feature a "driverless valet" system - where the driver can leave the car to park itself - as well as two "aerodynamic antennas", which will enable the car to act as an oversized wireless router. The car will unlock itself using face recognition technology and features the ability to learn driver preferences.



AUTO FOCUS



AUDI AUTONOMOUS Q7

Audi demonstrated its latest advances in autonomous mobility at CES with a fully-autonomous version of its Q7 SUV. Utilising artificial intelligence provided by Nvidia, a tech firm most commonly associated with high-level graphics cards for computers, the Q7 is capable of end-to-end deep learning and can read signs, navigate around obstacles, and drive on a variety of surfaces including grass and dirt. According to the firm's US President Scott Keogh the system will be ready for production in 2020.





AUTO
FOCUS

Jean Todt

MOVING WITH THE TIMES

As he enters his eighth year at the helm of the FIA, President Jean Todt reflects on his enduring passion for the automobile and looks ahead at the next decade for motor sport and for mobility; a decade that is likely to see great change

TEXT: JAMES ALLEN

There are many dossiers passing across the desk of Jean Todt, each attracting commitment, energy and foresight across the two pillars of the Federation Internationale l'Automobile.

In motor sport, there is a new commercial rights holder in Formula One after 40 years under the control of Bernie Ecclestone. There are radical new regulations for both F1 and the FIA World Rally Championship, aimed at improving the show in each. There's the near-complete mission to consolidate the single-seater pathway and growing grassroots motor sport around the world.

In mobility, the crusade to reduce road deaths goes on and there are fresh challenges: assimilating new technologies such as autonomous cars and new cultures such as car sharing that look set to disrupt many an automotive business model. ►

The FIA President is keenly aware that the automotive landscape on road and track is changing rapidly, but feels that the FIA is taking the right steps to navigate the new pathways opening up.

A NEW ERA IN F1

He begins with the change of ownership of F1's commercial rights, confirmed in January. The sale involved Liberty Media coming in, with 20th Century Fox vice-chairman Chase Carey replacing Ecclestone as part of a three-man management team that also features Todt's former Ferrari colleague Ross Brawn as managing director on the sporting side.

"I think they made a good choice about the buyer," says Todt. "It's professional, well structured, they have access and their people are leaders in new technologies, new communications. I think they made a good choice.

"Those people have decided on a new management team and all that has been done respecting the existing agreements. A lot of things will be dealt with by my successor and that's why I try to do my best to give a good heritage. I need to do the best out of it and sometimes I have to protect it, try to improve it and that's how it happens mainly in Formula One where there is such a long commercial agreement that has been signed and is in place.

"So it has changed. Now, the next step – the new owner of Formula One decides to create a team that is, in a way, a kind of more formal organisation."

And what of the departure of Ecclestone, who has dominated the pinnacle of motor sport for almost 40 years?

"I hope Bernie can enjoy his life, he has so many things he can enjoy and I think he should be happy to see his baby – because you can say it is the baby he has developed, although it was run before him – in good hands."

Ecclestone's departure from the day-to-day scene – though the 86-year-old has been offered an honorary role – means that there are very few of the big characters left from Todt's peer group in Formula One; Luca di Montezemolo, Ron Dennis, Max Mosley and others have all left their day-to-day roles in the sport. So what does it feel like to be last man standing?

"You still have people who are there; you have Niki Lauda, you have Jackie Stewart," he replies. "I am proud to have been able to compete for 50 years in motor racing in different categories, with some good achievements along the way. I would say that the most difficult period to assess is the most recent one, because when you are a competitor you are first, second, 10th, retired, good or bad.

"At the FIA it is very difficult to assess the job you do. It is much less rational, but that happens in a lot of activities. That's probably the good thing about racing, because you see the result. Here, you have fights or competitions, but they are judged in a different way."

Ecclestone and di Montezemolo were two huge figures in Todt's career. So does it feel strange today that neither are still active in the sport?

"Remaining humble, I think in a way they were essential for me and I was essential for them," says Todt. "Mainly for di Montezemolo. I think he probably took the risk of hiring me but I do think he got something back. Life has to be a good balance.

"And the same with Bernie – he needed Ferrari, it is the biggest name in motor racing, so you need to have a strong Ferrari to create interest. And Bernie was nice enough to believe in me and I think I have demonstrated that I did not disappoint him."

STEERING A NEW COURSE

While Liberty is expected to make changes to the promotion of Formula One, a new direction has already been defined for the sport with a radical new set of regulations – approved at the start of last year – coming into force for the 2017 season. The regulations

are aimed at developing more aggressive-looking, quicker cars in a bid to increase the sport's appeal.

A similar strategy has already been unveiled in the WRC, where new, more aggressive-looking machines took to the stages in the opening round at Monte Carlo in January. For Todt, whose career started as a rally co-driver in 1966, it's a pleasing development as he felt rally cars had lost some charisma.

"I want them to dream like they did when they saw the Group B cars," he told AUTO last year.

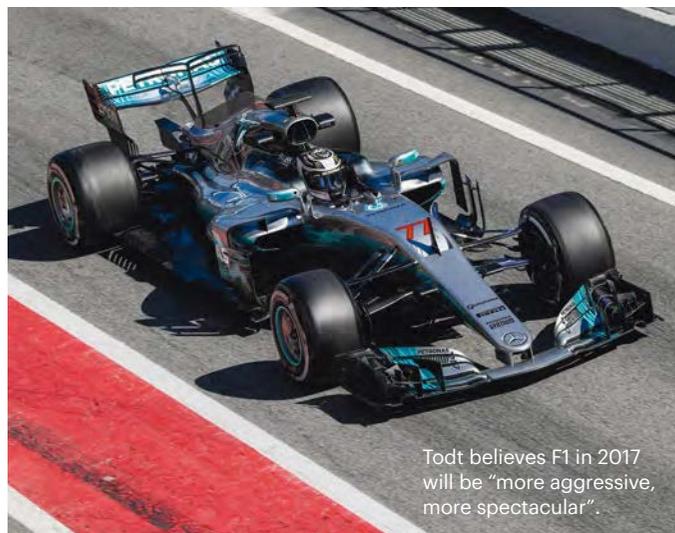
Expanding on that theme, he adds: "We wanted rallying to create more fascination; over the years it has changed. You will not think now about going to East Africa in Kenya to do a rally on open roads – it cannot happen; can never happen again. That's why you see the evolution.

"So it means there has been a modification of the format and a modification of the cars. This 2017 car is a kind of compromise, a modern car, with modern racing, but still with more fascination. Saying that, we have to be very careful about introducing a car that will perform better, but not increase the risk. It's always about trying to find the right balance.

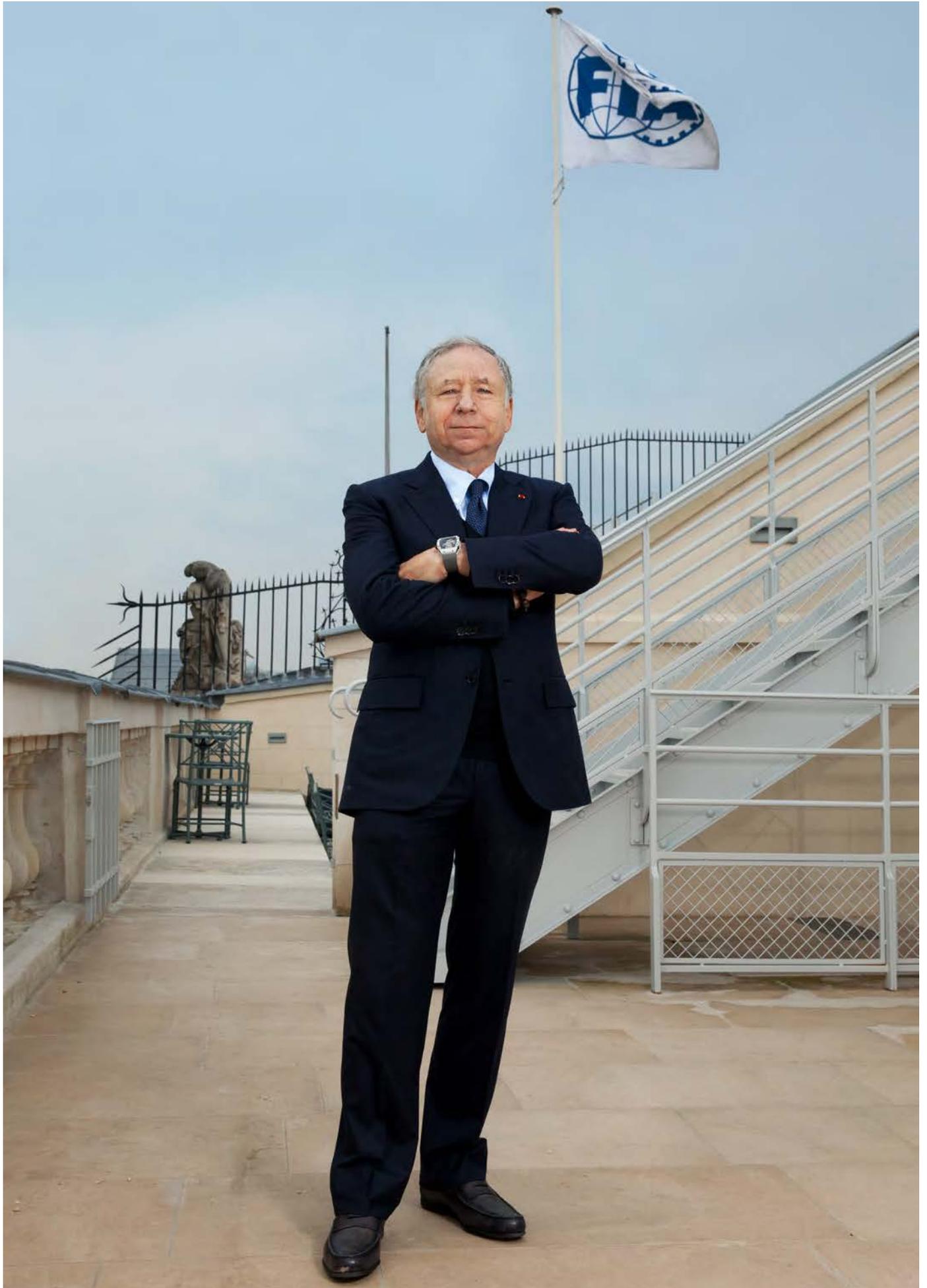
"It's unfortunate that Volkswagen decided to leave the championship, but Toyota have joined – successfully – you have Ford with a new car and investing more, giving a seat to the world champion [Sébastien Ogier], you have Hyundai who have been learning and progressing and Citroën returning."

