

AUTO

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OYSTER PERPETUAL COSMOGRAPH DAYTONA



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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 more than 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.

Dear reader, dear friend,

As we head into 2020, we begin this edition of AUTO with a look back at another exceptional year of racing and rallying through our traditional CELEBRATION OF THE CHAMPIONS who lit up the past motor sport season.

In December, the winners of the FIA championships gathered in the magnificent setting of the Louvre Museum in Paris, and in that temple of art we presented our finest competitors with some beautiful new trophies, created especially for the FIA by famous American artist, FRANK STELLA. His remarkable work adorns the cover of this issue and you can read his thoughts on the creative process behind these awards in our news section.

Last year represented a landmark for FORMULA 1, with the approval by the World Motor Sport Council of new rules for the championship's 2021 season and beyond that will dramatically alter how our most prestigious category goes racing. Significant changes to the Technical and Sporting regulations and, for the first time, the inclusion of Financial rules, aim to increase competition among teams and provide closer racing, and should ensure the sustainability of the pinnacle of motor sport for years to come. You can explore these changes in detail in our feature and read about the ambitious plans to make F1 carbon neutral within the next decade.

2019 also saw the launch of a new multi-disciplinary FIA event that brings together some of the world's finest up-and-coming and amateur talents to compete under national colours. The inaugural edition of the FIA MOTORSPORT GAMES, staged in its first host city, Rome, was a great success and AUTO looks back at how the event has benefited our Clubs, our young drivers and the next generation seeking to engage with motor sport in new and exciting ways.

Furthermore, we mark 10 years since the launch of the FIA WOMEN IN MOTORSPORT COMMISSION with a look back at the progress made with its President MICHÈLE MOUTON. Elsewhere, we feature the new head of DAIMLER, OLA KÄLLENUS, while our regular look at rising stars focuses on reigning Formula 2 and Formula 3 champions, NYCK DE VRIES and ROBERT SHWARTZMAN. Meanwhile, our Rearview section turns to Italy, firstly with NINO VACCARELLA, who built his reputation in the Targa Florio and burnished it further at Le Mans when teamed with Frenchman JEAN GUICHET, and secondly, with a look at the FERRARI DINO, one of the most beautiful, and important, cars to come out of Maranello.

There is plenty more to dive into in this latest edition, I hope you find it interesting and, as usual, please feel free to send in ideas and suggestions to make it even better.



JEAN TODT,
FIA President

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FIA INTERCONTINENTAL
DRIFTING CUP
**'GOTCHA'
DOUBLES UP**

Georgy Chivchyan defended his FIA Intercontinental Drifting Cup trophy by winning the dramatic third edition of the event held at Tsukuba Circuit in Japan last December.

After making light work of his opening rounds, in the semi-finals the driver known as 'Gotcha' found himself going up against Yukio Matsui who beat him in qualifying the previous

day. The initial runs resulted in a draw, but following a rematch it was Chivchyan who advanced to the grand final where he met another local ace – Hideyuki Fujino.

However, in the final Fujino was forced to retire with a technical failure and Chivchyan became the first double winner in the history of the FIA IDC.

CHIVCHYAN FEELS THE HEAT
After taking his second FIA Intercontinental Drifting Cup win, Georgy Chivchyan admitted that technical issues almost cost him glory. "In the final run, my clutch was overheating. I could feel that in the top four round. It was very hot, and I could feel it was soft. I was lucky, if it wasn't for [Hideyuki] Fujino's car breaking down, maybe I wouldn't have been able to continue."



CES 2020
**SONY
GOES
MOBILE**

Technology giant Sony made a surprise entry to the mobility sphere at the 2020 Consumer Electronics Show, revealing an electric concept car called the Vision-S to showcase its autonomous driving and in-car entertainment systems. The car was unveiled by Sony boss Kenichiro Yoshida, who said it “embodies our contribution to the future of mobility.”

While it is unclear if Sony has any plans to put Vision-S into production, or simply intends to develop technology to sell to existing manufacturers, Yoshida insisted that the automotive sector is hugely important. “It’s not an exaggeration to say that mobile has been the mega-trend of the last decade. I believe the next mega-trend will be mobility,” he said.

SENSING THE SHAPE OF THINGS TO COME

The main aim of the Vision-S is to showcase Sony’s automotive-relevant technology. The car features 33 sensors of varying types that can identify people and objects both inside and outside the car as part of a ‘safety cocoon’. The concept also features AI, telecommunication and cloud computing technology, all accessed via a large panoramic touchscreen.



WTCR, MALAYSIA MICHELISZ CROWNED IN WTCR

Norbert Michelisz claimed his first WTCR — FIA World Touring Car Cup title following a dramatic super-finale at the inaugural Races of Malaysia, which also featured action from the FIM Endurance World Championship for motorbikes.

The Hungarian, driving for the BRC Hyundai N Squadra Corse team, took victory in Race 1 and points finishes in Races

2 and 3 to out-score title rival Esteban Guerrieri. But it could have been different if Race 2 winner Guerrieri had not suffered contact with Mikel Azcona early in Race 3, which ultimately cost the All-INKL.com Münnich Honda driver his shot at the crown. The other driver to star was SLR Volkswagen's Johan Kristoffersson, who rose from P22 on the grid to win Race 3.

'NORBI' REACHES THE TOP OF HIS GAME
Norbert Michelisz had plenty of people to thank after winning his first WTCR title, not least rival Esteban Guerrieri with whom he is good friends. "A huge thank you to my family, the team and all my supporters," said the Hungarian. "Ten years ago I was still playing computer games and hoping to start a professional career. In the end I managed to do that, so thank you all."



NEWS

In this issue: FIA cements ABB FIA Formula E's world championship status; Didier Drogba leads FIA road safety campaign in Africa; Toyota to run autonomous vehicle passenger rides in Tokyo; Hyundai successfully tests self-driving truck; FIA enrolls enduro racing heroes to its Hall of Fame

Formula E gains FIA world championship recognition

ABB FIA Formula E has been awarded official world championship status by the FIA World Motor Sport Council (WMSC) following its latest meeting.

Council members voted to grant the all-electric race series full world championship status from the start of Season 7 in 2020/2021, with an agreement signed by FIA President Jean Todt and Formula E Chairman Alejandro Agag at the FIA headquarters in Paris.

"The creation and development of Formula E has been a great adventure," said President Todt. "Within a short timeframe, Formula E has proven relevant for the auto industry with more major car manufacturers joining the series at the start of the current season, bringing their total number to 10.

"Since its first race in Beijing in 2014, Formula E has proven that the concept of cutting-edge electric racing works."

Currently the ABB FIA Formula E calendar features 14 races in city centres across five continents. The series offers an international platform for the development of electric vehicle technology and the promotion of sustainable mobility.

ABB FIA Formula E continues to gather pace with BMW, Porsche and Mercedes-Benz now competing alongside the likes of Audi, Jaguar, DS Automobiles, NIO, Penske, Nissan and Mahindra Racing, extending the list of makes for whom ABB FIA Formula E represents a technological showcase.

The series will be the fifth world championship under FIA governance. From Season 7, the ABB FIA Formula E World Championship will be part of the highest level in the FIA-sanctioned hierarchy joining the FIA Formula One World Championship, the FIA World Rally Championship, the FIA World Endurance Championship and the FIA World Rallycross Championship.

ABB FIA Formula E Chairman Alejandro Agag said: "It was always our ambition to one day become an FIA world championship. Everything we have done and delivered to this point has been working towards this particular moment in time.

"This agreement puts Formula E in the top tier of international single-seater racing. It has been a tremendous effort from many people involved and none of it would have been possible without the support of FIA President Jean Todt and the federation, as well as the dedication shown by our teams and partners. It is the beginning of a new chapter for the ABB FIA Formula E World Championship."



Formula E has fast gained momentum since launching in 2014, with 10 major manufacturers now featured on the grid. Right: Jean Todt with series chairman Alejandro Agag.



FIA launches road safety campaign in Africa with Didier Drogba

The FIA has revealed its latest road safety campaign in Africa, with the support of Ivorian football star Didier Drogba.

As part of the #3500LIVES campaign, a new visual 'Watch out for Kids' places the emphasis on the safety of children, who are among the most vulnerable road users. Drogba, who is the FIA Ambassador for Road Safety in Africa, features in the campaign which encourages drivers to slow down in risk areas such as school zones and pay attention to children at all times.

"Road traffic crashes are the leading cause of death in Ivory Coast. Children and pedestrians are the most vulnerable," said Drogba. "We have an obligation to protect our people by educating them and teaching them the best practices."

Africa has the highest road fatality rate in the world where 44 per cent of all road traffic deaths on the continent are pedestrians and cyclists, and although Africa only has two per cent of the world's cars, the continent accounts for 20 per cent of all road deaths worldwide.

The campaign was announced with the support of the Prudence



The FIA's push for improved road safety in Africa is being led by Ivorian football star Didier Drogba, below.



Foundation and the Didier Drogba Foundation, alongside their 'SAFE STEPS' 60-second public service announcement. This also features Drogba advising on key topics of road safety including drink driving, distracted driving, seat belts, speed limits, motorcycles and pedestrians.

"The road safety crisis must be quickly and effectively addressed, especially in Africa where the mortality rates are higher than in the rest of the world," said FIA President Jean Todt. "With awareness campaigns such as #3500LIVES and SAFE STEPS Road Safety Africa, we want to make people conscious of the dangers they are exposed to when they don't respect

simple safety rules on the road." Marc Fancy, Executive Director of the Prudence Foundation, said: "We are committed to protecting the future of communities by enhancing their education, health and safety. Following the success of SAFE STEPS Road Safety in Asia, we are delighted to be launching the new SAFE STEPS Road Safety Africa campaign here in the Ivory Coast."

Motorists in NSW, Australia, can now be fined if new detection cameras catch them using mobile devices while driving.



Mobile phone detection cameras rolled out in Australia

Australian state New South Wales (NSW) has rolled out the world's first mobile phone detection cameras in a bid to cut the number of fatalities on the roads.

According to Transport for NSW, the cameras use artificial intelligence to review images and

detect illegal use of the devices. The images that are identified by the automated system as likely to contain a driver illegally using a mobile phone are then verified by an authorised personnel member.

Making or receiving voice calls while driving in NSW is legal but only when using a hands-free device. Other functions such as video calling, using social media and photography while driving are illegal.

So far 329 people have died on NSW roads compared to 354 people in 2018 according to official statistics, but the state wants to cut the number of road fatalities by 30 per cent by 2021.

The government hopes to snap 135 million vehicles every year within four to five years of the programme starting. That would mean if 1.8 per cent of drivers are caught using their mobile phones, this adds up to 2.4 million people.

For the first three months after the detection systems are in operation, offending drivers will be issued warning letters. After that, the penalty will be a A\$344 standard fine and a A\$457 fine in a school zone. In both cases, drivers will also receive penalty points.

FIA pays tribute to road traffic victims

The FIA supported the World Day of Remembrance for Road Traffic Victims (WDoR) on November 18, which commemorated the millions of people killed or injured on roads worldwide.

Linked to the third pillar of the Decade of Action for Road Safety 2011-2020, this year's topic was 'Life is not a car part', which emphasised that human life cannot be replaced if broken.

The day aimed to draw attention to the emotional and economic burden that road crashes represent for families and friends, recognise the suffering of road crash victims, and thank the emergency services working every day to save lives on the road.

Support from the FIA came from its member clubs, which have always prioritised road safety and worked with other mobility stakeholders on the issue. FIA championships also supported WDoR by organising family pictures with drivers in Brazil, Australia and China.

"On the occasion of the World Day of Remembrance for Road Traffic Victims, I would like everyone to take a moment to think about the victims as well as the countless families and friends who are tragically affected by road crashes," said FIA President Jean Todt, who also serves as the UN Secretary-General's Special Envoy for Road Safety.

"I also would like to pay tribute to the dedicated emergency crews who are doing a tremendous job, and to encourage everyone to make road safety a priority," he added.

F1 stars supported the FIA-backed World Day of Remembrance for Road Traffic Victims.



NEWS Toyota to test self-driving car on streets of Tokyo

Toyota will be testing out its self-driving cars on the streets of Japanese capital Tokyo next year by giving members of the public a chance to ride in them.

The company's Platform 4 (P4) self-driving car will be available for public demonstration rides next summer in Tokyo, to demonstrate its 'Chauffeur' capabilities in a 'Mobility as a Service' driving environment.

Taking place in Tokyo's busy Odaiba district, the often-congested waterfront sub-centre is seen as the ideal place to showcase the P4's abilities in an environment that has a mix of pedestrians, vehicle traffic, diverse road infrastructure and tall glass buildings.

Members of the public will still have to be accompanied by a safety driver, as required by Japanese law, however the technology has already had successful trials in the United States at Toyota's Ottawa Lake closed-course test facility in Michigan.

"By challenging ourselves to successfully operate autonomously in Odaiba, we have set a high bar that requires us to rapidly expand the capabilities of our technology in a short amount of time," said Gill Pratt, Toyota Research Institute (TRI) CEO.

"To accomplish that, we are working closely with the Advanced R&D Division of Toyota and Toyota Research Institute-Advanced Development based in Tokyo, which is responsible for bringing the P4's automated driving software to the public."

Further testing of the P4 software is being conducted on public roads in Odaiba, around TRI's Ann Arbor facility in Michigan and the Los Altos California research offices.



Toyota's Platform 4 autonomous car is set to 'chauffeur' members of the public around Tokyo.



NEWS Volkswagen launches electric mobility project in Rwanda

Car manufacturer Volkswagen has launched a new project with technology company Siemens to test the feasibility of electric mobility in an African country.

The pilot project will form part of Volkswagen's operations in Rwanda with four e-Golfs, VW's electric counterpart of its popular hatchback, and one charging station being introduced to the capital city of Kigali.

Volkswagen has signed a joint development agreement with Siemens to provide the charging

infrastructure for the electric cars, while the pilot e-Golfs will be added into the Volkswagen Mobility Solutions Rwanda fleet to provide a customised mobility service.

The plans for the service are to increase the number of electric cars to 50 units and 15 charging stations depending on the outcome of the pilot project.

"The success of our innovative and pioneering mobility solutions business has shown us that Rwanda has the potential to leapfrog the internal combustion engine into

Volkswagen and Siemens representatives mark the launch of a new electric mobility pilot project in Rwanda.



electric cars," said Thomas Schäfer, CEO of Volkswagen Group. "Rwanda has a young and progressive population that appreciates individual and modern mobility."

Dr Gerd Müller, German Federal Minister for Economic Cooperation and Development, added that the cooperation between Volkswagen and the country supports environmentally-friendly mobility concepts in African cities.

"Africa's youth need sustainable jobs and better prospects for a future in their home countries," said Dr Müller. "In this respect, initiatives such as Moving Rwanda are yet another step towards implementing the Marshall Plan with Africa."

NEWS Hyundai tests self-driving truck in South Korea

Hyundai has conducted a successful first test of self-driving trailer trucks in South Korea, showcasing its autonomous driving technology aimed at improving safety and reducing driver fatigue.

The test was completed on the 7.7km Yeouju Smart Highway in the capital city of Seoul, and successfully displayed manoeuvres such as vehicle platooning, cut-in/out by other vehicles, simultaneous emergency braking and Vehicle-to-Vehicle (V2V) communication tech.

Vehicle platooning mode enables a truck to maintain a 16.7m distance from the one it is following, with real-time fine-tuning based on the lead vehicle's acceleration and deceleration.

Platooning mode has the benefit of reducing air resistance, which improves fuel efficiency and lowers CO2 emissions. It does not require the driver to put their foot on the accelerator or brakes, reducing fatigue and improving safety.

The V2V technology enables trucks to be aware of each other's speed and precise road



Hyundai's self-driving truck was tested on a 7.7km highway in the capital, Seoul.

position, so if a vehicle cuts between platooning trucks, the following truck automatically extends the gap to a minimum of 25 metres.

Daimler, who tested its own platooning technology on US highways, expects the automated technology could improve economy figures of its trucks by as much as 10 per cent.

"We are confident that our industry-leading autonomous driving technology in commercial vehicles showcased in this platooning truck demonstration will lead to a paradigm shift in the freight and logistics industry," said Jihan Ryu, head of Hyundai Motor's Commercial Vehicle Electronics Control Engineering Group.

NEWS Global child-friendly street design programme

Four cities – Fortaleza in Brazil, Kigali in Rwanda, Santiago in Chile and Tirana in Albania – will pilot a child-focused street transformation by Global Designing Cities Initiative (GDCI), a National Association of City Transportation Officials (NACTO) programme, which is supported by the FIA Foundation.

The cities were selected for in-depth technical training and assistance, along with supplemental funding, to develop child-friendly streets as part of GDCI's Streets for Kids programme, supported by Bernard van Leer Foundation, FIA Foundation, Foundation Botnar and Bloomberg Philanthropies. The programme aims to advance street design for the creation of safe public spaces for children of all ages and abilities to be able to learn and play, with the freedom to move about safely.

Designing Streets for Kids, a new design guidance by GDCI and also funded by the FIA Foundation, will provide training to: identify sites for a street transformation project; engage children in the design process; develop a design for a temporary intervention that transforms a street or intersection into a safer, playful space



The GDCI's Streets for Kids programme has already been used to transform urban areas into safe play spots in the Italian city of Milan.

used by children, care givers and others.

"Every child has a right to healthy, safe streets and clean air to breathe," said Saul Billingsley, Executive Director of the FIA Foundation. "Child-friendly urban design is a cost-effective choice for cities that are truly invested in better environments for our children. That is why we are delighted to support in-depth training and resources around the world to demonstrate the potential impact of this scheme."

NEWS New AI initiative explores future of mobility

A New Mobility Initiative to explore the social benefit of mobility innovations in saving lives, reducing injuries and promoting health equity has been launched at prestigious United States university Johns Hopkins' Bloomberg School of Public Health.

The public health expertise at Johns Hopkins University is leading the way in a new era of mobility, focusing on autonomous vehicles and the implementation of the safe

systems approach to achieve equity, thanks to seed funding from the FIA Foundation. The initiative operates at a state, city and neighbourhood level to decrease road traffic crashes and increase access to education, medical care, healthy food and employment.

Discussing how autonomous vehicles can be used to improve quality of life for vulnerable populations, School Dean Ellen MacKenzie said: "It's clear that

self-driving cars are in our future, but so far we've focused a lot on the technology and not enough on their effects on our society. The New Mobility Initiative is designed to change all that. Public health experts have decades of experience in saving lives by gathering evidence and developing policy recommendations to reduce motor vehicle injuries. And the field's deep commitment to social justice can ensure that the new technology benefits everyone."

The initiative includes a focus on youth, which is at the heart of the Child Health Initiative hosted by the FIA Foundation. "This initiative is critical to ensuring the future of mobility is developed with an equity lens," said Natalie Draisin, FIA Foundation North American Director and UN Representative.



The New Mobility Initiative has been launched by Johns Hopkins University with backing from the FIA Foundation.

NEWS FIA ERC brings communities together in Cyprus

The FIA European Rally Championship played its part in bringing communities together in September as the Cyprus round on the competition united thousands of Greek and Turkish Cypriots normally separated by the island's buffer zone.

Each year, the Nicosia Super Special Stage of Rally Cyprus leads to the military posts and barriers of the 'Buffer Zone' in the island's capital Nicosia being dismantled, allowing hundreds of Greek and Turkish Cypriots to work together as organisers and volunteer safety marshals, thus ensuring the safe and smooth running of the stage. On the day of the event, people from both communities gather along the stage route in their thousands to enjoy the spectacle offered by the ERC competitors.

Now in its fifth year, the Nicosia Special Stage's temporary 'unification' of the city's residents is the brainchild of Antonis Michaelides, President of the island's ASN, the Cyprus Automobile Association. Following discussions with then President of the Turkish Cypriot Motor Federation Hasan Macila, the plan was approved by authorities in 2014.

Attending Rally Cyprus alongside Andrew Papadopoulos, President of the FIA's ASN Task Force and head of Australian ASN CAMS, FIA Deputy President for Sport Graham Stoker said: "It was deeply moving to be present in the 'Buffer Zone' and to see the barriers come down. This is an area that has seen great conflict in the past and to see communities come together to make this special stage of the rally happen was a true demonstration of sport's power to foster peace."

FIA Deputy President for Sport Graham Stoker with members of the UN peacekeeping force in Cyprus.





Twenty-nine winners of the FIA World Endurance Championship have been inducted into the FIA Hall of Fame.



Double FIA World Endurance Champion Derek Bell receives his award from FIA Deputy President of Sport, Graham Stoker.



Endurance racing champions added to FIA Hall of Fame

Twenty-nine champions spanning almost four decades of endurance racing have been inducted into the FIA Hall of Fame during a ceremony at the Automobile Club de France.

American Bob Garretson, winner of the 1981 FIA World Endurance Championship (WEC) with Porsche, was first to receive the honour, at 86 years of age. The late Stefan Bellof, who won in 1984 with Porsche, was represented by his brother Georg. They were followed by Hans-Joachim Stuck, FIA World Endurance champion for Porsche alongside Derek Bell.

FIA President Jean Todt was on hand to welcome the inductees.



Next to be awarded were Raul Boesel and Martin Brundle, title winners with Jaguar in 1987 and '88 respectively, followed by 1990 champion for Sauber Mercedes Mauro Baldi and his compatriot Teo Fabi, who won in 1991 (Jaguar).

Four-time Le Mans winner Yannick Dalmas (champion in 1992 with Peugeot) and his team-mate Derek Warwick were then inducted, followed by double world champions for Porsche Jacky Ickx (1982-'83) and Derek Bell (1985/'86), along with Jean-Louis Schlesser (1989/'90).

At the start of the FIA World Endurance Championship's new era in 2012, the first winners were Marcel Fässler, André Lotterer and Benoît Tréluyer, who claimed the title for Audi. Next on stage were 2013 champions Loïc Duval, Allan McNish and 'Mr Le Mans' Tom Kristensen, who added a world championship to his record nine victories at the 24 Hours that year.

The Audi trio were succeeded by Toyota winners Anthony Davidson and Sébastien Buemi, before it was the turn of Porsche's LMP1 stars from 2015: Mark Webber, Brendon Hartley and Timo Bernhard.

The German marque's success continued in 2016 with Romain Dumas, Neel Jani and Marc Lieb, before Porsche made it three in a row in 2017 with Earl Bamber. The WEC's first Super Season, held across two calendar years in 2018 and '19, followed with Kazuki



President Todt with double FIA World Sportscar champion and six-time Le Mans winner Jacky Ickx.



Mark Webber, Hans Stuck and Fernando Alonso with Jean Todt and Georg Bellof.

Nakajima winning for Toyota. Last to be honoured were the double champions from the championship's latest era, including 2014 and 2018-19 winner Buemi alongside Timo Bernhard and Brendon Hartley (both (2015/17)). Meanwhile, Fernando Alonso, a double Formula 1 champion as well as a 2018/19 WEC title winner, was celebrated as the first FIA Hall of Famer to win world titles in two different categories.

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MDD aim to continue to improve the safety, clinical excellence, and the quality of equipment, and in-service training, available to Medical Professionals operating in Motorsport.

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NEWS **Renowned artist Frank Stella partners with FIA to honour champions**

At this year's FIA Prize-Giving ceremony at the Carrousel du Louvre in Paris, motor sport's champions were awarded with a stunning range of specially-commissioned new trophies designed by world-renowned American painter, sculptor and printmaker Frank Stella.

One of the most influential living American artists, Stella's style evolved from the controlled minimalism of his late 1950s and early '60s work to riots of colour later in his career, and in recent years has become ever more sculptural. His approach to materials is just as revolutionary, comprising house and car paint, cast aluminium, fibreglass and the latest 3D-printing techniques. No stranger to motor sport, Stella designed one of the now-famous BMW Art Cars in the 1970s. His 3.0 CSL featuring a trademark geometric pattern raced at Le Mans in 1976.

Still a keen racing fan, Stella was persuaded to return to the world of motor sport by the FIA, with the artist taking up the challenge of designing all-new trophies that would be presented to the winning drivers of all the Federation's major championships bar Formula 1. And it was a challenge he admits he was more than happy to accept.

Stella based his intricate trophy design on a star to honour the FIA's championship winners.



"To be honest, I didn't have a lot of choice," he smiled. "I've known FIA President Jean Todt for a long time now and he is a very persuasive individual. Also, along with various friends, I've been involved in racing for many years, so it was very easy for me to agree to make these trophies."

