INTERNATIONAL
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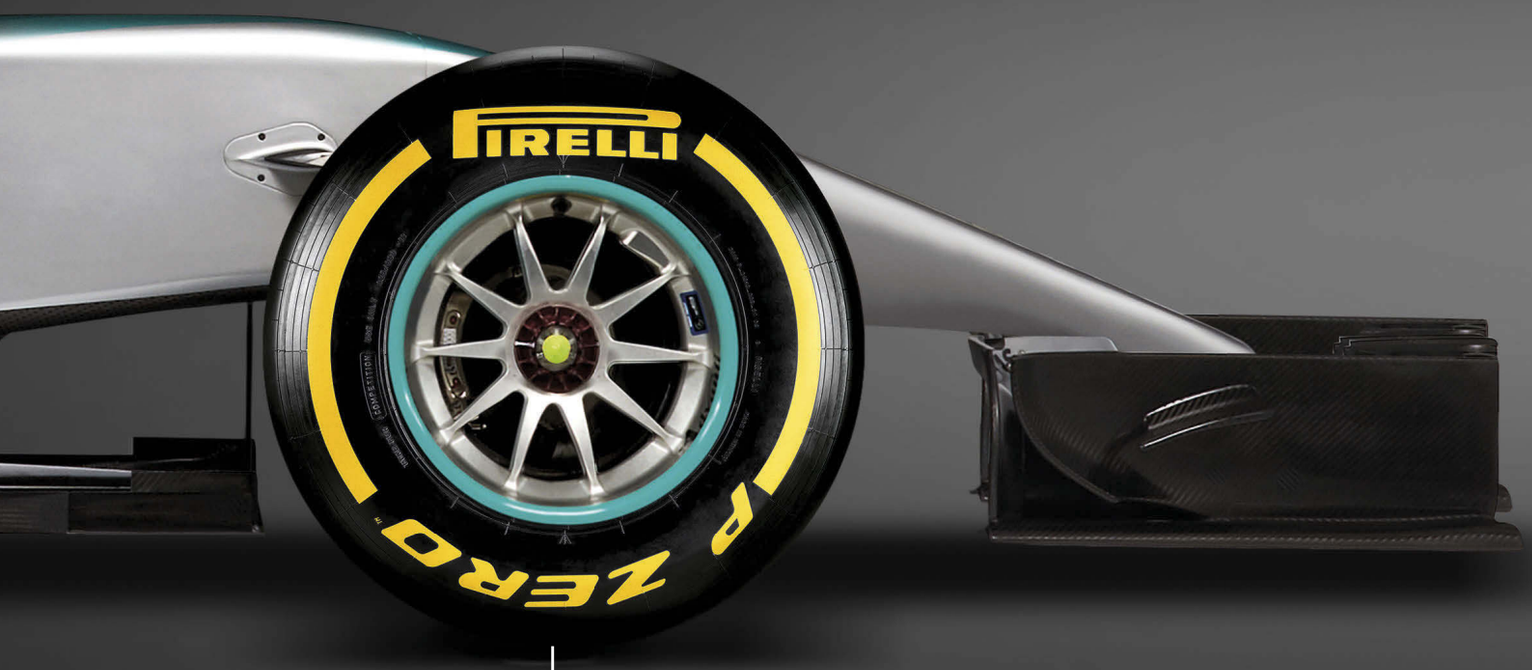
AUTO

P38

A NEW MISSION FOR ROAD SAFETY

FIA PRESIDENT JEAN TODT ON FACING THE CHALLENGE OF BECOMING THE UN'S SPECIAL ENVOY FOR ROAD SAFETY

CHOOSE PIRELLI AND



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ISSUE
#11

AUTO

INTERNATIONAL
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THE FIA

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

THE FIA FOUNDATION

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

THE FIA INSTITUTE

The FIA Institute is an international not-for-profit organisation that develops and improves motor sport safety and sustainability. It leads projects that encourage the rapid development of new and improved safety technologies; that facilitate higher standards of education and training; and that raise awareness of safety and sustainability issues. The Institute was established in October 2004 and funds its activities through annual grants from the FIA Foundation.

CHALLENGING TIMES

FIA President Jean Todt is not one to shirk a challenge and recently he took on one of the most important of his long career – as the new UN Special Envoy for Road Safety.

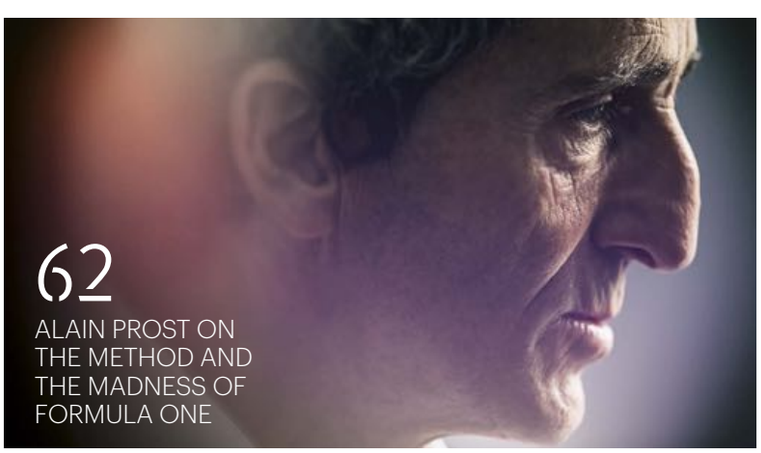
It is a role close to his heart and in this edition of AUTO he explains why he has taken on this task and how he'll achieve his aims.

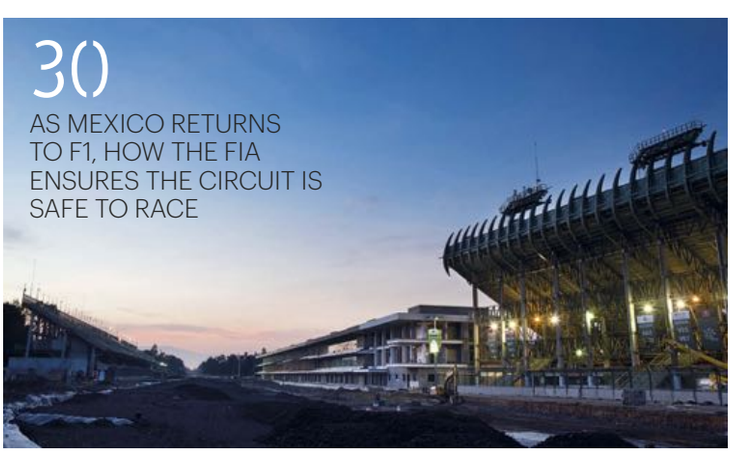
This issue of AUTO also looks at a number of challenges in the world of motor sport. Germany's famous Nürburgring Nordschleife had not staged an FIA world championship race for more than 30 years – until the WTCC held the first of three planned events at the legendary track in May. AUTO was there to see a mighty race unfold.

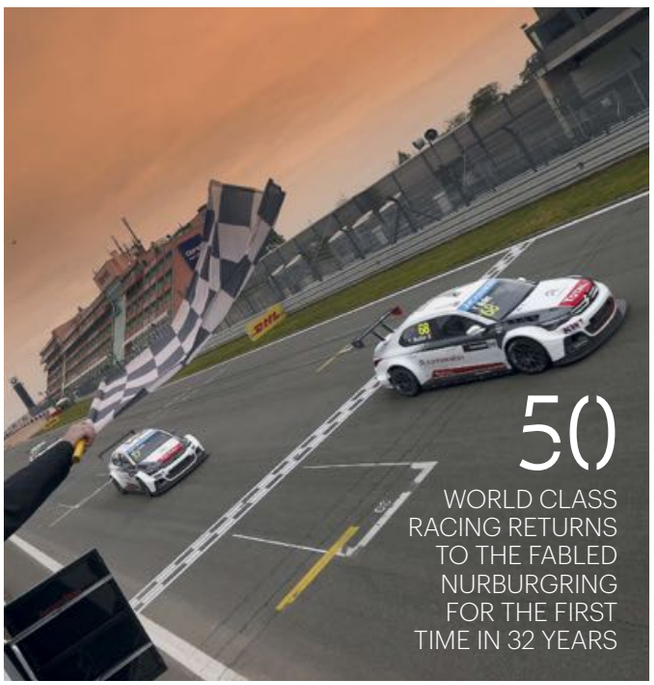
The task of heading back to a venerable venue is one F1 will similarly face in November, when it returns to Mexico City's Autodromo Hermanos Rodríguez – last used by the sport 23 years ago. Bringing the redesigned track up to 21st-century safety standards is the job of the FIA's Safety Department and F1 Race Director Charlie Whiting. AUTO follows him to Mexico for an in-depth look at making circuits safe.

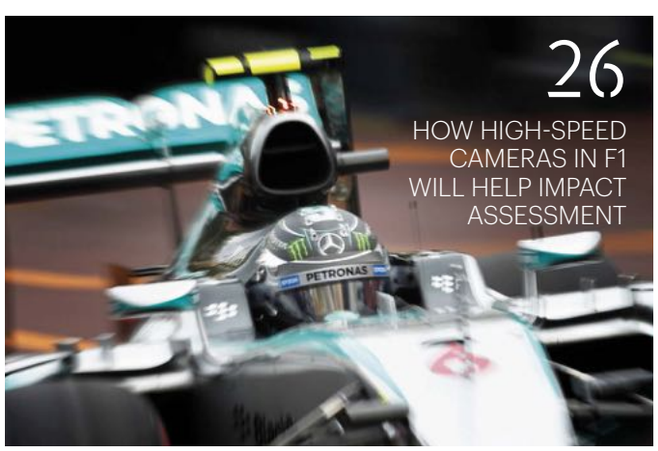
Contents

From the streets of Dar es Salaam to the circuits of Mexico and the forests of Germany, this is AUTO









UP FRONT

TECHNOLOGY

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FIA Formula 3 European Championship

A GRAND PRIX ORIGINAL

Across more than a century of competition, grand prix racing has bestowed a rich motor sport tradition on a huge range of circuits. None, though, can quite boast the heritage enjoyed by the street circuit at Pau in south west France – the first to ever host an event named Grand Prix in 1901.

Since then, the tricky circuit has hosted a range of categories and classes including Formula One, F2 and Formula Libre and has crowned some of motor sport's greatest legends as victors including Juan Manuel Fangio, Jim Clark, Jackie Stewart and in recent times current F1 champion Lewis Hamilton.

After periods of racing Formula 3000 in the early 1990s, F3 and then touring cars, Pau organisers have in recent years chosen the FIA Formula 3 European Championship as their flagship event. This year's action delivered another reminder of just why the Grand Prix de Pau, which took place at a three-race round in May, retains its historic appeal.

After losing the lead at the start of a thrilling race, Italian Antonio Giovinazzi (pictured) overtook Jake Dennis with just five laps remaining and went on to win from the two rookie drivers Maximilian Günther and Charles Leclerc, his main title rival. While Germany's Günther scored his first podium finish in the F3 European Championship, Giovinazzi stood on the podium for the ninth consecutive time from the nine races staged so far as AUTO went to press.

FRENCH FANCY

He's already enjoyed considerable success in this year's FIA Formula 3 European Championship, and Jagonya Ayam with Carlin driver Antonio Giovinazzi had the honour of adding the Grand Prix de Pau trophy to his collection in May. The other two Pau race wins went to Prema Powerteam's Jake Dennis.

BMW celebration

WORKS OF ART

It's 40 years since the first BMW Art Car raced at the Le Mans 24 Hours and to mark the occasion the German manufacturer has planned a series of exhibitions worldwide to celebrate these unique works of art.

It was French racing driver and art enthusiast Hervé Poulain who first asked artist friend Alexander Calder to apply his creative talents to a BMW 3.0 CSL and – with support from then BMW Motorsport Director Jochen Neerpasch – the first BMW Art Car was born. The cars soon became a crowd favourite, with further designs created by famous artists including Andy Warhol, Roy Lichtenstein, David Hockney and Jeff Koons.

Calder's original creation is pictured at the exhibition held at the Concorso d'Eleganza at Lake Como, Italy, where it starred alongside early BMW Art Cars by Frank Stella, Lichtenstein and Warhol as well as the latest creation from 2010 by Koons.

Other exhibitions have taken place in Hong Kong and Paris as well as at the BMW Museum, and further events are planned for New York, Miami and Shanghai later this year.

"The BMW Art Cars provide an exciting landmark at the interface where cars, technology, design, art and motor sport meet," said Maximilian Schöberl, Senior Vice President, Corporate and Governmental Affairs, BMW Group. "The 40-year history of our 'rolling sculptures' is as unique as the artists who created them."

BMW BEAUTIES

Four decades have passed since American artist Alexander Calder created the very first of the famous BMW Art Cars – a 3.0 CSL raced by driver and art fan Hervé Poulain at the 1975 Le Mans 24 Hours. Sadly the car he shared with Sam Posey and Jean Guichet failed to make the finish.

AUTO NEWS

In this issue, FIA world championship racing returns to the Nürburgring Nordschleife, driver skills are tested in third FIA Institute Academy, Audi creates 'fuel of the future', Indian motor sport receives government recognition and the automotive industry wins multiple design awards

WTCC MAKES SUCCESSFUL RETURN TO NÜRBURGRING NORDSCHLEIFE

Two hundred thousand fans attended the FIA World Touring Car Championship's return to the legendary Nürburgring Nordschleife in May.

The figures, released by event organisers ADAC Nordrhein, illustrate the popularity of the decision to bring the WTCC back to Germany for the first time since 2011, and to hold the race at such an esteemed circuit.

TV coverage of the event, which was held as part of the Nürburgring 24 Hours, was broadcast in 188 countries worldwide via 97 channels, including 62 free-to-air stations.

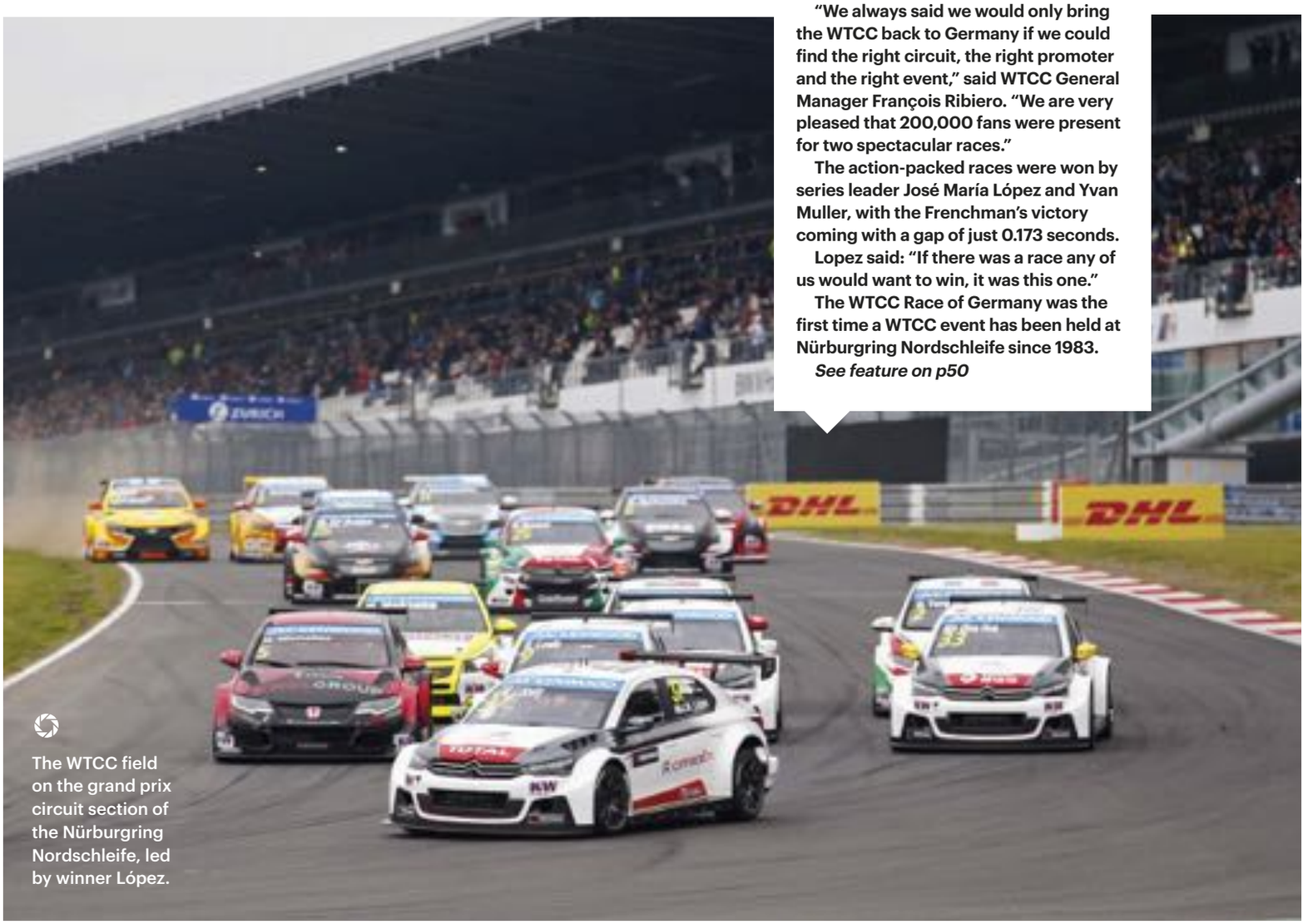
"We always said we would only bring the WTCC back to Germany if we could find the right circuit, the right promoter and the right event," said WTCC General Manager François Ribiero. "We are very pleased that 200,000 fans were present for two spectacular races."