Moving on to Formula One, the new cars have significantly increased downforce, wider tyres and are expected to be between three and five seconds a lap faster than the 2016 models. ►

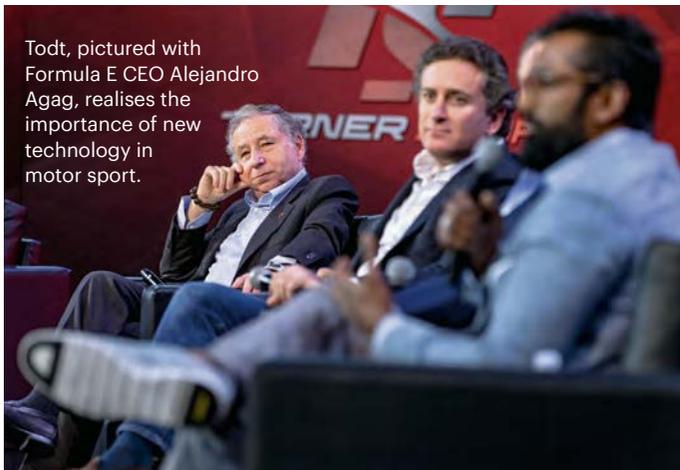
"BERNIE HAS SO MANY THINGS HE CAN ENJOY AND HE SHOULD BE HAPPY TO SEE HIS BABY IN GOOD HANDS"



Todt believes F1 in 2017 will be "more aggressive, more spectacular".



AUTO FOCUS



Todt, pictured with Formula E CEO Alejandro Agag, realises the importance of new technology in motor sport.

“IN FIVE YEARS THE ZERO CAR IN RALLYING MIGHT BE DRIVERLESS. MOTOR SPORT IS CHANGING”

This should increase interest too, although some insiders are concerned that the wider cars with higher downforce will find it hard to follow each other closely and to overtake at some venues.

“At the moment we only have expectations,” says Todt. “Until we see a race we will not know. In fact, it will probably not be clear until after three or four races. Then we will be able to understand the situation better. What we know at the moment is that the cars will be more aggressive, more spectacular – at least to see on the track. Having wider cars and more downforce means they will go quicker in the corners. But does it mean it will be a better show? It remains to be seen.

“I think entertainment has always been a priority,” he adds. “What has changed is the way to entertain. But not only in sport, our lives are more or less the same... it has been a revolution. Probably in motor sport we did not adapt enough the evolution to this revolution.”

That begs the obvious question: why not?

“Simply, I think because the global leaders have not been used to that aspect or trained to do that yet. It takes some time; new commerce will facilitate that.”

COMPLETING THE LADDER

“We have quite a nice range of categories of motor sports. I think, again something very important, in almost every category of motor sport we are on the way to finalising the process of the pyramid. The idea is to go from go-karts to Formula 4, Formula 3, Formula 2, then to Formula One. That is what we want to achieve.

“In endurance racing, you start from GT to LMP2, then LMP1. In rallying, in touring cars it’s the same. We must develop that in order to have many people having access to motor sport at a regional [grassroots] level.”

Mention of Formula 2 leads to the latest development in the ladder. According to Todt, by the time of this magazine’s publication the Federation should have confirmed a deal with Liberty Media to rebrand GP2, which came as part its acquisition of F1’s commercial rights. This has been a lengthy process, the expected resolution of which is a source of some satisfaction for the FIA President.

“Rationalising the pathway to Formula One has been a major goal of the FIA in my time here and the designation of a new F2 would achieve that goal,” he says. “Obviously we are in an early phase of involvement in this championship but I think there is a lot of scope for development.

“F4 has been great success with 12 national championships taking place around the world. F3 has been reborn and is a very competitive environment for young drivers learning their craft, and now we will have F2 as the final step. I think all of them have

enormous possibilities for the future to build grassroots involvement, gain new generations of fans for motor sport and to give real racing talents a clear path to their ultimate goal.”

FOCUSING ON THE FUTURE

Looking ahead to the future for motor sport, there’s no question that it contains a number of threats. Sustainability, autonomous vehicles and the potential banning of some road stages on rallies are but a few of them. There are opportunities too, however.

“I’m convinced that hydrogen will be a technology that will be used in the future,” says Todt. “Maybe in five years the zero car in rallying will be a driverless car. I think motor sport is changing, will keep changing. But we must make sure that we keep the best ingredients together.

“Again, that is one of our responsibilities – to decide not what we will do next year, but what Formula One should be in 2021, in 2030 – what rallying should be, what endurance racing should be.

“The heart of the sport will still be there but it has to take into consideration the evolution of society,” he continues. “When you see all of the emphasis that is put on climate change, on pollution, I feel we have the responsibility to participate. It is true a Formula One race will create less pollution than one plane going from Paris to New York, but we must be an example. And to be an example we cannot allow ourselves to create unnecessary pollution because it’s just the wrong image.”

So does that rule out the idea, currently being proposed by some stakeholders, that after 2020 F1 should divert from its current path or following the path of the automotive industry and move towards an old-style V10 or V12 engine whose objective is pure entertainment, away from the hybrid turbo story that has had a mixed response since its introduction in 2014?

“It will not be accepted by society,” says Todt. “Again, we have a responsibility to run an organisation monitored by global society. And global society will not accept that. Indeed, I’m sure if you said, ‘let’s go back to engines from 10 years ago’, many manufacturers would not support such a move. I’m convinced a minimum of three out of four would leave. Also, we know that stability is essential – firstly, to have as much competition as possible, and then to protect the investment. You cannot invest in new technology every year, it is not financially sustainable, and we already complain about the cost of racing, the cost of Formula One – a cost that for me is absurd.

“It’s something we need to fight. So far we have not managed to find the ideal solution and I’m happy to take part of the responsibility on behalf of the governing body. But saying that, it is not easy because you need to find common ground. For me, I always like to achieve some kind of solidarity when you take decisions.”

The future shape of that process could also be changing too. Todt's second term as FIA President comes to an end this year and he has yet to decide if he will run for a third. Despite that he is insistent that for whoever helms the organisation, the mission to reduce costs in motor sport must remain an ongoing priority.

"I have begun to work with my team and our members to make my decision and this will allow me to announce that choice very quickly," he says. "Of course, with a democratic organisation I could have a competitor who beats me. But clearly it's a goal that should be addressed in motor sport, whoever is the leader, to try to bring costs down."

A final thought on motor sport revolves around the threat from autonomous cars; in the future if people don't drive themselves any more, will there still be an appetite for racing? This topic was debated at the FIA Sport Conference in Turin last June and was again a key talking point when Todt appeared on a panel at the Consumer Electronics Show (CES) in Las Vegas in January.

"Clearly motor sport is a combination – a car and a driver. For me, I've always been interested to see who is driving the car," he says. "As an exercise it could be interesting, but where is the fascination if you have a race without a driver in the car? You can stay at home with a Scalextric, but if you go to see a show you want to see the driver."

"The element that creates the dream in motor sport is the leadership of the driver."

AUTONOMY ARRIVING

The topic of autonomous vehicles provides a bridge to move the discussion onto mobility. While in Las Vegas Todt went for a drive in an autonomous car and has a clear view of what it represents for the

future of mobility, even if many people fail to appreciate that these are first world conversations and the conversation in developing countries is quite different.

"It's a revolution on the way," he says. "But the world is made of over 200 countries. You have countries where the average cars are between 30-60 years old. And if you take modern countries like the UK and France, the average age of cars is about nine years old."

"You know, 1.3 million people die on the roads every year, 50 million people are injured; 90 per cent of those figures are happening in developing countries, middle- and low-income countries, which host only 50 per cent of vehicles."

"So I do believe that in some developed countries it [autonomous cars] will come quite quickly. But the developing countries, to have access on that, you must know that in a lot of countries millions of road users have never seen a safety belt."

"It's so far away from different regions where people don't know safety belts, don't know what a helmet is, don't know road regulations, don't know proper infrastructure. It will take a long time before the global society has access to that."

One of the most striking aspects of Todt's visit to CES was the extent to which the major manufacturers were present, at what is essentially a consumer electronics event. All were showcasing their autonomous drive technology. This is partly a defensive move against the disruption they face from hi-tech software companies like Google and Apple moving into making cars. What is Todt's view on that development?

"It is a lot of adventure, a lot of combinations. But you have the same names as leaders – if you take the industry you have Toyota, VW, Renault-Nissan, Chrysler – they are still there," he says. "There are some newcomers, there are some who come with technology ▶"



Todt has been encouraged by Toyota's successful return to the WRC as the sport enters a new tech era.

AUTO FOCUS

Driving down road fatalities in developing countries is one of Todt's main aims in his roles at the FIA and with the UN.





Sampling an autonomous BMW at the Consumer Electronics Show.



Todt sees his position as UN Secretary General Special Envoy for Road Safety and FIA President as being mutually beneficial.

“I HAVE A PASSION FOR PARTICIPATING IN THE MISSION TO REDUCE ROAD TRAFFIC VICTIMS”

and as a group I think it is very interesting. But it started many years ago, maybe we speak about that because it is some new technological partners who are coming, but most of the cars are done in partnership. Look at what we made with Magneti Marelli, it was with Bosch, it was with Delphi, with tyre companies. Manufacturers have historically always had essential partners.”

Another indicator of change in the developed countries is the move towards regulation against internal combustion engines, with diesel cars set to be banned in many cities in the near future. Todt is an enthusiast of classic cars so presumably he would be sad if internal combustion vehicles were one day regulated off the road, making classics obsolete?

“It has started unfortunately,” he says. “But motoring began just over a century ago. It’s fascinating when you see a car from 100 years ago and a car now, and if you have to guess what a car will be, not in 100 years, but in just 20 years – that is a very interesting debate indeed.

“Probably the automobile is one of the 20th century’s great technologies that has developed the most. It is a heritage, it is an asset and I think the cream of that asset has to stay. Like with a beautiful painting, you have Leonardo da Vinci, but the painters that have not been good have been forgotten. The cream of motoring has to stay.”

And what of the outlook with regards to the president’s role as UN Secretary General Special Envoy for Road Safety?

“I am honoured to have been reappointed to this post by the new UN Secretary General António Guterres and I am looking forward to continuing the work begun almost two years ago. We have made good progress but there is still so much to do.

“I’m still passionate about what I do,” he says. “My goal is

different from what it was before, though. I have a passion for participating in – and I say it in a very humble way because the task is huge – the mission to reduce road traffic victims, and clearly my role as President of the FIA alongside my role in the UN is very helpful to deliver that better.

“It has given me new access, new partners. For example, we were talking on the phone about a campaign we are launching in March and the High Commissioner on Human Rights will be next to me and he will say ‘road traffic safety is a human right’. Clearly it has allowed me to have access to some global leaders who are part of the team.

“It all goes back to what I have always enjoyed: building, running and leading winning teams. It was that way as a co-driver, as a rally leader, in cross-country, sports cars, Formula One, the motoring industry, and now I’m a leader of a different kind of organisation.

“For example, I have founded with a group of friends a medical institute – ICM – with 650 people researching brain and spinal cord injuries. I’m the chairman of the Aung San Suu Kyi foundation. Different things, but always trying to put people together.

“You have something where you think you can make a difference, some other things you know you can’t. So where I think I can make a difference is quite limited but I enjoy being involved in it.

“That’s why I am fascinated with other people, trying to understand what they do that I don’t understand and I don’t know how to do. But there are a few things where I love being involved and I think I can give some contribution – and I’m passionate to give some contribution.”

As a closing thought, when considering the future for both mobility and motor sport, Todt reflects that when he started his career in motor racing in 1966 he had no consideration of what motoring would be today, 50 years later.

“In a way, for me the pleasing thing is that I am still fresh with passion,” he says. “My father was a doctor; he had no interest for cars. For him it was a way to go from one place to another, but it came naturally to me. I remember at 10 years old looking at cars, in fact I was more of an expert of the different levels of cars – a 3.4 Jaguar, a 3.8S and all that – than I am now.