Explaining the thought process behind the design of the awards, Stella said: "It was a tough job to make a trophy, in terms of finding the right imagery and the other things I was working on at the time. We were working on a lot of things with the star motif and it seemed like that was a place to start, so we came up with a number of images. It was a case of combining those images in a way that made sense as a trophy."

"It's an anthropomorphic vision of what a star looks like. It's a different kind of geometry. Transparency helps to create the illusion of movement and there's movement in the geometry of these pieces, but there's also movement with the transparency."

Stella attended the Prize-Giving in Paris in early December and met President Todt, Formula 1 champion Lewis Hamilton and many of the stars who received his trophies.



Frank Stella's specially designed trophies at the FIA awards. Top: the designer with FIA President Jean Todt and Fernando Alonso.

And the artist hopes that the awards form a fitting tribute to their achievements.

"These trophies are a way of giving the drivers a reminder of their accomplishments and I hope they do that," he said. "The trophies are all about winning. It's something that commemorates victory and that you can take home. The idea is that the stars sparkle and they are uplifting. That quality is something you can recognise, and after all the champions are all stars."

Trophy designs are copyright of Frank Stella © 2019 FIA Prize-Giving report, p32.



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Creating access points

As well as acting on abuse of disabled parking spaces worldwide, FIA Disability and Accessibility Commission President *Nathalie McGloin* is looking to attract 5,000 disabled participants to motor sport in the next few years. She admits it's a tough goal but adds that meeting exacting targets is what the FIA does best



Nathalie McGloin has been busy developing new initiatives to support disabled motorists and competitors.

The past year has been an extraordinarily busy period for what is a relatively new body within the FIA structure, but after some intense effort on the part of everyone involved with the Disability and Accessibility Commission I feel we have made genuine advances in creating a better mobility landscape for disabled drivers and a fairer, more accessible motor sport environment for disabled competitors.

In the realm of mobility, one thing we particularly wanted to do is raise awareness about abuse of disabled parking spaces and in order to do that created a video entitled 'Would You?'

It is a very hot topic and one that affects disabled drivers everywhere. The abuse of disabled parking spaces is disgraceful and most of the time it is entirely casual, with people insisting: "I'll only be five minutes."

Those five minutes may mean nothing to that person, but to a disabled driver they could be hugely important and denying them what is often the only practical access they are afforded is unacceptable.

And that's the message we wanted to pursue. We wanted the video to fulfil the same function as anti drink-driving adverts by making this kind of behaviour socially unacceptable, to create a stigma around that casual abuse of disabled spaces.

I think we've created something impactful and thought-provoking, and I really hope it will make people think twice about their behaviour.

We have also continued our work with the International Transport Forum to update the global database

on Blue Badge reciprocity. It's important that disabled motorists can access information regarding the rules on Blue Badge acceptance and use in foreign countries. This is especially true in Europe where a post-Brexit environment could look quite different for many drivers.

I'm glad to say we've made some positive steps forward in this regard and together with the ITF we are looking at the best mechanisms by which an expanded database could be utilised. Hopefully we'll have a solution in place by the end of 2020.

In Sport we've spent a great deal of time making rules in the FIA's International Sporting Code (ISC) more consistent and user-friendly.

In the past, regulations governing disabled drivers in motor sport have been written in something of ad hoc fashion, reacting to circumstances as

and when they occurred. We wanted to overhaul those rules to make them work for today's motor sport and so that we can increase participation but without compromising on safety.

In that regard, a key advance we've made is with the introduction of a Certificate of Adaptations. We have lots of cases where drivers have had specific adaptations to their car, but when it came to scrutineering race officials had no measures to deal with such adaptations and the only response was to put that disabled driver into a separate class of their own. It might seem hard to believe but one of these cases involved perhaps the world's most famous disabled racing driver - Alex Zanardi.

That is not what we want. We want drivers to compete on a level playing field. So to ensure they are treated in a consistent manner within the rules we introduced the Certificate of Adaptations. This

regulations specifically requesting such clarification, but in those cases the certificate will act as a passport for that car and driver, making it easier for them to compete on level terms with able-bodied drivers.

The changes to the ISC to facilitate this were passed by the FIA Annual General Assembly in December.

I'm also pleased that in 2019 we created a new mandatory racing sticker for non-ambulant drivers. This is designed to help marshals and race officials identify cars where the driver may need assistance in extricating themselves following a track incident or stopping due to mechanical failure. This should encourage drivers who may feel insecure in the time they need for egress and it alerts safety officials as to whether they need assistance. It's a simple way of raising confidence among potential competitors and keeping officials informed.

'We want to increase participation without compromising safety'

details what modifications have been made and will be provided by the FIA for competition vehicles not in compliance with the corresponding homologation and/or technical rules because of those changes.

We will only accept requests for vehicles intended for competitions included in the International Sporting Calendar or with

The Commission is also creating a grant for disabled competitors at grassroots levels. This is focused on non-ambulant drivers whose egress times might be longer. The grant would enable them to invest in the highest levels of fireproof clothing and equipment such as fuel cells. It will reassure competitors, officials and ASNs that in the event of a driver with a slower egress time being involved in an incident, steps have been taken to ensure they stay safe.

With all these projects we hope to make motor sport more accessible. It's my goal to attract 5,000 more disabled participants to motor sport over the next few years - behind the wheel, in technical and team roles and as officials and volunteers. That may seem like an ambitious goal, but over the decades the FIA has become specialised at meeting tough targets - in safety, innovation and in engineering prowess - and I believe that while this is a lofty ambition, it is one we can meet. I want disabled youngsters to look at a Formula 1 champion and think, 'That's something I can do.' ◀



A new video aims to stigmatise the abuse of disabled parking spaces.

02

STEPPING UP

The 2019 race to the top of the FIA's single-seater ladder produced two worthy champions, with the new Formula 3 Championship crowning exciting Russian rising star *Robert Shwartzman*, while in Formula 2 the title-winning efforts of *Nyck de Vries* earned the Dutchman top-level drives in Formula E and the World Endurance Championship

TEXT / CHRIS MEDLAND

The 2019 motor sport year represented a landmark for the FIA's single-seater ladder, with the new Formula 3 joining F2 to create a clear pathway to Formula 1.

As support races at a number of F1 grands prix this year, not only did F3 and F2 deliver spectacular action for fans, the two categories provided the stars of the future with a finely calibrated experience designed to help them on the path to world championship level.

Even before the F2 championship had held its last round in Abu Dhabi, Nyck de Vries had been confirmed as the drivers' champion. And prior to taking his final bow in the series at the Yas Marina Circuit, the Dutchman was already making his mark at more senior levels, scoring an LMP2 win in the World Endurance Championship (WEC) round at Fuji in Japan before registering a top-six finish on his Formula E debut for Mercedes-Benz EQ in Saudi Arabia.

"The F2 title sunk in slowly," says de Vries of the championship won at the penultimate round in Russia. "I didn't sleep very well the night after winning the title; I was too excited! Over the past year I didn't sleep very well in general because a lot of thoughts were going through my

mind, and I was hoping to get a better night's sleep the night after but it was impossible!

"Then, when I got to the track for the sprint race in Russia, there was a panel in front of my car in the garage that was marked 'Nyck de Vries - Champion' and that was cool. It made me feel happy and proud."

De Vries spent three seasons in Formula 2 but this year combined his campaign with a drive in the WEC, reaping the benefits of more experience to secure the F2 title with three races to spare.

"The past five years have taken me through a lot of different stages, from winning to struggling to just surviving, to being in a situation where I have all the ingredients to actually fight for the championship but made too many mistakes.

"I've worked with different teams and I think as a driver by also competing in WEC and Formula E everything adds to you becoming a more complete driver," he says. "I'm a bit older now but I feel I'm still learning and improving all the time. Not so much in raw pace, but just becoming more complete as a driver. You think that you know things but you're still learning every day. It sounds clichéd, but it's honestly

De Vries combined his championship-winning F2 campaign with useful outings in WEC.



'I didn't sleep very well the night after winning the title; I was too excited!'



'Being with F1 is really important for any driver. It definitely gives you more energy'



Robert Shwartzman revelled in driving the new F3 car en route to a memorable title win on home soil in Russia.

the case. It doesn't need to be big things but little things that always help and can add to you becoming a better racing driver."

A BIGGER STAGE

While de Vries is further along in his development and leaving the F2 grid, joining the series a step below F1 will be the new F3 championship's inaugural winner, Robert Shwartzman. At 20 years old, the Russian steps up after benefiting from the experience of being part of the F1 schedule.

"It was something new for me," says Shwartzman. "There is a lot more media and just being together with F1 is really important for any driver - it's a step up. Plus, how professionally everything is done there - the track, the organisation, the timing, everything - was pretty impressive. It definitely gives you more energy."

Shwartzman had already been successful in European F3 before moving across with the Prema team and found a new car that he feels has prepared him well for the next stage of his career, even if his final result in it was a first-lap retirement in the F3 World Cup.

"Apart from stuff like numbers and stats it was a different car with different behaviour," he says. "We all know it has things like different tyres and a more powerful engine, but feeling-wise I preferred this year's car. I really liked how it behaved and my driving style matches it well."

"I enjoyed every moment driving it and, to be honest, I'll admit that at one point in Macau I was more upset I didn't manage to do the final race because it was so much fun to drive the car around that circuit. Obviously we lost an excellent result, but also I lost a good session in a good car. So it was a pity, but I was enjoying the whole season and the car was really cool to drive."

It's not just the fun parts that make the ladder effective, however. Shwartzman admits the tougher moments are the ones that have prepared him to move through the ranks, learning how to deal with adversity and pressure while still being able to deliver results.

"Apart from leading most of the championship - which was quite tough to have the pressure of being the leader - I think the most challenging part was when I had a bit of disappointment at the Hungaroring in race two," recalls the Russian. ▶

“There was an incident and I retired, and after that there was the summer break so we didn’t finish the first half of the season on a good note.”

“It was quite challenging to forget the stupid things we had done, to learn from them and to start the second half from zero,” he adds. “It was difficult, but in the end I managed to improve myself and also the team – we all did it – and I think that’s why the results in the second half of the season were better than the first half.”

Wins in France and Italy hold special significance for Shwartzman, but of more note was the fact that, like de Vries, the Russian wrapped up the title in Sochi.

“Obviously the biggest highlight I could get was in my home country, taking the championship and seeing so many people cheering. That was something incredible and the biggest emotion I’ve ever had throughout my entire career.”

Ahead of his planned move to F2, Shwartzman says knowledge of the Pirelli tyres and the F1 paddock give him a better chance of succeeding at the higher level.

“This year for sure gave me a lot of experience, especially how to be the championship leader, and how to deal with pressure and also tough periods. It taught me how to work with the tyres because they are more or less going to be the

same structure in Formula 2 as we had in F3, so I need to be nice and gentle with them, knowing how not to destroy them.”

“Also being in the F1 paddock means quite a lot,” he continues. “I had good preparation from the Ferrari Driver Academy too. I had a lot of training aside from physical activities, so also mental training, which helped because there were some moments where I needed that to mentally settle down.”

“Now I know what it’s like to be in the F1 paddock it helps for next year as well because I know what I have ahead of me. So I could already get used to that and feel comfortable in those surroundings.”

BRANCHING OUT

While Shwartzman continues on the ladder, with confirmation arriving at the end of November that he will step up to Formula 2 in 2020 alongside Mick Schumacher at the Prema team, de Vries has already moved up to two FIA world championships. While he isn’t following in the footsteps of Alex Albon, George Russell and Lando Norris in progressing to Formula 1, the 24-year-old says the ability to move into different series shows the system is clearly working.

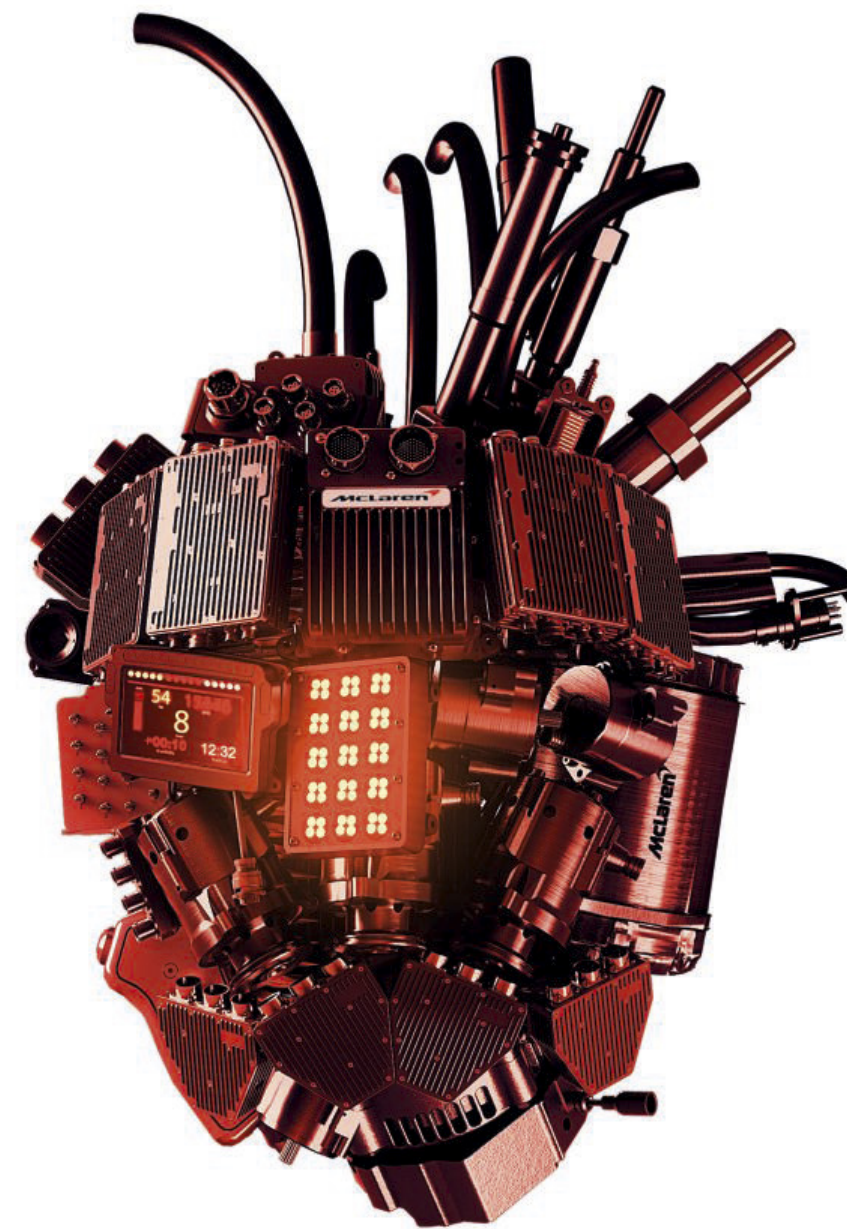
‘This year gave me a lot of experience, especially how to be a championship leader’

“It’s very exciting,” he says. “Formula E has established itself as one of the biggest championships in motor sport at the moment. There are obviously a lot of manufacturers involved – Mercedes and Porsche joining this season – so it’s super-competitive. I’m very thankful for the opportunity from Mercedes-Benz EQ and I hope to make them proud.”

“The basics of racing always remain the same. Of course you have different disciplines such as endurance racing or Formula E, which is a different concept. But I think if you’ve gone through the ladder and built up the experience by racing in various series, and you’ve performed well in them, then you can be prepared for anything that’s coming.”

“People or manufacturers or teams shouldn’t be afraid to put young drivers in the car because they’ve shown often enough – for example in Formula 1 – that they can deliver.” ◀

Dutchman de Vries is staying with Formula E, racing for the Mercedes-Benz EQ squad.

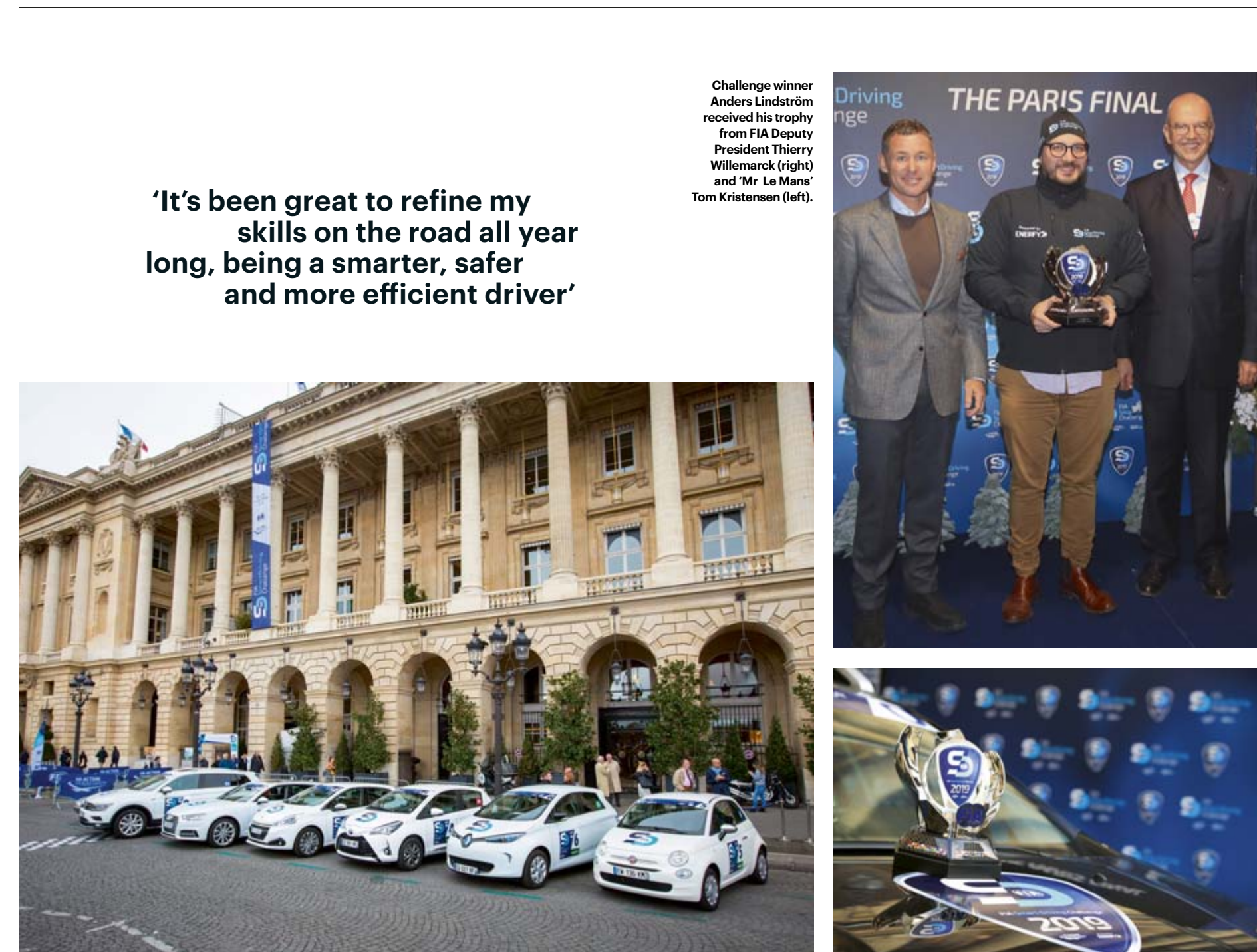
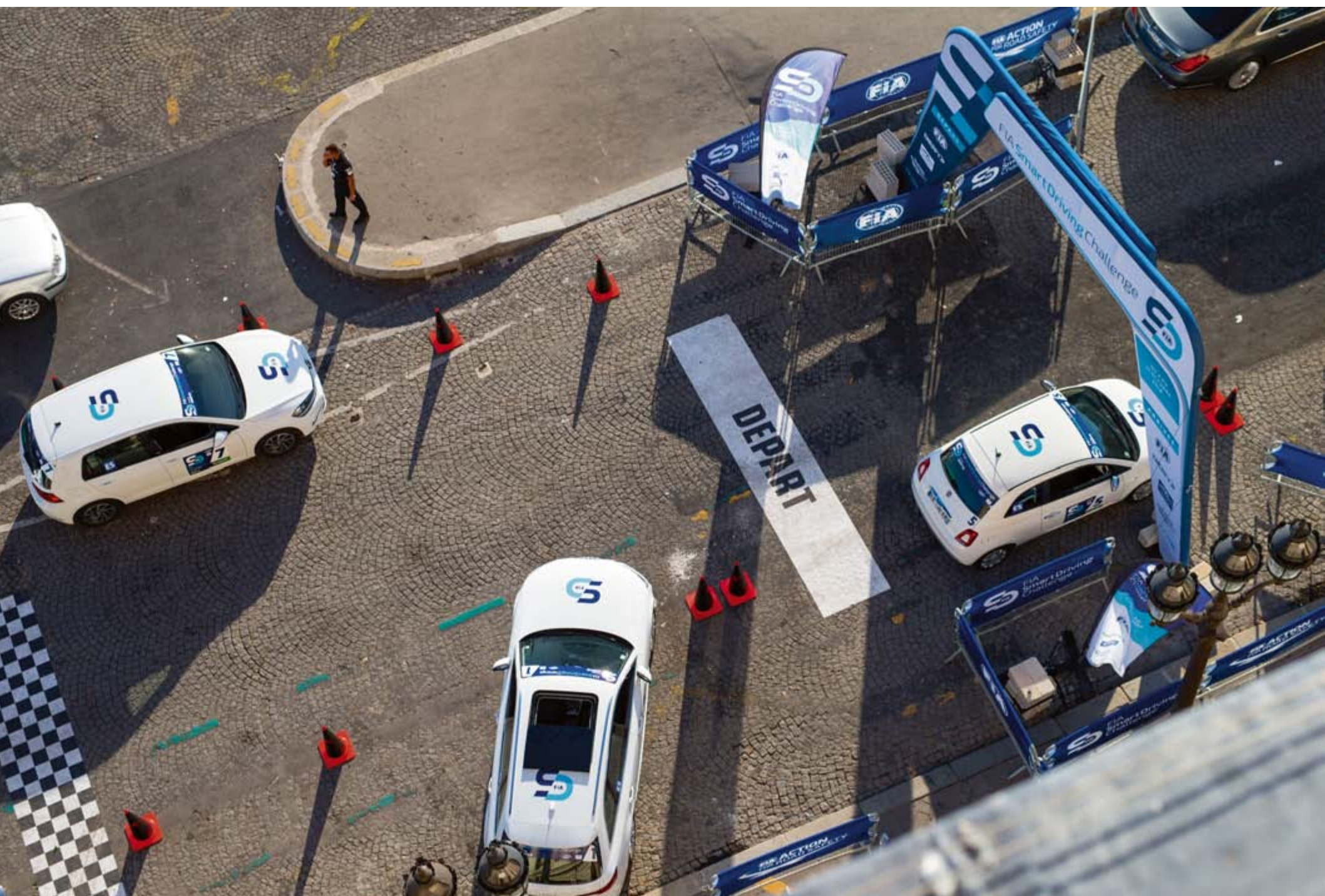


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STREET SMARTS

03

In 2019 the FIA launched its Smart Driving Challenge to reward smart, safe and eco-friendly driving, and in December the lucky winner received the initiative's top prize

TEXT
/
MARC CUTLER

Each year, in the first week of December, the winners from the FIA's major championships, such as Formula 1 and World Rally, come together to be awarded their trophies at the glittering FIA Prize-Giving ceremony. But last month in Paris, there was one winner who was more surprised to be there than the rest – Anders Lindström, a regular motorist from Sweden.

Three days before the gala, Lindström won the final of the first-ever FIA Smart Driving Challenge, (FIA SDC) a global challenge that rewards smart, safe and eco-friendly skills at the wheel. Competing against seven other finalists from across the world – including France, Great Britain, Qatar, Sweden and Singapore – Lindström navigated a pre-determined 4km course across the streets of Paris and recorded the best efficiency average to take the ultimate prize.

Part of his award was an invitation to the FIA gala and, although he would receive his trophy before the ceremony, he could still appreciate the

winning feeling among legends such as six-time F1 World Champion Lewis Hamilton. It certainly helped that he was awarded his trophy by FIA Deputy President for Automobile Mobility and Tourism Thierry Willemarck and nine-time Le Mans winner Tom Kristensen in the presence of team leader and FIA World Rallycross star Kevin Hansen.

On the occasion, Kristensen pointed out the similarities between smart driving and his own competitive experience. "Concentration, cleverness and focus are critical in order to deliver the best performance," he said. "The FIA Smart Driving Challenge is a great development promoting these skills."