The action-packed races were won by series leader José María López and Yvan Muller, with the Frenchman's victory coming with a gap of just 0.173 seconds.

Lopez said: "If there was a race any of us would want to win, it was this one."

The WTCC Race of Germany was the first time a WTCC event has been held at Nürburgring Nordschleife since 1983.

See feature on p50



The WTCC field on the grand prix circuit section of the Nürburgring Nordschleife, led by winner López.

CHILD SAFETY CAMPAIGN MARKED IN NEW YORK

FIA President and UN Special Envoy for Road Safety Jean Todt was among the guests at a #SaveKidsLives campaign 'flashmob' event held in New York City to mark UN Global Road Safety Week.

The #SaveKidsLives event was organised by UNICEF and the New York City Department of Transportation with support from the FIA Foundation. Also attending the event were UNICEF Executive Director Anthony Lake (left with Todt), Dr Etienne Krug of the World Health Organization, #SaveKidsLives ambassador Zoleka Mandela, Global Road Safety Ambassador Michelle Yeoh and New York Transportation Commissioner Polly Trottenberg.

Anthony Lake received the Child Declaration – a key aspect of #SaveKidsLives – and some 200 New York school children took part in a street dance to mark the campaign. The Child Declaration urges world leaders to include a target to halve road traffic fatalities globally in the Post-2015 Development Goals.

Jean Todt said: "Children are the most vulnerable in our society. Their protection must be our number one priority. In our Child Declaration for Road Safety, we call for new commitments to keep children safe around the world."

YEOH RETURNS TO NEPAL AS FIA PLEDGES SUPPORT

The FIA has announced the creation of a fund to assist its Nepalese club with restructuring efforts following April's tragic earthquake in the country. To coincide with the announcement UN Global Road Safety ambassador Michelle Yeoh returned to Nepal to support relief work a month after she, FIA President Jean Todt and FIA delegates attending a sport conference in Kathmandu were caught up in the disaster.

Ms Yeoh joined local relief efforts, helping to distribute aid packages, and said that it had been important to return to Nepal. "It was very important to come back to show our appreciation for the people who took such great care of us and to show people in Nepal that we care," she told Reuters.

The campaign associated with the FIA support to its Nepalese club will call for assistance from the FIA community, across both Sport and Mobility arms of the organisation, to contribute funds that will go entirely to the local National Sporting Authority, the Nepal Auto Sports Association (NASA).

Following her trip to Nepal, Ms Yeoh then travelled to Myanmar where during a visit to the township of Kawhmu, close to Yangon, she distributed motorcycle helmets free to local residents.

Ms Yeoh was making her fourth trip to Myanmar having played Burmese politician and Nobel Peace Prize-winner Aung San Suu Kyi in the 2011 film The Lady.

Michelle Yeoh on her return to Nepal following the April earthquake in the country.

LEADERS SET FOR MEXICO EVENT

Leading figures from across the world of motor sport will be participating in the third annual FIA Sport Conference, which will take place in Mexico City from 8-10 July.

The event, which is being held outside of Europe for the first time, will involve a series of high-level panels, including speakers such as Daytona International Speedway President Joie Chitwood, World Endurance Championship CEO Gerard Neveu and Telmex Chairman Carlos Slim Domit.

They will be joined by a host of representatives from across the world of motor sport, including Formula One drivers and team principals, championship promoters and safety experts.

The conference will explore business and development subjects in motor sport. The theme of the event is Towards New Fontiers, with plenary sessions covering entertainment, education and technology.

The event will also feature Sport MotorEx, an exhibition featuring some of the leading companies involved in motor sport across the world.

Car control was the chief topic at the third of this year's FIA Institute Academy workshops.

DRIVING SKILLS TESTED AT ACADEMY WORKSHOP

The third workshop of the 2015 FIA Institute Young Driver Excellence Academy took place at the Sachsenring, Germany, in May with the focus on driving skills and techniques.

The opening day of the workshop was dedicated to the friction circle and understanding the traction limits of a car. After studying how the active interaction between tyres and the road surface can affect grip, the drivers were invited to apply the theory to braking and swerving a vehicle.

Group presentations followed in the afternoon before the day's learning was tested on the circuit's skid plate with a handling and slalom exercise.

The second day focused on slip angles and cornering. First the drivers were given information and practical demonstrations and were then invited to use what they had learned in a number of drifting and cornering tasks.

The practical elements were backed up with classroom learning as the drivers were asked to work as a group to prepare for the afternoon session on slalom handling. Their skills were then put to the test in a driving competition and kart race.

The final day of the workshop paid attention to car control, with an examination of this in two very different disciplines – Formula One and rallying. After this visual presentation the drivers were encouraged to use what they had learned in a car control exercise on the circuit's drift handling track.

The drivers were mentored throughout the week by Academy Performance managers Robert Reid and Alex Wurz, and were given personal feedback to conclude the workshop.

"This workshop focused on enhancing the drivers' skills and understanding of driver-specific influences on their vehicles," said Reid. "The drivers have been really impressive in their grasp of these very technical skills. They have listened closely, clearly demonstrated improvement and an enthusiasm to apply what they have been taught here to their future careers."

By the end of the week it was clear that the drivers would be taking some valuable lessons with them.

British GP3 driver Seb Morris said: "It has been an extremely insightful few days here at the Sachsenring. The information will definitely stay with me and ultimately help me to move forward and become a better driver throughout my career."

See feature about Academy alumni on p56

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MOTORSPORT

MAGNETI MARELLI

DESIGN ACCOLADES FOR AUTOMOTIVE INDUSTRY

The automotive industry has won multiple Red Dot Awards, which recognise product design and innovation.

Four cars were awarded the highest accolade, the 'Red Dot: Best of the Best', with Magneti Marelli's automotive lighting division also claiming two awards.

The Ferrari FXX-K, Mercedes-AMG GT, Mazda MX-5 and the Volvo XC90 were given prizes in the vehicles category.

Morelli was presented with a 'Best of the Best' award for the Full LED smart headlamp, developed for the 2015 MY Audi TT3, and was also recognised for an Organic LED (OLED) technology rear light prototype, which received the Red Dot award for design quality.

The winners will receive their Red Dot Trophies in a gala event held at the spectacular Aalto-Theater in Essen, Germany, while the vehicles will be on display in front of the Red Dot Museum.

Mercedes' AMG GT was among the winners in this year's Red Dot Awards.

STUDY HIGHLIGHTS BENEFITS OF AUTOMATED BRAKING

A study carried out by Euro NCAP and its Australian equivalent, ANCAP, has found Autonomous Emergency Braking (AEB) to be highly effective in reducing low-speed rear-end crashes.

The two independent safety bodies conducted the study through the Validating Vehicle Safety through Meta-Analysis (VVSMA) group, which brought together experts from governments, industry, consumer and insurance organisations.

The group pooled data from five European countries and Australia using a standard analysis format and a novel meta-analysis approach. The findings showed a 38 per cent reduction in real-world rear-end crashes for cars fitted with low-speed AEB compared to those without. The findings revealed no difference between urban and rural speed zones up to 60km/h.

Dr Anders Lie, group chairman for the Swedish Transport Administration, said: "The meta-analysis approach used in this analysis is a unique academic contribution to the evaluation of vehicle safety technologies internationally and proved to be reliable with robust findings.

"Clearly, at this level of effectiveness, low-speed AEB is potentially an important active safety technology and widespread fitment through the vehicle fleet should be encouraged in the interest of improved vehicle safety."

Dr Michiel van Ratingen, Euro NCAP Secretary General, added: "These findings support our decision to make AEB technology a key discriminator in the safety rating of new vehicles. We will continue to monitor the effectiveness in reducing real-world crashes of the advanced systems that are promoted in order to validate and improve the overall star rating."

AUDI CREATES 'FUEL OF THE FUTURE'

Audi has created a synthetic fuel made solely of water, carbon dioxide and renewable sources.

The 'e-diesel', unlike regular diesel, does not contain any sulphur or fossil fuels and was made following a commissioning phase of four months.

The clear fuel boasts an overall energy efficiency of around 70 per cent and Audi hopes the plant that developed the fuel in Dresden, Germany, will produce up to 160 litres per day in the coming months.

Reiner Mangold, head of sustainable product development at Audi, said: "In developing Audi e-diesel we are promoting another fuel based on CO_2 that will allow long-distance mobility with virtually no impact on the climate. Using CO_2 as a raw material represents an opportunity not just for the automotive industry in Germany, but also to transfer the principle to other sectors and countries."

The fuel, named blue crude, is made by first heating water to 800C to prompt a high-temperature electrolysis to separate the hydrogen and oxygen from the steam.

The hydrogen then reacts with carbon dioxide in synthesis reactors, under high pressure and temperature, which creates a liquid fuel suitable for mixing with fossil diesel or being used in its own right.

"This synthetic diesel, made using CO_2, is a huge success for our sustainability research," said Dr Johanna Wanka, Germany's Federal Minister of Education and Research.

"Widespread use of CO_2 as a raw material would make a crucial contribution to climate protection and the efficient use of resources, and put the fundamentals of the 'green economy' in place."

See AUTO issue number four

Audi's 'e-diesel' has no sulphur or fossil fuels.

FIA ACTION FOR ROAD SAFETY

PLEDGE YOUR SUPPORT TO THE **10 GOLDEN RULES**

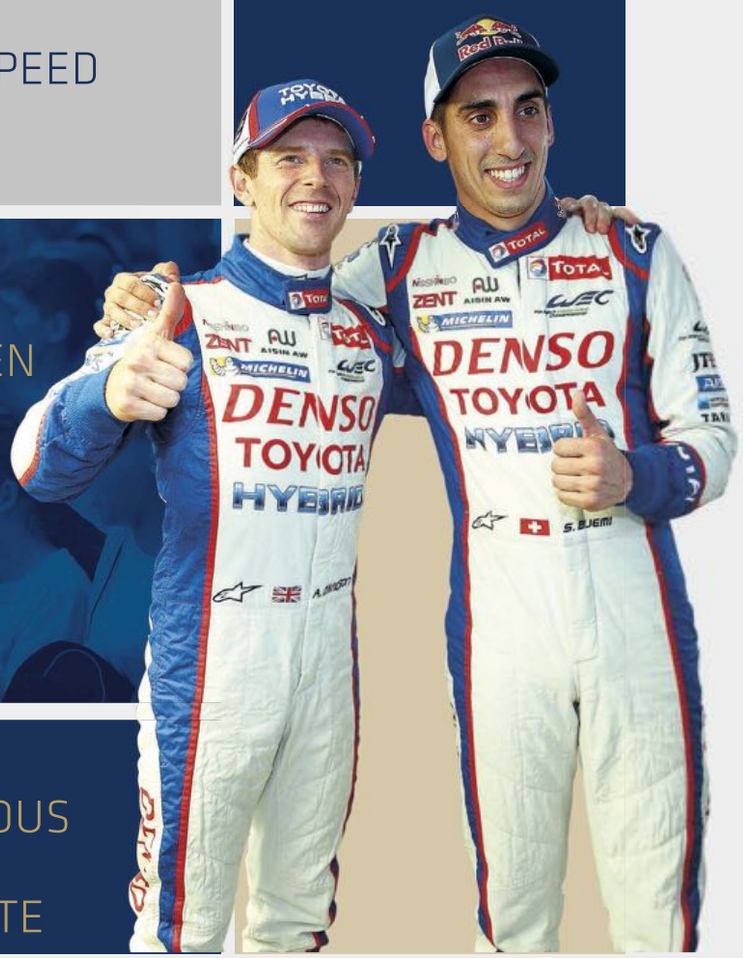
01 BELT UP

02 RESPECT THE HIGHWAY CODE

03 OBEY THE SPEED LIMIT

SEBASTIEN BUEMI
ANTHONY DAVIDSON

2014 WORLD ENDURANCE CHAMPIONS



04 CHECK MY TYRES

05 DRIVE SOBER

06 PROTECT MY CHILDREN

07 PAY ATTEN-TION

08 STOP WHEN I'M TIRED

09 WEAR A HELMET

10 BE COURTEOUS AND CONSIDERATE

ROAD CRASHES ARE THE **#1 KILLER** OF 15-29 YEAR OLDS. WE **ALL** HAVE A ROLE TO PLAY TO MAKE ROADS SAFE!

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SPORT CONFERENCE 2015

FIA SPORT CONFERENCE MEXICO CITY

8-10 JULY 2015

The third annual FIA Sport Conference will take place in Mexico City on 8-10 July. The event will bring together leaders from across motor sport, including FIA sporting clubs and industry representatives. This first Conference outside Europe will explore business and development in motor sport, looking at models in the Americas and across the world.

FIA SPORT CONFERENCE
PRESENTS

MOTOREX MEXICO

MEXICO CITY
9-12 JULY

COMPETITION EXPERTISE BUSINESS NETWORK

The FIA introduces the FIA Mexico MotorEx, a unique event promoting the best practices from the automotive and motor sport world. The event will take place for the first time outside of Europe. Open to professionals and to the general public, this exclusive exhibition will showcase the latest developments in the fields of safety, innovation and the environment. Leading car brands will also be present featuring their latest models. The event will be the best place to network, engage business, increase expertise and develop motor sport competitions.

TO REGISTER FOR THE EVENT PLEASE VISIT:
FIA.COM/FIA-EVENTS
or contact sfillastre@fia.com

GFEI TARGETS FUEL ECONOMY IN 100 COUNTRIES

The Global Fuel Economy Initiative (GFEI) has launched a campaign that aims to get 100 countries involved in its fuel economy capacity-building work by 2016.

Details of the '100 for 50by50' campaign were revealed by GFEI Executive Secretary Sheila Watson at the Sustainable Energy for All Forum in New York in May, with the aim of building support for the project ahead of the 2015 Paris Climate Summit in December.

GFEI conducts research, raises awareness of the benefits of improved vehicle fuel efficiency and works in countries to help stakeholders develop fuel economy policies that work for them. GFEI's analysis shows that a 50 per cent cut in average vehicle fuel use by 2050 is possible - the '50by50' target.

Government recognition of Indian motor sport may not help to win back its grand prix.

RECOGNITION FOR MOTOR SPORT IN INDIA

The Indian government has signalled its recognition of motor racing as an official sport by including its governing body, the Federation of Motor Sports Clubs of India (FMSCI), in its list of ministry-backed National Sports Federations (NSF).

The move will be a boost to the country's motor sports enthusiasts after the Indian Grand Prix was dropped from the Formula One calendar in 2014.

The inclusion of motor sport on the NSF list does, however, come with a caveat. Motor sport was listed in the 'others' category, meaning there will be no financial assistance provided to the FMSCI.

Despite this, former FMSCI President Vicky Chandhok welcomed the government's decision after years of waiting for recognition, saying: "This can only be good for Indian motor sport."

However, the government's move is unlikely to help with efforts to persuade F1 to return to the country, as responsibility for getting the Indian Grand Prix back lies with promoters Jaypee Group and commercial rights holders Formula One Management.

The absence of funding will not be a problem for the growth of Indian motor sport according to FMSCI council member Akbar Ebrahim, who said: "Motor sport has been growing independently of that (government funding) anyway. We wanted the sport to be recognised and it has been. It is a positive development for Indian motor sports."

EU ASKED TO PROMOTE AUTOMATED DRIVING

EU policy makers have been urged to take action to create a path to automated motoring as a way of boosting road safety.

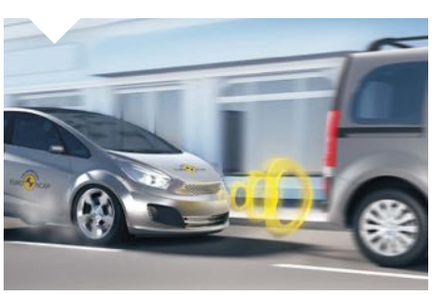
The FIA Eurocouncil, made up of 73 FIA Automobile Clubs in Europe and with 37 million members, believes EU institutions should be responsible for streamlining the deployment of automated technology.

Following a declaration adopted at the annual FIA Region I Spring Meeting at Gammarth in Tunisia, FIA Region I President Thierry Willemarck said: "This is the moment when automation is poised to dramatically improve road safety. Policy makers need to create the best legislative environment as this technology becomes a reality.

"Users must be at the heart of this deployment as well. They need to be informed and ready to adopt this next evolution in mobility."

The Eurocouncil is asking EU policy makers to make a concerted effort to speed up the arrival of automated motoring through a number of different avenues.

They include considering driver education and training needs under the European Driving Licence Directive, improving road signs and markings as well as road infrastructure and traffic data with regards to automated motoring, and supporting the development of vehicle design standards that promote driver-supervised automation.



AUTO ASKS

HOW CAN MOTOR SPORT APPEAL MORE TO NEW AND EXISTING FANS IN THE 21ST CENTURY?