“But still I remember when I was CEO of Ferrari, I was spending my days talking about cars, about new cars and I would take a plane and arrive in London or Paris and see a Ferrari Scaglietti and I was still turning my head to look at it, or an Aston Martin – and I still do. I’m still impressed with a nice car I see on the road or in the street.

“That’s probably why I’m still here.” ■



Force India's new driver line-up of Sergio Pérez/Esteban Ocon have been testing the team's 2017 challenger at Barcelona.

AUTO
FOCUS

Force India

GROWING FORCE

Having achieved its best team result in Formula One last year, Force India is striving for further improvement as the sport enters a new tech era

TEXT: ERIC SILBERMANN PHOTOGRAPHY: JAMES MOY, LAT



Silverstone Circuit is home to one of the two oldest events on the Formula One calendar, but on a cold, dull and damp winter's day, the venue for the British Grand Prix has little to recommend it.

However, there are some bright lights piercing the January gloom, coming from the units at the Industrial Park opposite the circuit's main entrance. They bear testament to the vital role the motor sport industry plays in the British economy. And, residing in its own grounds set apart from these modern facilities, like a stately home in a sea of affordable housing, sits the Force India factory.

Walk through the door into the lobby with its obligatory F1 'show car' and you are hit by a wave of energy. It's like the opening scene of a movie from the 1950s depicting life in a successful Manhattan office, with people scurrying every which way, the reception phones ringing urgently and staff dashing up and down stairs. If a building could have a spring in its step this one would and with some justification, as last year Force India secured its best ever result in its nine-year history, finishing fourth in the FIA Formula One Constructors' Championship after a thrilling season-long duel with the Williams team.

NEW-SEASON CHALLENGES

It was an exceptional performance from a team that cannot boast the mega-budgets of the trio of teams that finished ahead of it, nor indeed of some of the famous names it out-scored. With a workforce of under 400 people, compared to the 700 at Mercedes, champions for the past three years, Force India showed that the right approach and careful husbanding of its resources can deliver results. But no one can rest on their laurels in F1, so the question now is can they do it again or go even better in 2017? Adding to the usual uncertainty of the pre-season period is the fact that, on the eve of the new championship, the landscape looks rather different, with the technical regulations going through a change described by many insiders as the biggest the sport has seen in more than two decades. The racing will now feature bigger, noisier and faster cars that will be harder to drive and more difficult to set up to suit each of the 20 circuits on the calendar. This is a situation that usually favours the biggest teams, but Force India's Chief Operating Officer Otmar Szafnauer remains unfazed by the challenge that lies ahead. "For a team like ours, there is no external pressure," he says. "In this team we are all a bunch of racers who want to do well and we create our own pressure because of our wish to succeed. That's in all of our bellies anyway."

Szafnauer sees keeping that "bunch of racers" together as a key element in having another successful season. "If you have a good, deep understanding of what makes a racing car go quick, you should be able to apply it to the new regulations as well," he says. "The nuances and the parts that made previous cars quick don't apply at all, but it's what you've learned and how you apply your knowledge to the new problem that will help us make the 2017 car quick as well. That knowledge is something you only lose when people leave, so we've tried really, really hard to maintain a stable workforce here over the winter."

This view, that the key to success lies with the workforce rather than its weaponry, is echoed by Force India's Sporting Director, Andy Stevenson. "Having been in F1 for many years, I know it is far too easy to get carried away when you see some good results and the only way to improve on those results is to make sure you improve yourself," he says. "The staff is fired up after being exhausted towards the end of last season. They had put in a lot of effort all year and then, for the final few rounds, when the battle between ourselves and Williams was so close, they had to dig deep again to secure fourth place. We are managing their expectations for 2017. Our team really wants to improve on what they have done, but we have to ensure we get the basics right first."



Chief Operating Officer Otmar Szafnauer has focused on maintaining stability in the Force India workforce.

“WE’RE A BUNCH OF RACERS WHO WANT TO DO WELL AND WE CREATE OUR OWN PRESSURE TO SUCCEED”

OTMAR SZAFNAUER

“What we’ve been looking at for this year is to make sure we have improved procedures and reliability. We also have to ensure that the boys in the pit crew are fitter and stronger, because one thing that is obvious from looking at the new cars is that everything is a bit bigger. This will make the pit-stops more difficult so we’ve been preparing since before the end of last year. We’ve estimated a 20 per cent increase in effort because the wheels and tyres are bigger, and the front and rear jacks have to be bigger as the cars will be bigger and heavier to lift. We’ve worked hard to ensure we get to the first race in the best condition possible. The easier we can make the job for everyone trackside, the more we can focus on performance. We want to take the difficult side out of the job so that the cars we qualify and race are at the maximum as far as performance goes.”

When it comes to their 2017 car, the VJM 10, Force India's Technical Director Andy Green admits the new technical regulations have created a lot more work for his designers. "But we don't start from zero with respect to the design, because although the car isn't a carry over physically, it is from a philosophy perspective and the philosophy we've been using for the last few years seems to be holding up well with the new regulations." ►



Force India's staff have been busy at its Silverstone factory preparing for the new Formula One season.



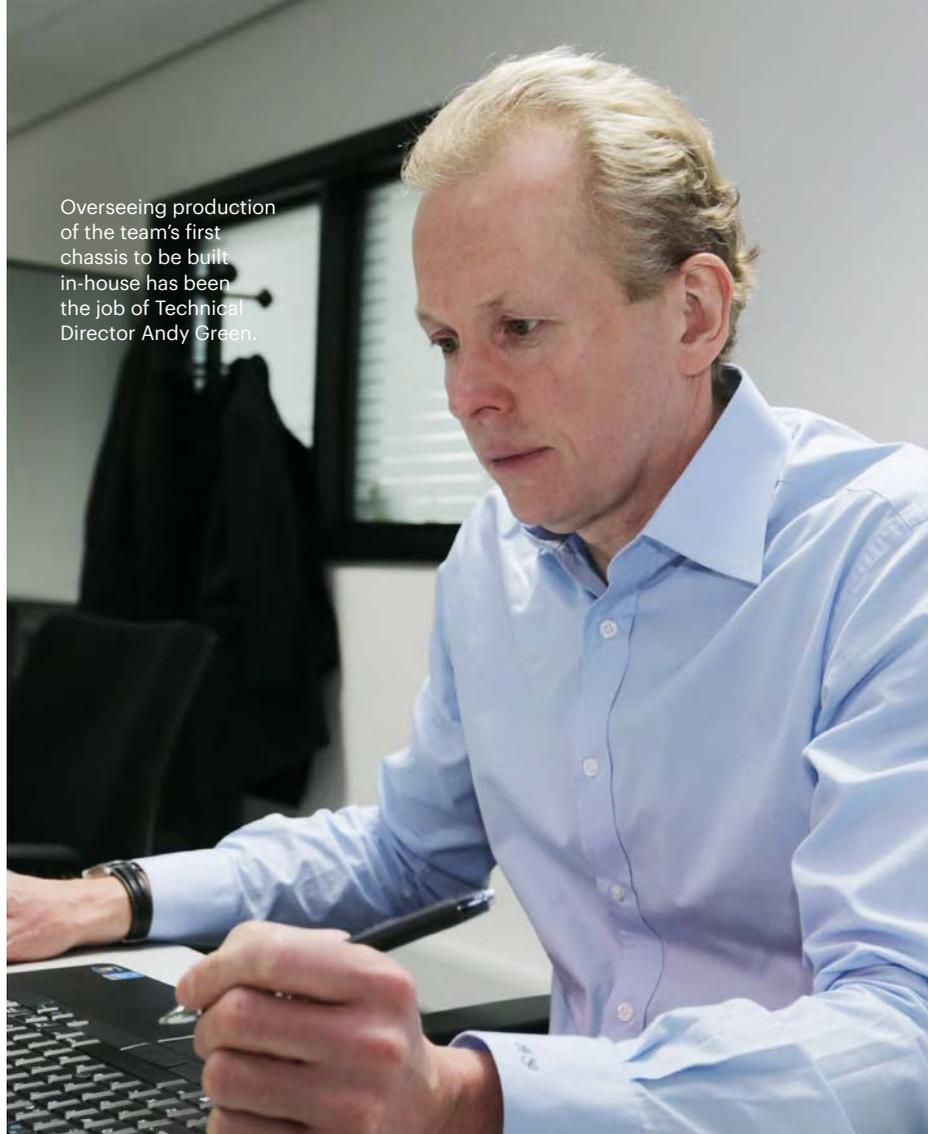
AUTO FOCUS



Chief Race Engineer Tom McCullough has been helping the team's new driver line-up to gel ahead of the new season.



Overseeing production of the team's first chassis to be built in-house has been the job of Technical Director Andy Green.



Sporting Director Andy Stevenson says the pit crew has trained for the physical challenge of working with heavier cars in 2017.



“The way we work hasn’t really changed that much,” adds Green. “We’re looking at extracting performance at the same part of the car trajectory that we’ve always looked at to do that. We expected the development rate to accelerate, and it has. It really did take off last year and we had to revise our performance targets because we underestimated a little bit what we could expect, which is a good thing, but we won’t really know how good or bad a job we’ve done until we start racing.”

After three years of relative stability on the rules front, car development throughout the field had slowed somewhat, but the 2017 changes have sparked a new arms race so that, according to Green, a new car is more or less out of date before the racing has even started: “We recognised that we needed to be more reactive so we started expanding a while back.” That expansion has involved bringing a lot more of the manufacturing process in-house, including building its own chassis for the first time. “The chassis is really the most complex bracket on the car!” jokes Green. “It’s there to hold everything together, but it is quite a complex piece. The process went really smoothly and we do have to ask ourselves why we didn’t do this a long time ago because logistically it was a nightmare having the chassis manufactured out of the factory, some distance away, so that staying on top of the manufacturing process was a real headache. It’s the best chassis that’s ever come out of this factory, that’s for sure.”

On the driver front, Force India can continue to count on the excellent Sergio Pérez, but there’s a new face on the other side of the garage. After an impressive maiden half-season with Manor Racing, Mercedes-Benz protégé Esteban Ocon steps in to replace Nico Hülkenberg, following the German’s move to Renault. Ensuring that the switch to a new line-up is as seamless as possible is primarily the responsibility of Force India’s Chief Race Engineer, Tom McCullough. “We try to build the right picture in the driver’s



Esteban Ocon comes to Force India following an impressive maiden half-season with Manor Racing in 2016.

AUTO FOCUS

head, so that when they drive the car, there are as few surprises as possible. That is a bigger challenge this year with the technical regulation change and because of the fact we now have a rookie.”

Plenty of time in the team’s new simulator is the pre-season order of the day. “We are simulating the race weekend, going through all the little details like which setting to engage at which point on an out-lap, during a timed lap or a race lap, running through as many scenarios as we can, explaining the reasons behind those,” continues McCullough. “This builds a picture in the driver’s head so that when he is in a stressful situation come qualifying or on race day, he doesn’t have too many questions, he understands what he is doing and what he is trying to deliver.”