THE LONG ROAD

Lindström's journey to the top goes back nine months to the start of this pilot season of the FIA SDC. The Challenge, which is supported by

FIA Member Clubs across the world, is open to all motorists and types of car (electric, hybrid or fuel) with the aim to reward the safest and most efficient drivers.

The FIA SDC encourages drivers to handle their car in a safe, efficient and considered way by promoting three smart tips:

- Adapt driving style and speed to the conditions, such as traffic and bad weather.
- Keep a safe distance from the car in front.
- Stay focused on your driving and pay attention to your surroundings.

The pilot season started last May and was organised around 14 heats, each a calendar week in length. Motorists worldwide could join one of 20 teams led by famous professional drivers, such as six-time World Rally Champion Sébastien Ogier FIA World Rallycross star Johan Kristoffersson and BMW works driver Martin Tomczyk.

Run in conjunction with Swedish technology company Greater Than, each participant received

The FIA Smart Driving Challenge was launched last May with the final (main) held in Paris.

an Onboard Diagnostics Reader (OBD) to plug into their car which then connects to the FIA Smart Driving Challenge app activated on their smart phone. This enables a digital platform, called Enerfy, to measure their ability to drive in a smart way.

Enerfy uses Artificial Intelligence (AI) to evaluate driving patterns in real time. The AI platform compares these patterns to a database that has 650 billion unique driving situations, based on analyses of over 50 billion kilometres of driving. The platform can instantly identify when a participant has been driving safely, sustainably and smartly. The platform uses these comparisons to calculate a driving score to determine both the individual and team rankings of the challenge.

The top eight drivers qualified for the final in Paris in December and upon winning the title Lindström declared: "It's been great to refine my skills on the road all year long, being a smarter,

safer and more efficient driver. I have learnt a lot, not only from the Enerfy app, but from my fellow competitors and my team leader. I've really enjoyed the challenge and look forward to continuing to be a smart driver."

This is one of the initiative's goals and demonstrates that it is successfully changing the way participants approach their own driving, even when not competing.

Jimmy Palmqvist, COO of Greater Than, is particularly pleased with how the first year went, especially as it was seen as a test season for the FIA SDC.

"We aimed to have clubs and team leaders from all over the world for this pilot season and I am happy to say that we made it," says Palmqvist. "We are present in Australia, Singapore, Qatar, UAE, the Philippines, Hong Kong, France, Sweden and Norway.

"We've also got very positive and interesting feedback from our participants on how much ▶

Challenge winner Anders Lindström received his trophy from FIA Deputy President Thierry Willemarck (right) and 'Mr Le Mans' Tom Kristensen (left).

'It's been great to refine my skills on the road all year long, being a smarter, safer and more efficient driver'

'We believe initiatives such
the FIA Smart Driving Challenge
can improve driver behaviour
and invite more clubs to join the
challenge and lead that change'



they actually developed their driving behaviour due to the Challenge. They've all been inspired by their fellow competitors, by the 'gamified' leaderboard, and by the live feedback contained in the app."

Palmqvist admits that they have learnt a lot in running the Challenge in 2019 and will incorporate that into the next edition.

"We have learnt many things thanks to the engagement from the clubs, team leaders and of course the competitors. One thing that is clear is that it is such a fun way to change one's driving behaviour. We've learnt that people participating in the Challenge really improve their driving behaviour in an extremely short amount of time and continue to drive much better than prior to the Challenge."

One addition for 2020 will be a number of quarter-final stages throughout the year, which will enable competitors to qualify for the final during the whole season. So even if joining the challenge after the summer, a competitor can qualify for the final.

Another route to the final will be national championships that will be run by FIA Member Clubs, with the winner of each qualifying directly for the final.

TECH TRANSFER

The 2019 season participants were required to use an OBD reader and plug it into their car to transfer data to the app. From season 2020,

Greater Than aims to develop a non-OBD solution in addition to this.

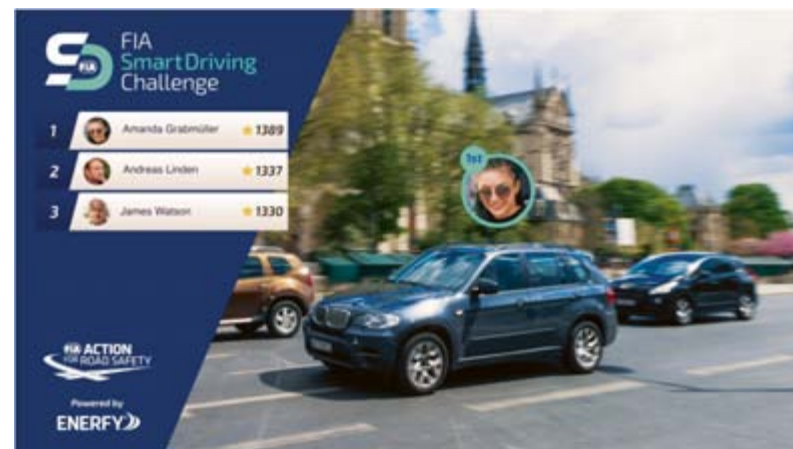
Competitors that have an infotainment system in their cars will not need the OBD, as the app will be able to connect directly to that and measure driving style.

In addition, the driver response within the app has been improved to give participants fine-tuned examples on how to improve their driving. Communication in the app between competitors themselves and the team leaders is also improved.

"We will bring the Challenge to a new level with increased engagement by having more clubs on board, adding several new team leaders and engaging thousands more competitors from around the world," says Palmqvist. "We cannot stress enough the importance of a safer and more sustainable road environment, which we're sure this initiative will help with."

CLUBS FRONT AND CENTRE

In the first season, 12 FIA clubs joined the Challenge: Automobile Club Association (France), Automobile Association Philippines (Philippines), Automobile Association of Singapore (Singapore), Ceylon Motor Sports Club (Sri Lanka), Emirates Motorsports Organisation (United Arab Emirates), Hong Kong Automobile Association (Hong Kong), Kungliga Automobil Klubben (Sweden), Norges Automobil-Forbund (Norway), Qatar Motor and



The Challenge uses an app (top) to measure how efficiently a driver is performing.

Motorcycle Federation (Qatar), Royal Automobile Club of Norway (Norway), Royal Automobile Club of Tasmania (Australia) and Svenska Bilspportförbundet (Sweden). And FIA Deputy President Willemarck is confident more will join for 2020. "We believe initiatives such the FIA Smart Driving Challenge can improve driver behaviour and invite more clubs to join the challenge and lead that change," he said.

Registrations for the 2020 FIA Smart Driving Challenge are open and drivers can start practicing and refining their driving now. The next winner is probably already on the roads.

The 2020 season starts in January and can be entered via the app FIA SDC. ◀



CHAMPIONSHIPS

FIA-CERTIFIED GRAN TURISMO CHAMPIONS CROWNED IN MONACO NOVEMBER 2019

The second year of the FIA-certified Gran Turismo Championships established digital motor sport as one of the most exciting new developments in racing as it expanded to reach huge audiences around the world.

Polyphony Digital Inc.'s stunning Gran Turismo game has sold over 80 million copies since it launched, and the latest iteration, Gran Turismo Sport, is the platform for the thrilling racing of the Nations Cup and Manufacturer Series.

As well as the online competition, the Gran Turismo World Tour featured six live events to bring together the fastest Gran Turismo racers in the world that were streamed on various platforms. Paris, the Nürburgring 24H race, New York, Red Bull's Hangar-7 in Salzburg, and the Tokyo Motor Show all played host to stunning events before the World Finals in Monaco at the end of November.

Germany's Mikail Hizal put in a dominant performance in the Nations Cup, while Toyota emerged at the head of a close-fought Manufacturer Series with Igor Fraga (BRA), Tomoaki Yamanaka (JPN) and Rayan Derrouiche (FRA) taking the driving duties.

www.gran-turismo.com



NATIONS CUP

Germany : Mikail Hizal

MANUFACTURER SERIES

Team TOYOTA : Rayan Derrouiche / Tomoaki Yamanaka / Igor Fraga



04

MOTOR SPORT'S CRÈME DE LA CRÈME

TEXT
/
LUKE SMITH

The FIA crowned its motor sport winners for the 2019 season during a spectacular annual gala dinner held in Paris in December, led by six-time Formula 1 World Champion *Lewis Hamilton*, who is now just one title away from equalling the great Michael Schumacher's all-time record. But, of course, the plaudits didn't stop there with drivers and teams from the worlds of single-seaters, rallying, sports cars, rallycross, Formula E, touring cars and karting all joining in the celebrations – and proving that there is plenty to look forward to in 2020...





FIA Formula One

WINNING DRIVER:
Lewis Hamilton
WINNING CONSTRUCTOR:
Mercedes AMG
Petronas Motorsport

Lewis Hamilton's pursuit of Michael Schumacher's all-time record of seven Formula 1 world titles continued apace in 2019 as the Mercedes driver wrapped up his sixth crown in convincing fashion.

Despite a nervy period of pre-season testing in which Ferrari put in a convincing performance, Mercedes stamped its authority on proceedings by taking an unprecedented five one-two finishes to start the season. By the summer break, Hamilton had eight wins from 12 races – including four in a row from Spain to France – to put him firmly in charge of the championship.

Further victories in Russia and Mexico put Hamilton on the brink of title success, which was sealed with two races to spare at the United States Grand Prix. The feat sees him surpass Juan Manuel Fangio's tally of five world titles, leaving him one short of Schumacher's record.

Mercedes was able to take a record-equalling sixth straight constructors' title with ease as Hamilton's team-mate, Valtteri Bottas, enjoyed his strongest F1 season to date. Four wins for the Finn saw him seal second place in the standings as Red Bull's Max Verstappen and the warring Ferrari duo of Charles Leclerc and Sebastian Vettel were left fighting over a distant third. ▶



Lewis Hamilton took his sixth F1 title at the US GP (left).

FIA WRC

WINNING DRIVER/CO-DRIVER:
Ott Tänak/Martin Järveoja
WINNING CONSTRUCTOR:
Hyundai Shell Mobis WRT

The 15-year reign of the Sébastiens (Loeb and Ogier) came to an end in 2019 as Ott Tänak captured his maiden FIA World Rally Championship title for Toyota.

Alongside co-driver Martin Järveoja, Tänak was able to deliver on the promise he had shown through his first year with Toyota in 2018 as the pair took six rally wins during the season.

Tänak did not have things all his own way in the title race as six-time reigning champion Ogier and 2018 runner-up Thierry Neuville also starred, leaving the trio separated by just seven points midway through the season.

But as his rivals faltered, Tänak was able to find another gear. Wins in Finland and Germany saw the Estonian nose ahead of Ogier and Neuville, before leading the pair home at Rally GB to extend his advantage to 28 points with two rounds to go. While Neuville took the win at Rally Catalunya, Tänak came home second to wrap up the championship with a round to spare (Rally Australia, which was ultimately cancelled due to bushfires).

Neuville was, however, able to lead Hyundai to its maiden WRC manufacturers' title, narrowly beating the Tänak-led Toyota squad. ▶



Ott Tänak (with Martin Järveoja, left) took the title with Toyota – but joins Hyundai for 2020.



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FIA WEC LMP1

WINNING DRIVERS: **Fernando Alonso, Sébastien Buemi, Kazuki Nakajima**
WINNING CONSTRUCTOR:
Toyota Gazoo Racing

The FIA World Endurance Championship's 13-month 'Super Season' may have ushered in a number of changes for the series, but at the front of the pack it was the LMP1 hybrids that remained the class of the field.

Toyota Gazoo Racing dominated proceedings through the 2018-19 campaign, taking seven out of a possible eight wins – six of them one-twins – and only losing the eighth after a post-race disqualification in the 6 Hours of Silverstone.

The #8 Toyota crew of Fernando Alonso, Sébastien Buemi and Kazuki Nakajima started the season with back-to-back wins at Spa and the Le Mans 24 Hours – the latter marking a long-awaited maiden success for Toyota in the famed race – before the rival #7 Toyota trio of Mike Conway, Kamui Kobayashi and José María López fought back with victories in Fuji and Shanghai.

Alonso, Buemi and Nakajima pulled clear again with victory upon the WEC's return to Sebring in March, before a second win at Spa left the championship all but confirmed.

The drivers' crown was sealed in style with a second straight Le Mans win for Alonso and co as punctures in the final hour left the #7 team to swallow a heartbreaking defeat. ▶



Toyota trio Alonso, Nakajima and Buemi's WEC title run included two straight Le Mans wins.



FIA World Rallycross

WINNING DRIVER:

Timmy Hansen

WINNING CONSTRUCTOR:

Team Hansen MJP

Timmy Hansen may have been destined for success in rallycross as the son of 14-time European Rallycross Champion Kenneth Hansen – but few could have predicted the circumstances in which he became world champion in 2019.

Driving alongside younger brother Kevin at the family-run Peugeot-backed team, Timmy saw his title hopes fade midway through the season after struggling to add to wins at Barcelona and Silverstone. While Hansen remained in touching distance, it was WRX veteran Andreas Bakkerud who was the driver to beat following his victory at Trois-Rivières in Canada.

But consecutive wins in France and Latvia catapulted Hansen into the title fight ahead of the finale in South Africa. Contact with Bakkerud in the final heat left Hansen in need of a fightback, with the Swede clawing his way to fourth place by the chequered flag, two spots behind his rival.

The result left the pair tied on 211 points, but with four wins to Bakkerud's one, Hansen was crowned World Rallycross champion on countback.

Kevin Hansen took third in the standings to secure the teams' title for Team Hansen MJP, marking a great year for rallycross's most senior and successful family.



Timmy Hansen's WRX title was sealed in a nail-biting finale at South Africa.

FIA WEC GTE-Pro

WINNING DRIVERS:

Michael Christensen, Kevin Estre

WINNING CONSTRUCTOR:

Porsche GT Team

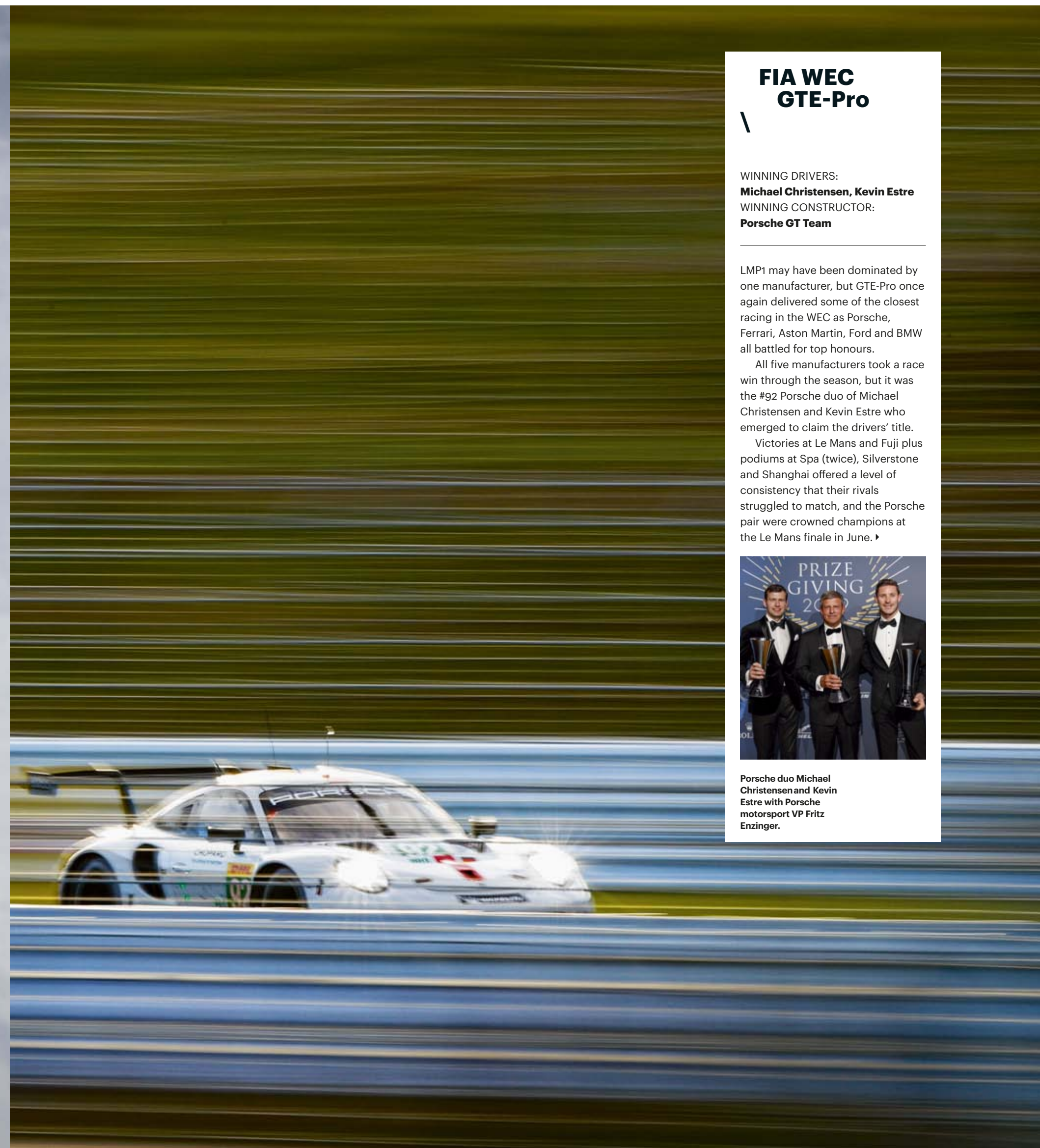
LMP1 may have been dominated by one manufacturer, but GTE-Pro once again delivered some of the closest racing in the WEC as Porsche, Ferrari, Aston Martin, Ford and BMW all battled for top honours.

All five manufacturers took a race win through the season, but it was the #92 Porsche duo of Michael Christensen and Kevin Estre who emerged to claim the drivers' title.

Victories at Le Mans and Fuji plus podiums at Spa (twice), Silverstone and Shanghai offered a level of consistency that their rivals struggled to match, and the Porsche pair were crowned champions at the Le Mans finale in June. ▶



Porsche duo Michael Christensen and Kevin Estre with Porsche motorsport VP Fritz Enzinger.





FIA Formula E

WINNING DRIVER:
Jean-Eric Vergne
WINNING CONSTRUCTOR:
DS Techeetah

Formula E furthered its case for being the most competitive and unpredictable championship through 2018-19 – but it was a familiar name that finished at the top of the standings.

Eight different winners in the first eight races left the series wide open with four rounds to go, yet reigning champion Jean-Eric Vergne was able to pull clear with victories in Monaco and Bern adding to his earlier success in Sanya.

Vergne was able to see off Season 2 champion Sébastien Buemi's late surge for Nissan e.dams to clinch the title in New York, making him the first multiple champion in Formula E history.

Racing alongside Andre Lotterer, Vergne's Techeetah squad was also able to claim its first teams' title ahead of Audi Sport ABT Schaeffler, avenging its defeat from Season 4.

Formula E staged new races in Ad Diriyah (Saudi Arabia), Sanya (China) and Bern (Switzerland), as well as breaking new ground with its 'Gen2' car, combining a radical new design with increased power and speed as the series continues to be at the forefront of electric vehicle development.

With eight teams taking race wins, and the arrival of Mercedes and Porsche for Season 6, the competition in Formula E looks set to only get fiercer.



Jean-Eric Vergne became Formula E's first double champion in 2019.

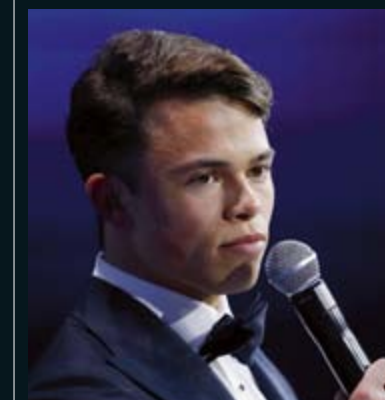
FIA Formula 2

WINNING DRIVER:
Nyck de Vries
WINNING CONSTRUCTOR:
DAMS

While 2018 may have been a story of incoming rookies lighting up the Formula 2 Championship, in 2019 the series' veterans made their experience show.

Williams F1 development driver Nicholas Latifi stole an early march in the championship with wins in Bahrain, Baku and Spain, but his title hopes fizzled out as Nyck de Vries – in his third season of F2 – took control.

Consecutive Feature Race wins in Monaco and France thrust de Vries to the top of the standings from where he did not look back. A run of podiums in Austria, Great Britain, Hungary and Italy saw his lead swell before he wrapped up the title with three races to spare following victory in the Sochi Feature Race.



Nyck de Vries made his experience count on the way to an F2 crown.



FIA Formula 3

WINNING DRIVER:
Robert Shwartzman
WINNING CONSTRUCTOR:
Prema Racing

Ferrari Driver Academy member Robert Shwartzman became the first winner of the new FIA Formula 3 Championship (the successor to GP3) in 2019, spearheading Prema Racing's charge as its drivers dominated the season.

Shwartzman scored pole and victory on his debut in Spain before a win at Paul Ricard helped him open an early lead in the standings, only for mid-season bursts from Prema team-mate Jehan Daruvala and Red Bull youngster Jüri Vips to put the Russian under pressure entering the summer break.

But Shwartzman was able to show supreme consistency through the second half of the season, finishing off the podium just once

in the final six races. Victory at Monza in front of Ferrari's *Tifosi* gave him a healthy lead heading to the last round in Sochi, where he sealed the title on home soil with second place in the opening race.

Prema's drivers finished 1-2-3 in the standings, with Shwartzman leading from Marcus Armstrong and Daruvala, meaning it eased to the teams' championship too. ▶



Russian Robert Shwartzman led the way for the Prema team in the new F3 championship.



FIA World Karting Championships

Karting's OK Junior class proved as competitive as ever in 2019.



Dutchman Marijn Kremers sealed his maiden KZ world title with a dominant win.



Italy's Lorenzo Trivianutto became a double world karting champ in the OK class.



In OK Junior, 14-year-old Thomas Ten Brinke was a clear winner in the final.

WINNING DRIVERS:

Lorenzo Trivianutto (OK), Thomas Ten Brinke (OK Junior), Marijn Kremers (KZ)

Lorenzo Trivianutto became a two-time karting world champion in 2019 by winning the OK class title at Alaharma, Finland in September.

Twelve months on from his maiden success in Kristianstad, the 20-year-old took the OK crown once again for CV Performance Group.

Trivianutto was 13th in practice before qualifying third for the final, fighting past home favourite Juho Valtanen to take an early lead.

Valtanen refused to back down, trying a move that resulted in contact and a warning for Trivianutto, and opening the door for Taylor Barnard, Kirill Smal and Harry Thompson to make it a five-way battle at the front.

Trivianutto held his nerve to secure the win from Barnard and

Thompson, becoming the first back-to-back karting world champion since Nyck de Vries in 2010-11.

Dutchman Thomas Ten Brinke took the OK Junior karting world title in Alaharma, topping qualifying before securing a lights-to-flag win in the race for Ricky Flynn Motorsport.

Ten Brinke, 14, had team-mate James Wharton for close company in the opening stages, only for a mechanical issue to stymie the Briton. Ten Brinke took the flag over two seconds clear of the field as Rafael Chaves Camara and Kajus Siksnelis completed the podium.

In the KZ category, 19-year-old Marijn Kremers claimed his maiden world title at Lonato, Italy for the Birel ART team, with a lights-to-flag win.

Kremers saw off Adrien Renaudin in a race-long battle, with the latter penalised and finishing ninth in the standings. That handed second to Kremers' Birel team-mate Riccardo Longhi, with Bas Lammers third. ◀



Kremers, Trivianutto and Ten Brinke with their FIA trophies.