Thanks to social media there are now myriad ways to engage with fans both old and new to motor sport - particularly among the younger generation. AUTO spoke to three experts, who will be speaking at the upcoming FIA Sport Conference in Mexico, about their views on modern communication and the key to maintaining motor sport's appeal.

The series manager

GERARD NEVEU

CEO, WORLD ENDURANCE CHAMPIONSHIP

Motor sport in general has a good product to offer sports fans. The fact is that mobility will continue to focus on the automobile for some time to come and motor sport is the perfect laboratory in which to develop safety, technology, efficiency and sustainability.

More and more people have access to cars now with huge growth in markets such as China, India and South America. There is a real future for motor sport but we have to be careful – we cannot sell and promote motor sport today as we did even a few years ago.

To be successful in this arena it is important to have a clear vision. To have a championship and promotion that works you need to have the right people in the right positions, and in that regard I think the FIA World Endurance Championship is very lucky.

Around the WEC we have a group of people who are passionate about the sport and who share the same spirit and vision. With our three presidents – Jean Todt at the FIA, Sir Lindsay Owen-Jones at the FIA Endurance Commission, who has huge experience of motor sport and of being involved in some of the biggest companies in the world, and Pierre Fillon at the ACO – there is value not only in terms of sharing the same vision for promoting the WEC but also in terms of thinking about the future and finding the right message.

The next thing is how you communicate what you are doing. You have to understand how fans use modern communications tools. That's the reason why we are doing massive development with our 'second screen'. You still have TV, which is the first screen, but the second screen, giving access to deeper levels of information, is a big thing. The app we are developing for the WEC and Le Mans is very important.

In the WEC we are trying to get across the message that you can have a race that is incredibly exciting combined with a modern view of technology; we are utilising the technology of the future with hybrids and maybe one day we will use hydrogen power or other technologies. I believe that's an important aspect for fans.

The world is changing rapidly and we have to adapt our communication profile to this new environment. The motor sport values are the same but the communication systems are very different and there is a lot of competition from other sports.

You have to adapt your approach. In the WEC we have the legendary appeal of sports cars mixed with a full programme on track and a connection with the fans. For me, that's the way forward.

The circuit boss

JASON DIAL

PRESIDENT, CIRCUIT OF THE AMERICAS

I am a firm believer that motor sport holds its own when positioned against its rivals as the elements needed for success are all there: innovation, speed, noise, adrenaline, drama and action. The problem is not the quality of the product, rather the manner in which it communicates its many qualities.

Lessons can be learned from other global sport properties. For example, look at the NFL in America and its embracing of modern communication tools. With 12 million followers of the NFL on Facebook, 11.3 million on Twitter and 3.1 million on Instagram, it has been highly successful in leveraging its many assets to directly engage with its fanbase. NFL fans are fully engaged on social media via real-time updates, live twitter chats, online polls, behind-the-scenes and in-game content and expert insight. The NFL is talking with its fans, not at them, making them an essential part of the NFL community via a policy of direct engagement and transparency. Formula One is now embracing that change, but more can be done.

The other key element the NFL has embraced is the need to take the helmet off. Here it has a direct parallel with F1 as it has embraced the need to showcase the heroes at the heart of the sport. In F1, in the US in particular, the drivers are not the hero figures they need to be. Yes, Lewis Hamilton is relatively well known, but to grow the fan base in America, and to continue to build on the incredible numbers who watch F1 worldwide, yet more needs to be done to make hero figures out of F1's warriors.

The good news is that F1 – and motor sport in general – has all the right ingredients to mirror and exceed the NFL's achievements. The aim should be to make our fans part of the conversation and the key to achieving that is content. We need to put fan engagement at the heart of everything we do to market the sport – from using the glamour and beauty of F1 to appeal to the glitterati, to using social media and content to tell the stories that make the hairs on the back of F1 fans' necks stand up.

PHOTOGRAPHY: DPPI

The racing driver

ESTEBAN GUTIERREZ

FERRARI TEST DRIVER

Increasing the popularity of motor sport, getting closer to the fans, is both simple and complex at the same time.

In any series, if one team is dominant or the racing is boring it's natural that people will not be engaged. However, if it's competitive and there is good racing across the grid, then reaching out to fans becomes a lot easier. I know that one team dominated in Formula One last year, but this year it has been closer with Ferrari returning to form, and there has been a lot of good racing across the grid as well.

In terms of the rules, I believe that the simpler they are, the better the sport will be – for competitors and fans. Don't get me wrong – that doesn't mean that the cars can't be complicated. But what we share with the fans and what we communicate to the outside world has to be simple and fun.

The next thing I firmly believe in is reaching fans through social media. It's not hard to understand how important this has become. If you are not present on social media you will not get proper fan engagement, especially with new generations. So it's about adapting to the way communications are changing – it's not rocket science.

My presence on social media is important, because fans want to know what makes you tick. They want to know the background stuff that happens outside a race weekend. This is a massive area of interest and social media is the biggest tool with which we can engage outside the track.

Finally, I think it's important that motor sport presents drivers as interesting characters. You need heroes to cheer for. In F1 drivers tend to be a bit conservative over what they say. But I do think there is a balance that can be achieved.

What F1 is doing right now is very good; the social engagement it has started lately is a real step forward. Young people are spending more time than ever looking at YouTube, Twitter, Instagram or Facebook, and if F1 is not present there, it's a massive hole we are not filling.

The dawn of the Cyber Tyre

GRIPPING TYRE TECH

Connected electronic systems aren't just taking over the cars we use, they're spreading to the very thing most in contact with the roads we drive upon - tyres

TEXT: ANTHONY PEACOCK

Cyber Tyre technology was first tested on Ferrari's FXX-K under extreme conditions – this is a track car capable of producing over 1000bhp.

To the overly imaginative, Cyber Tyre has an element of science fiction to it, conjuring up post-apocalyptic visions of a world ruled entirely by super-intelligent tyres: their totalitarian regime over non-rubber beings perhaps enforced by an army of black and round Robocops.

But Cyber Tyre is instead already a benign reality, the result of a partnership between Italian tyre producer Pirelli, selected car manufacturers and several universities worldwide. And it could be on sale as early as 2018.

Essentially, the Cyber Tyre concept is based on an 'intelligent tyre' equipped with a multi-purpose sensor that provides first-hand, real-time information about road conditions: working with existing electronics on the car to prevent accidents before they happen.

For example, Cyber Tyre is able to detect precisely how much grip is available within a corner before the tyre begins to aquaplane or skid – and can therefore reduce power or apply ABS braking to prevent loss of grip.

Equally, Cyber Tyre can measure precisely the amount of lateral grip available through a corner and work with active suspension systems to provide perfect road holding. Not just that, but Cyber Tyre is also able to play a key role in governing traction control systems, through supplying detailed information about exactly how much traction is on offer to boost acceleration.

FROM TRACK TO ROAD

This functionality already exists on Ferrari's FXX-K track car, the first Ferrari in history to produce more than 1000bhp. Cars such as this make the real technological gains on track.

As Maurizio Boiocchi, Pirelli's General Manager Technology, points out: "Essentially there are two logical elements to Cyber Tyre, but they are both connected. It can provide ultimate performance, as we've seen from the Ferrari FXX-K programme. Or it can benefit road safety, through providing accurate information about safe cornering speeds, for example. We're collaborating with a wide range of different car companies with the aim of improving control and therefore safety." ▶

"THIS IS EXCITING TECHNOLOGY. THE BIG ADVANTAGE OF CYBER TYRE IS THAT EVERYTHING IS BASED ON REAL-TIME INFORMATION"

MAURIZIO BOIOCCHI, PIRELLI

Pirelli's development with manufacturers focuses on integrating the data captured by Cyber Tyre sensors into the car's electronics. Ultimately this could lead to the car taking control of the situation if it senses it will imminently lose control. Alternatively, it could provide drivers with information – possibly superimposed onto a navigational display – about the optimal speed and even trajectory through a corner. Another way to show information could be via a percentage, with a readout telling the driver that they are utilising 68 per cent, for instance, of the grip available through a corner and suggesting a maximum safe speed.

The possibilities to dramatically improve road safety are countless. For example, electronic limits could be set for certain family members – especially young drivers – governing how close to the limit of adhesion they are allowed to go.

"This is exciting and important technology," says Boiocchi. "The big advantage of Cyber Tyre is that everything is based on real-time information. Most existing systems, such as ABS, act on estimates extrapolated from key parameters. And there is always a slight delay between the time taken to measure these parameters and calculate the estimate. Cyber Tyre instead relays a continuous flow of 'live' information from the only part of the car in contact with the road."

The Cyber Tyre features a sensor that provides live information to the car's electronic systems on road conditions.

A GLOBAL COLLABORATION

Ultimately, this is where Boiocchi sees the future of the tyre – and the car itself. "What we're working towards is turning the tyre into the biggest one of the most important sensors on the car, instead of just a component," he adds. "There has been a lot of talk about driver-less cars and so forth, but I believe we still have a long way to go before that can be safely achieved. So for the immediate future, there will always be human beings driving cars. And for that reason, we aim to provide as much information as possible to improve road safety by eliminating human error. But we're not an electronics company, which is why the collaboration with electronics firms, manufacturers and the universities is so important."

There is research going on into Cyber Tyre at a number of universities all over the world, including Berkeley in the United States. But Milan is where it all started, six years ago. Professor Federico Cheli is head of the faculty of engineering there.

"The Cyber Tyre provides realistic, predictive and mathematical data about the vertical, lateral and horizontal forces acting on the tyre – as well as the state of the road – and tells us how to drive," explains Cheli. "It's the first step towards a fully-fledged system of vehicle control. And in this phase, it already provides the promise of greater safety and better performance. In time, new technology will suggest what is the safest manoeuvre to make, and the same mechanisms will automatically control the brakes, steering and accelerator. Journeys will become more comfortable and less tiring."

As well as supplying real information about road conditions, Cyber Tyre relays data about the condition and life of the tyre itself – technology that exists thanks to Pirelli's Cyber Fleet intelligent tyre, which has been on sale in the truck market for a couple of years.

This involves a sensor embedded in the tyre that reports on basic parameters such as temperature, wear and pressure, relaying the data in real time both to the driver and fleet managers. With fleets prioritising maximum usage as well as fuel economy from their tyres, the system has not only prevented accidents by providing advance warning of impending failures, but also saved money by ensuring that tyre pressures are optimal for fuel saving.

"Sustainability is another important aspect," concludes Boiocchi. "Cyber Fleet was really the first step towards Cyber Tyre, so it was an important development. This is only a small sample of what can be done in the near future, though. You'd be surprised."

Despite what everybody thought, it seems that it is possible to re-invent the wheel after all. ■

Pirelli's Maurizio Boiocchi believes Cyber Tyre will play an important role in improving road safety as long as human beings are in control of cars.

F1 technology

SPEED CAMERAS

To understand exactly what happens to drivers in the event of a crash, the FIA Institute is developing a high-speed cockpit-mounted camera for use in F1 that will capture the very moment of impact

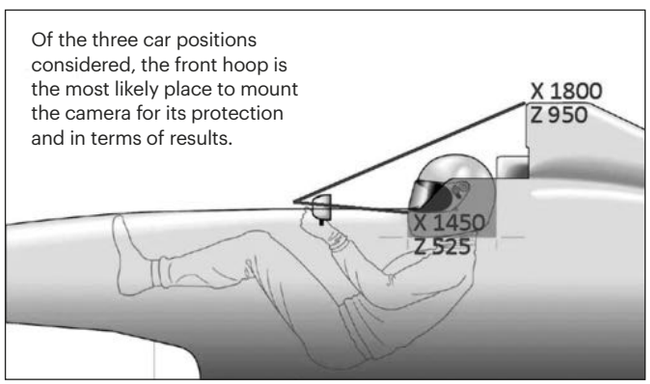
TEXT: MARC CUTLER

During qualifying for the 2011 Monaco Grand Prix, Sergio Pérez lost control of his car in the braking zone for the Nouvelle Chicane. The Mexican's car lurched towards the outside retaining wall before sliding sideways across the kerbing and into the safety barrier at speed. Pérez suffered a concussion that kept him in hospital and ruled him out of the race. Fortunately he made a full recovery, but more could be learnt about how his injuries were caused during the incident.

"We've had on board footage of crashes for a long time which has been useful, but of course it's all low speed and it doesn't really show what happened to the driver during the milliseconds of that impact event," says Andy Mellor, consultant for the Global Institute for Motor Sport Safety (GIMSS), the FIA Institute's research partner.

In incidents like this, injuries to a driver can happen in a few milliseconds, the exact cause of which are often impossible to determine with the naked eye. This is why the FIA Institute is working to develop a high-speed camera to capture the driver during the moments of a crash, thus providing crucial, potentially life-saving information on what happens to the human body during an incident. ▶

Of the three car positions considered, the front hoop is the most likely place to mount the camera for its protection and in terms of results.



If mounted behind the steering wheel, the high-speed camera would provide a full view of a Formula One driver's head in the event of an accident.

The high-speed device is capable of recording 400 frames per second, compared to a normal European TV camera that has a frame rate of just 25 per second. When played back in slow motion, this will show high-speed events in far greater detail than was previously possible.

"We've been investigating the concept of high-speed cameras for many years but, until now, the technology wasn't developed enough for this application. Laboratory-specification high-speed cameras had excellent frame rates and resolution but were big and expensive, while a number of compact cameras were available with a high frame rate but relatively low resolution. The main technical challenge for the new camera was to write the high-speed image data continuously, in real time, into the memory unit."

Writing data in real time requires processing and storage technology that has not previously been available in the appropriate size or form for use in motor sport. Those cameras that could provide a high enough frame rate used a buffer to store data, a method that would not allow Mellor and his team to record directly into the F1 crash recorder.

There was no off-the-shelf product that fitted the bill, so Mellor has been working with automotive and motor sport engineering company Magneti Marelli to create a bespoke version specifically for this purpose. This will be able to record images in real time onto the memory of the car's black box device, which was specifically designed to have the capacity and processing power to receive and record the video data.

RACE TO BE READY FOR 2016

"Magneti Marelli was the perfect partner for this project because much of the required technology is within its core competency and also because it already produces the Formula One black box device, allowing seamless compatibility rather than dealing with two different organisations," explains Mellor.

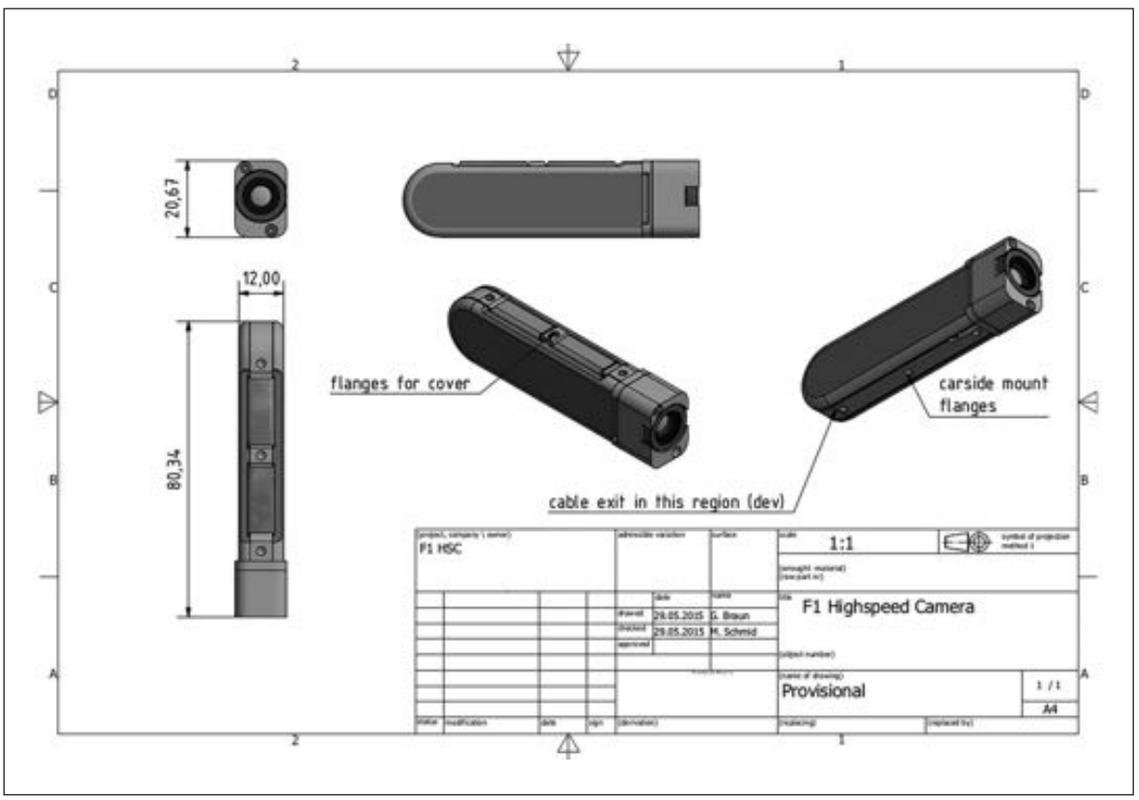
"THE PLAN IS TO GET THE INITIAL PROTOTYPES READY FOR TESTING THIS SUMMER"

ANDY MELLOR, GIMSS CONSULTANT

The camera that has been developed is only 12mm wide, 25mm tall and around 80mm in length, roughly half the size of an iPhone. It has been designed to these parameters so it can integrate well into the F1 cockpit. Although agreeing exactly where to position it has required some very detailed input and support from the teams.