WORKING TO ITS STRENGTHS

One aspect of car performance that cannot be effectively replicated in the simulator is tyre behaviour and, with a new range of Pirellis to choose from this year, McCullough expects Force India to benefit from its strengths in this area. “How to operate in terms of getting the best out of the tyres has been a strength of ours over the past few years and at the start of the season the teams that get on top of that quicker will definitely benefit. When you have a huge regulation change like this one, it’s a big challenge. It’s easy to be an iterative engineer, learning from what we did the previous weekend and so on, but the real test of our understanding and of our tools – software, simulator and modelling – will be our ability to react to the large changes that have been thrust upon us.”

It’s fashionable in F1 circles to trot out the mantra that a team focuses on itself without taking much interest in the opposition, but Green knows full well that Force India’s new car can only be judged relative to the others on the grid. “We just want to do better than we did the year before,” he says. “We want to get closer to the guys in front and we monitor our trajectory compared to those leaders.

“HOW TO GET THE BEST OUT OF THE TYRES HAS BEEN A STRENGTH OF OURS THE PAST FEW YEARS”

TOM McCULLOUGH

We’re heading in the right direction and as long as we can maintain that trajectory we’re happy, because ultimately we will catch them. If we can get closer to third this year that would be fantastic. It’s going to be an interesting season and by the time we get to Barcelona (round five, the Spanish GP) we’ll know roughly what the pecking order is. But it’s a long season and the development on the car is huge, so we’re likely to see some swapping of positions.

So can Force India do it again in 2017? Can it maintain its ranking as ‘best of the rest’ behind the three teams that have won every constructors’ title since 2007? Or could it go one better and finish third to equal the 2009 achievement of the Jordan team whose name used to be above the door of the Silverstone factory? The final word goes to Szafnauer. “We haven’t lost the ability to understand what makes a car go quick, so that’s where the optimism comes from. You don’t wake up one morning and bump your head hard and forget everything. But it’s all relative. There are others, there’s the might of Honda and McLaren for example, so we’ve got to look backwards as well as forwards and be careful that they don’t overtake us.” ■

AUTO
FOCUS

Inside the industry

SERGIO MARCHIONNE

The Fiat Chrysler Automobiles and Ferrari CEO talks to AUTO about reacting to the emergence of autonomous driving, Ferrari's road and racing future and why he believes the Alfa Romeo brand needs to be in Formula One

Fiat Chrysler Automobiles showed a new semi-autonomous vehicle, the Portal, at CES in Las Vegas and billed it as a vehicle “created by millennials for millennials”. What does this kind of car say about FCA's future direction?

The key feature of the Portal concept is its flexibility. The vehicle is engineered to be upgradeable as progresses in technology enable higher levels of autonomy. And, with its unique modular design, this vehicle can grow with millennials through each stage of their life.

This is just one example of the fact that, at FCA, we are well aware of the disruptive potential of innovation on our sector and we are making some key moves to stay at the forefront of the rapid technological changes that are transforming this industry.

The next 10 years, maybe even just five, will fundamentally change the operating model supporting what we do. Technology companies – either operating from or connected to Silicon Valley – have taken a keen interest in cars and they will force a reshaping of the relationship between customers and traditional carmakers.

I don't think it's our role to replicate Silicon Valley. And so we are working hard in various areas. We continue to develop relationships with a variety of players, the so-called tech 'intruders', the new entrants, and we continue to evaluate these technologies as being the most appropriate for our development. ►



Last year FCA launched a collaboration with Google on autonomous driving using the Chrysler Pacifica Hybrid minivan. How important is that partnership?

It was and is a key relationship. It is, for sure, the first of its kind, the very first time that Google has worked directly with an automaker to integrate its self-driving system, including sensors and software, into a passenger vehicle.

This project has allowed us to see first-hand how Google intends to deploy autonomous technology. It has also tested our ability to collaborate openly with a technology provider, and it has accelerated our learning process in fully automated driving.

This experience has been good enough to encourage us to go a step further and extend our collaboration to the Google-provided Android operating system in our vehicles. All these moves are unavoidable. The autonomous driving world that Google and others are advocating will become a reality in some fashion by 2020.

The Google platform may not be the only solution, but it's certainly one solution. There is an intention to continue to develop this relationship and find out how far we can go. It's a question of understanding how the technology plays in our world, and it's crucial that we continue to push the boundaries on this.

What's your view on the future of connectivity, within vehicles, from vehicles to each other and to infrastructure?

The tech intruders are poised to play a disruptive role in the industry. This is their real value: they are going to revolutionise the environment that drivers and passengers experience inside the vehicle. We are just at the beginning of this revolution.

I'm convinced of a couple of things. The first is that at least some sort of Level Four autonomy – where, under certain traffic or environmental conditions, all safety-critical functions are performed by the vehicle and the driver is expected to be available for occasional control – is going to become commonplace, in the very near term. In certain versions of our cars, for example, we are going to be seeing significant escalation toward Level Four autonomy between now and 2020. And secondly, that proper execution of this strategy will require cars to provide data to the 'cloud'. I am also convinced that most automakers are ill-suited to engineer 'the solution'.

There are technology companies and an incredibly prolific Tier 1 supplier base keenly working on and willing to provide solutions. We cannot delude ourselves by believing we can replace these new technology entrants. Rather we need to be responsive, even welcoming them, and benefit from their expertise.

And your view on driverless vehicles? Apart from the Google partnership where do your priorities lie in this regard?

There are two different approaches to the development challenge. The first, which we could call 'evolutionary', consists of a progressive evolution through the five levels of autonomy, one step at a time. The first two levels, which involve use of single or multiple assistive functions, are already widely available in our current range.

Our Maserati brand will introduce a hands-on-wheel highway assist program this year, which represents Level 3 autonomy, with the driver expected to respond to a request to intervene. Currently, we are also working on Level 4 capability and we are targeting the launch of our first highly-automated vehicle, enabling autonomous highway driving with limited driver supervision, in 2019.

Jumping straight to the last level, to a fully automated system, is what we would describe as a 'revolutionary' approach. I believe the right approach is a mix between the two. This is the approach we are taking at FCA. On one side, we are developing our own evolutionary technologies. On the other, we are working on the revolutionary project with Google.



According to Marchionne Chrysler Portal "is engineered to be upgradeable as technology progresses".



The Alfa Romeo Giulia "captures the original spirit of Alfa Romeo," says Marchionne.

How important to you is the Alfa Romeo brand, in North America and worldwide?

It is vital. The commitment we made with Alfa Romeo is one of the priorities in our five-year plan. It's no secret that Alfa is one of the projects I've been most involved in, operationally and emotionally.

It is one of the most important of my career. Not just because of the unequalled value of the brand or the business opportunity it represents. It's something more. Giving a voice to the real Alfa Romeo, restoring it to a position worthy of the legend, was a moral imperative. In recent years, we have acted on that imperative by providing the brand with the best resources, including talent and our best technological know-how.

What we have created, with the Giulia and more recently with the Stelvio, are two models that capture the original spirit of Alfa Romeo. The instantly recognisable thoroughbred character of Alfa is something that few other brands can claim or even aspire to. Today the brand is ready to retake its rightful position as one of the world's leading premium car brands.

"I WANT TO SEE ALFA ROMEO RACING IN FORMULA ONE. IT'S A PLACE THE BRAND SHOULD BE."

SERGIO MARCHIONNE



Marchionne with Ferrari F1 star Sebastian Vettel at FIA Sport Conference 2016.

AUTO FOCUS

Ferrari recently launched the LaFerrari Aperta to celebrate the company's 70th anniversary. How special is that model and what does it say about the company in the second decade of the 21st century?

This is a very special model because it's the roadster version of another special car, the LaFerrari. It is even more exclusive than the original, however, as only 209 will be built. The Aperta is the culmination of 70 years of work: design, performance, an innovative hybrid solution and, as I said, exclusivity.

You've spoken about a desire to see all Ferraris being hybrid vehicles in the future. Is that an important target for you, in terms of the company's sustainability and market share?

Hybridisation is crucial to Ferrari. There is no denying that regulations put us under pressure, but we could reach those targets in other ways. The challenge is to benefit from hybridisation not just in terms of emissions reduction, but also performance.

We have already developed a hybrid supercar, La Ferrari, and on future Ferrari models we will leverage new technologies as well as electrification. However, the approach is totally different from mass-market brands. Ferrari is all about the emotion of driving.

As always, Ferrari embraces the challenge of continuous innovation. Take the turbo technology on our 8-cylinder models, : our approach achieved improvements in performance while at the same time lowering emissions. And we did it our way, by cancelling turbo lag and making the turbo sound like a real Ferrari. It took time and investment, but we did it. ►



“WE INTEND TO DO
WHAT ENZO SAID WE
SHOULD: SELL ONE
CAR LESS THAN THE
MARKET DEMANDS”

SERGIO MARCHIONNE



Just 209 examples of the ultra-exclusive La Ferrari Aperta will be built.



Marchionne: "We cannot delude ourselves believing we can replace new technology entrants."

Ferrari's 2016 figures revealed strong growth with over 8,000 cars produced. What's behind that and where will growth come from in the future?

We achieved solid results, while maintaining our exclusivity. We increased sales through new models. We also took advantage of new opportunities and increased customer involvement. As for the future, let me be very clear. We intend to do what Enzo Ferrari always said we should: sell one car less than the market demands. If demand stays as it is, we will maintain current production levels. But, if demand increases, we would be foolish to hand potential Ferraristi over to our competitors.

Regarding motor sport, how confident do you feel ahead of the 2017 Formula One season?

The only real proof of where we stand is on the racetrack, so we need to wait and see how we measure up against the other teams.

What I can tell you is that we have made radical changes to the organisation and culture of the team. The communication flow is now better and the group is more integrated. We made some personnel changes and continued to invest. We have the resolve and, I'm sure, the right group of people including a couple of very talented drivers. But, despite the intense work we have done to continue to strengthen the resources and quality of the team, one thing I have learned not to do is make any grand predictions!

You've also hinted at a Formula E entry. How likely is that?

It's difficult to say. But I have two things in mind. The first is that we need to be involved in Formula E because electrification via hybridisation is going to be part of our future. The second is to see Alfa Romeo back racing in Formula One again someday, because I believe very strongly it's a place the brand should be. At this stage, I don't know how likely it is that either of those two things will happen. But the fact that we are talking about them is a good sign in itself.

Formula One is now under new ownership. How will that change things for you?

First of all, we need to thank Bernie. He did an incredible job for all those years and we need to pay tribute to him for making Formula One one of the most popular sports in the world. The new owners have already said they want to have more digital activities and push the entertainment side to attract a new audience. That can only make us happy, and we will continue to work with them and FIA toward our common interest of making the sport a great success. ■

AUTO FOCUS

F

Culver Local
To Coney Island
all times



**AUTO
FOCUS**

For millions of people public transport is a major source of mobility. Yet for 50 per cent of the population it can present a threat. With harassment and abuse of women on public transport on the rise, the FIA Foundation is tackling the issue

TEXT: AVI SILVERMAN

Women in transport

CREATING SAFE JOURNEYS FOR WOMEN



At the most extreme, there are the cases that have attracted widespread notoriety and coverage such as the horrific assault on Jyoti Singh in Delhi. Jyoti, a 23-year-old physiotherapy intern, was attacked – beaten and sexually assaulted by a group of men on a bus in 2012.