BEST OF THE REST: Selected FIA Driver Champions 2019

FIA Formula 3 World Cup
Richard Verschoor

FIA Formula Regional European
Frederik Vesti

F4 Nacem Championship Certified by FIA 2018-19
Manuel Sulaimán

F4 US Championship
Joshua Car

F4 Spanish Championship Certified by FIA
Franco Colapinto

F4 UAE Championship Certified by FIA
Matteo Nannini

F4 South East Asia Championship Certified by FIA
Lucca Allen

F4 Italian Championship Certified by FIA
Hauger Dennis

F4 German Championship Certified by FIA
Théo Pourchaire

F4 British Championship Certified by FIA
Zane Maloney

F4 Japanese Championship Certified by FIA
Ren Sato

F4 Chinese Championship Certified by FIA
Conrad Clarke

F4 Australian Rallycross Championship Certified by FIA
Luis Leeds

F4 French Championship Certified by FIA
Hadrien David

FIA Karting European Championship – OK
Lorenzo Trivianutto

FIA Karting European Championship – KZ
Jorrit Pex

FIA Karting European Championship – Junior
Marcus Amand

FIA Karting European Championship – K22
Emil Skaras

FIA Karting European Championship – Superkart
Peter Elkmann

FIA Karting International Supercup – K22
Emilien Denner

FIA Karting Academy Trophy
Kajus Siksnelis

WTCC – FIA World Touring Car Cup
Norbert Michelisz

FIA GT World Cup
Raffaele Marciello

FIA African Rally Championship – Driver/Co-Driver
Manvir Baryan/ Drew Sturrock

FIA Asia-Pacific Rally Championship – Driver/Co-Driver
Dewei Lin/Kepeng Le

FIA Codasur Rally Championship – Driver/Co-Driver
Alejandro Galanti/ Hector Nunez

FIA Nacem Rally Championship – Driver/Co-Driver
Ricardo Triviño/ Marc Martí

FIA Middle East Rally Championship – Driver/Co-Driver
Nasser Al-Attiyah/ Mathieu Baumel

FIA WRC2 PRO Championship – Driver/Co-Driver
Kalle Rovanperä/ Jonne Haltunen

FIA WRC2 Championship – Driver/Co-Driver
Pierre-Louis Loubet/ Vincent Landais

FIA Junior WRC Championship – Driver/Co-Driver
Jan Solans Baldo/ Mauro Barreiro Zaz

FIA World Cup for Cross-Country Rallies – Driver/Co-Driver
Stéphane Peterhansel/ Andrea Peterhansel

FIA World Cup for Cross-Country Bajas – Driver/Co-Driver
Oriando Terranova Ronnie Graue

FIA European Rally Championship – Driver/Co-Driver
Chris Ingram/ Ross Whittock

FIA ERC2 Championship – Driver/Co-Driver
Juan Carlos Alonso/ Juan Pablo Monasterolo

FIA ERC3 Championship – Driver/Co-Driver
Efrén Llarena/ Sara Fernández

FIA RGT Cup – Driver/Co-Driver
Enrico Brazzoli/ Manuel Fenoli

FIA European Rally Trophy Final – Driver/Co-Driver
Ondrej Bisaha/ Petr Tesinsky

FIA World Rallycross Championship
Timmy Hansen

FIA European SuperCar Rallycross Championship
Robin Larsson

FIA European Super1600 Rallycross Championship
Aydar Nuriev

FIA European Drag Racing Championship – Top Fuel
Anita Mäkelä

FIA European Drag Racing Championship – Top Methanol Dragster and Funny Car
Sandro Bellio

FIA European Drag Racing Championship – Pro Modified
Jan Ericsson

FIA European Drag Racing Championship – Pro Stock
Jimmy Ålund

FIA European Truck Racing Championship
Jochen Hahn

FIA Intercontinental Drifting Cup
Georgy Chivchyan

FIA European Autocross Championship – Super Buggy
Bernd Stubbe

FIA European Autocross Championship – Buggy 1600
Vincent Mercier

FIA European Autocross Championship – Touring Autocross
Matvey Furazhkin

FIA European Autocross Championship – Junior Buggy
Barth van der Putten

FIA International Hill Climb Cup
Peter Ambruz (I) Sébastien Petit (II) Karel Trnny (III, E1)



FIA Middle East Rally champion Nasser Al-Attiyah.

FIA European Hill Climb Championship
Christian Holzer (I) Lukas Vojacek (I) Christian Meril (II)–tied Simone Faggioli (II)–tied

FIA Masters Historic Formula One Championship (Fittipaldi Class)
Henry Fletcher

FIA Masters Historic Formula One Championship (Head Class)
Matteo Ferrer-Aza

FIA Masters Historic Formula One Championship (Lauda Class)
Martin Stretton

FIA Masters Historic Sports Car Championship
Andy Wolfe/Jason Wright (Post-65 cars)
Chris Jolly/Steve Farthing (Pre-66 cars)

FIA Lurani Trophy for Formula Junior cars
Bruno Weibel

FIA Historic Formula 3 European Cup – Cat. 1 (1971-1978 cars)
Valerio Leone

FIA Historic Formula 3 European Cup – Cat. 2 (1979-1984 cars)
Christian Olsen

FIA Historic Hill Climb Championship
Christian Holzer (I) Giuliano Palmieri (II) Jiri Kubicek (III) Uberto Bonucci (IV) Ondrej Chytil (V)

FIA Trophy for Historic Regularity Rallies – Drivers/Co-Drivers
Carles Fortuny/ Carles Jimenez

FIA Historic Hill Climb Championship
Christian Holzer (I) Giuliano Palmieri (II) Jiri Kubicek (III) Uberto Bonucci (IV) Ondrej Chytil (V)

FIA European Historic Sporting Rally Championship – Driver/Co-Driver
Antonio Parisi/ Giuseppe D'Angelo (I) Anders Johnsen/ Ingrid Johnsen (II) Karl Wagner/ Gerda Zauner (III) 'Lucky'/Fabrizia Pons (IV)

FIA European Historic Sporting Rally Championship – Nations Cup
Mikhail Hizal

FIA-certified Gran Turismo Championships – Nations Cup
Mikhail Hizal

FIA-certified Gran Turismo Championships – Manufacturer Series
Tomoaki Yamanaka/ Rayan Derrouiche/Igor Fraga

FIA Motorsport Games
Russia

FIA Motorsport Games – GT Cup
Hiroshi Hamaguchi/ Ukyo Sasahara

FIA Motorsport Games – Touring Car Cup
Klim Gavrilov

FIA Motorsport Games – Formula 4 Cup
Andrea Rosso

FIA Motorsport Games – Drifting Cup
Dmitriy Ilyuk

FIA Motorsport Games – Digital Cup
Cody Nikola Latkovski

FIA Motorsport Games – Karting Slalom Cup
Nina Pothof/ Bastiaan van Loenen



05

BRAVE NEW WORLD

In 2021 Formula 1 will change dramatically as new regulations usher in a new era of improved on-track battling and closer competition among teams. Formula 1 CEO *Chase Carey* and FIA President *Jean Todt* explain why the new rules are a major step towards ensuring the future success of motor sport's top class, while AUTO look at the key changes contained in the new rules

TEXT

/

JUSTIN HYNES

Halloween 2019, and in a packed press conference room at the Circuit of the Americas in Austin, Texas, Formula 1 reached a watershed moment. After more than two years of intense research and development and broad consultation with a cross section of the sport's major stakeholders, including teams, drivers, suppliers, sponsors, media and fans, the most radical changes to how the world's top motor sport championship would go racing were revealed.

Encompassing radical changes to how Formula 1 cars are built, as well as alterations to how teams race across grand prix weekends, the new rules have been designed to improve the on-track action by allowing drivers to push harder, follow rivals more closely and attack more successfully, and to achieve closer competition across the grid through restrictions on costly development for little gain and through the development of a cost caps – a ground-breaking move for a sport in which spending power has often been the major differentiator.

The detail of each set of regulations is dealt with elsewhere on these pages, but For Formula 1 CEO and Executive Chairman Chase Carey the full suit of 2021 rules presented in Austin represent a major step forward in the evolution of the sport. ▶

Changes to the 2021 F1 regulations led by the FIA and the sport's management should produce fairer, more cost-effective racing.

'We have delivered a step change for F1. We can now build a thrilling, sustainable, competitive and stable championship'



Top: F1 Managing Director, Motorsport Ross Brawn, FIA Head of Single Seater Matters Nikolas Tombazis and F1 CEO Chase Carey reveal details of the new regulations at last year's US GP and, above, what the new cars might look like.

"Formula 1 is an incredible sport with great history, great heroes and fans all over the world. We deeply respect the DNA of Formula 1 and we want to keep that, but we want to evolve it keep up to speed with a fast-changing world," says Carey.

"In the past Formula 1 too often initiated random and knee-jerk changes without a larger vision," he adds. "That is why we put in place an organisation that, together with the FIA, was capable of building a regulatory structure for long-term success of the sport to define this set of regulations. The goal was to improve the competition and action on the track and, at the same time, make the sport a healthier and attractive business for all. In all, we're very pleased with how the new rules have been received, especially by the fans and also by the teams. It was important to get the key points decided within the time frame and we achieved that."

For FIA President Jean Todt, the approval of the rules by the FIA World Motor Sport Council represented the culmination of a complex collaboration with a huge variety of stakeholders lasting more than two years.

"I'm enormously pleased that we had a successful conclusion to what was a long but also very rational and positive cycle of discussions," he says. "And I would add that it was a true collaboration. That was essential for me. If we harmonise everything, if we speak with all the stakeholders, then the outcome is something everyone involved in the sport can support and embrace. We could not have done that without the teams or the drivers, without the race promoters, the tyre suppliers, the engine manufacturers, with all of

Formula 1's stakeholders. It was absolutely crucial to have a strong coordination and thorough analysis of everything, with the Formula 1 teams and the FIA working hand-in-hand."

Carey agrees, adding: "We made many changes during the process, as we received input from the teams and other stakeholders, and we firmly believe we achieved the goals we had set out to deliver. We will have cars that are better able to battle on the track, a more balanced competition on the track, a sport where success is determined more by how well a team spends its money, not how much it spends. We will have a sport that is a better business for those participating and more attractive to potential new entrants, and a sport that continues to be the world's premier motor racing competition and the perfect showcase of cutting-edge technology."

CAPPING COSTS

Perhaps the most fundamental change being made for 2021 is the development of new financial regulations – a first for the sport – that aim to tackle the vast discrepancy between F1's ultra-successful big spenders and their less well resourced rivals by restricting team spending on on-track activities to a figure of £175 million.

Budget caps have been a topic of often frustrated debate in the sport for many years – the last time such cost controls were seriously considered was immediately prior to Todt's first terms as FIA President in 2009, when plans to cap spending almost split the sport in two – but finally the previously unthinkable has been achieved.

For Carey, the introduction of the cost cap is the major win from the two-year process. "I think everyone was particularly aware that it was absolutely vital to create conditions that would lead to long-term sustainability for this sport and the introduction of the Financial Regulations is a great result," he says.

Both men agree, however, that there is scope for further tightening of the financial strictures in the future. "The cost cap was not an easy decision and we will need to learn how to work with the different stakeholders involved in it over the years," says Todt. "But it's a first step. Personally, I feel the figure is still too high, but it is an important beginning – in fact I would say it is an essential step."

One of the key elements of the new Sporting Regulations is a move to a shorter race weekend, with a number of procedures that currently take place on Thursdays being folded into a re-imagined Friday schedule. The changes have been made to reduce costs for teams and lessen the burden on team personnel, but also to create space for the F1 schedule to grow – from the 22 races taking place in 2020 to a maximum of 25 events.

"It's no secret, we've been saying since the start of this adventure that two of the areas where we are looking to expand are the USA and China, because we believe there is an untapped audience there that our sport has not yet reached," says Carey. "When it comes to the first of these new races, I'd say we're close to reaching an agreement that could see Formula 1 racing on the streets of Miami, a destination city, that would add something special to the championship and that would definitely attract a whole new audience."

"Other new venues? It's possible, but we will always go for quality over quantity, maintaining the right balance between traditional venues and new markets, keeping in mind that, historically, Europe is the cornerstone of this sport. In fact, we are in the fortunate position of being able to choose the best options, given that we receive many more proposals than there are available spaces."

One area of the technical specification of cars post-2021 that doesn't change is the engine and the sport will continue with the 1.6-litre V6 turbocharged hybrid power unit introduced in 2014. However, that stability will be paralleled by intense research by Formula 1 and the FIA into renewable fuels as part of a concerted driver towards making the sport carbon neutral.

"One of the most important initiatives we'll be addressing as we go forward is the environmental impact of our sport," says Carey. "We've always been at the leading edge of the automobile industry and we believe we can play a leadership role on this critical issue as well."

While the regulations have been approved and teams have begun the process of designing cars to meet the new specification, both Carey and Todt acknowledge that work on the fine details of the rules will go on until the weeks and months leading up to April 30 when the regulations will be fixed, with any further changes requiring the unanimous approval of teams.

"There is constant dialogue with the teams as we approach the new deadline at the end of April," says Carey. "Along with the FIA, we are listening to all comments and, where necessary, we will make adjustments, but the basic principles have been defined and will not change for 2021. Having said that, nothing is set in stone and in the medium term we will react if needs be, but always in harmony with all the stakeholders, especially when it comes to costs. For now, we have taken a first step, trying out a budget cap, which inevitably is something new for everyone."

But while there are elements that Todt admits "may require fine-tuning", the heads of Formula 1's commercial rights holder and its regulator remain convinced that 2021



Carey and FIA President Jean Todt have worked in close collaboration on the sport's new regulations.

will usher in a brave new world of Formula 1 action.

"We have delivered a step change for Formula 1," says Todt. "There is still a lot of work to do but we now have a strong platform on which to build a thrilling, sustainable, competitive and stable championship for the future."

Carey, meanwhile, says that the sport as a whole can be proud of the progress made. "At the end of 2021 I think I'd like to look back on this process as an first important step in the right direction to make Formula 1 more spectacular, more financially viable and for the outcome of races to be more uncertain," concludes the F1 CEO. "We are all aware that the rules unanimously approved by the WMSC back on 31 October are not a panacea, but for the first time they have been drawn up in a systematic way, with clear aims, backed up with the right tools and methodologies. It's a result of which we can therefore be proud." ▶

The new rules allow for new, wider 18-inch wheels, which will debut in the Formula 2 series in 2020.



TECHNICAL REGULATIONS

Creating closer competition

Radical aerodynamics and simplification of high-cost, low-gain components mean F1 in 2021 should see better on-track battles throughout a more competitive grid

The key goal of the 2021 regulations is to foster better racing by giving drivers cars that can race closer and that afford more opportunities to attack rivals ahead. Achieving that target meant tackling the negative impact of what is known as the 'wake effect' of current Formula 1 cars. Existing F1 cars generate a large wake of 'dirty air' that substantially upsets the stability of a following car, reducing its downforce levels by as much as 40 per cent. The loss of downforce makes it difficult to follow a leading car and more difficult still to make an overtaking move as the loss of stability leads to the following car moving around more on track, which in turn leads to tyres becoming overheated and losing grip. New aerodynamic regulations for 2021 will dramatically reduce that wake effect, with current figures showing 2021 cars losing just 15 per cent of their downforce when one car length behind a rival and just five per cent at three car lengths. "The intense research work undertaken by Formula 1 and the FIA has been focused on improving the performance of following cars," says FIA Head of Single Seater Matters Nikolas Tombazis. "We sought to simplify the cars and to desensitize some areas in order to lower performance differential. We hope these new aerodynamic regulations will mean the difference between the fastest and the slowest car will be smaller than currently."

WAKE REDUCTION

In order to reduce the wake, the FIA and Formula 1 have made fundamental changes to the rules

governing the aerodynamic design of future cars. A simpler front wing, larger rear wing and the absence of bargeboards and myriad conditioning elements on the body will reduce wake and make it easier to follow, but the biggest change is underneath the car, and in how 2021 cars will generate downforce. "What we have provided for is a ground effect car," Tombazis says. "It's got a long diffuser starting from the front of the sidepod, going underneath and finishing at the back of the car. That is fundamental for the flow structures we've sought to achieve. In addition, some areas of the car are going to be proscribed because we felt that if we didn't restrict certain shapes, we would potentially see teams finding ways to overcome our main objectives. "The simplification of the leading car's aerodynamics helps with wake performance because on the one hand the front car doesn't have as many methods to control its wake, and for the following car, not having a lot of little, very sensitive devices on the various surfaces means it's less susceptible to disruption."



CLOSING THE PERFORMANCE GAP

As well as seeking to bring about closer racing through aerodynamics, the 2021 rules also look to improve competition by simplifying and standardising a number of parts such as, fuel pumps, brake disks and suspension elements, as well as restricting development in other areas such as gearboxes — an area with significant costs but little performance benefit — with teams only able to modify designs once in a five-year window.

The sport is also moving to 18-inch wheels, a shift with more behind it than the simple aesthetic value of a lower-profile tyre. The current 13-inch tyres have high sidewalls and deform considerably under load, which has an impact on aerodynamics. The big-budget teams have spent heavily on dealing with this and have thus gained a sizeable advantage over teams with less resources. A tyre with a stiffer sidewall deforms less and offers less aero performance exploitation opportunities to larger teams.

VISUAL DIFFERENTIATION

While the aero specification of the 2021 car has primarily been aimed at providing closer racing — and has achieved simulation results described by F1 Chief Technical Officer Pat Symonds as "exceptional" — the rules should

also generate cars that fire the imagination of fans and are design-friendly. "We expect there'll be numerous areas where cars will look different to each other," says Tombazis. "The nose, the front wing, the engine intake, the sidepod inlet, the sidepod shape itself, the rear wing... There are a lot of areas where we see notable performance and visual differentiation. We feel we've taken a huge step towards creating rules that still allow teams and aerodynamicists to be creative."

SAFETY

The FIA has used the opportunity of the new 2021 rules to further enhance safety in F1. "There are a number of safety improvements on the car," says Tombazis. "We are increasing the front energy absorption of the nose cone and strengthening the chassis sides. "We're also improving the headrest and how it attaches to the chassis and we are tethering some parts of the rear of the car, so that they do not become dislodged. Finally, we will have better debris containment. Research has led to the development of a membrane that can be put in the carbon layer of certain key components, so that when those elements come in contact with another car they don't disintegrate into tiny pieces that get scattered on the track."



The new 2021 car should generate greater downforce. Above: Nikolas Tombazis has worked to improve all areas of the new car.



The cost cap is designed to help teams such as Toro Rosso (now Alpha Tauri) celebrate more podium finishes, as it did with Pierre Gasly in 2019.

FINANCIAL REGULATIONS

Levelling the playing field

Designed to reduce the gap in spending and performance between F1's powerhouses and its midfield contenders, the sport's first cost cap should lead to a more competitive championship

For the first time, in 2021, the FIA will impose spending restrictions on Formula 1 teams aimed at making the sport fairer and more sustainable. The new cost cap seeks to reduce the ever-increasing spending gap between F1's biggest outfits and those with fewer resources, a financial chasm that results in a significant performance differential. Starting next season, team spending relating to on-track performance will be capped at US\$175 million per year. That figure encompasses 21 races, but with F1 racing in 22 locations in 2020 and an expansion ceiling of up to 25 events expected in the coming years, provision has been made for the cap to rise by US\$1m per event over 21 races. While the budget restriction covers all aspects of on-track performance, it does not include driver salaries and the top three team personnel or areas such as marketing. For Formula 1 Managing Director, Motorsport Ross Brawn, the implementation of the new financial regulations is the biggest positive of F1's 2021 rule changes. "The crucial thing about the rules is that they're now part of the FIA regulations," he says. "Therefore, sanctions for breaching the rules will be sporting penalties, depending on the severity of the breach.

"Previously we had the resource restriction agreement, a gentlemen's agreement, that was a failure. This, though, has serious consequences for teams that breach these rules." The new spending restrictions will be overseen by a Cost Cap Administration, with breaches of regulation being ruled on by a Cost Cap Adjudication Panel comprising a group of independent judges. Should a team be found in breach of the rules a range of penalties will be available, including deduction of championship points, increased limitations on aerodynamic or other testing and/or reduction of the Cost Cap imposed on a team, or, at worst, exclusion from the championship. In a further bid to reduce development costs, the number of wind tunnel runs teams can do each week will be cut, with CFD (Computational Fluid Dynamics) development promoted over physical simulation. The standardisation of parts, the prescription of others and the simplification of a further array of car elements will also reduce the financial burden on teams. "The cost cap is a turning point in F1 and something we're all massively committed to," concludes Brawn. "It's absolutely essential we control how much teams spend."

SPORTING REGULATIONS

Grand Prix weekends get a makeover

New-look grand prix weekends will reduce costs for teams, concentrate the action for fans and provide more spectacular entertainment

While the technical and financial regulations make up the bulk of the seismic changes taking place in F1 in 2021, the sporting regulations governing how race weekends unfold will receive a makeover. "On the sporting side there's much less change, but there have been developments to improve clarity and consistency," says F1 Managing Director, Motorsport Ross Brawn. "The key change is that the number of races will increase to 25 and in correspondence with that we are changing the format of the race weekend. Our promoters rely on a three-day race weekend, but all the activities that take place on a Thursday will now be condensed into the Friday format." In terms of the operational side it means scrutineering — where cars are checked for conformity to the rules — will take place on Friday ahead of the two practice sessions. However, in a change to the current regulations, the car approved by scrutineers will represent a 'reference specification' for the weekend. Following final practice on Saturday, cars must be returned to this specification. Thus, any bodywork trialed in practice must be removed. Brawn says this has been introduced to cut costs. "The introduction of a reference specification is an important point," he explains. "We want to stop teams building lots of parts. In current F1, you want to take a new front wing to a track and test it. However, if it

works well you'll want to run it and you need two or three, so that both drivers can use it and you have a spare. That's a huge expense for something that may or may not work, plus you're flying parts in at the last minute. Under the new rules teams will be able to try a component in practice but not race with it that weekend, thereby saving on extraneous fabrication should the test prove unsuccessful." Regarding the three-day race weekend, Brawn adds that as the calendar expands it will lessen the strain on human resources. "The teams have been very cooperative on this process and they've given us strong feedback. Most of them feel they can come to a race meeting at least one day later than they currently do," he says. "The number of working hours will be reduced as well to take the load off personnel." In addition to the shape of race weekends, all teams must run at least two practice sessions during the year using drivers who have completed two Grands Prix or fewer in order to giving more opportunities to young drivers to demonstrate their talent in an F1 car.



Ross Brawn aims to cut team costs and lessen the strain on personnel through a more focused GP format.

SUSTAINABILITY REGULATIONS

Fuelled for a sustainable future

In addition to the introduction of major regulation changes aimed at making Formula 1 competitively and financially sustainable for the coming years, the sport is also targeting environmental improvements. In the wake of the rules announcement, F1 and the FIA revealed details of ambitious plans to make the sport carbon neutral by 2030

Central to plans to eliminate the carbon footprint of F1's track activity is a move to sustainable fuels, with the 2021 regulations providing for a major increase in the renewable content of fuel, as FIA President Jean Todt explains.

"Beyond the extraordinary efficiencies we have already found with the hybrid engine currently in use in Formula 1, I'm optimistic that we can find ways of further addressing sustainability, through fuel for example," he says. "We have initiated intense research to see what can be done. We need to go further and I believe we have a unique opportunity to be a game

changer in mobility as a whole, but more specifically in motor racing, starting with Formula 1."

And according to FIA Head of Single Seater Matters Nikolas Tombazis, the process begins with the 2021 regulations.

"We've taken a step for 2021 and the renewable content of the fuel in F1 is doubling. We are setting a fairly ambitious road map to increase that over the coming years and we are in discussions with the power unit manufacturers and the fuel companies on how to achieve that." Formula 1's Chief Technical Officer Pat Symonds adds that the sport is ideally placed to advance

sustainable fuel research and development.

"I think that what Formula 1 can do is show the world that there are alternatives to electric power," he says. "Over a billion of the 1.1 billion vehicles in the world are powered by ICEs and there is great potential within that number to reduce carbon emissions globally. Formula 1 didn't invent the hybrid, but it showed what it could be. F1 moved people's perceptions of what a hybrid is capable of and I think we can do the same with new fuel technology and hopefully demonstrate that

another viable alternative energy source is possible."