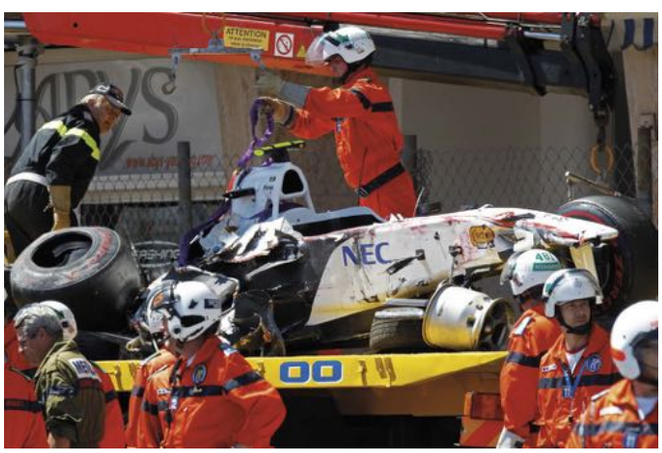
"When we're discussing mounting position options there are two main issues. The first is the image itself, what can we actually see and what is the value of that to our research? We feel the front view is the best overall because you can see the motion of the driver's head and neck, particularly during side impacts where concussive head injuries frequently occur. An overhead view gives more information about the forward motion but all you can see is the helmet itself, the body is hidden from view, so on balance the front view is better.

"The next issue is the vulnerability of the mounting position. Of the three positions we considered – the roll hoop, front hoop (in front of the windscreen) and side mirror – the mirror would be most vulnerable. The roll hoop is probably best, but the front hoop is also a strong part of the car so both should provide adequate protection."



Provisional blueprint of the high-speed camera being developed by Magneti Marelli.

In a crash like Felipe Massa's at Hockenheim last year, the high-speed camera would record footage before and after the impact, capturing vital information.



Sergio Pérez suffered a major concussion in his Monaco crash in 2011; now more could be learned about how his injuries were caused.

The front hoop just in front of the steering wheel is the preferred mounting point, although this still requires the precise installation details and field of view to be validated for the 2016 cars. Mellor must also advise on how long the camera needs to be recording to capture the moments of a crash that the project has set out to investigate.

"Depending upon the final specifications, our plan is to record on a one-minute loop capturing the 30 seconds prior to and proceeding a crash. The camera will be directly connected to the black box, which will trigger when an accident has occurred and subsequently control what to record and save. The camera will also have its own tri-axis accelerometer that can trigger in the event of an accident."

Mellor points to Felipe Massa's 2009 crash in Hungary, where the Brazilian was knocked unconscious by a spring and subsequently hit a wall, as an example of why they need to capture such a length of footage: "He hit the spring first and the barrier many seconds later, so in an accident like that the impact with the barrier would trigger the recording but you'd have to make sure the initial incident was also captured."

With the FIA mandating the use of the camera in all cars for the 2016 Formula One season and onwards, the project has been fast-tracked to be ready in time.

"The plan is to get the initial prototypes ready for testing this summer. It's important to test them in-car and get some real-world experience in order to be ready to deliver the final package to all cars for the first race next year."

If it proves to be a success then there are already plans to filter this technology down to all levels of motor sport. It is set to become an extremely important element of safety research.

As Mellor says: "I think the F1 programme is likely to be just the start. We'll certainly be looking to use this technology to further help to develop safety across motor sport." ■

PHOTOGRAPHY: DPPI

Circuit homologation

MEXICO'S NEW DAWN

In November, Formula One will return to Mexico City on the circuit that hosted the country's last race - 23 years ago. Bringing a revamped Autodromo Hermanos Rodgríguez up to 21st-century safety standards is the job of the FIA's Safety Department and F1 Race Director Charlie Whiting

TEXT: JUSTIN HYNES PHOTOGRAPHY: MAURICIO RAMOS

From the moment 19-year-old Ricardo Rodríguez, at the invitation of Enzo Ferrari, stepped into the cockpit of a Ferrari 156 at the 1961 Italian Grand Prix, Mexico's love affair with Formula One was sealed.

Young, prodigiously talented and gift-wrapped in the romance of boyhood dreams being realised in the cauldron of the world's best-known racing series, Rodríguez's exploits captured the imagination of a country already in love with the automobile, with speed and risk.

Fascination translated into ambition in 1962 and bidding for a slot on the F1 calendar a non-championship race was staged at a circuit in the Magdalena Mixhuca park in the heart of Mexico City.

It would be Rodríguez's final race. With Ferrari not in attendance, he entered the race in a privateer Lotus 24. On the first day of practice his Lotus' right-rear suspension failed at the fearsome Peraltada turn, and the car hit the barriers killing Rodríguez instantly. If anything, however, the heightened romance of his doom simply led to even greater fervour and throughout the 1960s the Magadelena Mixhuca circuit and again in the '80s the renamed Autodromo Hermanos Rodgríguez, in honour of Ricardo and brother Pedro, played host to a catalogue of races that found their way into F1 legend. From John Surtees' final round title win for Ferrari in 1964 to Richie Ginther's first win for Honda in 1965 to Nigel Mansell's astounding pass on Gerhard Berger around the outside at the Peraltada in 1990, the Mexican Grand Prix became renowned as one of F1's most action-packed venues.

RENEWED PASSION

By 1992, the end was in sight. Mansell, whose bravery had so thrilled the crowd two years earlier, was complaining that the Peraltada was "mighty dangerous", saying that "if you get on the marbles and you're in fifth or sixth, you're history".

Then, after Ayrton Senna crashed out in practice, Mansell again voiced concerns. "The bumps are terrible and you're fighting for control all the time. It's an accident waiting to happen," he said.

And there, with safety concerns on the rise, dwindling interest from a cash-strapped race promoter and with Mexico City in parlous economic straits, the race ended.

Twenty-three years later, however, things are different. With Mexico's economy riding out the worst of the global crash, with two drivers – backed by Mexico's richest family – active in F1 and with a new generation of motor sport fans clamouring for the return of grand prix racing to the country, F1 is back.

Mexico's renewed passion for F1 was announced last July, with Alejandro Soberon, president of Mexican live events company CIE, revealing to the Mexican Stock Exchange that the company had secured a five-year contract to host a grand prix in Mexico City at the Hermanos Rodríguez, beginning this year. "Start your engines, F1 will return to Mexico next year," he smiled.

Only one small problem existed – the Hermanos Rodríguez circuit itself. In the years since the last grand prix the track had gradually become increasingly unserviceable. The US CART/Champ Car series raced at a modified version of the track from 2002 to 2007 and local NASCAR and club racing events continued to be staged at the circuit, but by the time the announcement was made that the F1 circus would pitch its tents in 2015 there was an unshakeable feeling that tents would very much be in order.

Fast-forward to last month and inside the Magdalena Mixhuca is a hive of almost constant activity. At any time between 500 and 800 people are working on site, and extensive foundation work has given way to major structural change. Pit buildings are 80 per cent complete, the ebb and flow of the re-profiled circuit is plain to see, debris fencing is in place and the first steps towards surfacing the track are being undertaken.

"Most of the main buildings will be ready in mid-July. And with the track I expect 90 per cent of the work to be done by August 1, which is basically 90 days from the first race on November 1," says Christian Epp of go-to F1 circuit architects Tilke and Partners.

Getting to that date, however, is an involved process and one that stretches far beyond the enormous civil project that is the bricks and mortar construction of the circuit.

Before a wheel can be turned at the Autodromo Hermanos Rodríguez, indeed before an engine can be fired up in anger at any racing circuit, the FIA must be satisfied that the track is fit for purpose, that it is safe for drivers, spectators and officials.

Charged with making sure that is the case is the FIA's Safety Department and eventually, in the case of F1 circuits, Formula One Race Director Charlie Whiting.

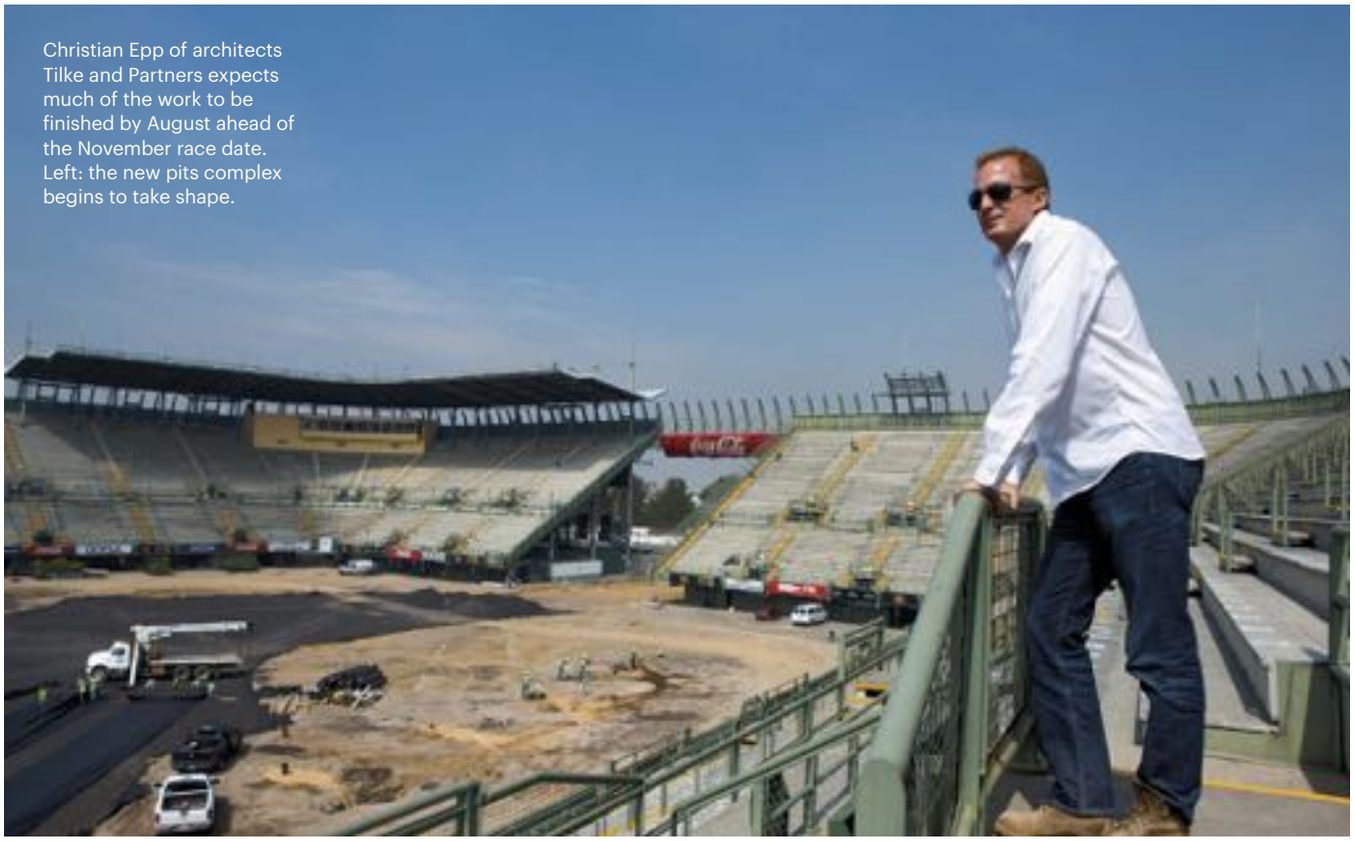
The process known as homologation, by which an exhaustive and carefully worked out set of build and safety standards must be adhered to, begins long before the first sod is turned on a construction site.

"Homologation normally starts when the designer engaged by the promoter presents us with a master plan, an overall scheme of what is intended," explains Whiting, who this month visited the track for the second of a possible four to five site inspections. "That plan is fairly detailed and the architects will have done quite a lot of work on it before they present it to us. ▶

F1 Race Director Charlie Whiting will visit the Hermanos Rodríguez circuit up to five times as part of the FIA approval process.

Construction work at the Mexico City-based circuit has been non-stop, with between 500 and 800 people working on site.


CAT



Christian Epp of architects Tilke and Partners expects much of the work to be finished by August ahead of the November race date. Left: the new pits complex begins to take shape.

"The FIA has a set of internal guidelines that we provide – normally to national sporting authorities, but also to designers who are in the process of building or wish to build a serious circuit.

"This is an extensive and detailed document that the FIA has developed over the past 40 years. Basically, it describes everything a circuit designer might need to know about walls, tracks, kerbs, fences, how to design corners, how much run-off area you need – everything that we have learned over the past four decades."

DETAILED PLAN

Across those four decades and certainly in the 23 years since Mexico last hosted a round of the FIA Formula One World Championship safety technology has evolved massively and according to Whiting very little of the infrastructure of the old circuit was deemed worthy of retention.

"What was considered safe even 20 years ago would probably be considered old-fashioned these days," he explains. "There are many areas that have been developed. Not just new technologies but even new ways of doing things with the same equipment.

"For example, guard rails are much better than they were, the spacing of the posts has been adjusted massively to stop the guard rails spreading. Debris fences have been brought up to a much higher standard. It is a case of learning from experience and over the past two or three decades we have learned a huge amount.

"Kerbs have developed massively. They used be nearly 25cm high, which would be unacceptable these days. In Mexico, when I first went there when the grand prix was first being discussed, the old kerbs were maybe a foot high and you just would not do that nowadays. All those kinds of things have been brought up to date.

"It goes all the way back to what we call a second line of protection, so it includes track, kerbs, run-off area, barriers and then the second line, debris fences."

Once the master plan has been received by the FIA, simulations are run to model the suitability of a range of criteria.

"The architects would have run their own simulation on it too, to check that run-off areas are big enough and that speed is not excessive in certain corners, but we obviously need to run it through our systems as well to make sure we're satisfied that everything meets our requirements," says Whiting.

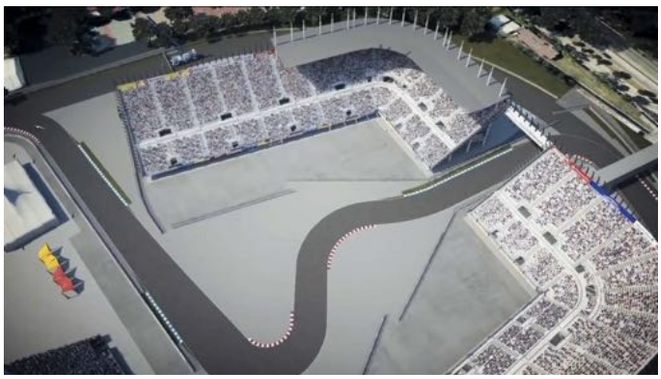
"We will then go back to them with any suggestions we may have and then probably about nine months out from when the first race is due to take place, I would normally visit at that point. There's no point in going earlier than that because in reality there is rarely much to see. However, nine months out you get a good impression of how things are shaping up. I'll then visit three or four more times between then and the first race."

For Epp, the guidelines amount to a complex building code, a set of rules that ultimately makes the process of circuit design more quantifiable.

"They describe everything that falls within the realm of safety," he says. "How a medical centre needs to be built and the features it must have. That it must have a set number of rooms, a standard amount for the doctors, a major treatment room, a minor treatment room, burn showers etc.

"It describes for example the details of what constitutes an FIA fence, how the resistance is measured, how when a car drives over 250km/h and there's a spectator behind how much resistance the fence needs to have. There's a formula behind it that we need to comply with. A huge range of the products we use for the track construction must comply with FIA regulations."

Because of the level of detail featured in the initial planning phase of the circuit, Whiting's site inspections rarely result in huge architectural changes, though the F1 Race Director insists that site inspections are crucial to understanding how a circuit will be raced. ▶



Models produced by Tilke and Partners, which follow detailed FIA guidelines, show how they expect the vastly revised circuit to look.

"There are never major discrepancies in terms of the architecture but what is more likely is that you will request changes based on elements you see in the flesh," he says, "It's often difficult to get a good idea of topography from a plan. You can't really get a good feel for it from a vertical profile.

"For example, when you go to Istanbul Park [used by F1 from 2005-11] or Austin [the Circuit of the Americas] you can't see the huge elevation changes you have at those two circuits on a two-dimensional drawing. The visit gives you a better feel for things and you might end up saying 'that run-off area is too big' or whatever."

The prospect of shrinking run-off areas might seem antithetic to safety but Whiting says that a shift from gravel traps to asphalt run-off areas and advances in understanding the mechanics of accidents have led to reassessments of best practice in circuit design.

"I like to get spectators as close as we can to the circuit," he says. "You can start off with big run-off areas but they're seldom used. Certainly circuits that were designed 12 to 15 years ago have some run-off areas that are a little too big and they wouldn't be as big these days because we have a lot more experience of how cars go off at certain corners and we have better impact attenuating devices."