Singh died of her injuries within two weeks of the attack and her case received widespread attention both within India and internationally. It sparked a wave of mass public protests; thousands marched across India, against both the state and national government for failing to provide adequate security for women.

The assault on Singh drew attention to concerns about women's safety across society in India, with an upsurge of reports highlighting the prevalence of attacks in the country. It was an issue that previously had received little attention, and the public reaction worldwide

signalled the extent of the problem globally, with women reporting a lack of security particularly on public transport in many countries.

It's an issue the FIA Foundation has followed up on, launching an in-depth 'women in transport' research project. Increasingly worldwide, women are frequent and regular users of public transport. In developing countries they often rely on some form of public transport as their only choice of motorised transport. Yet at the same time, there are a growing number of incidents reported where women have had their security compromised.

While Singh's case and other high-profile attacks have caught the media's attention, there are many more cases of women being subjected to aggressive behaviour, verbal abuse and sexual assault on public transport that are not publicised. ►



The FIA Foundation's initial report 'Safe & Sound: International Research on Women's Personal Safety on Public Transport' shows that women face harassment while using public transport on a daily basis all over the world. The report is part of the FIA Foundation's Safe, Clean, Fair and Green research series that reflects key priorities in sustainable mobility.

Harassment and assault is reported as an issue of concern from Baku, Azerbaijan to Bogotá, Colombia – and everywhere in between. It is not confined in any way to the developing world, however, and appears to be as prevalent in high-income, industrialised cities such as London, New York or Paris.

All forms of harassment can affect women's access to opportunities and their quality of life. Harassment can take various forms: verbal abuse (cat-calling or unwanted teasing), visual harassment such as leering or staring, and physical abuse such as men exposing themselves, groping or other forms of touching.

This abuse often occurs in public spaces as women travel to and from places of education, schools or to and from work. It also takes place in or around bus and train stations, at bus or other public transport hubs and stops, and on vehicles themselves – particularly if they are crowded.

EVERYDAY PROBLEM

The extent of the problem is shockingly widespread. It is clear that harassment and assaults occur more often than is thought. The FIA Foundation report shows that women face harassment while using public transport every day worldwide.

Research carried out by Hollaback and Cornell University based on 16,600 interviews in 22 countries found that 80-90 per cent of women had been harassed in public. The research found that a majority of German women – 66 per cent – have been groped or fondled and 47 per cent of Indian women had witnessed someone exposing themselves in public.

Women are often reluctant to go to the authorities. High rates of non-reporting of incidents were found internationally: in New York it is estimated that 96 per cent of sexual harassment and 86 per cent of sexual assault on the subway goes unreported; in Baku, Azerbaijan, none of the 162 out of 200 women who said they had been sexually harassed on the metro reported it to the appropriate authority. In Egypt, of 1,000 women surveyed, only 2.4 per cent of the 83 per cent of Egyptian women and 7.5 per cent of the 98 per cent of foreign women living or travelling in Egypt who had experienced sexual harassment in a public place reported it.

There is a lack of available information on women who have

either reduced their aspirations to increased mobility or changed their travel patterns due to concerns over personal security, so it is not easy to gauge the effect of this undesirable behaviour. But it is likely to have a larger impact on women contributing to society and the labour force than is currently understood.

It's already acknowledged that all forms of harassment – sexual or other – affect women deeply, causing psychological distress, reducing confidence and impacting the ability to move freely in public places. If this is directly associated with their transport options, it will affect decisions to take up educational opportunities, join the labour market and influence the kinds of jobs they pursue.

As report author Heather Allen explains: "This is an issue that has much wider consequences than personal security and we need to learn more about how to address it. Reducing the global workforce due to transport security reasons will strongly impact our future development, especially in the developing world. Women can be a strong force for change and we should harness this potential rather than waste it."

It's clear that women play a strong role in influencing the value sets of their children. If they pass on to them a negative value judgement about using public transport, based on their experience and perceptions, it can hinder efforts to increase the use of mass transport in the future.

As this is a core pillar of sustainable mobility, especially as the world becomes increasingly urbanised, by not addressing this issue we are merely setting the system up to fail. Children will grow up with a view that transportation is inherently unsafe, and as soon as they can they will prefer to buy or share a car, motorbike or scooter – creating a vicious downward spiral of increased congestion, even if every vehicle is cleaner than today.

There is little doubt that getting more women into the workplace will have a positive impact on putting the global economy back on track. The McKinsey Global Institute estimates that if women in every country were to play an identical role to men in markets, as much as US\$28 trillion would be added to the global economy by 2025.

If we also accept that there are many young girls who would like to work when they grow up and link this to the recent findings of the ILO on youth unemployment – with almost 43 per cent of the global youth labour force in 2015 being either unemployed or working yet living in poverty – we can see that by addressing this issue we can unlock significant opportunity for growth.

Women can and should be able to play a role in society and it is important that women are able to fully contribute to a country's

“WOMEN CAN BE A FORCE FOR CHANGE AND WE SHOULD HARNESS THIS POTENTIAL RATHER THAN WASTE IT”

HEATHER ALLEN

development. Excluding women from being active in the labour market, for any reason, should be considered to be out of order in today’s world; it will reduce both the speed and robustness of sustainable, economic development. If the reason for exclusion is due to transport inequalities, we can do something about it, but only if we manage to take it out of the security arena and put it firmly in the development agenda.

Both aspects are interdependent – the more active women are in the labour market the more they are able to demand safe and secure transport; the less empowered they are, the more socially exclusive transport becomes. Reserving separate carriages for women may be a temporary solution, but it also underpins the concept that women should be kept apart and not be given equal rights. By addressing both ends of this equation we can create a win-win-win situation – addressing equity, economic empowerment and improving quality of life.

Together with CAF, the Development Bank of Latin America, the FIA Foundation is now undertaking further research with the aim of developing policy recommendations to make the journeys for half the world’s population safer, enjoyable and more secure. ■



SEXUAL HARASSMENT: A GLOBAL CONCERN

- In Bhopal, India, 51.4 per cent of women interviewed by WRI EMBARQ had faced sexual harassment while using public transport and 49 per cent of men had witnessed women being harassed.
- In Kathmandu, Nepal, about one in four (27 per cent) people stated that personal security was one of the main problems associated with public transport, with twice as many women as men (30 per cent compared to 16) highlighting this.
- In South Africa, 38 per cent of household heads said they were very unsatisfied with security levels when walking to and waiting at Minibus taxi stops.
- In the UK, one in eight women stated that they felt so unsafe using public transport they avoided it.
- Women were also more likely to feel insecure in crowded areas or after dark. Ten per cent said they felt unsafe waiting on a railway platform in the day, compared to 53 per cent at night.
- Delhi police recorded 501 allegations of harassment and 64 of rape between December 2012 and January 2013, but only launched four inquiries.

**AUTO
FOCUS**

South American racers

CONTINENTAL



Until Felipe Massa announced his late return to the 2017 grid, Formula One was facing its first season without a Brazilian driver since 1969. It's a tale mirrored across South America, where a once-steady stream of drivers progressing to the top level has slowed to a trickle. So what is causing the problem? AUTO investigates

TEXT: DIEGO F. MEJÍA

DIVIDE?

Felipe Massa was the last Brazilian to come close to winning the F1 title in 2008 – he will resume his career with Williams this year.

It is 25 years since a driver from the Americas last won the Formula One World Championship, dating back to Ayrton Senna's third title in 1991, although few doubt he could have gone on to claim more.

Since then, only a couple of Latin drivers have found themselves in the thick of a championship battle: there was Juan Pablo Montoya against Michael Schumacher and Kimi Räikkönen in 2003, and Felipe Massa's near-miss against Lewis Hamilton in '08.

To date, before starting the 2017 F1 season, Pastor Maldonado's victory in the 2012 Spanish Grand Prix stands as the last time a Latin American driver topped the F1 podium.

And yet in the 67-year history of the FIA Formula One World Championship, Brazil ranks third in the list of countries with the most Grand Prix victories and drivers' titles, beaten only by the UK and Germany.

When Rubens Barrichello won the 2009 Italian Grand Prix for Brawn GP at Monza, he claimed the 101st and – to date – most recent win for a Brazilian in F1, almost eight years ago.

The way the 2016-2017 winter unfolded, with Felipe Massa returning to Williams after having announced his retirement last September, while Felipe Nasr, his younger countryman, was left without a seat after winning two crucial points for Sauber at Interlagos, goes to show how much things have changed for the country that once used to send one sensational driver after another across the pond.

Fernando Plata looks after Carlos Slim's Escudería Telmex drivers programme in Europe and is currently guiding the career of Pietro Fittipaldi, who may well be Brazil's next F1 hope. The 20-year-old grandson of two-time Formula One World Champion Emerson is lined up for a second season in Formula V8 3.5 with the Lotus team this year.

"Brazil was very fortunate to have Emerson Fittipaldi because he opened the doors to other Brazilian drivers," says Plata. "The country appreciated the relevance of having a world champion and that created opportunities for others to follow his path."

A STREAM OF TALENT

For three decades Brazil was the most prolific country in F1, its drivers winning eight championships over a period of nearly 20 years, between 1972 and '91. Junior categories were graced by a consistent flow of talent that claimed lots of wins and titles in Europe, especially during the late '80s.

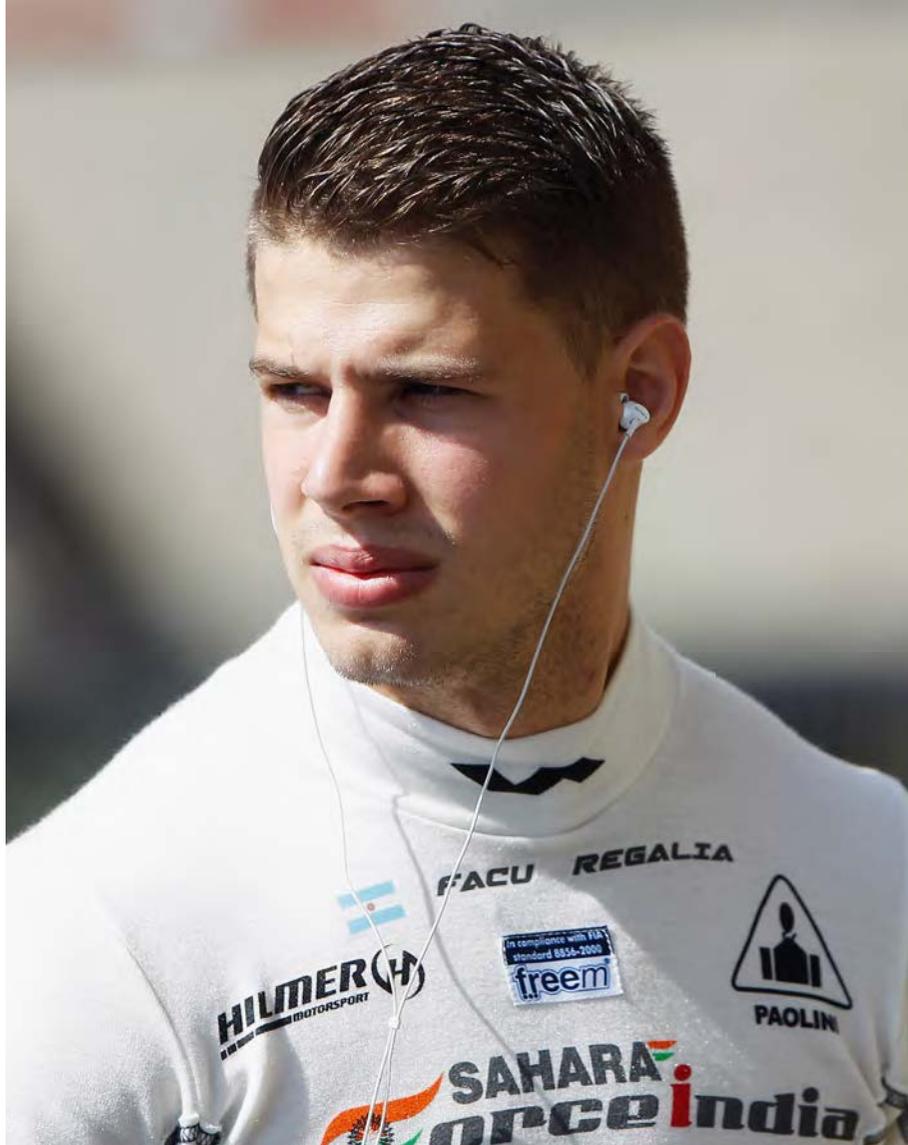
Rubens Barrichello, Gil de Ferran, Mario Haberfeld, Antonio Pizzonia, Nelson Piquet Jr – all claimed the coveted British Formula 3 Championship, while Roberto Moreno, Christian Fittipaldi, Ricardo Zonta and Bruno Junqueira were champions in the Formula 3000 International Championship, with Felipe Massa winning the Euro F3000 series as well.