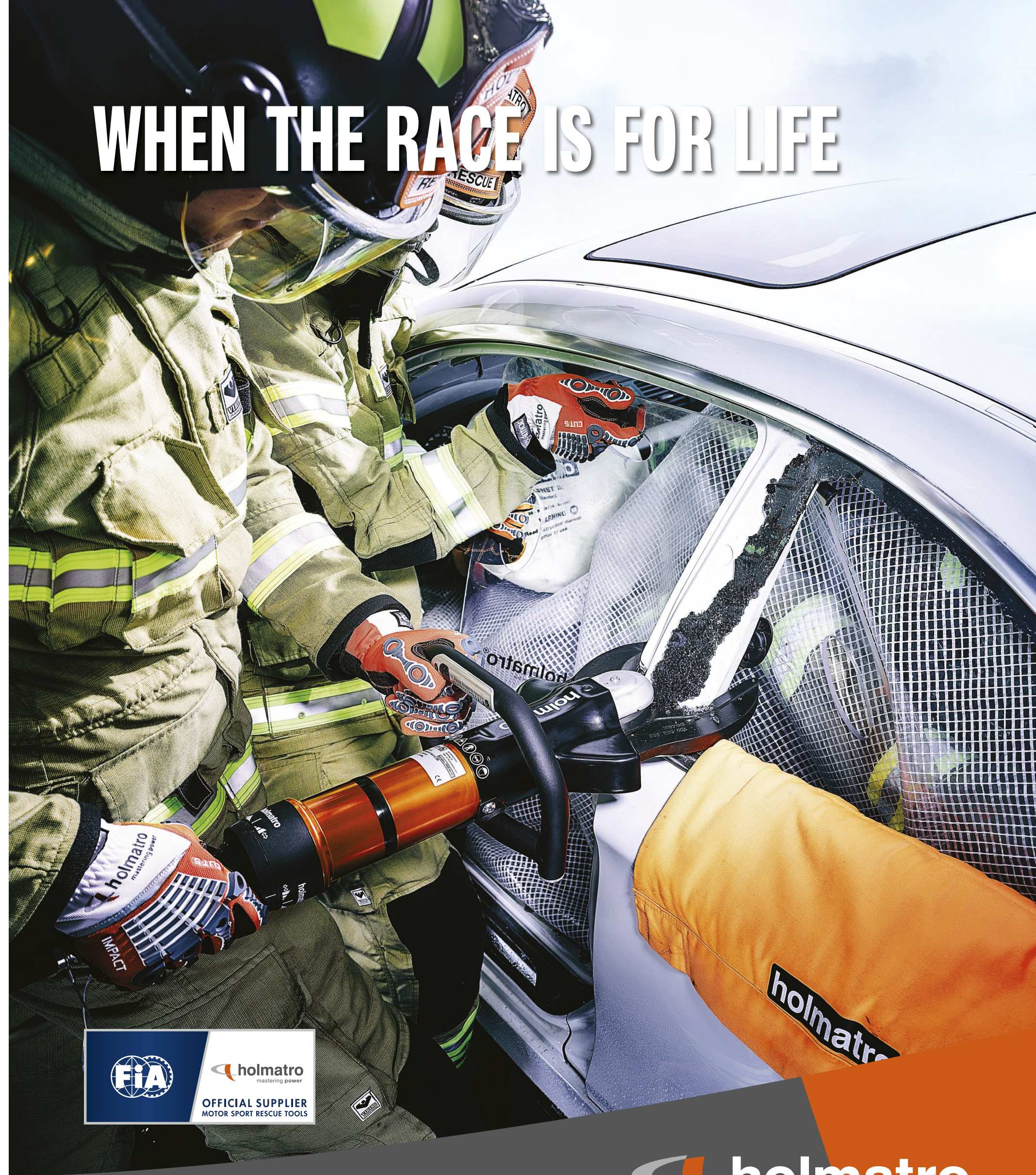
Tombazis adds that the next steps on the road are already underway. "The path towards 100 per cent renewable fuel in F1 is not straightforward, but in partnership with Formula 1 and in collaboration with the engine manufacturers and fuel suppliers we are already making progress. We met before Christmas to begin to define the way forward and over the coming months we will meet regularly to establish a course of action. "The next Formula 1 engine specification is due to arrive in 2025 or 2026 and that presents a real opportunity to tailor the fuel and the engine together. The possibilities arising from that could be very interesting."

Symonds concludes: "Our ambitions are all aligned. It's early days and it's important to say that I don't think it will be easy, but anything of value requires ingenuity, commitment and the will to make a change. And if we can do it, I think there's another great contribution story from motor sport to the world at large."



F1 showed the potential of the hybrid engine; now it plans to do the same with fuel technology.

WHEN THE RACE IS FOR LIFE



Creating a new legacy 05

Ola Källenius had a tough act to follow in taking over at the helm of Daimler AG from the flamboyant *Dr Dieter Zetsche*, but the Swede is already making his mark with an ambitious vision for the future of the one of the world's oldest automotive brands

TEXT

EDOARDO NASTRI

It's not easy to take on the mantle of one of the most important players in the recent history of the car industry, and even less straightforward to take the legacy of that key figure and build upon it without distorting a brand with almost a century of heritage behind it. That, though, is the task that Ola Källenius has faced since last May when he took over at the helm of the Daimler Group, replacing the hugely influential and charismatic Dr Dieter Zetsche.

For 13 years between 2006 and 2019, Zetsche had steered the German marque through some of its most difficult times and took it to unprecedented success, but in Källenius the good doctor was convinced he had identified a worthy successor. "In the various roles that Källenius filled at Daimler, he gained maximum respect from me and total recognition from his colleagues," said 'Doctor Z' when naming his successor.

Källenius will need to draw deeply on those characteristics to ensure that Daimler continues to successfully navigate what is one of the most challenging eras the auto industry has ever faced. A difficult worldwide sales market, declining interest in car ownership, shared mobility, electrification, rapidly expanding connectivity, automation – all are issues Källenius must grapple with in the coming years.

Born in 1969 in Vastervik, Sweden, Källenius obtained a Masters in Finance and Accounting in 1993 at the Stockholm School of Economics and then specialised with a further Masters of International Management at San Gall University. At the same time, at the age of 24, he began

working for Mercedes-Benz as a trainee in the International Management Associate Program, set up by the German company to train its own personnel. In 1995, he was transferred to Tuscaloosa, USA as manager of Mercedes-Benz USA, and in 2000 he went back to Germany to run Mercedes' vehicles emissions department.

After transitioning through a variety of roles, Källenius moved to the UK in 2003 to become Executive Director of McLaren Automotive and in 2005 he switched to running Mercedes' High Performance Powertrains operation at Brixworth in the UK, the division that would go on to eventually help win the brand six straight Formula 1 titles between 2014 and 2019.

In 2009, Källenius moved to the United States once again, this time as Managing Director of Mercedes-Benz USA. However, just a year later he was back in Europe as VP of Mercedes-Benz AMG and in 2015 he joined the Mercedes-Benz board. His progress from junior manager to CEO of the Daimler group was completed on May 22, 2019 and Källenius is due to stay in the role until 2024. ▶



Ola Källenius took on the role of Daimler CEO with the full backing of his charismatic predecessor, Dr Dieter Zetsche.





Källenius inherited a clearly defined electrification strategy from Zetsche, with more than 10 exclusively battery-powered cars planned to be included in the Mercedes range by 2022. It's a process of increased environmental sustainability that also applies to the company's suppliers, who will have to adapt in order to be completely carbon neutral. Everyone is involved in this change, making the most of existing resources and rationalising costs. "In order to intensify efforts aimed at the future of mobility, we must cut costs significantly and increase our cash flow," maintains Källenius.

AMBITIOUS TARGETS

Figures show that the German group's turnover went up by eight per cent between July and September 2019, reaching a figure of €2.7 billion. Despite progress over the summer, Daimler has warned that its end-of-year figures will be down on those from 2018, chiefly because of investment in electrification, which it believes is necessary to meet tougher European Union rules which will force auto makers to cut carbon dioxide emissions from cars by 37.5 per cent by 2030 compared with 2021 levels, and following a 40 per cent cut between 2007 and 2021. On top of that, there's the effect of the current global political uncertainties, largely stemming from

the USA's relationship with China and the effect of Brexit on European markets.

Apart from making sufficient provision for further electrification of the model range, investment must also be available for the development of autonomous mobility solutions. Daimler intends to initiate a savings plan to compensate for investment made in the electrification of the range, for research into new technologies including autonomous driving and for the uncertainty of demand.

"The expenditure needed to achieve the CO2 targets requires comprehensive measures to increase efficiency in all areas of our company," said Källenius in his first major address since taking over from Zetsche. "This also includes streamlining our processes and structures.

"This will have a negative impact on our earnings in 2020 and 2021. To remain successful in the future, we must therefore act now and significantly increase our financial strength."

A significant, though tough to countenance, step is a widespread reduction in the workforce. According to statements from the German car constructor, as much as €1 billion in savings will be achieved before the end of 2022 through job cuts. Management and contractors will be particularly affected, while the vans and trucks divisions will together cut €650 million in staff and other costs.

Under Källenius's guidance Mercedes is focused on an electric future with the new EQA as part of its range.

It is also important to save money to deal with any eventual sanctions next year, with the introduction of new regulations relating to CO2 emissions set out by the EU. "2020 and 2021 will be the key to understanding the real future of this sector," the new CEO added.

It's a challenge that has to be tackled with the right products. Källenius insists that such vehicles "definitely exist in the range, even if we cannot be sure what our customers will choose". The result is further expansion of the electrified range with Källenius announcing outline plans to introduce more than 20 new plug-in hybrid and fully-electric Mercedes cars by 2022.

This revolution will also affect the performance-oriented models produced by Daimler's AMG brand, which must be sporty but with a green edge and not reliant on traditional metrics of potency as part of their appeal.

"We must reach a point when power units are no longer considered the key factor, because this marque is based on the experience of its customers," Källenius insisted. Therefore, it's of little importance if lurking under the bonnet of an AMG there is a V8 or a silent zero-emissions power unit. What matters is performance and driving pleasure.

"Through our strategy called Ambition 2039, over the coming 20 years, the fleet of new Mercedes-Benz cars will be neutral in terms

of CO2 emissions." Already, by 2030, 50 per cent of cars the company sells will be hybrid plug-ins or completely electric. The aim is to make electric cars profitable over the next 10 to 15 years.

The strategy extends throughout the range, even encompassing historic models such as the G-Class that has been available since 1979.

"The electrification strategy involves all our products," says Källenius. "We will electrify the G and greatly improve its carbon dioxide emissions."

The most powerful version of the off-roader emits up to 304 grammes of CO2 per kilometre, but with a 100 per cent electric version envisaged Källenius has said that under his guidance, it has a long future. "In the past, stopping this model was discussed, but now I'd say that the last Mercedes to be produced will be a G," he confirms.

LEADING THE CHARGE

Looking to the future, it's not just the product that will change but also how it's sold. Källenius reckons that by 2025, one sale in four will be made online.

"There's a need to maintain quality physical contact with the customers, which has always been one of our selling points but, apart from this, there's a need to transform showrooms into places where one can fully experience the brand. Our customers will come to our dealers to

experience our brand through various activities, events and display spaces, which will be completely different to today's."

The short-term future is in electrification, while the long term features autonomous driving, a theme elaborated on by Daimler's new chief.

"Ensuring that self-driving cars are 100 per cent safe in a crowded urban environment is proving to be more of a challenge than engineers expected a few years ago. We can develop this type of technology, but we have to evaluate its viability in terms of profitability."

Daimler continues to test its robotaxi in California and it's possible that once perfected, this technology can most probably be applied to commercial vehicles used for long-distance transportation rather than taxis.

"At the moment, being the first group to carry out projects like this on a large scale does not make sense," says the new CEO. "We are not stopping our development of robotics and all the new technologies, but we will go to market only when the time is right and we don't believe that will be in the short- or mid-term."

Having cycled through Mercedes' racing engines department and through AMG, Källenius holds motor sport in high regard. As well as presiding over the firm's move into the FIA Formula E electric racing series, Källenius expressed his delight when Lewis Hamilton won

Källenius has helped oversee Mercedes' huge success in F1, with Lewis Hamilton winning sixth titles in a car powered by the German marque.

the F1 world title for the sixth time in 2019.

"Lewis is really the embodiment of the aspiration of our brand to always be the best, both on and off the track," he says. "He always tries to do more, improving every tiny detail, and never stops pushing himself and the team. To have won six world championships, all powered by Mercedes-Benz, is an incredible result that makes everyone at Daimler proud. Congratulations from your 300,000 colleagues around the world."

Despite the extravagant costs associated with F1, Källenius has denied that an exit from the sport might form part of Daimler's cost-cutting. "We have won the world championship six times in a row. That is unique and has more than paid off in terms of marketing. So it has to be seen as a very worthwhile investment."

Whatever the firm's sporting ambitions, the quest to expand its presence in every sector of the EV market continues apace, most recently with an announcement by Källenius – at the launch of the new GLA – that an entry-level EQA SUV will be introduced to the global market in 2020.

The gate-crashing of a party for the birth of a new model with news of the conception of a potentially more successful sibling was unusual, but offered yet more evidence of how Källenius plans to take Daimler into its next incarnation – at speed and with revolutionary intent. ◀



05

FLYING THE FLAG FOR MOTOR SPORT

Following the success of the inaugural FIA Motorsport Games in Vallelunga last November, AUTO looks at what the event means for the Federation and its member sporting organisations, and at how the gathering of nations is set to expand in the coming years

TEXT
/
KATE WALKER

At its top levels motor sport's focus often narrows to the tightest of apertures, homing in on the individual and defining the pursuit of success as a singular effort in a rarefied arena where only the fittest survive and prosper. That characterisation, though, forms but a detail of a far bigger picture that at its widest encompasses a huge range of disciplines from karting to single-seaters, touring cars and GT machines, and from entry-level to the cusp of racing's elite categories. The rise to those dizzy heights also takes in a vast array of competitions organised and run by the national sporting organisations that make up the members of the FIA's sporting pillar.

It's that enormous motor sport culture that the Federation has sought to celebrate and honour with the inaugural FIA Motorsport Games.

Designed as an annual gathering of motor sport's clans under national colours, the Games were born out of 2018's FIA GT Nations Cup, held at the Bahrain International Circuit. The unique selling point of the Bahrain competition was its national focus and its promotion of top amateur talent. Bringing together the world's finest non-professional drivers to race for their respective country generated strong interest, from media and sports organisations but also from governments.

The logical extension of the concept was to broaden the event's scope beyond GT racing and in June 2019 the Federation announced the launch of the Motorsport Games, to be held in November in the first host city, Rome. Building on the Nations Cup the Games would additionally feature Formula 4, Touring Cars, Drifting, Karting Slalom and Digital Motorsport. ▶

Russia's rising stars, including Touring Car Cup victor Klim Gavrilov (centre), celebrate winning the inaugural FIA Motorsport Games.



ASNs – developing national competition

For the Federation's member clubs, the FIA Motorsport Games provided an opportunity to raise their profiles on an international stage, building and deepening their relationships with ASNs in other regions. And according to FIA Deputy President for Sport Graham Stoker, the event proved popular with the FIA's national sporting authorities. "It was exceptionally well received, with around 50 nations represented at the inaugural event in Rome and 190 competitors taking part," he says. "It was great to see the excitement and pride of the winners when they received their medals. This is very much aimed at showcasing amateur motor sport and brings much needed international attention to this vital part of our motor sport pyramid of development with a clear pathway up to the top levels." For Victor Kiryanov, President of overall medal winners the Russian Automobile Federation, being ambassador to the winning team was a proud moment. "It was my honour to be ambassador of the Russian national team. Our drivers proved themselves in 2019, and

I have great professional and personal respect for them," he says. "They are the face of our motor sport, our country. They worked not only for victory at the Games – they worked for national motor sport development in our country." And the wider purpose of the FIA Motorsport Games – the growth of interest in motor sport as a discipline for fans and competitors alike – resonates deeply with Kiryanov. "The FIA Motorsport Games is a very interesting project that I am sure will be a new tool for national sports development. I would like to thank the FIA President, my friend Jean Todt, for creating this kind of competition, which did not exist before. And I must also congratulate the Italian federation for being the first to stage the Games. "I hope all the countries from the 2019 Games meet each other again in 2020 – and Russia will definitely be there. The weekend in Vallelunga was a great event. I feel it's a new page of world motor sport history and I'm proud that the Russian Automobile Federation is the first winner. Thanks to all of the ASNs involved and the participants. All of the national teams were very strong and we highly appreciated being in competition with you."

Russian Automobile Federation President Victor Kiryanov says his country will happily defend its Games title.



The Games was launched in Rome last October with a parade of cars through the city centre and past the Colosseum.

With the six gold medals on offer divided among six different National Sporting Authorities, and with 13 ASNs awarded gold, silver, or bronze, the inaugural FIA Motorsport Games was judged to be an unqualified success. Taking part were 190 athletes from approximately 50 countries, competing in six racing categories: GT, Touring Car, Formula 4, Drifting, Karting Slalom and Digital Motorsport.

PRIDE AND PROGRESS

The first winner of the Motorsport Games was Russia, which secured gold in the Touring Car Cup with Klim Gavrilov. Adding to the bronze medals already claimed for the Karting Slalom Cup and Drifting Cup took Russia to the top of the table. Host Italy and Australia were tied on a gold and a bronze apiece, with Italy eventually taking second after a tie-breaker. "The Russian Automobile Federation won the first FIA Motorsport Games, and I am very proud of our drivers and those who have helped the Russian team to win," said Russian Automobile Federation President Victor Kiryanov. "What does it mean for our ASN and Russia in general? Pride, progress and, of course, satisfaction. Because we met our goal, we got the result – victory. What does it mean for Russian team drivers? Great motivation for the future. It's a great platform upon which to set new goals, from which to find new levels of performance and self-development."

While there is no denying the honour in returning home from the Games with a clutch of medals, the global exposure afforded by the event affects not only those taking part, but also the wider Federation, explains FIA Deputy President for Sport Graham Stoker.

Drivers – climbing the pyramid

The FIA Motorsport Games gave young drivers emerging from grassroots levels the chance to make an impact on the international stage. At the entry level of competition, the Karting Slalom Cup provided a perfect introduction to motor sport for those lacking in experience. Open to drivers aged 14 to 16 – and with no license required – the inaugural edition of the cup was won by the Dutch team of FIA Girls on Track Karting Challenge finalist Nina Pothof and Bastiaan van Loenen. The Dutch pair secured gold after a tightly-fought contest against neighbours Belgium, represented by Antoine Morlet and Manon Degotte. The bronze medal went to Russia's Olesia Vashchuk and Vladislav Bushuev.

A parallel relay event, the karting slalom was staged as a knockout competition at the FIA Motorsport Games run over three days. Competitors had a Friday practice session before qualifying on Saturday narrowed the field down to eight teams, with the Final Knockout Tournament held on Sunday. As per the regulations, each team was comprised of a mixed male-female pairing, with each driver taking part in every session. The event was based on the FIA's Karting Slalom Guidelines, designed to improve grassroots access to motor sport worldwide. Comparatively cheap to run and requiring little space, Karting Slalom has seen astonishing growth since its launch and it is hoped graduates will soon be making names for themselves in the wider world of motor sport.



At the level above international karting, the FIA's Formula 4 series represents a first step into single-seaters for drivers seeking to forge a career in motor sport. Twelve national championships are currently organised by ASNs around the world and in Vallelunga the first Formula 4 Cup saw some of the standout talents from those series race each other in a hybrid-powered

FIA Girls on Track Karting Challenge finalist Nina Pothof was a Games slalom cup winner alongside countryman Bastiaan van Loenen.

"Our premier championships are strongly promoted and are hugely popular on TV, but this new event showcases upcoming amateur talent and that's important for the strength of our national sporting organisations," he says. "These competitors are active at a national level with our ASNs, but the Motorsport Games gives them the opportunity to take part in a high-profile international event where they can represent their country and win medals. This hasn't happened before and brings global attention to the depth of talent that exists within our sport. This is an exciting development and, based on the success of this inaugural edition, there is huge potential to showcase the skills of some exceptional sportsmen and women." Such was the positivity surrounding the inaugural Games that according to Stoker, in the aftermath of the event he received an approach from an ASN interested in taking part in the next edition. "In the wake of the Games I spoke to a number of our Caribbean ASNs in Panama City and they would like to enter their own National Motorsport Team in the next event. This demonstrates how we are shining the spotlight on a part of our sport that is so important through the FIA Motorsport Games. Strong amateur motor sport is our 'life's blood' and the Games celebrates that." ▶

'These competitors are active at a national level, but the Games lets them take part in an international event'

single-seater designed exclusively for the FIA. The Halo safety device was also integrated into the car's design, making it the first F4 car to run with the system in place. Italian Andrea Rosso brought home the gold medal for his country, beating Germany's Niklas Kruetten and Finland's William Alatalo in the process. Prior to a late-race safety car period, Israeli racer Ido Cohen had also been in contention for the win, having been a long-time race leader. Rosso took the lead with only five minutes left on the clock, while after a safety car restart Kruetten and Alatalo knocked Cohen down to fourth place. It was a proud moment for the young Italian. "I am super happy," he said. "I came here with good expectations. I wanted to put the Italian flag on the podium but I didn't expect to stand on the top step, so I am really honoured."



The Games, inspired by the 2018 FIA GT Nations Cup, featured a GT Cup won by Japanese duo Hiroshi Hamaguchi and Ukyo Sasahara.

The inaugural Games was also noteworthy for its inclusive spirit, with women comprising around 20 per cent of all athletes. Four of the six disciplines featured female representation, with the karting slalom including teams of mixed pairs.

The Netherlands took gold in that event with FIA Girls on Track Karting Challenge finalist Nina Pothof and team-mate Bastiaan van Loenen clinching the top spot, while neighbours Belgium secured silver thanks to Manon Degotte and Antoine Morlet. Rounding off the podium were Team Russia's Olesia Vashchuk and Vladislav Bushuev.

The success of the Games was most apparent in the number of countries represented on the stage of the Congress Centre Vallelunga during the awards ceremony. While Russia was crowned overall winner and Australia and Italy shared second place, the Netherlands, Japan and Ukraine – which won a single gold medal each – were third.

Building on the success of the inaugural Games is already high on the FIA's agenda, with additional disciplines under consideration for inclusion.

"There is a real opportunity to grow the event by involving the majority of our 145 ASNs worldwide and through the participation of many more competitors," says Stoker. "We can build on this first event to establish the Games as a high-profile arena in which the very best emerging talents from all over the world can show off their abilities. There is great potential to introduce other disciplines such as rallying, rallycross, karting and Cross Kart to reveal the great breadth of our sport and the exceptional talents participating week-in, week-out at events globally. That is worthy of celebration and the Games are a fitting tribute to this talent and to the national sporting organisations that make their success possible." ◀

New disciplines – the future of engagement

Emphasising the changing shape of motor sport, the FIA Motorsport Games featured some of the newest disciplines to emerge as sources of future champions – drifting and digital racing.

Scheduled as a night-time event to emphasise the drama inherent to the all-action discipline, the floodlit Drifting Cup took place over two evenings, beginning with solo runs before moving onto a knockout stage in which drivers were paired according to their rankings.

The top 16 entrants competed in a three-hour grand final showdown. Ilya Federov took bronze for Russia in a Nissan Silvia S14, knocking Italy's Federico Sceriffo into fourth.

Top honours went to Dmitriy Illyuk, who brought home Ukraine's only gold medal driving a Nissan 200SX. The Czech Republic's Michal Reichart (BMW M3 E92) secured silver.

The Drifting Cup medals were the first to be awarded in the Games, and Illyuk was proud to be the

discipline's first gold medallist. "Taking gold was the target from the start because I was the first guy registered by the Ukrainian ASN," he said.

The Digital Cup, a virtual racing contest using systems developed by Polyphony Digital Inc. for the FIA-certified Gran Turismo Championships, saw groups of 12 racers go head-to-head on a large stage with special racing rigs, working their way through qualifying and knockout stages before the Grand Final.

Australia's Cody Nikola Latkovski claimed the first Digital Cup gold medal, beating 11 rivals during the final 19-lap race run using the Red Bull X2019 prototype on a virtual Circuit de Barcelona-Catalunya. Silver went to Costa Rica's Bernal Valverde, who like Latkovski is a regular in the Gran Turismo World Championship. The final podium placing was taken by local hero Stefano Conte, who took bronze for Italy.



Ukraine's Dmitriy Illyuk topped the Drifting Cup podium.



FIA Motorsport Games 2019 – Winners

MEDAL CUP	GT CUP	TOURING CAR CUP	FORMULA 4 CUP	DRIFTING CUP	KARTING SLALOM CUP	DIGITAL CUP
1. Russia – 1 Gold, 2 Bronze	H Hamaguchi / U Sasahara (JAP)	K Gavrilov (RUS) G Mangus (BEL)	A Rosso (ITA) N Kreutten (GER)	D Illyuk (UKR) M Reichert (CZE)	N Pothof / B van Loenen (NLD)	C N Latkovski (AUS) B Valverde (CRC)
2. Italy – 1 Gold, 1 Bronze	A Lewandowski / A Janosz (POL)	M Homola (SVK)	W Alatalo (FIN)	I Federov (RUS)	M Degotte / A Morlet (BEL)	S Conte (ITA)
3. Australia – 1 Gold, 1 Bronze	S Grove/B Grove (AUS)				O Vashchuk / V Bushuev (RUS)	

In almost 100 years, we have contributed to the technological evolution of motorsport through the development of know-how and innovation. Today our expertise embrace electronics, connectivity, electromechanical and powertrain systems for two and four wheels racing vehicles. We provide all the best teams and organizations in the world, 365 days a year. Magneti Marelli Motorsport: always on track.