Altering the profile of corners, extending or contracting run-off areas or moving debris fencing are all issues that carry relatively little penalty when building a 'green-field' circuit such as those at Austin, Sochi or New Delhi's Buddh circuit, used by the sport from 2011-2013. However, Mexico City's circuit sits within a city park and the existing Magdalena Mixhuca Sports City. The constraints were not easy to overcome.

"It becomes difficult with a circuit like Mexico City where you're working with an existing track. There were a lot of restrictions," he confirms. "That's when we have to sometimes initiate one-on-one conversations with the FIA and go on site and find compromises. On existing tracks we need a close interaction with the FIA to work together on solutions.

"The biggest challenge here is that this was an F1 track that was extremely outdated. So every advance made over the last 23 years is missing. The run-off areas were not right. The track surface was worn down and was never going to be suitable. The drainage system wasn't working, the kerbs were outdated and the fencing was unsuitable. The entire infrastructure of the pit was wrong. The pit wall didn't exist in the way we now need it to. The medical centre was not in a suitable location; it didn't have the right footprint; all the equipment was wrong. The list goes on, but with the FIA we have addressed all those issues and now we are very much on time."

A major talking point was the fate of the legendary Peraltada, with the exceptional fast 180-degree turn being ditched in favour of a twisting stadium complex. Whiting and Epp insist, however, that there was no thought of including the famed and feared corner.

"Unfortunately, one of the great features of the circuit is gone – it went long before I got there," says Whiting. "But the fast, sweeping corners that lead onto the back straight are still there, although we had to modify the alignment slightly to get adequate run-off there. We've spent a lot of time trying to make the circuit safer but we've introduced some new alignments of existing corners in order to make sure we've got two or maybe three genuine overtaking spots. We've done our best to make sure the original features are retained."

When his final visit is complete, the track is signed off and Mexico welcomes F1 back for the first time since Mansell shrugged off his concerns to take his second win at the circuit, Whiting is convinced that the sport in Mexico will begin an exciting third age.

"People can expect a world-class facility," he says. "They can expect a huge enthusiastic crowd, and as for the track, you see this beautiful park in the middle of Mexico City and inside will be this truly great circuit, where I am sure the racing will be just as great." ■

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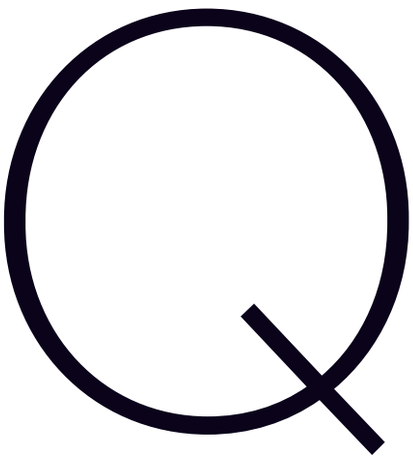
Jean Todt: UN Special Envoy

A NEW MISSION FOR ROAD SAFETY

With the UN Decade of Action for Road Safety reaching its midpoint this year, and with road fatality numbers still rising, UN Secretary General Ban Ki-moon last month took action and appointed a new Special Envoy for Road Safety to help re-mobilise action on the crisis. The man charged with the task is FIA President Jean Todt and here he explains to AUTO what the role means to him and how he plans to tackle the challenges ahead.

FIA President Jean Todt, whose road safety advocacy has led to his appointment as a UN Special Envoy on the issue.

President Todt accepts his apppointment as UN Special Envoy from UN Secretary General Ban Ki-moon.



Q Can you explain the background to your appointment as the UN Secretary General's Special Envoy for Road Safety?

First of all, it is a great honour for me to receive this appointment and I am deeply grateful to UN Secretary General Ban Ki-moon for considering me for this post. It is one I regard with the utmost seriousness but it is a task I firmly believe can result in positive outcomes for road safety worldwide, working together with all stakeholders.

Road safety is one of the major development challenges of the 21st century. Road crashes have huge social and economic costs both for the individual and society. Yet most people are completely unaware of the scale of the challenge. It has been said many times before but it is worth emphasising once again: 1.3 million people die on the world's road annually, with 50 million more seriously injured. Despite the good work of governments, organisations and public and private bodies around the world, these figures are increasing in low- and middle-income countries. The road safety crisis outstrips the death toll for malaria and for tuberculosis. Road traffic injuries are the leading cause of death worldwide among young people aged 15-29 years. Road safety must be a concern for politicians, as well as for professionals in all the relevant sectors, such as transport, police, education, health, and insurance.

Having said that, great strides have been made. The launch of the UN Decade of Action on Road Safety in May 2011 was a real achievement and since its launch attention on road safety has been greatly moved up the global agenda.

However, we are now half way through the Decade of Action and results are less than satisfactory. I think there is consensus that progress has been slower than had been anticipated in 2011 and both political and financial commitments are falling short. As Special Envoy I believe it is my job to increase the global focus on road safety and to assist in the development of mechanisms than help to fund that work. It is a great responsibility and the work will not be easy but it is a role I am more than happy to take on.

Q Do you believe that the creation of a Special Envoy will help in gaining the attention road safety deserves?

I believe so. In the years since I took on the role of President of the FIA I have made road safety a major priority of my administration and have visited a great number of world leaders, government departments and development agencies to try to get recognition of the existence of this crisis. I have also met with key international organisations dedicated to improving road safety including those engaged in developing traffic regulations and standards, as well as road safety policies in an internationally harmonised way.

Throughout this time the key thing that has repeatedly been brought home to me is that building the political will to take actions is essential but extremely difficult.

There is an urgent need for more leadership in order to give road safety a more prominent place on the international agenda and I hope that the post of Special Envoy for Road Safety – not just in my time but for those who take on the role in later years – will act as a catalyst for change, creating a focal point in terms of mobilising the road safety community, world leaders and governments to fight for safer roads, safer vehicles and better driving rules.

Q How do you see that happening? Have you already set some goals for the short-term?

It is a long-term fight in which there will be no easy victories. However, looking ahead to later this year one of the crucial things we hope to achieve is getting road safety included in the UN's post-2015 Sustainable Development Goals.

Road safety was not part of the Millennium Development Goals set in 2000: as a fundamental component of economic and social development it is essential that road safety is included within the new goals that will be voted on in September.

If this were to happen I believe it would greatly advance our efforts to move the issues up the global political agenda. Placing road safety on the same footing as the battle against poverty and the fight to halt the spread of HIV/AIDS would undoubtedly promote political commitment and, importantly, I feel it would also help to attract new private sector support and funding.

Q The UN Decade of Action was borne out of the Global Ministerial Conference on Road Safety that took place in Moscow in 2009. The second Ministerial Conference is set to take place in Brasilia in November. Will that form another major waypoint in your activities?

Absolutely. It is a moment for us to review the progress made so far, to examine the areas in which we can improve and to define the goals we have, as a global collective, for the coming years.

The second Ministerial Conference in Brasilia needs to have a clear outcome. Governments must start taking concrete actions, first of all to prevent road crashes, but also to mitigate their negative impact when they do occur.

However, I am convinced that the conference – which will be hosted by the government of Brazil and President Dilma Roussef, who has been enormously committed to road safety advocacy – is an opportunity to provide new momentum for the Decade of Action in terms of both mobilisation, funding and commitment for increased governance for road safety.

Q You've mentioned funding several times. How crucial is finance to the success of the Decade of Action? Has progress to this date been hampered by a lack of funding?

In comparison to other leading causes of fatality that raise billions of dollars each year, road safety is lagging far behind. As an example, the World Bank's dedicated fund for road safety has a budget of only US$3 million per year. By contrast the public-private Global Fund to fight AIDS, Tuberculosis and Malaria invests almost US$4bn a year to support programmes aimed at ending those terrible illnesses. This is a huge and admirable success and one we need to emulate.

There is an urgent need to radically scale up funding for road safety and the establishment of a UN Road Safety Fund ▶

would be a clear deliverable from the Ministerial Conference.

Q Can the private sector play a bigger role in the generation of sufficient funding?

We certainly need to do more to encourage the private sector to make a substantial commitment. There are new and innovative methods of financing being developed in a collaborative manner between private and public sector in many areas of activity. We need to look beyond established, sometimes obsolete and ineffective models and be open and flexible to explore new ways of financing. In this respect I will engage both public and private stakeholders in order to formulate the model that works.

Q Going back to the need to create the political will to tackle road safety issues, how do you see that happening?

As I've said, I think that the role of Special Envoy is about crystallising focus around road safety. In meetings with political leaders I have always emphasised that not only is the human cost of road accidents unacceptable but the financial burden on their countries – where the cost of dealing with the effects often amounts to as much as 1-3 per cent GDP – is something that can be avoided if the right measures are taken. However, I know that advocacy by individuals, NGOs and concerned agencies often falls on deaf ears.

Therefore, I see my mission as one of unification. I wish to bring together all stakeholders to lobby for change in a focused, strategic way, speaking with one voice at the highest levels globally.

An important part of that message and my mandate will be to encourage countries to sign up to agreed UN road safety conventions, for example on minimum vehicle safety regulations, respect and compliance with internationally harmonised traffic rules. The adoption of these common standards can make a really significant impact towards saving lives.

Q It is a huge challenge. How do you see this working in tandem with your existing role as President of the FIA?

I think this represents an exceptional opportunity to further the work that the FIA and its member clubs have done in the realm of road safety over the past decade. FIA clubs have been instrumental in helping to bring road safety to greater prominence globally.

For example, our member clubs were deeply involved in the organisation of the first Global Ministerial Conference on Road Safety and clubs around the world have been among the most committed supporters of the UN Decade of Action and of the FIA's response Action for Road Safety. In support of their activities the FIA's grant programme has so far funded more than 100 road safety projects in over 50 countries. In many countries, FIA clubs – which today represent the mobility interests of their members around the world as motorists, pedestrians, motorcyclists and cyclists - are the leading voice on road safety in their countries.

The FIA as a whole is at the forefront of the fight for road safety. We have established close working relationships with a broad range of international institutions such as the United Nations and within that the Inland Transport Committee and the UNECE Road Safety Forum, which is a unique UN platform dedicated to this cause, the World Health Organisation, the World Bank and other Multilateral Development Banks. We have established successful road safety campaigns with private sector organisations such as Nissan, Michelin and Petronas. The work is already in progress and I think this appointment will give more strength to it.

Q How can this new role sit alongside the FIA's role as the world governing body of motor sport? Are the two not incompatible?

"I SEE MY MISSION AS ONE OF UNIFICATION, TO LOBBY FOR CHANGE IN A STRATEGIC WAY"

JEAN TODT

I think the opposite – that motor sport is a great advocate of safety. The key message with motor sport has always been that racing is not for the road but for the track, a controlled environment where over the past 50 years the FIA has made safety its paramount concern.

The sport itself has always been an innovator in this regard. It has been and is still an important technological laboratory for new safety innovations. Safer helmets and restraint systems, crash barrier research, use of data recorders, passive safety and active telemetry are all examples where cutting-edge motor sport safety research is making an important contribution.

We are also extremely fortunate that our role in motor sport allows us to convey the road safety message to millions of fans through our sporting ambassadors. It allows us to connect with young people in a way that wouldn't otherwise be possible. When their heroes – who understand the risks on the road better than anyone else – tell children to be careful, to obey the rules, and to never drink and drive, they listen. We have a duty to be involved and spread the road safety message through this channel and I think it is one we can develop even further through my new role.

As a final word, while I am convinced that road crashes must be prevented, I'm also pragmatic and aware that sadly they still happen. The memory of the victims stays with us and strengthens the commitment to stop road crashes and as long as we do not achieve the goal of zero crashes, their consequences will have to be mitigated through better trauma care, more affordable insurance schemes and overall support to the victim's families. ■

Jean Todt sees his role with the UN as an ideal way to further road safety work already undertaken by the FIA.

SUPPORTING SAFETY

In order to strengthen the mission of the UN Special Envoy for Road Safety, the United Nations Economic Commission for Europe (UNECE) will provide essential administrative support. The organisation's Executive Secretary Christian Friis-Bach explains how this will work and why he thinks the time is right to appoint a Special Envoy.

Q **Why was the United Nations Economic Commission for Europe chosen to act the secretariat, the administrative office, of the UN Special Envoy for Road Safety?**
The UNECE was chosen as the secretariat and thereby the host of the special envoy mainly because we are host to 58 UN legal agreements and conventions in transport and inland transport. So, almost everything you see on the road, on the river or on a railway is designed and developed by means of negotiations happening in Geneva and within the UNECE itself.

This also goes for the vehicle standards in safety and efficiency. Even on the finest cars if you open the hood you will find technology that conforms to 20 or 30 standard vehicle build and safety regulations that have been developed by the UNECE.

Therefore, what we will provide in support of Jean Todt are the vast resources in terms of legal agreements and the effort of thousands of people working in and around the UNECE on road safety by means of improving transport conventions or vehicle standards and regulations.

Together with Mr Todt we will develop road safety activity and the key messages that he, as Special Envoy, can carry around when he performs his duties. We also hope to establish a fundraising mechanism that hopefully can bring in significantly more funds in support of road safety around the world.

Q **Is the time right for the appointment of a UN Special Envoy dedicated to road safety?**
We are halfway through the UN Decade of Action for road safety and we promised each other that we would half the number of accidents and deaths from road accidents. Instead, the number is increasing every day. There's an enormous need to mobilise a much stronger advocacy for investing in road safety.

It is undoubtedly the right decision of the secretary general to appoint a Special Envoy, to really try to mobilise action and increase attention on road safety.

In September we will hopefully agree on a new set of ambitious sustainable development goals, and again, the target must remain to half the number of deaths on the roads.

If we do not really scale up our efforts and mobilise significantly more attention and resources for road safety there's no chance that we can reach this target. The result, if we do not, would be millions of people would be killed in road accidents in the coming decades and that is not something we can allow. So yes, there was a significant need to do something and this appointment is a step towards our goals.

Q **The UNECE's legal instruments have been taken up by a broad range of countries, but will the fact that the organisation is now working with a UN Special Envoy add weight to the campaign for the introduction of these safety methods, particularly when combined with the work he is doing at high level politically?**
Absolutely. That's exactly why we are very happy about the appointment of a Special Envoy and look forward to working closely with him. The legal instruments are developed; they are readily available. We know how to build a safe road. We know how to do the road signs in a manner so we can prevent accidents. We know how to build a car with the finest safety standards, but in so many places in the world they are not implemented.

Many countries have not signed up to these standards and conventions. That is why, for instance, if you take a car in Africa, even though it looks exactly the same as a car in Europe it has been stripped of most of the safety equipment that would allow it to avoid a road accident and kill children on their way to school.

Roads are not designed in a proper way; signs are not developed according to the best available international standards and to the conventions we have developed. Having a Special Envoy, one with his personal drive and precision, makes the campaign stronger.

Having Mr Todt as a key advocate for these issues will gain us access to policy makers around the world and therefore help us to implement these conventions that we know substantially improve road safety. That is why we really look forward to working with Mr Todt. I know he will bring enormous drive and energy to the cause. Additionally his access to policy makers at the highest level can really make a difference.

Q **Is that kind of access something the UNECE had difficulty with in the past?**
Yes, it has definitely been a challenge to reach out with transport conventions. We know that they have not reached many parts of the world and especially the poorest countries; these conventions have not yet been implemented or they have not yet been gratified or signed up to. That is the biggest challenge because we know that 90 per cent of all casualties from road accidents occur in developing countries, and it is due to lack of proper roads and proper vehicles. The biggest need is to reach those countries and here Jean Todt's continuous engagement has shown that he can gain access to policy makers even in the poorer countries in the world and thereby hopefully help to convince them that they need to improve road safety because it is life and death for many of their citizens.

Q **Do you feel that this lobbying will extend to automobile manufacturers as well as governments?**
Certainly I think the UN Special Envoy can help us to achieve progress on this essential issue. I have in the past issued a strong call for car companies and vehicle producers throughout the world to show corporate social responsibility and make sure they implement the safety standards that are available for rich consumers in all parts of the world in order to stand up for road safety.

It is not acceptable that car companies strip cars of some of their essential safety equipment when they send them to the poorest countries in the world, and I really urge them their most important corporate social responsibility would be to implement the essential safety features in cars regardless of where they sell them or to whom they sell them to. And do it while making cars available at a price where all sorts of consumers in poorer countries can buy them.

I'm sure that the Special Envoy, coming from the background he does, will gain access to the private sector and to car companies as well and really help to engage them in improving road safety by producing safe cars regardless of who they sell them to and where. That would be a significant contribution to road safety.

Improving safety

TRAINING WHEELS

The FIA Foundation is supporting a number of training programmes to educate the thousands of motorcycle taxi riders on Tanzania's roads and elsewhere

TEXT: RICHARD M KAVUMA PHOTOGRAPHY: SALA LEWIS

When Jafari Mrisho completed secondary school in the Bagamoyo district in Tanzania's coastal region, he saw no chance of further education. Life, says the 27-year-old, was hard and his single mother was unable to afford tuition fees of any kind.

"I had to get into business to help myself and my family," says Mrisho. He got a friend to teach him how to ride a motorcycle and within a few weeks he was on the road, carrying passengers for a fee. These motorcycle taxis, or Boda Boda as they are known throughout the country, are often the only means of income for local people.

"Boda Boda was the only business that was paying well; so I went straight into it," explains Mrisho.