It seemed that Brazil's main exports back in those heady days were football players, coffee and racing drivers. A strong local karting ladder and good, healthy single-seater series to take those first steps in cars – be it in South American F3 or Formula Chevrolet – were common to most of the names who went on to follow a similar path to Europe.

Karting remains strong in Brazil today, but that next step is where the problem lies. The Formula 4 Codasur series is hoping to help bridge the gap for drivers moving from karting to single-seaters before they attempt the jump to Europe.

However, not as many drivers are securing the budgets necessary to progress to the international scene any more. It was notable that for the first time in its history the GP2 Series did not include a Brazilian driver in its field in 2016.

The local economic climate is probably partly to blame, but it doesn't help either that 25 years have now passed since a Brazilian driver won the F1 title. ►



Felipe Nasr scored two crucial points for Sauber in 2016, but the Brazilian is out of F1 this year.

"I THINK BRAZIL MAY NEED ANOTHER WORLD CHAMPION BEFORE WE SEE THAT FLOW OF DRIVERS TO F1 AGAIN"

FERNANDO PLATA



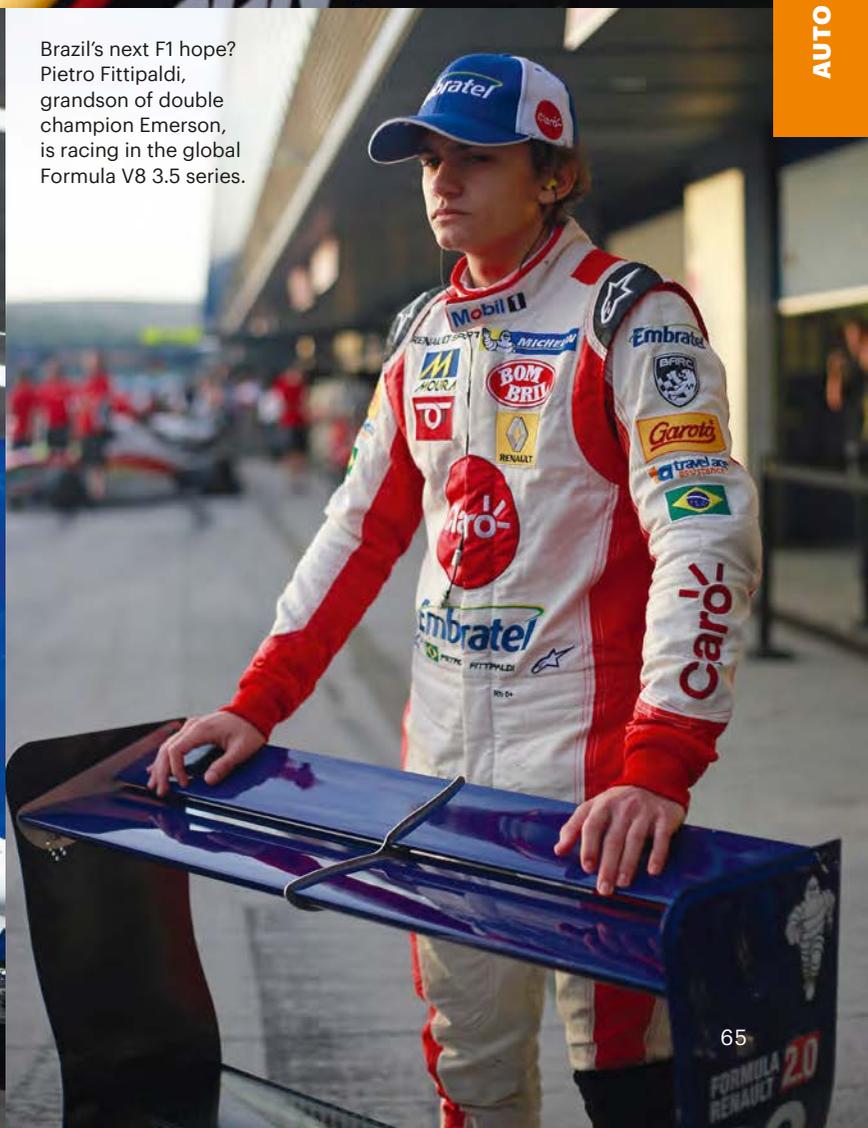
He came close to winning GP3, but now Argentine Facu Regalia is focusing on building his single-seater career at home.

Brazilian Sergio Sette Camara was until this year part of Red Bull's junior driver programme.

AUTO FOCUS



Brazil's next F1 hope? Pietro Fittipaldi, grandson of double champion Emerson, is racing in the global Formula V8 3.5 series.





José María López's single-seater career stalled in Europe but the Argentine has since claimed three straight WTCC titles for Citroën.

Those Brazilian F1 drivers in the late 1990s and early 2000s came with the momentum and the backing, but they couldn't quite match the impact of their predecessors.

"I think Brazil may need another World Champion before we see that flow of drivers to F1 again," says Plata. "Felipe Nasr should be the one following in Felipe Massa's footsteps and next in line we have Pietro Fittipaldi."

Sérgio Sette Camara, Pedro Piquet and Vitor Baptista are among current names pursuing the F1 dream, while others before them have simply chosen an alternate path, carving out a professional career in Brazil.

Twenty-one year old Felipe Fraga had hopes of a successful career in Europe, but after a short spell in the Renault Eurocup and NEC series in 2012, he shifted his focus to touring cars.

Two years later he was winning races in the Stock Car Brasil Championship while competing against names such as Barrichello and Zonta, and last year he became the youngest champion in the history of Brazil's most popular series.

"This didn't happen in Brazil in Emerson Fittipaldi's time: Brazilians didn't have a choice if they wanted to make a living as a racing driver, they had to go international," says Fernando Paiva, who runs his own sports marketing agency, Lit Entertainment, having previously worked with fellow Brazilians including Christian Fittipaldi and Cristiano da Matta.

What Paiva is referring to is exactly the same situation that for years has seen some of the best talent from Argentina blossom locally instead of choosing to climb the ladder to Formula One, just as in America NASCAR tends to become the ultimate goal for many young racing drivers.

Despite the legacy of Juan Manuel Fangio and legends like José Froilán González, more than 15 years have passed since Argentina was last represented in a Grand Prix.

José María 'Pechito' López came closest to ending that drought with spells in F3000 and GP2 before returning home to race touring cars and effectively turning professional in his native country.

His success on home soil ultimately gave his career a boost and he made the most of a chance to compete in the FIA World Touring Car Championship in Argentina as an independent entrant in 2013, beating all the factory teams and drivers. The rest of the story of the now three-time WTCC champion is well documented.

"These days the goal of a driver who wins the Formula Renault championship in Argentina is to race in the Super TC2000 or Turismo Carretera," says Facu Regalia, who came close to winning the GP3 series title in 2013 and is now trying to rebuild his career in single-seaters. Lack of funding brought his momentum to a halt in 2014, while his championship rival Daniil Kvyat went on to make his debut for Red Bull-backed Toro Rosso in Formula One.

"Top drivers in Argentina make a lot of money because they compete in up to three different series, there's a massive following of the sport locally and manufacturers are involved, so there is no real motivation for many young talents to look elsewhere," he adds.

"The budgets needed to race in Europe are a big step up from what they need in Argentina, and unless one day there is a well-structured programme like Escudería Telmex has in Mexico, it will be difficult to see more drivers from Argentina emerging in Europe."

There has been talk of a possible return for F1 to Argentina - it last visited the Autódromo Oscar y Juan Gálvez in Buenos Aires almost 20 years ago. If that prospect were to materialise, it would bring F1 back in focus for young hopefuls and potential sponsors.

While Regalia is the last Argentine driver to come closest to competing at the top level, his countryman Marcos Siebert won the 2016 Italian F4 Championship, beating Mick Schumacher to the title, while another young talented Mexican backed by Escudería Telmex, Raul Guzmán, finished third.

American/Ecuadorian driver Juan Manuel Correa was a race winner in the same series and placed sixth in the points, while Venezuela had Mauricio Baiz and Sebastián Fernandez on the same grid, both as race winners. Manuel Maldonado, cousin of F1 race winner Pastor, also took his first steps in the series.

The days when Venezuelan oil and gas giant PDVSA and the local government provided support to a good number of drivers all the way from F1 down to karting seem to be over for now, given the current turmoil in the country. That will certainly not make things any easier for young drivers as budgets rise along the racing ladder.

But just as was the case in Brazil decades ago, Venezuela and Colombia don't have a strong professional local racing scene, forcing drivers elsewhere in pursuit of their goals.

Proof of that was seen in 2014 when Colombia achieved an unprecedented full-sweep of the podium in an IndyCar Series race in Houston, with Carlos Huertas winning from Juan Pablo Montoya and Carlos Muñoz. Huertas, a race winner in British F3, and Muñoz, a podium finisher in Euro F3, were both inspired in their infancy by the driver who later became their rival. However, neither of them raced cars in their native country.

While Montoya seems to be easing away from full-time racing, Muñoz has established himself in IndyCar, something Uruguay's Santiago Urrutia, a former GP3 racer, is hoping to achieve after coming close to winning back-to-back Indy Lights titles last year.

Tatiana Calderon is Colombia's sole representative in any of F1's support series and is set to contest a second season in GP3. She's also just been appointed as a development driver for Sauber F1 team. Countryman Oscar Tunjo won a race in GP3 in 2015 but ran out of funding and has been on and off the grid since.