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Positive signs on the long road to safety

05

United Nations Deputy Secretary-General *Amina Jane Mohammed* believes significant progress has been made on road safety since the launch of the UN Sustainable Development Goals in 2015. But, as decision-makers prepare for next month's 3rd Ministerial Conference on Road Safety, she says now is the time to work even harder

Amina Jane Mohammed: "Road safety projects are a smart investment."



TEXT

JUSTIN HYNES

When the UN Sustainable Development Goals were adopted in 2015, a period when you were advisor to former United Nations Secretary-General Ban Ki-moon, a specific target (3.6) to reduce road traffic fatalities was adopted within the Health Goal. In your time as Deputy Secretary General are you satisfied that progress has been made?

Road traffic injuries are the leading cause of death for children and young people. So, this dedicated target on road safety in our global goals will save lives. We have seen some strong action on this since 2015, but it's time to shift gears and to work even harder to reduce road traffic deaths to zero, to free people, especially young people, from danger on the road.

In December 2018 the World Health Organisation published its latest report on global road safety. It indicated that road deaths continue to rise, but that when the increase is considered in the context of population growth and growing motorisation, the situation appears to be at least stabilising. Is that a good news story or a call for more intense action?

There are some positive trends as more countries amend their road safety laws. Some 49 countries now have laws on motorcycle helmet use, 105 countries have seatbelt use laws and 55% of countries have formal processes to train emergency health providers. This is progress but it's not enough. If you are a child or young person between the ages of 5-19, you are more likely to die from a road traffic injury than any other reason. Road crashes are responsible for 1.35 million deaths – more than half come from people walking and riding bicycles and motorcycles. We must do better, particularly as most of these deaths and injuries are entirely preventable.

has been significantly contributing to global improvements in road safety.

The UN has for some years organised an annual Road Safety Week. In 2019, the fifth edition took place under the theme of 'Leadership for Road Safety' and the hashtag #SpeakUp. How important is local advocacy in changing political will with regard to making investments in road safety policy?

Road safety is for the well-being of every citizen. Promotion of road safety is everyone's responsibility. The #SpeakUp campaign provides an opportunity for communities to generate demands for strong leadership for road safety, ensuring a social safety net. And I hope it inspires leaders to take action for policy change, increasing investment, enhancing legislation, strengthening enforcement and improving post-crash care.

SDG 11.2 aims for providing access to safe, affordable, accessible and sustainable transport systems. Is that goal realisable by 2030, especially in the developing world?

It is possible for all countries to provide access to public transport to a large section of the population by 2030 as outlined in SDG 11.2. Investment in infrastructure is both essential for economic and social development and a boon to the local economy. But it must be done right, involving considerations linked to cost, accessibility, environmental performance and safety, but not limited to road safety.

In February 2020, the 3rd Global Ministerial Conference on road safety will take place in Sweden. What do feel are the key topics to be addressed in Stockholm and what outcomes are you hoping to see from the conference?

The 3rd Global Ministerial Conference will provide an opportunity for all stakeholders to celebrate the achievements and identify the lessons learned from the Decade of Action for Road Safety 2011-2020. From there, a new direction for the next decade will be needed to ensure it is more successful than in the past. I am looking forward to seeing stronger commitment from all stakeholders for improving road safety, more concrete steps to produce immediate and tangible impact in countries, and more innovative and effective solutions to save lives.

Finally, in an interview with the Financial Times when you took on your current role, you said the greatest challenge of our time is indifference. Do you feel that society has become more or less indifferent since then and are hopeful for the future?

As complex, confusing and chaotic as our world may seem, there is evidence of progress from falling rates of extreme poverty to more children in school. I find as I meet with people that they care, even more so if they are connected within their communities.

The fact that 49 countries now have laws on helmet use is a positive sign says Mohammed.



'Every day, nearly all of us have an opportunity to do something positive about road safety. We need to mobilise our communities, companies and countries to ensure our roads are safer'

When it comes to road safety, every family that has experienced a road crash knows the devastating effects they can have. I think about children who are afraid to cross the street to go to school. Individually we need to be actively aware and share what the dangers are, as well as the life-saving solutions available. Collectively we need to ensure those solutions are available in our communities. Finally, I would like to thank the strong advocacy by governments, United Nations organizations, IGOs, NGOs and the private sector—it's working—awareness about road safety has increased. The United Nations Secretary-General's Special Envoy for Road Safety [Jean Todt] has played an important role in this process, though his tireless promotion of global partnership, advocacy towards governments, civil society and the private sector, and calls for accession and implementation of the United Nations legal instruments on road safety. ◀

The hydrogen-powered electric Skai rotorcraft has been designed as a five-seat taxi for the air.

05

Alternative journeys

As urban roads become ever more congested, city planners are looking at new and often radically different ways of transporting people to their destinations – on elevated personal mobility highways, through vast tunnels and even by air

TEXT

BEN BARRY

Read through the latest INRIX Global Traffic Scorecard and any commuter would surely wish to pass straight over or under the daily rush-hour crush. According to the traffic data specialist, in 2018 drivers in Bogota lost an incredible 272 hours trapped in traffic, while those in Rome and London haemorrhaged 254 and 227 hours respectively. INRIX's report further reveals that congestion cost the UK economy nearly £8 billion in 2018, while Americans lose a staggering \$1,348 and 97 hours to traffic chaos every year. That's not to mention the heavy toll air pollution takes on public health.

No wonder city authorities, private business and car manufacturers alike are investigating and implementing innovative ideas with a reach far beyond today's existing transportation solutions – not only in terms of cleaner road transportation, car sharing and upgraded public transport, but with alternative infrastructure projects and even zero-emissions air travel that would bypass the rush-hour queues completely.

BMW Group's Research, New Technologies, Innovations division is one such business looking to address the challenges faced by mega cities (those with populations of more than 10 million people), which would see the manufacturer combining its century-old expertise in vehicle design with city infrastructure itself.

"Our goal is to link sustainable and efficient mobility with a high quality of living in cities," explains Dr Gerd Schuster, Senior Vice-President Research, New Technologies, Innovations. "We use new technologies as well as our creativity in order to develop innovative approaches such as the BMW Vision E³ Way."

Purely at the concept stage for the time being and designed in collaboration with the Tongji University in Shanghai, China, the Vision E³ Way is a proposal for an elevated toll road specifically for electric two-wheeled vehicles, including BMW's own Motorrad Concept Link and Motorrad X2 City. ▶



BMW claims the modular, simple design of the road is easily replicated, can be scaled for multiple locations, and would connect to existing road networks, underground railway stations, and popular destinations such as shopping centres and entertainment complexes. The Vision E³ Way is envisaged to cover up to 15km, depending on location.

According to Schuster, users would pay an automatic toll, and collect and deposit rented two-wheeled electric vehicles from charging stations powered by solar panels integrated into the roadway's structure. Video surveillance and artificial intelligence would manage traffic flow – both to regulate vehicle speeds and to maximise the available road space at different times of day – while a largely covered structure would protect users from the elements, and separation from regular traffic would ensure a far safer environment for those on two wheels than a shared road system otherwise could.

In the US, Boring Company boss Elon Musk – best known as the charismatic figurehead of both Tesla, Inc and space transportation company SpaceX – is attempting to tackle the same problem from below rather than above ground.

Late in 2018, Musk unveiled a 1.83km tunnel stretching below Hawthorne, California and treated special guests to early test rides. The Hawthorne Test Tunnel is designed to lower



Elon Musk's Hyperloop tunnel system would transport passengers and cargo at high speed underground.

vehicles and pedestrians below ground in a lift, and then transport them through the tunnel at speeds of up to 240km/h on specially constructed 'skates'. The tunnel is currently at the proof of concept stage, with the intention of demonstrating that the lifts can be built in compact footprints within existing public and private buildings. "Looking forward, one could have a lift in the basement of every office building," says a statement on The Boring Company's website.

Even more ambitiously, Musk has also proposed a Hyperloop tunnel system capable of propelling freight and passenger vehicles over the 560km journey between Los Angeles and San Francisco in just 35 minutes at speeds of up to 1200km/h. The vehicles would be loaded into pressurised capsules and propelled through reduced-pressure tubes.

BMW's Vision E³ Way concept involves rented two-wheeled electric vehicles travelling on elevated toll roads.

Hyperloop remains purely a theoretical concept at this stage, and while the Hawthorne Test Tunnel already exists, a far more comprehensive network of additional tunnels would be required beneath Los Angeles in order to have any positive impact on the notoriously sticky traffic of America's second-largest city.

What's more, just like BMW's elevated roadway, red tape and conflicts with other land use could well stand in the way of The Boring Company's tunnels ever seeing the light of day. But as concepts, the potential to dramatically reduce car journey times, city congestion and air pollution is clear.

UBER FOR THE AIR?

The Skai rotorcraft removes infrastructure complexities from the equation almost entirely. Hailing from Alaka'l Technologies and designed by BMW's semi-independent Designworks consultancy, the Skai is billed as the world's first hydrogen-powered electric vertical take-off and landing vehicle. If that sounds almost impossibly futuristic, Skai is perhaps most easily pictured as a zero-emissions helicopter minus the tail rotor, and it might just become the Uber-style ride-hail service of air travel.

The Skai is built around a carbonfibre structural frame and uses up to 400 litres of liquid hydrogen to power six electric motors,

each driving one of six rotors. The five-seat Skai is designed to carry either four passengers and a pilot, or five passengers with autonomous control or a ground-based pilot. Its total payload is 500kg. Despite a high level of flexibility in terms of take-off and landing capability, Skai would typically operate in a relatively small geographical area, therefore compensating for the highly limited hydrogen filling-station infrastructure.

Speaking to AUTO, Designworks President Holger Hampf explained that Skai would fly in geo-fenced corridors at an altitude of no more than 1500 metres to avoid conflicts of air space, at a maximum speed of 189km/h and with a maximum four hours' flying time. Journey times versus passenger vehicles would be drastically reduced: while the 154km car journey from Santa Barbara to Los Angeles airport typically takes between two-and-a-half to three hours, a Skai rotorcraft ride would slash that to just 25 minutes, Hampf estimates. "There are four main use cases we envisage for Skai: as an emergency responder, VIP service, air taxi or for cargo," he explains.

How its pricing menu would compare with a helicopter ride remains to be seen, but users would book a Skai ride via a smartphone app (submitting their weight and luggage), with dynamic pricing based on the time of day. If all this sounds like a sci-fi flight of fancy, Skai could well be hovering over cityscapes in the very near future: the concept is currently undergoing a Federal Aviation Administration approval process and its makers claim it may be ready to fly as early as 2020.

Urban cable-car systems might be a less radical solution compared with EV expressways, high-speed subterranean transport networks and zero-emissions drones, but such relatively traditional solutions are already proving highly effective at both combatting congestion and reducing pollution in busy urban centres. Crucially, too, cable-car infrastructure is more affordable and accessible to far broader demographics, including those on limited incomes and with reduced mobility, and therefore its potential to reduce inner-city congestion is correspondingly larger.

The Mexicable system, for instance, operates between Ecatepec de Morelos and San Andres de la Cañada to the north east of Mexico City. Opened in 2016 following a combined \$90 million private and public investment, Mexicable was North America's first commuter cable-car system, and its 184 cable cars now transport approximately 30,000 passengers per day.

Jorge Barreiro of Mexico State Public Transport claims the system prevents 4,500 tonnes of carbon dioxide from being released into the atmosphere each day, the equivalent of removing 15,000 cars from the road. In addition, Mexicable has reduced the travel time over its 4.8km span to 17 minutes, well down on the typical hour or so it takes to cover the same distance by road. Further adding to its appeal,



Cable cars, such as Metrocable in Caracas, could provide a more practical urban transport solution.

'Our goal is to link sustainable and efficient mobility with a high quality of living in cities'

Vehicles like BMW's X2 City would run on its Vision E³ Way.

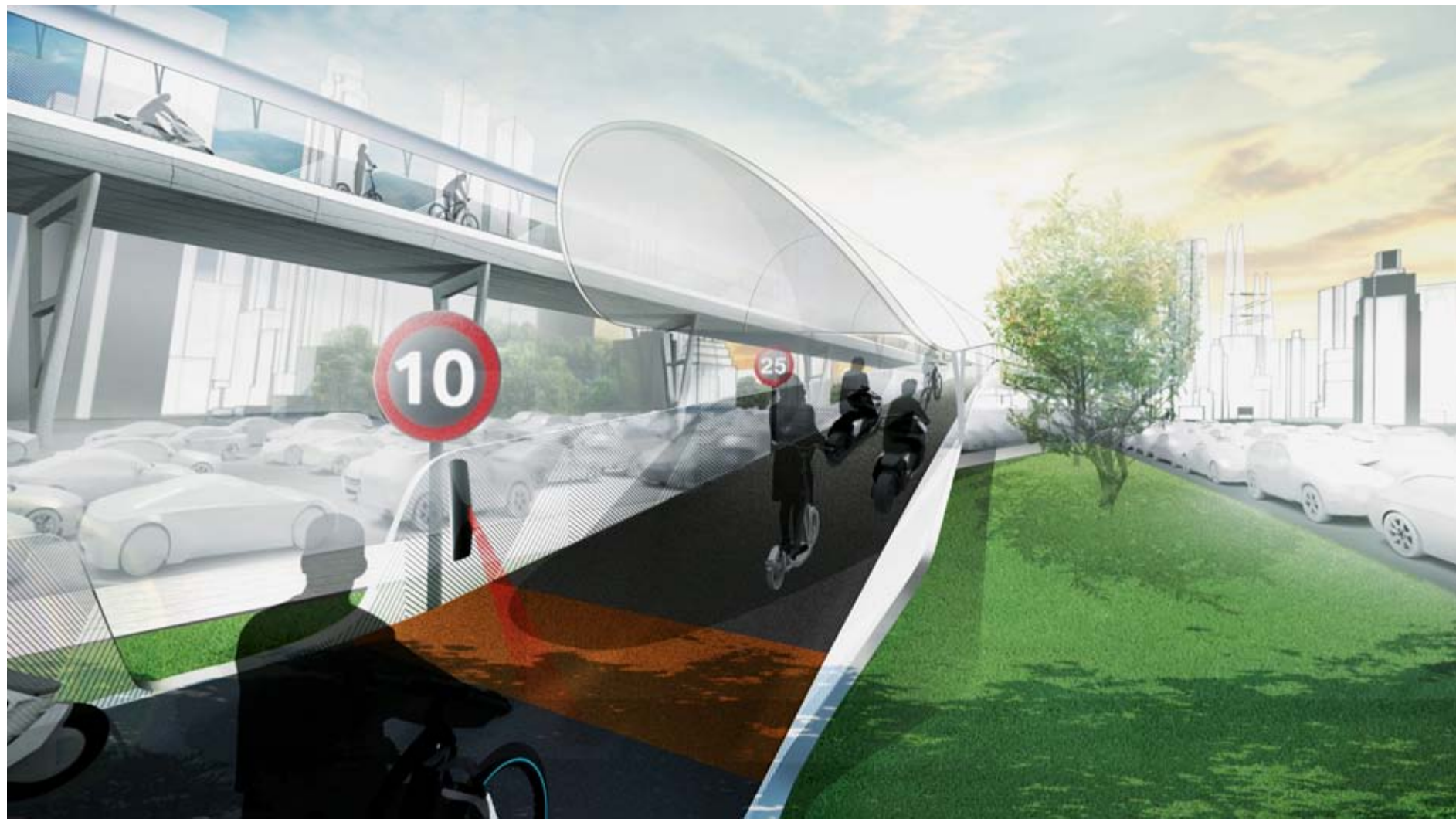


a one-way Mexicable journey costs only \$7 (approximately €0.30), and is free for the over 60s, under fives and disabled riders.

A similar cable-car system in Caracas, Venezuela was opened in 2010 following collaboration between design firm Urban-Think Tank, community leaders and local government. Known as Metrocable, the system has helped promote greater social equality for residents of Caracas's more deprived areas, including Barrio San Agustín. Metrocable spans 1.8km over the densely populated city, with its cable cars leaving every 27 seconds and able to carry up to 3,000 riders per hour in each direction of travel.

The system has been engineered to dovetail seamlessly with the existing public transportation network, boosting both convenience and safety. Indeed, Metrocable is operated by Metro de Caracas, which is also responsible for the underground rail network. Childcare centres, police stations, libraries, theatres and markets have all been established at the stations for a fully integrated approach of both transportation and essential services.

No single transportation solution can solve the problems faced by the world's most congested cities, simply because geography, politics, demographics and local preferences must all be taken into account. But with an integrated multi-modal approach to both vehicles and infrastructure, it's clear that governments, populations and private business can ease the strain, improve local air quality and help all of us spend less time stuck in traffic. ◀



05 Equal to the challenge

Designed to increase female participation in every area of competition, FIA Women in Motorsport recently celebrated its 10th anniversary. Commission President *Michèle Mouton* looks back at what has been achieved and explains why the future is bright. Plus, AUTO highlights some recent success stories...

TEXT

/ JUSTIN HYNES

By its very nature as a pursuit that in large part sets aside brute physicality in favour of speed of thought and deed, motor sport is something of a great leveller in the world of sport, a discipline that ideally remains ignorant of race, colour, creed or indeed gender. In machinery of equal potency, equality should be a given.

The truth, though, is that motor sport has been traditionally seen as something of a 'boys' club', an arena in which women have often been marginalised and on occasion actively discouraged from participation.

In 2009, the FIA set out to change that paradigm by launching its Women in Motorsport Commission, a body tasked with creating "a sports culture that facilitates and values the participation of women in all aspects of motor sport".

WIM Commission President Michèle Mouton has overseen a decade of progress.



In the past decade the Commission has been involved in a wide variety of projects in every area of motor sport activity, developing programmes to advance female participation on track – in disciplines ranging from karting and single-seater racing to cross country rallying and sports cars – and off track through initiatives to raise awareness of the huge diversity of industry roles available to women in engineering, design, logistics, promotion, administration, and marketing and communications.

Throughout its first decade of existence, the Commission has been presided over by 1982 FIA World Rally Championship vice-champion Michèle Mouton. And the four-time WRC rally winner is certain that the Commission has helped to make motor sport more inclusive in that time.

"We have reached the 10th anniversary of the Women in Motorsport Commission and I feel proud of our achievements and the collaborations we now have with many of the stakeholders in the sport," she says. "These 10 years have flown by and while we are always pushing for greater progress, I believe the foundations we started to lay at our first meeting in early 2010 have provided a solid base from which we are now reaping rewards.

"Our work is ongoing and our mission hasn't changed over the years, but the momentum has built steadily and now I sense a real change in the perception of women in the sport and the opportunities available to them," she adds.

"Everyone associated with our Commission, as well as all the national sporting authorities and stakeholders who support our activities, are helping us to realise our objectives and some of the dreams we had back in the early days are now becoming a reality. That is immensely satisfying."

When the Commission was in its infancy one of the key targets was to encourage greater female participation in karting, the gateway to motor sport competition for countless champions in almost every discipline. At the time Mouton insisted that: "karting is the grassroots of motor sport. Awarding a trophy to a promising young girl is a symbol of encouragement for more girls to persevere and not simply a reward for a purely feminine achievement."

The first steps towards that goal were taken by the support of female racers in the CIK-FIA Karting Academy Trophy, a contest designed to attract youngsters aged between 12 and 14 to the sport.

In 2014, however, the Commission's ambition for wider female involvement in karting grew significantly with the development of a planned Europe-wide karting talent search. And in 2018 the

plans came to fruition with the launch of the FIA European Young Women Programme. Part-funded by the EU Erasmus+ programme, The Girls on Track initiative initially encompassed a two-year project based around a cost-effective, arrive and drive karting slalom format whereby a small Tarmac area in a central urban location would be set up with marker cones to create a slalom course.

Partnered by eight European national sporting authorities and CDES-PROGESPORT at the University of Limoges in France, the initiative staged 22 events across nine countries. Following the national events a six-strong European Team was selected in the final at Le Mans. From there, the team attended two driver training camps to help enhance their careers in the intense world of motor sport.

For Mouton, the Girls on Track project has been one of the major success stories of the Commission's first decade.

"Girls on Track was a hugely ambitious project requiring significant funding and concrete support from our ASNs. It was a vision, but I knew we could achieve it; if we wanted to make progress, we had to," she says. "We introduced more than 1200 young girls to the motor sport world and showed them what opportunities were potentially open to them as career options."

OPENING DOORS

The success of Girls on Track has led to the initiative being continued and expanded. Partnering with the Dare to be Different programme launched by former Formula 1 test driver and current Formula E team principal Susie Wolff, the first FIA Girls on Track – Dare to be Different event took place in Mexico City in February 2019, during the weekend of the Formula E race in the city. A second event took place at the FE round in Berlin last May and in November the initiative staged a first-of-its-kind event at the opening round of the 2019/2020 Formula E season at Diriyah in Saudi Arabia.

"We have received enormous support from the Formula E community and its promoter, enabling us to also host events at their high-profile city centre races," adds Mouton. "More and more ASNs have been inspired to run their own Girls on Track activities and if this programme can be implemented around the world, that is a significant amount of young girls we can reach and potentially get involved in our sport. With a lot of hard work and support from many people and organisations, our vision came true and we are

convinced that focusing on the grassroots level is where we can increase our base of female participation across many areas of the sport."

It's not just at grassroots level that the Commission has been active. Over the past decade it has sought to boost female participation at the top levels of motor sport and as well as a 2016 talent search in cross country rallying organised in partnership with the Qatar Motor and Motorcycle Federation (QMMF), the Commission has supported a number of rising female drivers in rallying and circuit racing. The Commission president believes that the world of endurance racing offers a strong possibility of top-level success too.

"Our dream of getting female racers onto the top step of the podium at Le Mans is getting ever closer," she says. "We have highly competitive drivers in Europe and America competing in top teams and achieving great results. Endurance racing is a discipline where women are making a mark, and I am so pleased that with the support of manufacturers we are now in a position to help open doors and create real opportunities for them. There is more to come very soon in this discipline."

It's not just in GT racing that Mouton believes success will come, however, and with a decade of investment in female empowerment now behind the Commission, its president is sure that rich dividends will start to flow in the coming years.

And as evidence of changing perceptions within motor sport she points to the results of the first female driver assessment undertaken by the FIA in August 2018.

Held at the Circuito Navarra in Spain, the assessment saw the Women in Motorsport Commission work together with the FIA Drivers' Commission to analyse the performance of 25 female drivers currently competing in a wide variety of circuit racing categories.

"After our first female driver assessment we had concrete data about the performance level of 25 drivers," says Mouton. "This put us in a position to talk seriously to championship promoters and manufacturers and, by working together, we have been able to create opportunities for these women. The support we are receiving is fantastic, with more manufacturers talking to us about potential future test and race seats.

"It is important we maintain and increase this momentum and support the drivers wanting to take that next step. The creation of a talent development pathway is therefore vital to our ongoing plans and an initiative we intend to launch in the very near future."

'I sense real change in the perception of women in motor sport and the opportunities available to them'



Karting Slalom puts girls in the spotlight at FIA Motorsport Games

Last November's inaugural edition of the nation-versus-nation FIA Motorsport Games involved female racers taking centre stage with women making up almost a fifth of all entries.

Twenty-eight girls aged between 14-16 took part in the entry-level Karting Slalom Cup in which mixed pairs battled for glory on a specially constructed course at the Vallelunga Circuit near Rome. Designed to encourage the next generation of female competitors, the Karting Slalom event featured several graduates of the FIA Girls on Track programme, including Nina Pothof of the Netherlands, Matilde Fidalgo of Portugal, Slovakia's Barbora Baueroová, Poland's Sara Sandra Kałuzińska and Anna Glaerum from Sweden, while 15-year-old Doriane Pin came to the event from the prestigious Volant Winfield competition.

In the end, though, it was the Dutch duo of Pothof and teammate Bastiaan van Loenen who clinched the gold medal by seeing off regional rivals Belgium in a closely-fought final contest. Belgium's Antoine Morlet threw down the gauntlet with an impressive time of 48.929s on the first run. The Dutch ran Morlet close, however, and thanks to their consistent efforts it was they who emerged victorious, 3.925s ahead of their rivals.

Karting Slalom Cup winners at the Games and, top, the Girls on Track event at Vallelunga.



"We are very happy to be here and to represent the Netherlands," said Pothof afterwards. "We were a bit unlucky in the beginning but we still made it to the final and won, so we're very happy."