With no formal training and zero understanding of road safety, he was on a motorcycle and ready to pick up passengers. He was required to give TzShs 6,000 (€2.6) every day to the owner of the 'bike. He was sure he could work hard enough to pay his boss's money and also sustain himself. The business surprised him. He found himself able to save more than twice that amount on good days.

Within a year, Mrisho had saved enough money to buy his own motorcycle. And now he is his own boss, bringing in up to TzShs 30,000 a day.

Tanzania today is awash with stories like Mrisho's – stories of frustrated, unemployed youths riding their way out of poverty. Unfortunately, many of them are also riding their way into hospitals or worse.

Official figures show that in 2009 Tanzania imported only 1,884 motorcycles (excluding government and donor-funded project vehicles). Last year, the country imported a total of 185,110. This is an increase of nearly 10,000 per cent in 11 years and experts say most of these are for Boda Boda or motorcycle taxis. The Boda Boda have the advantage of keeping on the move where cars and trucks are stuck in heavy traffic, or reaching remote areas with barely drivable roads.

Nowhere is this growth more evident than in Dar es Salaam. Tanzania's commercial capital is also its Boda Boda capital. With its human and vehicle population galloping forward, and with the city's legendary traffic jams getting ever messier, the Boda Boda is almost an inevitable option for anyone trying to get around Dar es Salaam quickly.

But beneath stories such as Mrisho's lies a dark reality: the Boda Boda is one of the biggest safety challenges facing Tanzania. Their riders are notorious for breaking traffic rules, and they and their passengers are paying a heavy price. In 2014, for instance, motorcycles were the second most accident-prone vehicles in Tanzania: they were involved in 26 per cent of road crashes.

Boda Boda riders are required to hold valid driving licences, wear helmets and follow many laws that apply to other categories of motorists, but few of them do. Many stakeholders this writer talked to agreed that the riders seem to respect no rules, leaving them and their passengers vulnerable to injuries and death.

"Frankly speaking, the Boda Bodas are out of control," admits Johansen Kahatano, Tanzania's deputy traffic police commander. "You can never stop a rider and he stops. They do not stop at junctions, whether there are signals or not. In fact, many get killed at junctions."

SAFETY TRAINING

Almost everyone agrees that a key factor behind Boda Boda driving behaviour is lack of training. In fact, as Kahatano confirms, a national training curriculum for Boda Bodas is expected to be finalised soon, having already been reviewed by the traffic police and other stakeholders.

Yusuf Haidary, based in the Temeke district of Dar es Salaam, mirrors Mrisho's story of learning to ride for a few days and then starting to carry Boda Boda passengers. Just like that. When we meet on a rainy May morning, the scars on the right side of his forehead are still raw. He was driving in March 2015 when he was knocked by a car after dropping off a passenger. He says he tries to ride by the rules.

> "THE BODA BODA RIDERS DO NOT STOP AT JUNCTIONS, WHETHER THERE ARE SIGNALS OR NOT"
>
> JOHANSEN KAHATANO, TANZANIA POLICE

Now 25, Haidary started working as a part-time Boda Boda rider in 2010, while still studying. Then, he operated a motorcycle that belonged to his "boss". By the end of 2013, he had saved enough money to buy his own motorcycle. "Drivers need to be trained in how to drive safely," he says.

Haidary goes on to explain that he trained at the Vocational Education and Training Authority (VETA) centre in Temeke and obtained a driving licence. He is not a typical Boda Boda rider, but he is representative of an idealised future: he owns his own motorcycle (many riders work for someone else) and he is trained and licensed. These attributes are seen as critical to safer Boda Boda operations, according to the police and the Automobile Association of Tanzania (AAT).

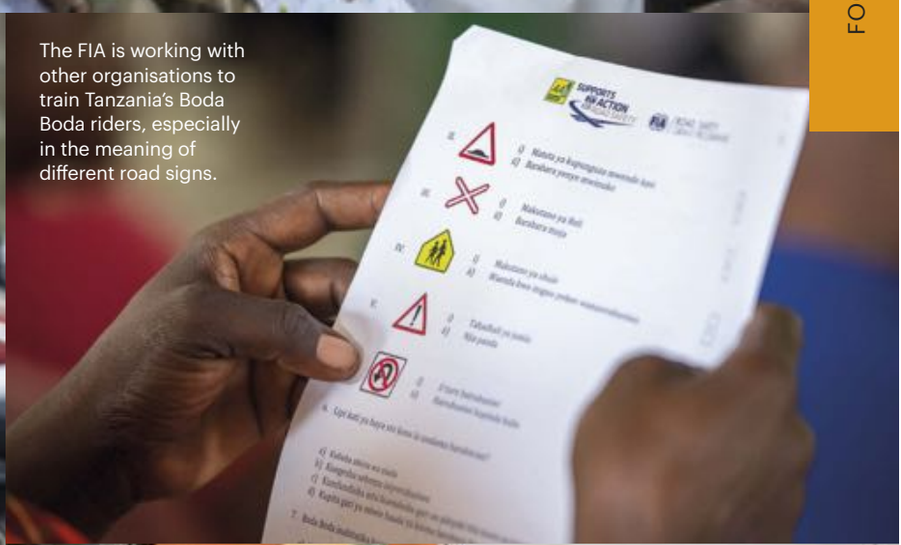
Yusuf Ghor, the AAT's chief executive officer, explains that the association has put an emphasis on training riders after noticing their behaviour on the roads. AAT's initiative is supported with funding distributed by the FIA from a global grant it receives from the FIA Foundation. Over the last three years, AAT, with the acknowledged support of national traffic police commander Mohamed Mpinga, has trained 5,000 Boda Boda riders in Dar es Salaam and the Kibaha area.

Although the Boda Boda business has been in Tanzania for more than a decade, Ghor says it only "exploded" in Dar es Salaam about four years ago, inspired by brisk business in neighbouring Uganda and fuelled by the availability of cheap Chinese motorcycles. Hence, when the chance to work with the FIA's programme arose, Ghor thought training the riders would benefit the masses because the accident rate was so high.

"You [noticed] that Boda Boda riders never went to any formal school to get training on road signs; they just bought the motorcycles, started driving in the backyard and off they went into the trade," says Ghor.

At the time, he adds, Dar es Salaam alone was said to have at least 40,000 riders. Commander Mpinga, a member of the AAT board, put the traffic police's education unit at the project's disposal for three hours a day for up to 10 days for each 'intake'. The police also helped to mobilize Boda Boda riders to attend training sessions.

"Our emphasis was more on the road signs, because riding they knew," explains Ghor. "Now, after completion of the course, we issue a certificate. On the presentation of a certificate to the vehicle inspector, they are issued with an official licence to ride." ▶



The FIA is working with other organisations to train Tanzania's Boda Boda riders, especially in the meaning of different road signs.

Boda Boda riders who have completed their training are issued with licences and helmets for both themselves and their passengers.

"THIS IS NOT THE END; THERE ARE SO MANY RIDERS WITHOUT LICENCES. BUT WE'VE DONE OUR BEST"

YUSUF GHOR, AAT CEO

Because of the FIA-supported Boda Boda training project, AAT has twice been recognised by the National Road Safety Council – alongside individuals such as Commander Mpinga. Ghor hopes he can secure more funding to train more riders. "This is not the end; there are so many riders without a licence who have not learned the road signs," he says. "But we have done our level best."

UNFORGETTABLE

The road safety non-governmental organisation Amend is another entity that has long recognised the need for training Boda Boda riders. Some 300 riders have received road safety lessons, driving licences and crash helmets, as well as reflective jackets designed to improve visibility for other motorists.

Among the beneficiaries of one of Amend's training sessions, held at Msinune primary school in Bagamoyo district in 2013, was Jafari Mrisho, who says he now understands road signs and other requirements such as reducing speed in busy trading centres. "I will never forget that!" he says of the significance of receiving a licence and two helmets – one for him and the other for the passenger.

However, as many other riders will testify, most passengers in Tanzania won't wear helmets – because they say it could spread diseases. Asked what else needs to be done to improve road safety, Mrisho says: "Amend could conduct another training course because now there are so many new riders here and they have never been trained."

LOOKING OUT FOR CHILDREN

With many untrained, unlicensed riders hitting Tanzania's roads each day, there is particular concern for children walking between home and school. Since 2009, for instance, Amend trainers have delivered road safety lessons to some 125,000 school children. With funding from the Puma Energy Foundation, 30,000 reflector-enhanced school bags have been distributed to children in Tanzania, Zambia, Namibia, Botswana and Mozambique. This has also resulted in initiatives such as the School Area Road Safety Assessment and Improvement (SARSAI) programmes, implemented by Amend with funding from the FIA Foundation.

According to SARSAI programme manager Ayikai Mills-Tettey, the first phase of the programme, run between 2012 and 2014, targeted 12 government primary schools in Dar es Salaam, which were observed to be particularly dangerous for children. The schools got minor infrastructural interventions such as the erection of crossing points and speed bumps, or a footpath between the road and the school fence.

"In more than one case, another measure involved introducing a second school gate along a quieter road where children were coming from to prevent them having to walk along a busy road to access the school," says Mills-Tettey.

These 'hardware' improvements were accompanied by 'software' strategies – like road safety education for the youngsters. Pupils were schooled in safe behaviour such as looking before starting to cross the road and walking on the 'right' side of the road (teaching them to ignore the 'keep left' signs meant for motorists).

In its second phase, run from 2015-2016, SARSAI is supporting a further 18 schools in Dar es Salaam and nine in another African country yet to be identified, still with the FIA Foundation's support.

As opposed to the initial phase, which was based on observations and assessment by Amend staff, the second phase involves contacting schools, establishing the level of vulnerability to road traffic injuries and zeroing in on those in most need. Amend is also undertaking a more scientific approach to measuring the impact of its interventions.

"We have research assistants out around the catchment areas of these 18 schools and they are collecting information about the levels of road traffic injuries to students. After implementation of this programme we are going back a year later to do the same survey," says Mills-Tettey.

BEYOND BODA BODA

The Boda Boda are only part of Tanzania's grim road safety story. In 2014, for instance, the country lost 3,760 people on its roads, while another 14,530 sustained injuries of varying degrees. These are the official figures, and if anything understate the scale of the crisis, with the WHO estimating over 10,000 annual road deaths in Tanzania. When you ask why the figures are that high, you get various answers, including the narrow congested roads; but the commonest ones have to do with the behaviour of drivers and the police's failure to enforce weak traffic laws.

Abdul Awadh, head of the Tanzania Roads Association (TARA), admits that road traffic injuries have not risen as fast the country's vehicle population – which can be interpreted as an improvement in road safety. But he maintains that the number of crashes and fatalities remains unacceptably high. TARA hosts the Annual Roads Convention (ARC) and for this year's edition in November the focus will be on road safety. Awadh is resolute that without the threat of stern police action, drivers will continue to be dangerous.

However, there are signs that the efforts of the various stakeholders in the road safety sector are starting to pay off, as deputy traffic police commander Kahatano explains: "From general observation you can say that the road safety situation is worsening. But when you look at the statistics, there is some improvement. For example, when we compare last year to the previous year, we had a remarkable reduction in the number of road crashes by around 40 per cent. The number of deaths went down by around six per cent and the number of injuries by around 20 per cent."

So what was the magic bullet? "Last year we set to intensify enforcement, we tasked our officers that each little offence that they came across should be registered and fined," says Kahatano. "That's why we're deploying our officers to have a lot of outreach programmes for Boda Boda riders, to train them."

To help ease congestion on the roads, Dar es Salaam authorities are building a 21-kilometre Bus Rapid Transit (BRT) system. Expected to begin operation in September, the BRT is critical because, as Kahatano admits, currently most police officers are consumed by traffic control duties (helping to deal with traffic jams), which diverts them from the core function of enforcing the law.

The hope is that reduced congestion could mean a reduced market for Boda Bodas in Dar es Salaam and a safer environment for travel. And some of the present city riders may end up relocating to the outer suburbs and perhaps to farther-off places such as Bagamoyo, where Jafari Mrisho has enjoyed a largely accident-free life. ■

WTCC at the Nordschleife

THE LONG ROAD BACK

Germany's famous Nürburgring Nordschleife had not staged an FIA world championship race for more than 30 years - until the WTCC held the first of three planned events at the legendary track in May

TEXT: RICHARD RODGERS

Mehdi Bennani's Citroën on the graffiti-adorned Nordschleife – where the WTCC races were held over three laps of the 25km circuit.

Even the best don't get it quite right at the Nürburgring Nordschleife, venue for rounds seven and eight of the FIA World Touring Car Championship in mid-May. Just ask José María López, one of the fastest drivers of his generation and on course for back-to-back WTCC titles with the factory Citroën team.

He insists there's no such thing as a perfect lap around the challenging, punishing, sometimes terrifying 25.378-kilometre layout, which is made up of the bulk of the modern grand prix circuit plus the fearsome Nordschleife loop.

Fastest in pre-race testing, López added a 10th WTCC career pole with a standout final-lap charge before taking victory number four of 2015 in the opening three-lap contest, which marked the first world championship race on the Nordschleife since 1983.

And it could have been a fifth win of the year shortly afterwards but for a scant 0.173 seconds, the gap between the Argentine and his French team-mate Yvan Muller – a four-time world touring car champion – in race two.

"On such a long lap like here you can never get it right – there is always a place where you were not as good as before," says López, 32. "I was on the limit to get pole because I really wanted it at this important circuit."

While several WTCC stars prepared for the championship's Nordschleife debut by contesting national-level events, such as rounds of the VLN endurance series, López relied on knowledge garnered from 10 laps in a Citroën DS3 road car, several visits to his team's simulator and an impromptu lap back in 2001.

"I was racing on the modern circuit in Formula Renault and I went on the old track with my younger brother in a very old Fiesta," he remembers. "I shouldn't say the brand but it was consuming more oil than fuel. We drive there because in Argentina the Nordschleife is very famous because of Fangio and Reutemann."

ONE THEY ALL WANTED TO WIN

Indeed, the list of former Nordschleife winners reads like a who's who of motor sport legends with the likes of Jim Clark, Fangio, Jacky Ickx, Niki Lauda and Jackie Stewart all triumphing at the 'Ring over the years, a fact not lost on López when the topic was raised after the second WTCC race.

"To hear your national song on the podium is always special and at the Nordschleife it's always something more," says López, who said he instantly clicked with the track on his first timed lap.

"I just felt so good, maybe in a past life I was a driver and I drive on the Nordschleife. I felt really confident from the beginning. I was scared a bit because the grip in the road car is not so good but I felt good grip in the racing car."

Unlike López, Sébastien Loeb had previous competitive Nordschleife experience to call upon. The nine-time world rally champion, now a WTCC title contender, took part in the Nürburgring 24 Hours in 2001, retiring during the night when the BMW he was sharing with four French friends broke down.

"I felt like I knew the track when I arrived," says Loeb. "Not because of this [24-hour] race but from the work we did in the simulator." And of all the tracks on the WTCC schedule, the Nordschleife is about as close as it gets to a rally stage. "For sure the sensation in the car is amazing compared to some of the other races," he admits. "Sometimes we are just flying! When you fight with someone at high speed it's bumpy, it's jumping, it's very nice." ▶

'RING SPARKLES

WTCC chiefs had harboured ambitions of a return to Germany since Oschersleben's exit from the calendar in 2011. But series boss François Ribeiro insisted it had to be at the right track. The Nürburgring Nordschleife was that track.

"We met ADAC Nordrhein, realised their promoter Mirco Hansen was just like Eurosport Events: forward-thinking with a big understanding of the importance of the fans, television, social media and real racing," recalls Ribeiro. "Once we got the all-clear from the FIA about track suitability, it didn't take long to do the deal."

Of course there were a few hurdles – such as convincing the teams that working out of a tented village rather than pit garages for the weekend was a sacrifice worth making.

The length of the track also meant changing the knockout format to an hour-long qualifying session, while the race one podium took place after race two. Otherwise everything else fell into place with the respective event and championship organisers forming a close alliance to ensue a successful weekend.

Perhaps the biggest achievement was the live television broadcast – a joint initiative between Eurosport Events and German company WIGE, which gave fans around the world a rare opportunity to enjoy extensive live coverage from such an iconic venue.

It was a huge undertaking with a workforce of more than 100, 32 trackside cameras, eight on-board cameras each providing three different angles, cameras on the grid and in the pitlane, two helicopter-mounted Cineflex cameras and a repeater plane to transmit the camera signals all required to make the spectacular show.

And while the world was watching on TV, 200,000 fans were trackside to ensure WTCC Race of Germany was a big hit.

Hugo Valente, one of a crop of young WTCC drivers emerging this season, had been scheduled to take part in a VLN race in March but a licence issue resulted in a wasted journey from his native France. Instead he relied on a bit of thinking time. "The test day was very beneficial, then every day after that I was just thinking in my head to visualise the track to memorise it," says the 22-year-old. "When I got there for the race I was really in a good state of mind and I had a feeling I could achieve something good."

Although his challenge ended with his Chevrolet parked up in a tyre wall on lap two of race one, Valente qualified second and, but for a fluffed start and myriad hits at the first turn, could have taken a podium finish.