There is talent in Latin America in abundance, but only a few secure the resources to back them all the way. "For the next big star in Latin America to emerge two things have to come together: talent and financial backing," concludes Plata. "It's no secret that the main promoter of young drivers in Latin America is Carlos Slim. He has already achieved the goal of helping a driver to reach F1 with Sergio Pérez. But his search for the next great talent continues." ■



MASSA'S MISSION

The F1 veteran wants more action to help young drivers at home

For Felipe Massa, whose brief Formula One retirement was ended by Williams' need for an experienced racer to drive alongside rookie Lance Stroll in 2017, the dwindling throughput of South American drivers to the top of motor sport is not a recent development.

"The problem is not so much the lack of budget, but the availability of people who can teach youngsters and prepare them to go to Europe to race there," says the 11-time GP winner.

"When I began racing in Italy, I didn't have much money, but I was ready technically because in the junior formulae in Brazil I had great teachers and so there were plenty of other South Americans racing alongside me. Today, after karting, there's nothing and even the most talented are soon lost."

Massa is ideally placed to analyse the problems faced by motor sport in South America – and not just through his experience as a driver.

While racing for Ferrari in 2010, the Brazilian set up the Formula Futuro series in his home country. Aimed at giving young drivers a chance to start out on a career in single-seaters, the championship was short lived.

"It was really accessible financially," he says. "The organisation looked after everything, but the teams found it more advantageous to offer test days for sale and so it only lasted two years."

The solution? "A series like F4 would be useful, not just in Brazil but all over South America. It needs input from the ASNs: in Europe we've seen this works, especially as it is backed by the FIA."



Pedro Piquet, son of triple F1 champion Nelson, will progress to European F3 this year having won back-to-back Brazilian F3 titles.

AUTO FOCUS



Prince Albert II of Monaco

NOBLE AMBITIONS

The Monegasque royal family has always harboured an abiding passion for motoring and motor sport. Prince Albert II of Monaco is no exception, but he is also firmly focused on a sustainable future

TEXT: DANIEL ORTELLI
PHOTO: ERIC MATHON/PALAIS PRINCIER

Where did the Grimaldi family get its passion for cars?

My grandfather, Prince Albert I, was keen on anything technical and technological, two words that weren't in common usage back then. He was fascinated by the sciences, by everything that could contribute to the progress of mankind and lead to peace.

When he was born, at the beginning of the industrial revolution, many journeys were still made by horse-drawn carriage. He had a Humber motorbike that he loved [a 1902 350cc model]. He rode it from Monaco to Paris, crossing France on this less-than-sturdy bike. On his first trip, which he tackled alone, he broke down, riding on roads that were often just loose surfaces. He had an adventurous spirit that went with a love of the motor car.

Your father, Prince Rainier, was the first Grimaldi to start a car collection...

He witnessed the birth of the Grand Prix, all that atmosphere around the car, which means that we in Monaco are all

very fond of motor sport. I have a soft spot for a 1902 De Dion Bouton, the car my father drove in a London to Brighton run, 50 years ago, in 1968. The whole family went over for it and we did some of the sections following behind and others in the car with him. I also very much like the 1935 Packard 8 on display in our private collection.

When did you attend your first Monaco Grand Prix?

In 1965. The race was won by Graham Hill. I was seven years old and it made a big impression on me. There was a lot of noise and I remember covering my ears. That noise delivered an excitement level that is less evident today. But what I really miss is the smell of castor oil, which added to the charm of it.

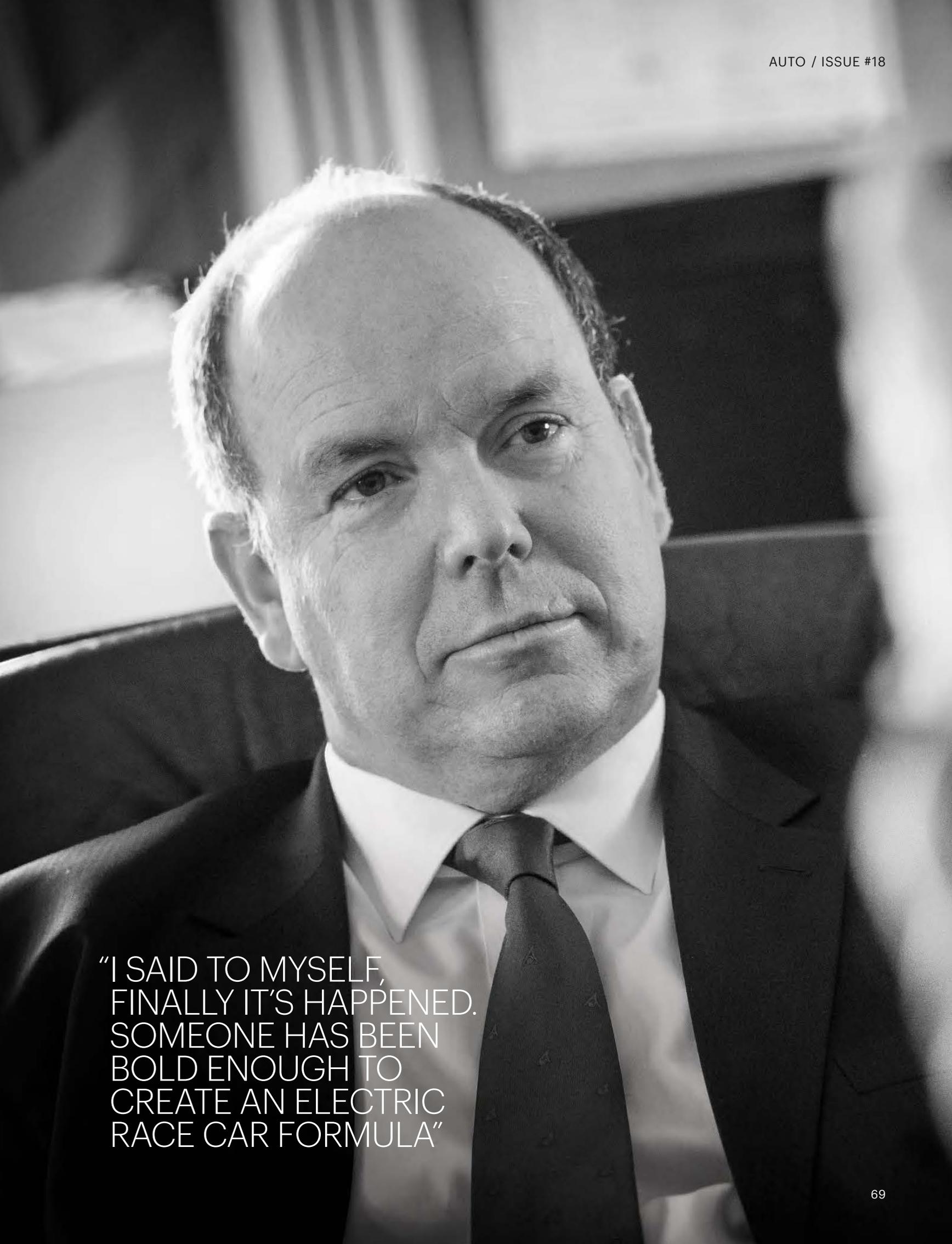
Is it true that the Monaco Grand Prix pays little or no fee to Formula One's commercial rights holder?

That's just a rumour. Maybe the rights are less expensive than for other circuits, but there is a fee. Bernie

Ecclestone was well aware what Monaco brought to Formula One, he said it himself, as do the sponsors and drivers. It's part of the negotiations with the ACM (Automobile Club de Monaco). Bernie always took care of us, but he still made us pay what he reckoned was the right amount. I don't know all the figures and maybe it is less than for some other races, but you have to look at what the Monaco GP represents historically. We have not been favoured unduly and we pay what we have to pay.

What was your impression of Alejandro Agag when he came to talk to you about his Formula E project?

I said to myself, finally it's happened. Someone has taken the risk, has been bold enough to create an electric race car formula. I immediately gave him my support, even before he spoke to the ACM, and my Foundation became a partner. It's a really competitive series that demonstrates you can race with electric single-seaters. It is certainly going to help promote the idea. ►



"I SAID TO MYSELF,
FINALLY IT'S HAPPENED.
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CREATE AN ELECTRIC
RACE CAR FORMULA"

Do you think his gamble has paid off?

I can't claim to be too objective, but it seems to be really taking off. The racing is close and the car switch [mid-race] also spices things up. Soon, the cars will be able to run longer, which shows that progress has been made on the battery life.

You were keen for Venturi, a Monegasque team, to take part?

I have to really thank Gildo Pallanca Pastor for taking on this challenge right from the start. It shows the principality is engaged in environmentally-friendly mobility. My first electric car was a little Peugeot 106. Today, there are around 600 electric or hybrid cars in Monaco, with recharging points opposite the palace.

Are you keen on the plan that sees the Historic Grand Prix and the Formula E race alternating each year, a mix of nostalgia and innovation?

I'd rather we held all three events every year, but that's not possible. Technically,

it is complicated and running several events one after the other would put a lot of pressure on the volunteers.

This year, you waved off the competitors for the final leg of the Rallye Monte-Carlo Historique. What's your take on the growing success of this event, which involved 330 crews taking part in the 20th edition?

I am delighted, just as I am with the Historic GP, to see the enthusiasm of competitors and spectators alike. There's a nostalgia for the great events of yore, for these cars that have become legendary. The passion is always there and the event is easy-going and fun, but the competitors take it seriously. It's fantastic and there's an amazing atmosphere, even inland and further away in Valence.

What are your fondest memories from your time as a co-driver?

In a Renault with Jean Ragnotti, who gave it his all as the course-opening car on a super special stage for the Rallye

Monte-Carlo down on the port. That was great, and I also remember opening a stage on the 1000 Lakes in Finland, in a Lancia. On the Paris-Dakar I drove some link sections in a Mitsubishi Pajero, so that Jean-Pierre Marsan could take a break. Once in Algeria, we ended up in a convoy trying to slipstream other competitors. We didn't do too badly, sometimes we finished in the top 25.

I have another memory, which involves the American driver Danny Sullivan. After a dinner, I asked him if he wanted to do a lap of the Monaco circuit in my Golf GTI. It was winter, so there wasn't much traffic and he drove. He went a bit quickly and some police officers were a bit disconcerted. But that was 30 years ago...

What's more frightening: getting lost in the desert on the Paris-Dakar, or representing Monaco in the bobsleigh event in the Olympic Games?

We weren't completely lost, even though it was night-time and therefore

Prince Albert has been a strong supporter of the Formula E Championship, run by Alejandro Agag.





Prince Albert and Jean-Pierre Marsan at the start of the 1985 Paris-Dakar in their Mitsubishi Pajero.

a bit complicated, at the end of the Iferouane to Agades stage. We soon found some other competitors and we all managed to get out together. It was more of an adventure, with some marvellous moments. I just regret I didn't make it to the finish, but that's motor sport.

When you go down a run in a bob, you're definitely a bit apprehensive. You have to learn how to drive it, which requires finesse, correcting your trajectory with levers. It's very precise, very subtle. Whoever says they are not scared in a bob is lying. You have to overcome that feeling, while controlling the excitement of competition to be able to find the best lines.

When did the Albert II of Monaco Foundation first become interested in sustainable mobility?