In the other disciplines female racers were also well represented, with promising single-seater competitor Belen Garcia of Spain finishing sixth in the Formula 4 Cup, while Sweden's Jessica Bäckman was seventh in the Touring Car Cup.

"At present, women account for only five per cent of competitors taking part in various forms of motor sport around the world," said FIA Women in Motorsport Commission President Michèle Mouton. "The recent inaugural FIA Motorsport Games provided another great opportunity for the ASNs to nominate girls to participate and nearly one-fifth of the entrants were female. That was another key milestone in our objective to make motor sport more accessible to women."

As well as encouraging female participation through the Karting Slalom, the FIA Women in Motorsport Commission also staged an FIA Girls on Track event at Vallelunga ahead of the Games' opening ceremony. Approximately 120 young girls from local schools were given the opportunity to sample the e-karts used in the Karting Slalom Cup. They also had the chance to try out simulators and take part in a number of informative challenges addressing such topics as road safety, first aid and environmental awareness. *Motorsport Games report, p58. ▶*

Amna Al-Qubaisi triumphs as four girls feature in UAE F4 round

UAE and Abu Dhabi racer Amna Al Qubaisi became the first Emirati woman to win an FIA single-seater race with a convincing victory in the opening event of the Trophy Round in the F4 UAE Championship at Yas Marina Circuit in late November. One of four girls on the F4 UAE grid for the double-header support event to the Formula 1 Abu Dhabi Grand Prix, Al Qubaisi started from pole to win the first race 3.644 seconds clear of Xcel Motorsport's Nicola Marinangeli and 7.351s ahead of Marinangeli's team-mate and reigning F4 UAE champion, Alex Connor. Dragon Racing's Manaf Hijjawi

was fourth, while Al Qubaisi's younger sister, Hamda, took fifth. "I feel amazing. I can't describe the emotion," said 19-year-old Amna after the win. "I am very proud to be the first Emirati and Arab driver on the podium of Formula 4. I thank my family and all the supporters. It's an amazing feeling, to do it in my home town and at my home track. I have a lot of local people watching. It was a huge honour." Al Qubaisi's hopes of making it a perfect weekend with victory in the Sunday race were ended by a collision soon after the start, while sister Hamda finished in 11th place after her race was

hampered by front-end damage to the car, though there was a better result for Saudi Arabian racer Reema Juffali, who was sixth. The fourth female competitor, Scotland's Logan Hannah, finished ninth in Sunday's race. A former karting champion, Amna and sister Hamda have been making an impression on the local racing scene. Amna competed in her second season of the Italian F4 Championship, with a best result of 12th place at Adria in 2018. Her list of accolades so far includes becoming the first woman to win both the UAE RMC Champion karting title in 2016 and the GCC Drivers Academy Competition in 2017. Amna was also the first woman from the Middle East to take part in a motor sport test programme for Formula E after the Al Diriyah e-Prix event in Saudi Arabia.

The Girls on Track Karting Challenge has boosted female participation in motor sport.



FIA European Young Women programme yields positive outcomes

The FIA's two-year-long European Young Women Programme, 'The Girls on Track Karting Challenge', concluded in October 2019 with a closing conference at the headquarters of the EU Commission in Brussels where key outcomes of the EU Erasmus+ supported initiative were presented. As part of the project the FIA partnered with CDES-PROGESPORT at the University of Limoges to conduct a detailed analysis of the programme's impact, most notably through a sociological survey as well as through the development of a set of recommendations to the sport's stakeholders and public institutions on how to challenge gender stereotypes around sport and better promote equality. The central survey revealed positive feedback from participants, who reported a 96.4 per cent satisfaction rate for the 22 national karting challenge events organised by the FIA and the initiative's nine

national sporting organisation partners. An impressive 97.4 per cent believed such events had strong potential to encourage more girls to take up motor sport. However, the survey also revealed the influence of an early acquaintance with motor sport in order to overcome the gender stereotypes surrounding it. It also noted a lack of adaptation within motor sport, such as in the provision of facilities and equipment specifically for females. Communication and the promotion of female role models was another key factor to help encourage young girls to the sport. As such, the challenges to be met in order to encourage effective gender equality referred to the conditions of access, the environment surrounding the practice at grassroots level, and more generally to the establishment of sustainable proactive female-friendly policies and initiatives, such as the FIA European Young Women Programme.

Following a karting demonstration by the six-strong FIA Girls on Track Karting Challenge European Team, the afternoon session of the conference hosted two panel discussions. The first, focusing on making motor sport more accessible for women at grassroots level, featured Anssi Kannas, Secretary General of Finland's AKK-Motorsport, Milja Kukkonen, a member of the Girls on Track Karting Challenge European Team, Tatiana Calderón, test driver for the Alfa Romeo Racing F1 team, FIA Formula 2 Championship racer and an ambassador to the programme, and Margarita Torres Diez, Trackside Formula One Power Unit

Engineer for the Mercedes F1 team. The closing panel session looked at how sport can foster gender equality, leading to discussion between Brianna Salvatore, UNESCO Sport for Development, Sylvia Poll, Olympic medallist and member of Peace for Sport, Kirsten Hasenpusch, ENGSO Youth Committee Member and Marijke Fleuren, President of the European Hockey Federation. The closing conference of the Girls on Track initiative followed the selection of six competitors from the national events at a European final in Le Mans last March. The six members of the FIA Girls on Track Karting Challenge European Team were then invited to two training camps. The first, held during the FIA World Touring Car Cup's Race of Hungary, immersed the girls in all aspects of a race weekend; the second, held in Genk and Veldhoven in the Netherlands, focused on driving skills and fitness. During the four days in the Netherlands the European team took part in a number of track sessions, analysed by coaches and former CIK FIA Academy Trophy World Champion and double Formula 4 champion Richard Verschoor, as well as engaging in simulator work and fitness training.

Michèle Mouton at the Girls on Track conference and, below, the six members of the European Team.



FIA Girls on Track initiative makes its mark in Saudi Arabia

Susie Wolff took part in the FIA Girls on Track event at the Saudi Arabia Formula E round.

Following the success of the two-year FIA European Young Women Girls on Track project the FIA Women in Motorsport Commission further expanded the programme in 2019, through a partnership with the Dare to be Different initiative launched by ex-Formula 1 test driver and current Formula E team principal Susie Wolff. Featuring karting sessions, a pit-stop challenge, media tutorials, practical STEM (science, technology, engineering and mathematics) activities as well as fitness and well-being workshops, the expanded Girls on Track programme is designed to engage and motivate young girls as well as open their minds to the possibility of a career in the motor sport industry. Following activations at the Mexico City and Berlin rounds of the 2018/2019 Formula E season, in November the initiative headed to the opening round of the 2019/2020 season, in Diriyah, Saudi Arabia, where female motor sport competition is in its infancy. In June 2018, Saudi Arabia's ban on women being allowed to drive was lifted in a historic move that has seen tens of thousands of driving licenses issued to women in Saudi. The Formula E event at the UNESCO heritage site of Diriyah thus offered a unique opportunity to inspire and encourage girls between the

ages of eight and 18 as well as to educate the general public on gender equality in motor sport. The event in Saudi Arabia saw more than 400 girls learn about a wide variety of motor sport roles and activities including journalism, with motor sport reporters demonstrating how to report from a race meeting and prepare a news story, as well as presenting a piece to camera. The girls also got involved in technical workshops to develop their STEM skills as well as being guided through first aid training. Simulator sessions also took participants through essential driving practices alongside an instructor. Finally, the girls had the opportunity to experience karting first hand, with a sequence of flying laps that provided each participant with an exciting introduction to motor sport competition. Commenting on the event and the wider future of the Girls on Track initiative, FIA Women in Motorsport Commission President Michèle Mouton said: "As we look to further promote the development of women in motor sport, the FIA Girls on Track activations showcase the opportunities available to girls and women around the world. Hosting this event in Saudi Arabia alongside the high-profile Diriyah e-Prix is a big step towards promoting gender equality in our industry and one we hope will be adopted by ASNs in the region." >



Amna Al Qubaisi became an F4 winner in Abu Dhabi.

Female sports car crews gear up for 2020 season

The FIA Women in Motorsport Commission's pursuit of success in GT racing took a step forward for 2020 with the announcement that it would support an all-female line-up in the Daytona 24 Hours (January 24th-26th). Bringing together some of the best female drivers from America and Europe, the GEAR Racing (Girl Empowerment Around Racing) team brought together IMSA and sports car driver Katherine Legge, Alfa Romeo Formula 1 test driver and Formula 2 racer Tatiana

Calderón, 'Iron Dames' team member and Audi Sport Customer Racing driver Rahel Frey, and IMSA and sports car driver Christina Nielsen, to battle for the top positions in the legendary US race that kicks off the IMSA WeatherTech SportsCar Championship season. GEAR is an organisation devoted to promoting female talent in motor sport. During 2020, the Women in Motorsport Commission will support three all-female



Right: Iron Dames Manuela Gostner, Michelle Gattling and Rahel Frey. Below: GEAR Racing's Lamborghini Huracan.

professional teams competing in top-level international series in the United States and Europe. Legge, Calderón and Nielsen will continue with GEAR Racing to contest the full 12-round 2020 IMSA season in a Lamborghini Huracan GT3 Ev. The Commission will again follow the fantastic line-up for the 2020 European Le Mans Series with Rahel Frey, Michelle Gattling and Manuela Gostner taking part behind the wheel of the Iron Dames Ferrari 488 GTE. And, in addition to their American programme, Katherine and Tatiana will compete in the ELMS with an Oreca 07 in the LMP2 category. "Our next objective," said Michèle Mouton, Commission President, "is to have two female teams in this year's Le Mans 24 Hours." ❖



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POWER IS NOTHING WITHOUT CONTROL

TEXT
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MARC CUTLER

Global ambitions

The FIA World Cup for Cross Country Rallies is bringing in new rules and events as it sets the stage to become the next FIA world championship

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Whether drifting over the stony tracks of Morocco, cresting the sand dunes of Abu Dhabi, or watching the sun setting on the Kazakhstan landscape, there is one thing for sure: no other motor sport series brings you right into the heart of the most beautiful race locations like the FIA World Cup for Cross Country Rallies.

The series not only fuels fierce competition but also pushes man and machine to their collective limits over the most diverse and challenging terrain. It is possible that some fans have not heard of this daring discipline, but with new regulations and exciting new locations joining the calendar in 2020 it is aiming to drift into mainstream motor sport with style.

Last season, history was made when husband-and-wife duo Stéphane and Andrea Peterhansel became the first married couple to take the title. ▶

Cross Country rallying is receiving an overhaul as it chases FIA world championship status for 2021.





Red Bull-backed Stéphane Peterhansel and his co-driving wife Andrea Mayer won last year's World Cup.

They raced hard throughout the four rounds to secure their cup victory in the last stage of the final event ahead of Nasser Al-Attiyah and Mathieu Baumel by just three points.

With such tight competition throughout the season, the series should arguably be getting more coverage and attention, and that is exactly what the new President of the FIA Cross Country Rally Commission Jutta Kleinschmidt intends to achieve. A Dakar Rally winner herself, Kleinschmidt aims to propel the World Cup forward, with the ultimate aim for the series to become a recognised world championship.

"We are focusing on the future, what we can improve and what is necessary to make this sport great," says Kleinschmidt. "The technical and sporting regulations have been completely revised and a lot of changes will be implemented in 2020. Next year, we will continue to improve in all areas and push hard to be ready for the new world championship in 2021."

SHOWING THE WAY

A demonstration of the series' ambitions is the introduction of the Silk Way Rally for the first time. A Marathon 8,000km event, it will bring the World Cup into a new market, appealing to Asian viewers, and also become attractive to sponsors as the race crosses through several countries.

"It's important to get a Marathon event as usually we are racing for five days," says Kleinschmidt. "Cross Country has become known because people love adventure. Every single race day is a great challenge. It's very important that we keep and expand this kind of spirit. In addition, people still want to see really special and beautiful landscapes, and this is what you can see in Cross Country. Especially when you cross continents like the Silk Way Rally does."

The World Cup is not a series that just any event can be added to, especially as it strives to meet the requirements to be made a world

championship by 2021. Even with nine years of rally-event experience, the Silk Way had to prove its worth before it was added for next season.

"We have the experience and the knowledge, and we have shown our capacity to create a big event with many challenging aspects, such as safety, logistic, crossing countries and customs," explains Frédéric Lequien, Deputy Director of the Silk Way Rally. "On the sporting side, the Silk Way has been won by the greatest champions. Every year, top teams and pilots come to compete. I guess it was kind of a win-win situation with the FIA, and we are so proud to be in the 2020 World Cup."

Lequien believes that his event can match the World Cup's ambitions. "Being part of the

There are plans to develop a new prototype truck regulation for Cross Country rallying for 2021.

FIA World Cup is a new step for us. We strongly believe in the potential of this sport. If both the FIA and organisers work well together, we can do something absolutely great."

Despite having global events and impressive competition, the World Cup currently suffers from a lack of media coverage. Integrating big events like the Silk Way Rally and having champions from other racing disciplines enter in races, such as two-time Formula 1 World Champion Fernando Alonso, who participated in the 2019 finale in Morocco, helps give the sport a needed boost.

"Television is very important and particularly today when we are using video. We use the latest technology to capture the story and the dramas of the competition," says Lequien. "We do put

these videos in front of the eyes of the viewers using our large global network of television channels and on social media. In the last two years, we have managed to grow our visibility on traditional television, expanding from coverage on 60 television channels worldwide to 78 channels. The Silk Way Rally is now available to watch in five of the seven continents.

"Of course, we know that the television market is changing – now viewers want to watch their popular sport on their phones, tablets and laptops. So we are also focusing on those developing platforms by sharing coverage also on social media."

Kleinschmidt is only too aware of this changing media landscape. "I think it's much



'People love the adventure in Cross Country. Every single race day is a great challenge and it's important we keep this spirit'

Cross Country offers competitors unique experiences, such as racing through the Siberian Forest.

more important today to have more audience on digital channels, a bit like the example of the FIA World Rally Championship [WRC]," she says. "WRC is not really one broadcast channel, it's more broadcasts on national channels, but they have an OTT platform called WRC+. This broadcasts the whole event live and I think this is more what you're looking for in the future. The future audience likes to follow the sport live on mobile devices instead of sitting in front of the TV at a certain time."

To help further increase worldwide media coverage, the FIA has decided to choose a promoter for the new world championship in 2021. An invitation to tender was published in November 2019.

YOUTH APPEAL

Future innovations hold the key to success according to Kleinschmidt, and this reflects in the proposed new direction of the series in 2020 and beyond. In the 2019 season there was a split into two different World Cups, with a second one for

Bajas, which are shorter events that last no longer than three days and are aimed at attracting younger competitors in particular.

One of the most exciting directions next year is its focus on helping young racers get a foot in the door of the racing series. The 2020 season sees a new World Cup title introduced for series Side by Side Vehicles (SSVs). This group is aimed at younger racers as an entry point into the series, with the aim to keep costs as low as possible through new technical regulations.

"Up to now we do not have an affordable entry level," says Kleinschmidt. "But we need young new talents as they will be the stars of tomorrow. When young drivers enter into Cross Country sport, they usually have to buy a driver seat from a team, either by having the budget themselves or getting it through private sponsors. But finding big budgets is usually very difficult, especially if you are still unknown. Therefore, it is extremely important to have an affordable entry level."

"Through this new SSV category young talents can show that they are good and they deserve publicity. This will make it possible to find sponsors and move up to the next level."

By breeding its own future stars, the series hopes to increase interest among the younger generation. Two world-class manufacturers have already seen the potential of this new class, with Yamaha and BRP-CanAm confirming that they will enter cars. ▶



A breath of fresh air

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Funded and supported by the FIA Foundation and launched at the UN Climate Summit in September, the Clean Air Fund is a first-of-its-kind initiative aimed at combatting air pollution, improving health and accelerating decarbonisation

TEXT

/

KATE TURNER

Imagine watching your children and knowing each breath they take could be shortening their life, making them ill now or limiting their opportunities in the future. If that's a difficult scenario to imagine, then you are part of the lucky 10 per cent of the world's population not exposed to dangerous levels of air pollution every single day.

Outdoor air pollution kills 4.2 million people a year, more than malaria, tuberculosis and HIV/Aids combined, including 300,000 children. As populations continue to shift to urban areas, the air pollution crisis deepens. By 2050, 68 per cent of us are expected to live in urban spaces and in the same year air pollution is predicted to become the lead cause of environment-related child death.

"When I open people's chests to operate on lungs these days, I see black spots on children's lungs," says New Delhi-based lung specialist Professor Arvind Kumar. Thirty years ago he rarely saw patients other than older, heavy smokers but now he regularly treats children for the ill-effects of dirty air: "In a polluted city there is no true non-smoker, everyone has the ill-effects of smoking. It's nothing short of a public health emergency."

To address this growing health crisis, a new \$50 million philanthropic initiative, the first dedicated entirely to addressing air pollution, was launched during the United Nations Climate Summit in September. Established with the support of FIA Foundation funding and expertise, the Clean Air Fund is designed to explore the impact and solutions for vehicle-related pollution.

The fund supports organisations around the world working to provide a triple dividend: to combat air pollution, improve human health and accelerate decarbonisation. It aims to increase the scale of funding currently interlinking resources

addressing climate change, children and health; share best practice to rapidly scaled up and replicated solutions; and lead a collective strategy to ensure interventions have a significant impact.

"It is a public health and environmental crisis. The time to act is now. Without aggressive intervention, the number of outdoor air pollution deaths is set to increase by over 50 per cent by 2050," says Jane Burston, Executive Director of the Clean Air Fund. "Tackling air pollution will not just save millions of lives but brings multiple benefits to issues including climate change, children's development and equity across the globe."

Funding, best practice and collective strategy are paramount to addressing the contribution of vehicles to poor air quality. There is currently little research disaggregating the contribution of traffic emissions from other sources of outdoor pollution – be that industrial, agricultural or domestic – but it is widely accepted that urban traffic pollution is a significant contributor to the problem.

The impact of dirty air is not, however, equal. The burden on health is disproportionately higher in poorer countries. In these urban contexts, transport is a major contributor to poor air quality, and while poverty and exposure are linked as main roads bisect poorer communities, many lower-income countries lack vehicle and fuel regulations or enforcement, acting as a dumping ground for the oldest, dirtiest and most unsafe vehicles.

Yet support for air quality projects in these regions is infinitesimal; just 0.5 per cent of global philanthropic funding on air quality is spent across the entire continent of Africa. In spite of the vast weight of evidence about the scale of the impact of toxic air, funding and political will is nascent; some \$800 is spent by foundations for every HIV-related death, compared to just \$7 for every outdoor air pollution-linked death.

YOUTH IMPACT

The impact of dirty air on populations is also unequal. Damage done to children by vehicle emissions, in particular, is invisible but serious, beginning even before conception with maternal exposure and reaching far beyond the headline figure of attributable child deaths, as it can affect long-term health and opportunities for learning and achievement.

Children are extremely susceptible in part because they are most directly exposed to harmful vehicle emissions at street level, where emissions are pumped out at the level of their mouths and

noses. Living more active, outdoor lives, moving more energetically with faster respiratory rates, means they are constantly taking in more air as a proportion of body weight than adults, leaving children particularly exposed to air pollution.

Respiratory issues are the most commonly associated with air pollution, and children's lungs and air passages are smaller, more permeable and more easily blocked. It can act as a contributory factor to asthma, one of the most common chronic health conditions in children, and infections like pneumonia, which is responsible for 15 per cent of all deaths in under five-year-olds, killing more than 808,000 children in 2017, according to the World Health Organization.

But air pollution damage is far more insidious and the impacts are constantly being uncovered. Ultra-fine particulate matter – just a thirtieth of the width of a human hair – can penetrate deep inside the lungs and enter the bloodstream, causing a range of health problems including heart disease. Nitrogen oxides can exacerbate pneumonia, asthma and other lung conditions. Polycyclic aromatic hydrocarbons, produced by diesel vehicles, damage neural connections and, unsurprisingly, exposure to these toxins have been linked to a vast range of learning and behavioural conditions with significant, life-long impacts.

Underestimating the contribution of vehicle emissions to poor urban air quality is a particular challenge and is most obvious in countries where other sources of air pollution, such as burning fuel for domestic use or localised energy production, are obsolete. The Real Urban Emissions Initiative, a project with the FIA Foundation and the International Council for Clean Transportation, conducted real-world emissions tests in cities across Europe which showed that in London, for example, NOx emissions of Euro 6 diesel cars were five times above the type-approval value. Even in countries with legislation for the cleanest air, there are secret threats.

"Vehicles are a major contributor to this problem and too little is being done to address their impact," says Sheila Watson, Deputy Director of the FIA Foundation. "The movement of people must be prioritised over the movement of vehicles in our cities, or the health risks of urban air pollution will continue to cast a terrible blight, particularly on our children."

"A targeted fund to address the causes of air pollution and its impact has never been more vital for our health and our children's future."

The case has never been clearer – we need targeted funding, strategy and intervention to address this most pressing global threat and the Clean Air Fund answers a call most governments have, so far, failed to hear. ◀



The Clean Air Fund's Jane Burston fears air pollution deaths are set to double.



Sheila Watson of the FIA Foundation says urgent action must be taken to tackle vehicle air pollution.

'A targeted fund to address the impact of air pollution has never been more vital'



06

THE MEN WHO WOULD BE KINGS

TEXT

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PINO ALLIEVI

Venerated on his home island of Sicily for his exploits in the Targa Florio, it was the Le Mans 24 Hours that really captured the imagination of *Nino Vaccarella*. And paired with French driver *Jean Guichet* in 1964, the teacher-turned-racer provided Ferrari with one of its most famous La Sarthe victories



Nino Vaccarella and Jean Guichet celebrate their giant-killing victory over Ford at Le Mans in 1964 in the lesser-powered Ferrari 275 P, right.





Nino Vaccarella was not so much a racing driver as a king. 'Ninni', as he was known, was born in Sicily in 1933 and is regarded in the same manner as those who have ruled the island, the biggest and most culturally rich in the Mediterranean from 1000 AD onwards. In a country that has always placed its racing heroes on a pedestal, Vaccarella's status as being worthy of veneration was sealed through three Targa Florio wins on home soil (though in truth it could have been eight) and through an outstanding Le Mans 24 Hours for 'national marque' Ferrari.

Vaccarella's legend is well preserved and protected, even 60 years on from the events that immortalised him. Today, he is still admired and idolised as some sort of Greek god, capable of feats beyond those achievable by mere mortals.

To give you some idea of what his life was like back then and what cloth Sicilians are cut from, one needs to look at an incident that occurred in 1965. Just a couple of weeks after winning the Targa Florio alongside Lorenzo Bandini in a Ferrari 275 P, Ninni happened to be in the village of Collesano, on the race route, just as a statue of the Madonna was being paraded through the streets with all the inhabitants following on behind. Vaccarella was forced to stop to let the religious procession go past. At least, that's what he attempted to do. Recognised by some of the villagers and like a scene from a cinematic melodrama, he was dragged out of his car, hoisted onto the shoulders of the crowd and carried in triumph through the streets. The Madonna was abandoned and left to find her own way to the church as the festival of the Virgin Mary became the festival of Vaccarella.

"It really was incredible," recalls Ninni. "Because I found myself lifted off the ground by the people, who were imploring me and trying to hug me. It was an unforgettable moment."

Even today, if he happens to be somewhere on the old Targa route, he is mobbed and asked for autographs, as if time had simply stood still. He won in 1965 with Lorenzo Bandini, in 1971 with Toine Hezemans in the Alfa Romeo 33/3 SP and again in 1975 with Arturo Merzario in the Alfa 33 TT12. Apart from those, there were other wins and good results that eluded him through mechanical woes or accidents.

But the race that Vaccarella loved the most was Le Mans, which he won in 1964 with Jean Guichet at the wheel of a Ferrari 275 P, fitted with a 3300cc V12 putting out 370 horsepower in a car weighing some 750kg.

"Why Le Mans and not the Targa Florio? Because I always loved having a lot of power and high speeds," Vaccarella admits. "Going down the Hunaudieres straight at over 300km/h is

intoxicating, as are the flat-out sections such as Maison Blanche, especially when the car is sliding. These are feelings you can never forget. In the Targa, you drive with just one hand on the wheel, because the other is constantly operating the gearshift. At Le Mans it's different, the driving is more technical and less improvisational. And the fact you all start at the same time gives you an even bigger adrenalin rush and is more tense, because not only do you have to overtake the cars you are racing against, you also have to get past the slower cars. And then there's the night driving, the mystery of the lights cutting through the darkness, which is an indescribable feeling."