ADAPTING TO THE TRACK

While Tom Coronel's "20 VLN races and 12 starts in the 24 hours" meant that along with Rob Huff, the Dutchman was one of the most experienced drivers in the field at the track he calls the "ultimate, ultimate", his knowledge of the Nordschleife paled into insignificance compared to Sabine Schmitz.

Schmitz, who turned 46 on the eve of qualifying, was making a one-off WTCC appearance in a deal brokered by championship promoter Eurosport Events.

Growing up at the family hotel within sight of the famous circuit, Schmitz achieved success and fame through her driving exploits around the 'Ring, winning the 24 hours twice and providing a high-speed 'taxi' service to show visitors to the venue how a fast lap should be done. She also narrowly missed out on a sub-10-minute lap in a Ford Transit, of all things, for a feature on the BBC's *Top Gear* television show.

Lacking experience of her Chevrolet Cruze, front-wheel drive and standing starts, Schmitz craved wet weather in an effort stand

Sabine Schmitz, who grew up near the 'Ring, hoped to put her vast experience of the track to good use in a one-off WTCC appearance.

out. "The advantage for me will be when it's really raining hard, which I have hoped for," Schmitz concedes. "I am just missing laps in the car."

With a bumpy and inconsistent track surface, it proved hard to transfer set-up from other WTCC venues. Ride heights were raised as a result but there were concerns about the strain put on the cars by the endless knocks and compressions.

"Normally you go stiff with no roll but at the Nordschleife you go much softer to absorb the bumps and kerbs," says LADA driver and former WTCC champion Rob Huff. "The car has to ride the road well."

Ultimately effective car set-up came down to vetoing rear wing to maximise speed for the two-kilometre Döttinger Hohe straight, while trying to provide enough grip through the endless dips and turns. For most it was a case of throwing caution to the wind.

"Our strategy was to go very light on downforce and that's why the car was very difficult to drive on sectors three and four particularly," Citroën's Muller explains. "But the car was very fast on the straight."

The FIA granted official WTCC tyre partner Yokohama permission to use a softer compound tyre to cope with the fluctuations in conditions and temperature, although the weather was largely stable for the races, but for a few drops of rain nearing the finish of the final race.

Fortunately, this will not be the final World Touring Car Championship race on the Nordschleife, as the WTCC racers will be doing it all again – and again in fact – with a three-year deal in place and the repeat scheduled for May 28, 2016.

"The amount of adrenalin you have on this circuit is really just amazing," says Honda driver Norbert Michelisz. "I really hope I can come back next season." ■

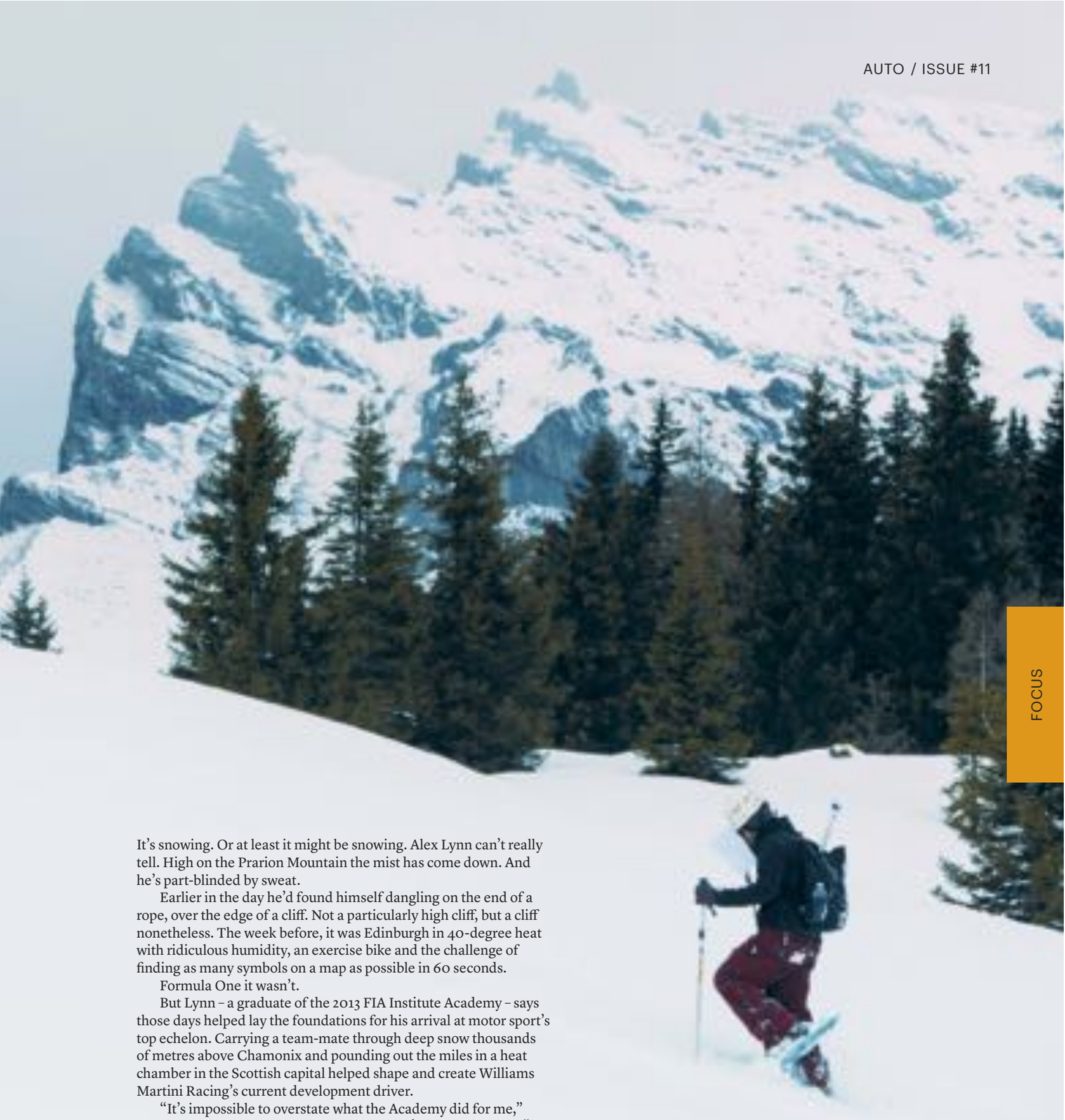
Citroën continued its WTCC dominance at the 'Ring, with Muller winning race two shadowed by race one winner López (above).

FIA Institute Academy

REACHING THEIR PEAK

An increasing number of FIA Institute Academy graduates are achieving success at world-level motor sport - and all feel they owe a deb of gratitude to the young driver training programme

TEXT: DAVID EVANS



It's snowing. Or at least it might be snowing. Alex Lynn can't really tell. High on the Prarion Mountain the mist has come down. And he's part-blinded by sweat.

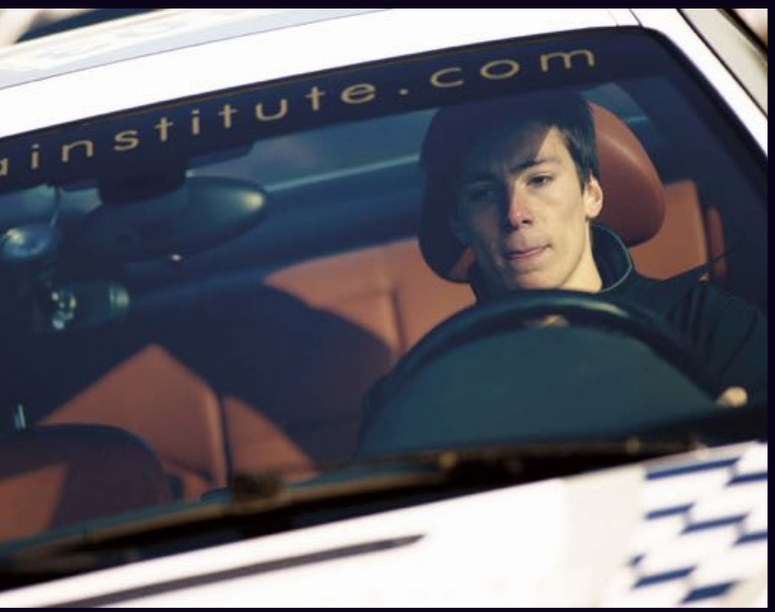
Earlier in the day he'd found himself dangling on the end of a rope, over the edge of a cliff. Not a particularly high cliff, but a cliff nonetheless. The week before, it was Edinburgh in 40-degree heat with ridiculous humidity, an exercise bike and the challenge of finding as many symbols on a map as possible in 60 seconds.

Formula One it wasn't.

But Lynn – a graduate of the 2013 FIA Institute Academy – says those days helped lay the foundations for his arrival at motor sport's top echelon. Carrying a team-mate through deep snow thousands of metres above Chamonix and pounding out the miles in a heat chamber in the Scottish capital helped shape and create Williams Martini Racing's current development driver.

"It's impossible to overstate what the Academy did for me," says Lynn, the 21-year-old winner of last year's GP3 Series title. "I was competing in [European] Formula 3 when I was part of the 2013 course, so it was kind of a pivotal point in my career.

"Being able to turn to people like Alex Wurz and talk to him was invaluable. Alex was somebody who understood, he'd been there; he'd been the guy who was desperate to get to Formula One and he could relate to us all so well. The depth with which we went into things like nutrition, psychology and physiology with Robert [Reid, Academy co-manager with Wurz] was amazing. And, to be honest, beyond anything most of us had seen at that point in our careers." ▶



Academy members who have been put through their paces include GP2 race winner Alex Lynn (above), IndyCar racer Gabby Chaves (above right) and WRC talents Andreas Mikkelsen (top right) and Kevin Abbring (right).

Education and training in motor sport is nothing new, but when the FIA Institute instigated the Academy in 2011, it wanted to raise the bar, while simultaneously offering drivers from around the world a unique opportunity to be involved with the governing body's initiative.

"The fact that this was an FIA Institute course was so important as well," adds Lynn. "The FIA means everything in our world. Everything. So to have the chance to come on board with the Academy was fantastic for me. Beyond the stuff we did in the car and the classroom it was also fascinating to be given an insight into the wider work of the FIA, particularly in terms of road safety and promoting that message. That's vital. That's stopping people from dying on the roads every single day."

Le Mans 24 Hours race winner Wurz is the man who brings the science to Academy school days. The Austrian and his team know the friction circle inside-out and provide the perfect explanation of why cars do what cars do.

It is, however, fair to say there's been a degree of scepticism from some of the young drivers who felt they were about to be taught how to suck eggs. They couldn't have been more wrong.

Volkswagen's World Rally Championship star Andreas Mikkelsen has Wurz to thank for the evolution of his driving style on asphalt.

The two-time Intercontinental Rally Challenge winner says: "What I learned in the theory – and in practice on the track – about driving on tarmac has really helped me a lot to understand the fastest way to drive.

"Before I went to the Academy, when I was driving on asphalt, I would usually have a little bit of a slide at the exit of the corner and I'd think: "Okay, that's on the limit, that's good..." But I learned that this wasn't really good. When I really understood the friction circle and how the tyre is working with the surface – for example, what creates the acceleration and what destroys the tyre – it really helped. I changed my style a little bit after that."

HIGHLY RECOMMENDED

American IndyCar star Gabby Chaves admits now that he wasn't sure what he was in for when he was offered a place on the 2013 Academy intake.

"I didn't know much about the programme at the start," he says. "It was a lot of travelling for me from America; a long way to Europe for the workshops, but once I got to the first one I really got it. Now, any time I see any of the guys in the junior formulae, I'm constantly telling them: 'Hey, get onto the scheme – it's the best thing you can do.' I can't recommend it highly enough."

While Mikkelsen was through the Academy a year earlier than Chaves, the Polo driver says the chance to meet and work with racers gave him a new dimension on all aspects of his day job.

"It was great to meet Robert and to work with him," says Mikkelsen, "but as well as that seeing how the racing drivers do things was really helpful. For the racing drivers it's the small details, the absolute last details – they want everything to be perfect to make sure that everything is 100 per cent. Seeing this approach made me want that as well.

"Also, the Academy made me aware of the responsibility we have working with the FIA and understanding how we can help get the road safety message across by being ambassadors."

As Mikkelsen looks back on his Academy season, the roster is growing into a who's who of motor sport.

"You know, there was a lot of talent in the year that I was doing it," he says. "We had Stoffel [Vandoorne, GP2 runner-up last year and McLaren reserve driver] and Richie Stanaway [German F3 winner and current GP2 racer], and from the rally side Kevin Abbring [Hyundai WRC test driver] as well." ▶

Like Mikkelsen, Abbring is competing at rallying's highest level with a manufacturer team and the Dutchman says his time with the Academy went beyond the sporting aspect.

"I got to know myself in my time with the Academy," says Abbring. "I found out who I was and where I wanted to be. It also made me see the much wider picture: that motor sport is not just about the driving – it's about everything and how you approach everything too.

"For the driving, it helped me get the most out of the car by using the weight distribution; you don't always have to use the steering wheel, the brake or the throttle to make the car work – that was so useful."

Classroom sessions laden with complicated equations and formulas spark the interest, but it's still out on the track putting theory into practice where the real lessons are learned.

"I know the friction circle quite well now," smiles Mikkelsen. "And, thanks to these guys, I know how to stay inside the circle!"

The dynamics of driving are vital to any career in motor sport, but Chaves points out that the business side was also one of the best aspects of the curriculum.

"Working on how to find and look after the sponsor was so important," says Chaves. "We got some real behind-the-scenes stuff and some real insight. There weren't any better guys to work with in motor sport; we had the chance to really learn from the best in the business."

And, as last year's Indy Lights winner progresses through his rookie season in America's big-time racing series, he's taking lessons learned from the Academy with him and including them in his daily schedule.

"You look at the work we did with the nutrition, the training, all of that kind of thing," says Chaves, "and that's helped to shape the way I live my life right now."

BEYOND THE RACING

The FIA Institute also uses industry experts to give Academy members the inside line on all aspects of what they do. Abbring remembers one particular afternoon of talking tyres.

"We had a lecture about them," he says. "It was so interesting, we learned how the tyre is built and then we all realised that now we knew more about how it was constructed and how it worked, we could be more efficient with the tyre and make all of that information work for us. That's what the Academy is about."

On the physical side, the Academy is about pushing the drivers and showing them what the body is capable of, moulding programmes to suit individual needs. Lynn's needs as he powers a GP2 car or even an FW37 through Eau Rouge are quite different to the demands on Mikkelsen as he enters the final sector of a 55-kilometre stage with cockpit temperatures pushing 50 degrees.

The Academy brings everything together and makes the drivers think outside themselves and inside their teams.

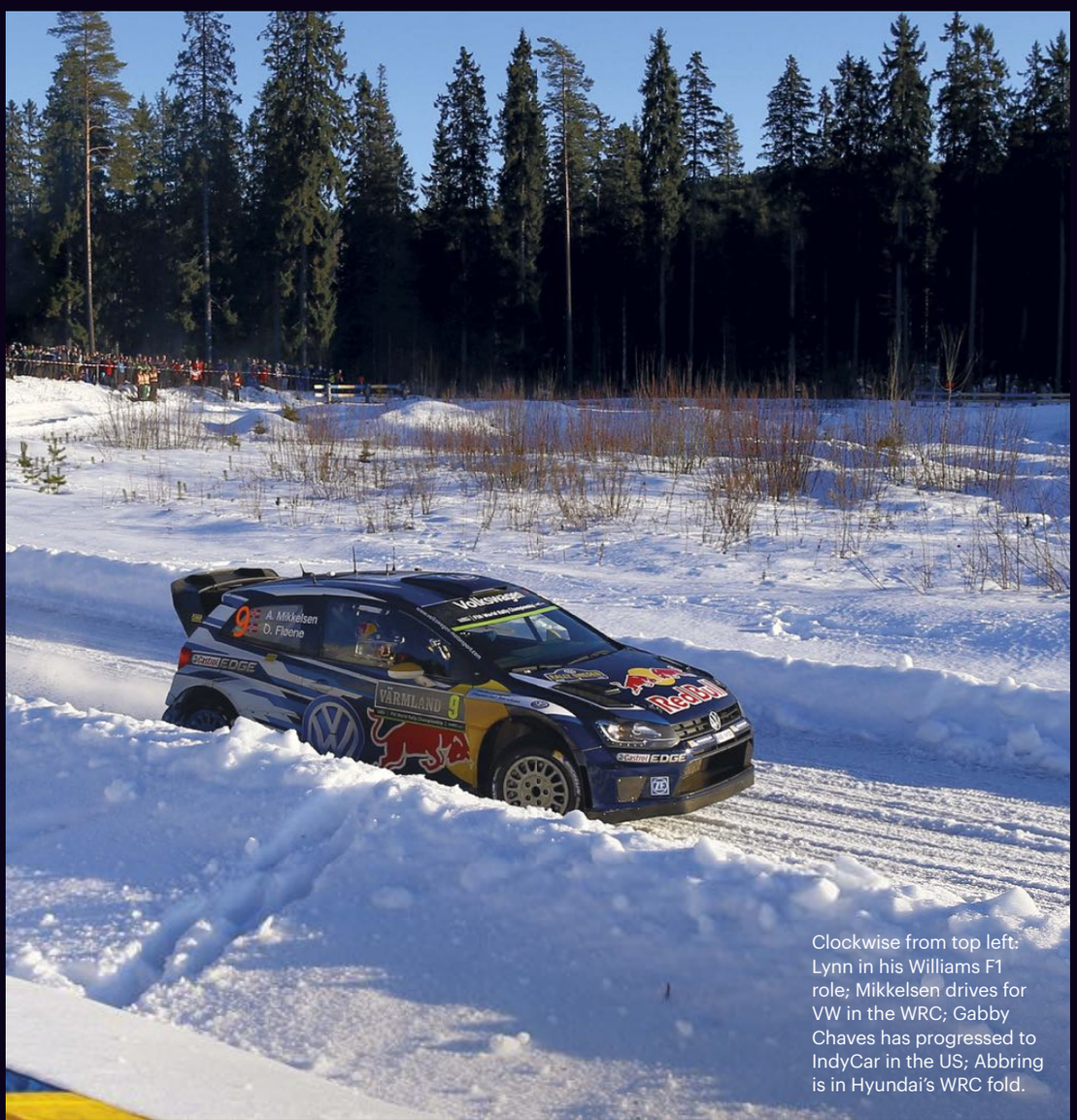
Being forced to construct a stretcher on the top of the French mountains before carting one of their own through a snowfield was an element few drivers approached with any degree of zest. But, year after year, it brings out the best in them. And they have an absolute ball.