Right from the time it was set up in 2006. Our first initiatives were aimed more towards biodiversity and climate change, but we soon realised that we had to promote renewable energy, based around electric vehicles. The EVER exhibition (Exhibition of Ecological Vehicles and Renewable Energy) already existed and there was already the idea that one should promote clean mobility. Therefore it was logical that the Foundation should get involved.

Were you inspired by what Al Gore was doing in the United States?

Of course, because he was one of the first politicians to talk about these

“WE HAVE 600 ELECTRIC OR HYBRID CARS IN MONACO, WITH CHARGE POINTS NEAR THE PALACE”

things, to write a book and make a film, *An Inconvenient Truth*, well before he became Vice-President of the USA. He was already very involved and a leader in this way of thinking, as was Nicolas Hulot in France. I had already accompanied my father [Prince Rainier] to the Earth Summit in Rio in 1992. I felt more should be done and that's why the Foundation was established.

Ten years on, what have you achieved in this field?

There is more and more awareness of this topic. Everyone has now understood that better methods must be applied to mobility and how to power it as a matter of urgency. The major cities all suffer from pollution with a subsequent risk to health. In the car industry, for financial reasons, there is still a long way to go.

Is the input of visionaries such as Tesla founder Elon Musk important when it comes to raising awareness?

For a long time, people thought of electric vehicles as just gadgets, but now they reckon they are too expensive so they stick with their good old diesel car. We are beginning to make diesel less appealing, which is a good thing. We have to set out clearly the main elements in making the switch with convincing and quality products. But it also needs the major manufacturers to encourage their customers to take that first step.

You are working to protect the environment, the FIA does a lot on the road safety front, so does your work and that of FIA President Jean Todt share common ground?

These two fights are complementary and long term. When it comes to road safety, I believe we in Monaco are good students, even if speed is naturally limited in the urban landscape of a city-state. However, rules get broken and accidents do happen. But in the schools of the principality there is a push to educate and inform. On a global level, there is much to do in some countries.

Calling on great champions, celebrities, international organisations and patrons from industry is a good approach and is what we have been doing on the environmental front. These are topics that must be promoted through several voices and by society so as to add weight to them and create a bigger impact.

Do you believe in the connected car?

Yes, of course if everyone went around in connected cars, that would improve traffic flow and there would be fewer accidents. But there's also a chance of your system getting a computer virus one day. In an extreme case, the car could make a sharp turn, or stop and not restart, if it does not recognise the driver as being the right person.

To an extent, it also removes the enjoyment of driving, a certain level of freedom, even if I know that the younger generation is less interested in cars, less interested in driving. The idea is pretty amazing, but I have reservations. And I don't know if this is something that will be with us tomorrow, or a bit further down the line. ■

AUTO FOCUS

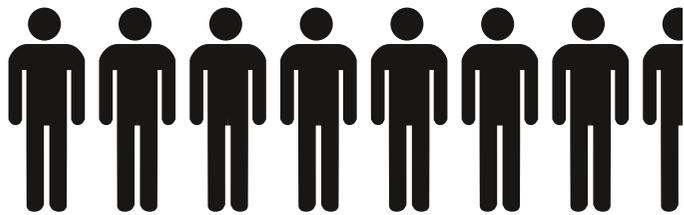


SAVING THE CHILDREN

Despite ongoing road safety projects worldwide, too many children are dying on our roads. But more can be done to change the statistics, especially through the use of Child Restraint Systems

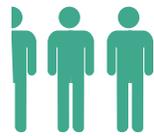
CARS AND ROAD SAFETY

Every year **1,250,000** million people die in car crashes



186,300

are children (under 18)



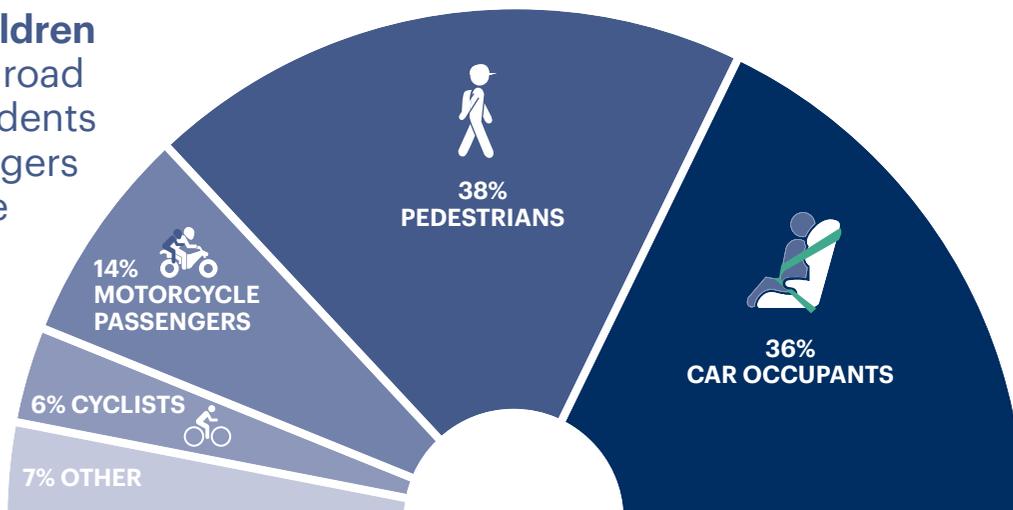
* The Convention on the Rights of the Child considers every human being under 18 a 'child'

15%



A child dies every **three minutes** as a consequence of a traffic accident somewhere in the world

36% of children who die in road traffic accidents are passengers in a vehicle



Child Restraint System (CRS)

How does the CRS work?

It prevents contact with rigid elements in the vehicle:



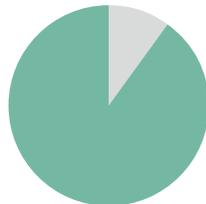
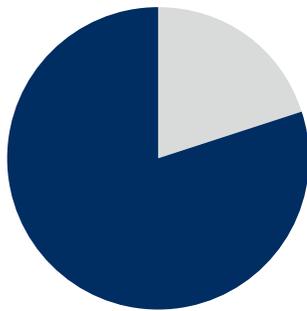
CRSs with a harness help to protect the neck and head



CRSs attached with a seat belt protect the thorax and back

EFFECTIVENESS The correct use of a Child Restraint System:

Reduces the child's risk of death in case of a traffic accident by up to: **80%**

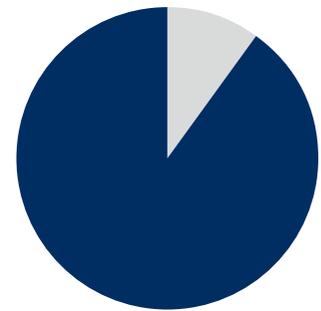


Infants (<1 year) by **90%**



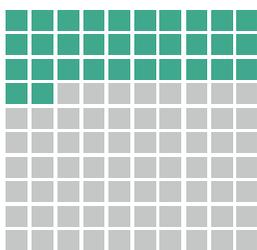
Toddlers by **80%**

Risk of injury is reduced by: **90%**

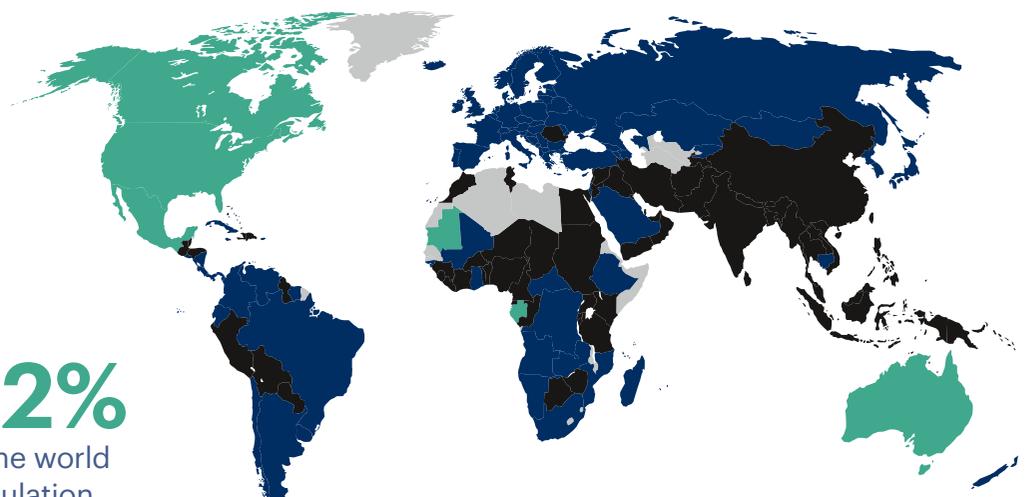


REGULATION

Just **96** countries have specific regulations for the use of CRS in the vehicle:



32% of the world population



- National child restraint law
- Child restraint law but not nationwide
- No child restraint law
- Data not available

Main sources Global status report on road safety 2013/15 (WHO).
 Ten strategies to preserve child road safety (campaign #Savekidslive).
 Seat belts and Child Restraint Systems. A manual of road safety for decision-makers and professionals (FIA Foundation).
 Seat belts: current issues (University of California Berkeley Traffic Safety Center Newsletter, 2002).

FINAL
LAP

The last word

Geneva Motor Show President Maurice Turrettini on why the event remains a huge draw for manufacturers

SHOW OF STRENGTH

Q: Is the 2017 Geneva Motor Show as popular with car manufacturers as in previous years?

A Yes, absolutely; once again all the important car manufacturers will this year be present in Geneva. In addition, we welcome numerous luxury car manufacturers and designers as well as high-class tuners to give a complete overview of the car industry, including niche products.

Q: Manufacturers are increasingly appearing at tech-focused events like the Consumer Electronics Show – how does this affect traditional motor shows like Geneva?

A I don't know how it affects other shows. It definitely does not affect Geneva. The fact that manufacturers meet their technical partners and suppliers at professional shows – like CES – does not exclude their participation in 'traditional' motor shows, where they meet the media and primarily their customers.

Q: Why are motor shows still popular for car launches when manufacturers could reach a larger audience online?

A A car launch is a three-dimensional experience. A car needs to be discovered with all the senses; the sense of seeing, of hearing and even the sense of odor. An online presentation remains two-dimensional. It is for sure a great teasing tool. However, only a get-together in real life can really attract one.

Q: Has there been a big change in the way manufacturers are using the show in recent years?

A While a few years ago the manufacturers simply focused on new car models, today they strongly convey their brand philosophy and their efforts in research and development. This often goes with an interactive and global experience. The motor show is an opportunity for the exhibitors to strengthen their image... much more than



simply present and 'sell cars'. Once again, it is all about emotions.

Q: How is the show embracing modern technology?

A We focus on our exhibitors, they are our priority. We want them to get the best communication platform possible in Geneva for the most powerful media coverage. Their booth is the centre place where modern technology is displayed and explained. Therefore we are rather careful with the organisation of special exhibitions in the

framework of the show. Although we have some ideas and projects...

Q: Is the future bright for the event?

A I think we have some very convincing arguments for the future: a neutral, easily accessible place in the heart of Europe without any homeland car production; a human-sized exhibition: all seven halls are under one roof; and finally the 'Swiss' label in terms of reliability, quality, cleanliness and safety. Yes, I see the future is bright for the event.

73+

RACE TRACKS REALIZED

33

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#1

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