DAVID VS GOLIATH

Enzo Ferrari really wanted to win Le Mans in 1964. It was not simply the usual uncontrollable urge to compete, there was a lot going on in the background. Ford was reeling from Ferrari giving up on the idea of selling to the Detroit colossus, with the Commendatore's last-minute change of heart leaving the Blue Oval's senior management publicly embarrassed and privately furious.

Ford was therefore out to humiliate Ferrari at the most famous race of all, the Le Mans 24 Hours. It turned up at La Sarthe in '64 with an arsenal full of GT40 Mk 1s. Ferrari's riposte was to fine-tune its 275 and 330 Ps, which nevertheless were at a significant power disadvantage when compared to the American car, which boasted a 4200cc engine.

In the early stages of the race, Richie Ginther, who was paired in one of the Fords with another ex-Maranello driver, Masten Gregory, took the lead, charging past three Ferraris on the Hunaudieres straight. It looked as if things were not going well for the Prancing Horse.

"That's how it seemed," recalls Vaccarella. "But the truth was we knew we had the upper hand in terms of reliability compared to Ford. In endurance races you should never pay too much attention to what goes on in the early stages. In fact, Ginther had to retire, while in their GT40, Phil Hill and Bruce McLaren, although working their way up the order, ran into mechanical problems and we, in the Ferrari, found ourselves out in front. Along with Guichet, we were five laps ahead of the Graham Hill/Jo Bonnier 330 P. Surtees was third with Bandini and it was a resounding triumph for Maranello."

How did Vaccarella end up paired with Jean Guichet, whom he hardly knew and with whom he had never been team-mates?

"It was Enzo Ferrari himself who decided," explains the Sicilian. "He always wanted a reliable and combative driver alongside a regular sort. ▶

Ferrari's greater reliability played to Vaccarella/Guichet's advantage at Le Mans '64, and as the Fords ran into trouble they moved ahead.



Top: Vaccarella is idolised in Sicily for his three Targa Florio wins there, with the first in 1965. Above: Guichet was not Ninni's first choice as co-driver for Le Mans, but proved the perfect ally.

'I found myself lifted off the ground by the people, who were imploring me and trying to hug me. It was an unforgettable moment'



Despite his success in the Targa Florio and elsewhere, Vaccarella never became a full-time racer and remained a committed headteacher.



I would have preferred Bandini or Scarfiotti, with whom I got on well, but I was told it was Guichet. And I have to admit the gamble paid off, in that Jean proved to be quick, reliable and very kind on the car. Very good. When we crossed the finish line, our car could have gone on for another 24 hours!"

The win created even more of a sensation as it came at the expense of its rival: David had knocked out Goliath was the angle that the press went with all over the world, in an era when these races were yet to be seen on television.

Vaccarella went on to win other important races, such as the Sebring 12 Hours and the Nürburgring 1000Km, without ever really becoming a professional racing driver. In fact, he had another profession, as the head of a private school in Palermo that was owned by his family.

"I could have become a full-time driver at Maranello," he says. "Enzo Ferrari called me and congratulated me on my results, gave me a guided tour of the factory and put a contract in front of me. I knew that, in all honesty, I could only be a

professional driver for 50 per cent of the time, as I didn't want to leave the school, nor leave Sicily. That was limiting, even if I was a works driver for the Prancing Horse for several years. I've got no regrets. It was good the way it was."

Well educated, in possession of a law degree and well connected, Ninni Vaccarella always had a slightly diffident approach to the racing life around him. "I had fun and I'm still alive, unlike so many of my friends such as Bandini, Giunti, Surtees, Parkes and Scarfiotti."

His only regret is not having had a real shot at Formula 1: "Even though I preferred the Sports Prototype cars that were more powerful and harder to drive, because at the time, the 1500cc F1 cars were like go-karts in comparison."

Today, Ninni watches Formula 1 religiously, discussing races with his friends and is full of admiration for Lewis Hamilton. But what about Guichet? "I never saw him again, which is a shame. I remember his bravura and the beautiful women who seemed to surround him."

'I knew that I could only be a professional driver for 50 per cent of the time, as I didn't want to leave the school, nor leave Sicily'

Vaccarella and Guichet's paths have never crossed since their Le Mans win, with the Frenchman later moving into rallying.



Born in 1927, Guichet, his team-mate in that unforgettable Le Mans 24 Hours, continues to work in the shipping business in Marseille, his home town. Apart from Le Mans, he won countless races in the legendary Ferrari GTO, including the Tour de France with José Behra. That same car changed hands several times and then, in 2013, a very wealthy American enthusiast bought it for the not inconsiderable sum of 52 million dollars.

Towards the end of his racing career, Guichet switched to rallying, even winning the prestigious Codasur in Argentina in 1979 in a Peugeot 504, co-driven by none other than Jean Todt, current president of the FIA. The pair also came fourth in the Bandama Rally and did well in other important events such as the Tour de Corse and the Rally of Morocco. But the outstanding achievement remains that Le Mans win, partnering the king of Sicily, whom Guichet regarded as a full-time pro even if, for Vaccarella, removing the crash helmet meant returning to a very different, altogether more normal existence – except when the parades begin. ◀



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'I never thought a son could leave his father a legacy but my son did'

In April 1956, the Italian monthly publication *Velocita* established by racing driver-editor Cesare Perdisa ran an article on the future of racing engines, written by Dino Ferrari. A long and detailed argument explaining the development and merits of the 1.5-litre racing engine he had championed for Formula 3 use, the two-part discourse was erudite, forward thinking and amply demonstrated the passion for racing and innovation the young engineer had inherited from his legendary father. However, just two months later the 24-year-old scion of the Ferrari family was gone, succumbing to the incurable muscular dystrophy he had battled all his life. Both design and death would ultimately lead to the creation of an iconic sports car that despite running counter to Ferrari's philosophy has captured the imaginations of aficionados for half a century.

Though his death had been inevitable it came as a huge blow to Enzo Ferrari and, in order to honour Dino, five months after his death Ferrari built his son's engine, the Dino 156.

It was the start of an incredible line of Dino engines developed over the following decade for use in Formula 1, Formula 2, sports cars and GT racing, and eventually on the road. "I never thought a son could leave his father a legacy but my son did," Ferrari later said.

The first race car to bear the Dino marque badge was the 1957 Dino 156 intended for the Formula 2 series. The car made its debut at the Naples Grand Prix in 1957 with Luigi Musso scoring third place. After two second places at the Modena GP (in both heats) courtesy of Musso, the engine was expanded to 2.2-litres and then to 2.4 for Formula 1 specification and renamed the Ferrari 246 F1. With sports prototypes such as the Dino 166P and 206P also using variations of Dino's 65-degree vee angle, the concept powered Ferrari to huge success between 1957-66.

However, victory on the track had a paradoxically troubling effect on Ferrari's wider business. The small Maranello company, which produced its first car in 1947, was in need of increasing investment for its factory and for the production of its customer cars, as well as for increasing diversity in its racing activities, which by the mid-'60s included a variety of single-seaters, including F1, sports car competition and, most expensively, its foray into GT racing. Running a company of this sort without the support of a powerful financial and technical partner was beginning to prove nigh on impossible.

Ferrari's flirtation with Ford and his rejection of the US firm's overtures has passed into legend – most recently celebrated in the film *Ford v Ferrari* or *Le Mans '66* – but even in the wake of that bitter wrangle Ferrari was struggling to maintain its multiple programmes.

NEW DIRECTION

In 1965 the Commission Sportive Internationale de la FIA had drawn up new rules, to be enacted for the 1967 season, that required F2 engines to feature no more than six cylinders and to be derived from a production engine, from a road car homologated in the GT class and produced in at least 500 examples within 12 months. Ferrari did not possess the production capacity to reach such quotas and to meet the requirement an agreement was signed with Fiat which would see the manufacturer produce the 500 engines needed for homologation, to be installed in a GT car which remained to be specified.

The V6 engine, built by Fiat in Turin, would make its road-going debut in 1966 in the Fiat Dino. In parallel with the development of the engine, Ferrari had been toying with the idea of a mid-engined road-going sports car, a concept enthusiastically supported by Sergio Pininfarina and a number of Ferrari dealers. Initially, though, Ferrari was unconvinced.

"He kept insisting it was too dangerous," Pininfarina recalled. "While he felt it was fine for racing and professional drivers, he was against making mid-engine sports cars for customers. He was afraid of the safety, of building a car that was too dangerous."

Ferrari's solution was to minimise the perceived danger by using the V6 engine and creating a new entry-level brand. "When Mr Ferrari finally said yes, he said, 'Okay, you make it not with a Ferrari, but with a Dino,'" Pininfarina explained. ▶



The Dino 246 GT made its official debut at the Turin Show in November 1969.

06

Little wonder

A little over 50 years ago the 246 variant of *Enzo Ferrari's* tribute to the engineering vision of his late son Dino made its debut, and with the arrival of the model's finest iteration the legendary status of the V6-powered machine was sealed. Half a century on, AUTO looks back at the birth of Ferrari's beautiful baby...

TEXT

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ANTONIO GHINI

The Dino 206 GT Special design study – based on the 206 S racing model – made its debut at the Paris Auto Show in October 1965. The concept was so well received that a year later, at the Turin Show, a second prototype, known as the Dino Berlinetta GT, was displayed. A final production prototype was shown at 1967's Turin Show and the 206 Dino GT went into production in '68. It was an instant hit with press and public alike.

"The Dino 206 GT is a wonderful car... an engineering masterpiece," said America's *Sports Car Graphic*, while the UK's *Car* magazine noted that the "Dino stands out as one of the most advanced grand touring cars of our time."

During a short nine-month production period just 150 examples of the 206 GT were built, all of which were left-hand drive. Perhaps in response to increases in the size of engine made by Porsche to the 911 that the Dino was designed to compete against, Ferrari expanded the 2.0-litre engine to 2.4-litres and lengthened the wheelbase by 60mm.

The 246 GT arrived in 1969 and became the definitive example of the model. And despite its 'baby Ferrari' status the Dino's cachet was

enhanced by celebrity endorsement. The 246 GT featured as the car of choice of Tony Curtis' playboy crime-fighter Danny Wilde in hit early '70s TV show *The Persuaders* and also found favour with rock royalty such as Keith Richards, David Crosby and Pink Floyd's Nick Mason, as well as Hollywood stars including Dean Martin and Sonny and Cher.

Further small updates created three 246 GT series – the type L, type M and type E. The biggest change came with the March 1972 Geneva Auto Show introduction of the 246 GTS, which featured a one-piece removable targa top panel.

By the time assembly of the Ferrari Dino 246 GT and GTS ceased in 1974, production, including the 206 GT, totalled nearly 4,000 cars, making it Ferrari's best-selling series up to that time.

And it's in that figure that the legacy of Enzo Ferrari's first-born son is perhaps most greatly felt, for the 206/246 GT led Ferrari on its first tentative steps towards the kind of volume production that we know at Maranello today. In that regard the Dino might just be the most important single road-going Ferrari of them all. ◀

'The Dino stands out as one of the most advanced grand touring cars of our time'

Between 1969-74 a total of 2487 Dino 246 GT models were produced, with 1274 246 GTS examples made between 1972-74.



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07

Part of the landscape

Since its foundation in 1904 Automóvil Club Argentino (ACA) has become woven into the fabric of life in Argentina, and in the face of new challenges it believes a continued focus on community will help the club deal with the mobility and sporting demands of the future

TEXT / GAIA PELLICCIOLI



Despite the financial and economic crisis, and the unstable political situation that has hampered its progress for more than a decade, in summer 2018 Argentina appeared to begin the slow process of exiting the doldrums with its continued inclusion in a list of emerging markets by Index provider MSCI, alongside countries such as China, Russia and Colombia.

And though the Argentine economy is forecast to contract for the second year in a row in 2020, key market segment drivers continue to ward off deeper stagnation. The car market, in particular, is one of the most robust in the region, supported by multiple factors such as labour availability, research and development efforts, geographic advantage and government support.

And while the graph for domestic car production often features Andean peaks and troughs, output remains strong, with 2019 set to reach around 400,000 units – small by comparison with major producers such as China and Germany, but significant in the region. Sales, too, continue to rise, up 6.7 per cent in 2019 over last year.

Supporting this high number of vehicles and motorists is the Automóvil Club Argentino (ACA), which for more than a century has been providing its members – over 350,000 at the last count



ACA President Jorge Rosales oversees the club's mobility and sporting arms as well as being a member of the FIA Senate.

'Over time the ACA has shaped its services to meet specific needs'

– with high-quality assistance. Through the years, the club has understood how to successfully diversify its services to adapt to a fluid market and increasingly specific consumer needs.

"The ACA was created in the City of Buenos Aires on June 11, 1904, by a group of visionary car amateurs," explains ACA President Jorge Rosales who, since 2013, has also served as a Member of the FIA Senate. "At first the club played an essential role in road and highway development by accompanying the boom in car sales – providing mechanical assistance, fostering national tourism throughout the territory and promoting motor sport.

"Over time the ACA has gradually shaped its services to meet the specific needs of each period, consolidating the patrimonial structure the club has maintained through the creation of a highly-developed mechanical assistance truck fleet, the acquisition of service and refuelling stations, offices, stores, mechanics' workshops, hotels, hostels, recreation sites and camping facilities."



The ACA Almagro in Buenos Aires is an office development designed with the environment in mind.

The ACA's network of more than 200 filling stations across Argentina are a major source of revenue for the club.

One of those elements – the acquisition of fuelling stations – played a key role in not only developing the club but also in advancing Argentinian national identity. In August 1936, the Automóvil Club Argentino and the then-called Yacimientos Petrolíferos Fiscales signed a historic agreement that provided for the construction of 30,000km of roads and 80 fuel service stations between the years of 1937 and 1943. This national network served to link regions often separated by vast distances, with the familiar signposts of the ACA stations acting as oases along the routes.

More than 80 years on, fuel sales at the club's own refuelling stations

remain one of the major revenue streams for the ACA and provide a key benefit for all its members.

The other major alliance that allowed the club to extend its service network is its agreement with la Caja S.A. insurance.

"Through this agreement our members can secure insurance for their vehicles with the ease and support that only the ACA and La Caja offer in the current market," says Rosales:

In a bid to diversify its portfolio in a changing social context – and to increase its membership – the club has in recent times instituted a number of innovation projects in different spheres, notably in the area of sustainable mobility.



"Among our new initiatives we can underline sustainable mobility projects, some of which we have already begun implementing, for example the installation of power chargers for electric vehicles at our service and refuelling stations, and other ongoing projects such as assistance initiatives and new services for responsible and shared mobility," says the ACA President.

"In order to enlarge our membership, we have focused on the role of women drivers and we have multiplied our efforts to meet the specific requirements of female motorists. Likewise, we have addressed younger members of the public through our schools project, whereby we take our road education course to high schools to facilitate driver education, as well as undertaking subsequent evaluations that enable youngsters to obtain a driving license with the ACA."

With a view to changing driver behaviour and reducing Argentina's high rate of road fatalities, one of the club's main priorities is in safety education.

"Argentina has one of the highest road death rates," explains Rosales. "Twenty people die every day and according to statistics there were 7,000 casualties due to traffic accidents in 2018. Traffic accidents are the main cause of death among people under the age of 35 and the third highest cause of death among all Argentinians."

To improve road safety across the country, the club is strongly committed to training public and private operators, teachers and children with a variety of programmes targeted at different demographic groupings.

The ACA's commitment to safety was consolidated in 2008 with the launch of the first edition of the Itinerant Road Safety Education Programme (PIESVI). Over the past 11 years, this programme has undertaken 5,638 courses and trained some 338,940 people in 365 towns and cities across the country.

The club has just launched the third edition of the PIESVI programme, focusing on the safety of the youngest. With a fully equipped mobile classroom, this part of the programme plans to raise awareness around the correct use of Child Restraint Systems (CRS).

In addition to mobile classrooms, the ACA has developed a Transit

'The ACA's Road Safety School has generated high levels of recognition'

Park where children are able to experience the different roles everyone takes on public roads, learning how to respect traffic rules and other road users.

The Children Traffic Park was also activated at the Youth Olympic Games held at Buenos Aires in October 2018, where the club, in collaboration with the FIA, engaged with an audience of more than 20,000 visitors.

"The event was a true success," says Rosales, "not only with regards to the presence of a large audience, which widely exceeded expectations, but also in relation to the variety of different road safety stands on site. These featured simulations of drunk



Road safety is high on the ACA's agenda – it runs a number of driving schools where beneficiaries have included police officers.



Over time the ACA has branched out into tourism and runs hotels, hostels, recreation and camping sites.

driving, driver reaction speed, and distraction through the use of mobile phones while driving. Alongside the circuit designed for electric karts, they provided a special attraction for the audience."

Another major road safety initiative the club is proud of is the annual Road Education Photo Contest Campaign, open to the general public and aimed at promoting best safety practices.

"This year the subject of the campaign was helmet use among motorcycle and bicycle riders," explains Rosales. "This is an important message considering that in our country only 60 per cent of motorcycle users wear helmets and there are no statistics on

helmets worn by bicycle riders.

"We understand that progress has been made in terms of road infrastructure and controls over the years, though there is still much to be done and we will go on providing support through our educational activities."

To encourage the development of safe driving techniques, the club has recently expanded its network of driving schools with four new institutions in Buenos Aires, in addition to the FIA-ACA Road Safety School inaugurated in July 2018 at the Autódromo Oscar y Juan Gálvez and supported by the Government of the Autonomous City of Buenos Aires (CABA).

"The ACA's Road Safety School has generated high levels of recognition and great acceptance. Since its inauguration, enquiries and interest shown in the course contents have grown substantially," says the ACA President.

"The school has also proven to be highly effective in the training of police officers in Buenos Aires, and at the start of this year we certified the first police officers to be trained in the provision of improved driving techniques and road safety. Training police officers and preparing them to better face situations encountered on the streets is essential to the Ministry of Security of the City of Buenos Aires."

SPORTING VARIETY

The Automóvil Club Argentino is also the national sporting authority in Argentina and develops motor sport in compliance with the FIA standards.

A vibrant motor sport scene, organised by the ACA into a packed calendar, encompasses a diverse range of championships including Cross Country, Formula 2.0, karting, rallying, Sport Historico, TC and Super TC 2000 touring car racing, Top Race saloon car racing, various historic categories, Rallycross, GT racing and the Cup Fiat Competition. ▶



Argentina's vibrant touring car scene has produced the likes of WTCR frontrunner Esteban Guerrieri.

'Our touring car series have given rise to internationally-renowned drivers'

One of the most significant competitions organised by the club is the Gran Premio Histórico. Not to be confused with the Formula One Argentinian Grand Prix, the Gran Premio was first organised by the ACA in the 1950s and had more in common with rallying than circuit racing. In the event's golden age, from 1950-57, it attracted a host of international stars including Juan Manuel Fangio and José Froilán Gonzalez, who battled home-grown heroes such as the Gálvez brothers on hard-packed rutted roads deep in the Argentine interior.

Revived by the ACA at the start of this century, the race now covers a 3,062km route across the provinces of Buenos Aires, Santa Fe, Córdoba, La Rioja and San Juan. It serves not only as a crucial promotional tool for tourism, but also as a charitable event with participants delivering 5kg of non-perishable food to the Caritas stations along the route. The food is then distributed to different institutions through local dioceses.

"The GP is essential for promoting tourism as a reminder of the classic cars that competed for the Argentina touring grands prix between the 1950s and '80s, covering the best tourism sites in Argentina by car, and opening new roads in Argentinian cities and villages," explains Rosales. "It enables us to cover all of the country's provinces by car and facilitates better relationships with provincial governments."

The club is also committed to

developing grassroots motor sport including karting and, it is hoped, Formula 4.

"Supporting the FIA Formula 4 project and maintaining the Argentina Karting Championship will help us to provide a competitive development framework to young drivers from the grassroots," asserts Rosales. "The ACA also provides advice and institutional and sporting support all over the country to 25 regional federations that are within our regulatory sport structure."

FORWARD THINKING

Looking to the future, Rosales says the club will continue its efforts to maintain its role as the National Sport Authority and develop all forms of motor sport.

"Our goals for the future of sport include providing institutional support to Argentinian motor sport drivers abroad, continuing the organisation of events at international level, such as Rally Argentina in the FIA World Rally Championship, and organising the Gran Premio Histórico to keep our motor sport heritage alive."



Motorists remain at the heart of the ACA's service – be it through roadside assistance or shared mobility.

"We also want to maintain the success of our touring car series, which are widely broadcast on television each weekend. These series have given rise to internationally-renowned drivers such as José María López, Esteban Guerrieri and Néstor Girolami."

From its incarnation to the present day, the strength of the ACA comes from its origins as an organisation rooted in the community and possessing a keen awareness of the common good.

"The ACA has grown as part of the community," says Rosales. "It has always been aware that its role is framed in a social context within which it makes a lasting contribution to the benefit of all."

"At present we are facing a range of difficulties, largely predicated by the national economic reality," he adds. "However, our origin as a service provider with defined founding principles and an ability to look towards the horizon ensure that we are well-placed to put forward diversification strategies to meet the new social demands and to innovate around new forms of mobility."

"We understand that mobility will go on evolving – prioritising and fostering the use of public transport combined with healthy mobility, such as the larger spaces for pedestrians, bicycles and skateboards currently seen in Buenos Aires. The use of electric vehicles will be encouraged too."

"Meanwhile, in areas far from the capital city, where distances are larger, the rise of shared mobility undertakings such as car-sharing is growing," he concludes. "With the innovative projects we are working on, we expect to go on accompanying our members in this evolving process, providing them with the support and assistance they may need." ◀



The country also has its fair share of rally fans who flock to the annual WRC round.



Weaving a new urban fabric

08 Toyota chief Akio Toyoda on the firm's plans to build a hydrogen-powered connected city

FINAL LAP the last word

The 2020 Consumer Electronics Show (CES) in Las Vegas saw Japanese automaker Toyota reveal ambitious plans to build a prototype 'city' of the future on a 175-acre site at the base of Mount Fuji in Japan.

Called the Woven City, it will be a fully-connected ecosystem powered by hydrogen fuel cells.

Envisioned as a "living laboratory", the Woven City will serve as a home to full-time residents and researchers, who will be able to test and develop technologies such as autonomy, robotics, personal mobility, smart homes and artificial intelligence in a real-world environment.

"Building a complete city from the ground up, even on a small scale like this, is a unique opportunity to develop future technologies, including a digital operating system for the city's infrastructure," said Akio Toyoda, President of Toyota Motor Corporation. "With people, buildings and vehicles all connected and communicating with each

other through data and sensors, we will be able to test connected AI technology... in both the virtual and the physical realms, maximising its potential."

Toyota will extend an open invitation to collaborate with other commercial and academic partners, and invite interested scientists and researchers from around the world to come and work on their own projects in this one-of-a-kind, real-world incubator.

"We welcome all those inspired to improve the way we live in the



Toyota President Akio Toyoda says Woven City will be an experimental base for the development of future technologies.



Scientists and researchers would be invited to conduct their own studies at Woven City at the base of Mount Fuji.

future to take advantage of this unique research ecosystem and join us in our quest to create an ever-better way of life and mobility for all," said Toyoda.

For the design of Woven City, Toyota has commissioned Danish architect, Bjarke Ingels CEO. Bjarke Ingels Group (BIG) has designed many high-profile projects including 2 World Trade Center in New York, the Lego House in Denmark and Google's Mountain View and London headquarters.

"A swarm of different technologies are beginning to radically change how we inhabit and navigate our cities," said Ingels. "Connected, autonomous, emission-free and shared mobility solutions are bound to unleash a world of opportunities for new forms of urban life. We believe we have a unique opportunity to explore new forms of urbanity with the Woven City that could pave new paths for other cities to explore."

The city masterplan includes the designation for street usage into three types: for faster vehicles only, for a mix of lower speed, personal mobility and pedestrians, and for a park-like promenade for pedestrians only. These three street types weave together to form an organic grid pattern to help accelerate the testing of autonomy.

To move residents through the city, only fully-autonomous, zero-emission vehicles will be allowed on the main thoroughfares. In and throughout Woven City, autonomous Toyota e-Pallettes will be used for transportation and deliveries, as well as for changeable mobile retail.

Toyota plans to populate Woven City with Toyota Motor Corporation employees and their families, retired couples, retailers, visiting scientists and industry partners. The plan is for 2000 people to move in at the start, adding more as the project evolves. Ground breaking work at the site is planned for early 2021.



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