And, when you're the one hanging over the edge of the cliff, there's no better way to learn the importance of putting your trust in those around you.

"I just wouldn't have missed this thing," says Chaves. "It was a privilege to have been part of the FIA Institute Academy and it's something I'll take all the way through my career.

"It's a real strength."

That strength has helped the Academy deliver a generation of winners throughout motor sport. ■



Clockwise from top left: Lynn in his Williams F1 role; Mikkelsen drives for VW in the WRC; Gabby Chaves has progressed to IndyCar in the US; Abbring is in Hyundai's WRC fold.

ACADEMY ALUMNI

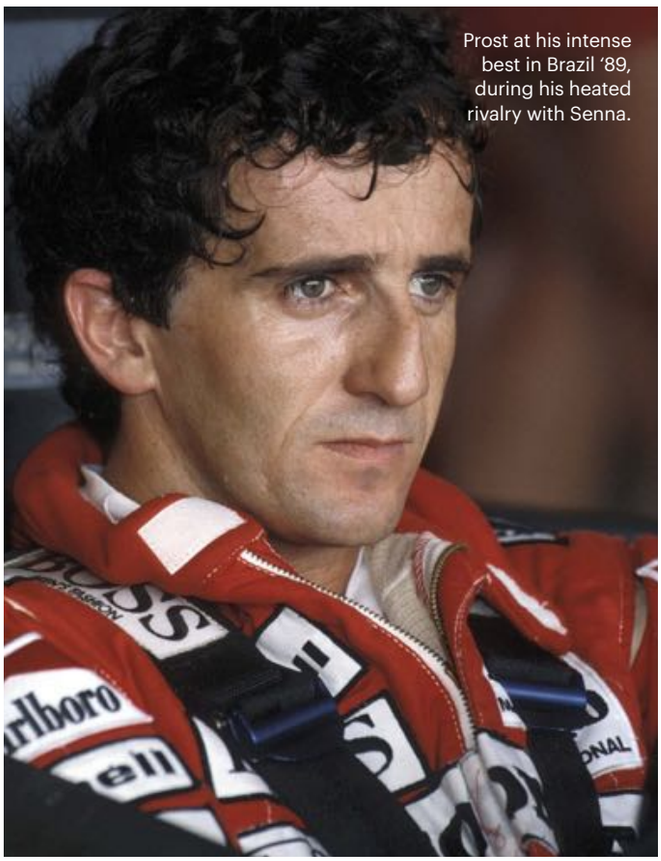
- STOFFEL VANDOORNE / 2011
  GP2 and F1 test driver
- ALEXANDER ROSSI / 2011
  GP2
- RICHIE STANAWAY / 2011
  GP2
- TIMMY HANSEN / 2011
  World Rallycross Championship
- ANDREAS MIKKELSEN / 2011
  World Rally Championship
- KEVIN ABBRING / 2011
  World Rally Championship
- GABBY CHAVES / 2012
  IndyCar
- ALEX LYNN / 2012
  GP2 and F1 development driver
- CRAIG BREEN / 2012
  World Rally Championship
- MICHAEL CHRISTENSEN / 2012
  World Endurance Championship
- KELVIN VAN DER LINDE / 2013-14
  ADAC GT Masters
- IGNAS GELZINIS / 2013-14
  Porsche Carrera Cup

Legends

THE THINKER

In a sport that celebrates the virtues of racing on the edge, Alain Prost's elegant, studious and intellectual approach to Formula One has often led to the four-time champion's achievements being overshadowed by those of more flamboyant rivals. It's time, then, to set the record straight

TEXT: TONY THOMAS PHOTOGRAPHY: SHIVRAJGOHIL


Prost at his intense best in Brazil '89, during his heated rivalry with Senna.

With 12-and-a-half more points, Alain Prost could have been an eight-times Formula One World Champion and indisputably, therefore, the most successful driver to have ever walked the Earth.

As it is, he won four world titles; finished second four times, missing out in 1983, '84, '88 and '90 by the tiniest of margins: two points in '83, half a point in '84, then three in '88 – although he out-scored champion Ayrton Senna before having to shed 18 under that year's 'best 11' rule. In 1990 he was a 'yawning' seven points off Senna.

By any measure, Prost's F1 record is remarkable and he remains, 22 years after retirement, the sport's second most-winning driver, with 51 grand prix victories to Michael Schumacher's 91.

Yet for all the weight of achievement, the garlanded 13-season narrative of success, the joint lead role in F1's most storied rivalry, he remains a hushed legend, a champion spoken about with the greatest respect, but not awe. One whose elegant *vitesse* would routinely leave rivals floundering, allowing him to vanquish the toughest team-mates (Niki Lauda, Keke Rosberg, Ayrton Senna, Nigel Mansell), yet who rarely excited with feats of derring-do. That simply was not his style.

And he knows it: "People always liked Keke or Ayrton at the time, drivers who expressed their natural talent more in their driving style, rather than with thinking," he says. "But you can have both. Niki was called 'the computer' when he was racing. And why not? People forget that you can also be fast. If you look at the statistics, you see that maybe Ayrton was exceptional in qualifying [65 pole positions] but he was really working on that. I worked more on the race set-up, so it makes a big difference. In race conditions with Ayrton I was never much slower than him. It's just a different approach."

METHOD AND MADNESS

As comfortable today in his 60-year-old, bean-lean skin as he was in his racing prime (though still with hungrily chewed nails), Prost is manifestly at ease with his canon, untroubled that his legacy was built on method, not madness. Even if that leaves him perhaps under-rated, under-appreciated and forever 'the other guy' in *that* three-season war with Senna.

He's wryly amused at the notion that F1 should appreciate him more and you sense that while such ideas may once have troubled him, these days he's well over it.

"I think I cared a little bit in the past," he says, those somehow-sad grey-green eyes looking momentarily distant, "but now it just sounds funny to me, you know. I am happy at least to be asked the question. You always have this kind of question about who was the best, who was the best driver, the best ever, or whatever... Which is ridiculous, honestly, because you cannot compare. If you have driven in Formula One, especially with different cars, different teams, different ambience, you cannot compare the drivers and number of titles. So in a way maybe I prefer things the way they are now, especially as I'm getting older!"

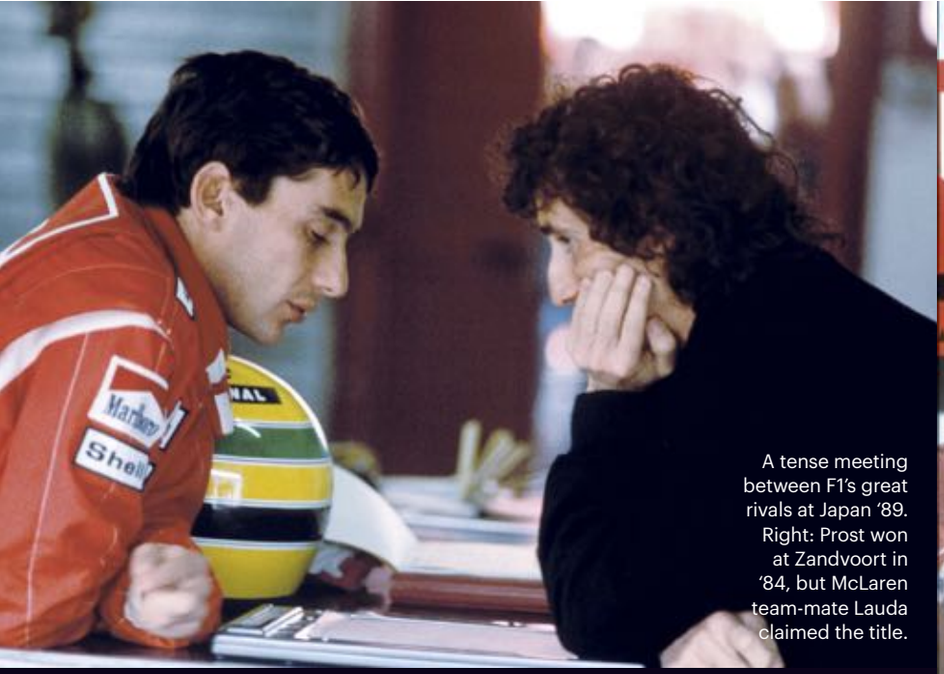
Prost, still actively involved in motor sport though roles as an ambassador for Renault F1 and as a Formula E team owner, has surely earned the right to a little lofty perspective. He raced, after all, through the still-perilous early '80s and emerged, a generation later, largely unscathed, unlike compatriot Didier Pironi who was seriously injured at Hockenheim in '82 or friend Gilles Villeneuve who died at Zolder that same year.

"I was very close with Gilles," Prost recalls, "and I remember him saying to me – it's hard to believe, yes – 'In Formula One you cannot hurt yourself.' He believed this because he had a lot of huge accidents but never had physical pain.

"But me, in only my third grand prix, at Kyalami, I hit the steering on a kerb and I broke my scaphoid [a wrist bone], and I felt pain. And when you feel the pain, it was like 'oh, shit, you can hurt yourself in F1'. And I realised that I had to be careful."

Despite enjoying a justified reputation as one of the cleanest, least incident-prone drivers, Prost recalls a number of big accidents during his 1980 rookie year with McLaren. There were "huge shunts" in testing and practice although none of them resulted in serious injury. "I banged my head a few times though," he smiles. "In practice at Watkins Glen that year, I had a big one. After that I had almost two weeks at home in bed. No lights... I could not move. I realised then that whenever you lose a front wing or you lose suspension or whatever, you know you really need luck."

The accidents two seasons later to Villeneuve and especially to Pironi, which happened during a wet German GP qualifying session, once again forced him to reflect on his approach to racing. ▶



A tense meeting between F1's great rivals at Japan '89. Right: Prost won at Zandvoort in '84, but McLaren team-mate Lauda claimed the title.

"I LEARNED FROM NIKI'S APPROACH TO THE RACE, PARTICULARLY HIS MENTAL CONDITION"

Prost took seven victories in '84, including this one at Hockenheim, but Lauda's race preparation proved key in a championship won by half a point.

"GILLES SAID, 'IN F1 YOU CANNOT HURT YOURSELF.' IN ONLY MY THIRD RACE I BROKE MY WRIST..."

Clockwise from top left: Prost, who was close to Gilles Villeneuve, sporting a broken wrist in 1980; winning at Monaco in '85 en route to his first title; Adelaide '86, where he vanquished the Williams of Piquet and Mansell; at Suzuka with Ferrari in 1990, where Senna won the title...

Prost, by then racing for Renault having become disillusioned with a pre-Ron Dennis-era McLaren, was the unwitting catalyst for Pironi's career-ending wreck. Pironi was carrying out tyre evaluation and on a hot lap moved to pass the Williams of Derek Daly. In doing so, he slammed into the back of Prost's RE30 – invisible in the track-spray – launching his Ferrari 20 feet into the air. Pironi's car slammed down and somersaulted, leaving him with multiple leg fractures.

"After that day," says Prost, "I decided in wet conditions, with no visibility, I would do it the way I want. I said to [team boss] Gerard Larrousse, 'Okay, you want me to continue, you want me to go back in the car very quickly. Give me 15 minutes.' I was in the motorhome in Hockenheim for 15 minutes alone and I said: 'Okay, no problem, I think you're right, but I can tell you from today, I do what I want when it's wet.' People did not know that at the time, but I always did what I thought was reasonable."

LEARNING FROM LAUDA

As with Lauda before him, Prost had concluded that certain levels of risk in racing were unacceptable and that his approach to on-track action would always be tempered by that rationale.

"From the outside, maybe you can't understand. When it's very wet, it's only 'a big heart,'" [Prost thumps his chest with a fist, by way of emphasis] "and sometimes, maybe, it's easier not to think too much. But it's not only driving skill. When it's a bit wet and very slippery, then yes. When it's very wet it's something different. You choose either to do it or not. It's not that you are either the master or the king when it's very wet. Sometimes it's only big heart that allows you to stay flat. Both Niki and myself were a bit like this. Why take a big risk when you cannot control it? That's a big question."

Prost crystallised this mindset even before he partnered with Lauda to form something of a McLaren 'superteam' for 1984. A classic pairing of 'wily old fox' with 'young charger', together at a McLaren re-imagined by Ron Dennis and tech Svengali John Barnard, they would essay a season of dominance: 12 wins from 16 races, five for Niki, seven for Alain, with the title going Lauda's way. It would be his third and last and was won by a mere half-point.

Speaking to AUTO last year, Lauda recalled having to re-set his approach to the race weekend, faced with the prodigious speed of his ambitious young French team-mate. "In the beginning I thought, 'No problem. A Frenchman can't be better than an Austrian. He will have no chance,'" said Lauda. "But he taught me a lesson, because in qualifying we had this stupid 600 horsepower more and qualifying tyres for *one lap* and Prost used it much better than I did. I could not catch him on a qualifying lap, so I changed immediately my strategy and said 'I'm going to work for the race from Friday to Saturday to make sure that my race set-up is better than his.' And this made me in the end world champion – only because I was thinking how to beat the guy in another way, without just driving quicker."

Prost studied the master that year and employed a more rounded skill set to take back-to-back titles in 1985-6.

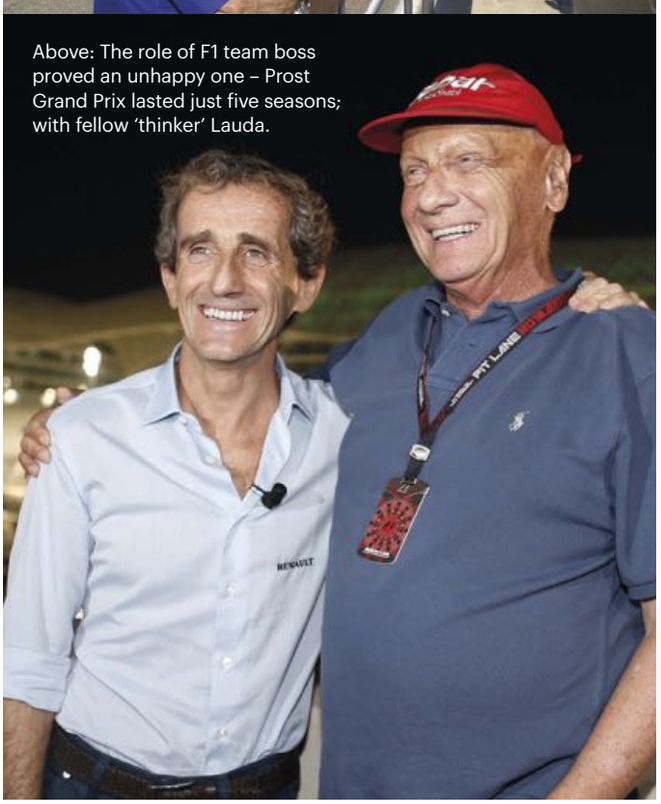
"I learned a lot from Niki's approach to the race," he confirms, "particularly his mental condition. In 1984, for example, I thought that I was fighting Nelson Piquet, because most of the time he was on pole or very fast, so I thought my target was Nelson. But I was wrong and I learned a lot from that. For example, it's better to finish fourth and get points and maybe go on to be world champion."

The approach would be fundamental to his racing over two McLaren seasons alongside Senna, allowing him to out-fox his combative rival to the '89 title, having already out-scored him in '88.

Prost's rivalry with Senna is probably the most documented in Formula One's history and we decide, on this occasion, not to dwell on it, preferring instead to talk about their later relationship, which became close. ▶

These days Prost is a team owner in the Formula E championship with E.DAMS Renault.

"MY RELATIONSHIP WITH AYRTON WAS EXCEPTIONAL – COMPARED TO WHEN I WAS RACING!'"



Above: The role of F1 team boss proved an unhappy one – Prost Grand Prix lasted just five seasons; with fellow 'thinker' Lauda.

"Our relationship was really exceptional, you know," Prost reflects, "especially compared to what we had when I was racing! And I promise you that I am *sure* relations would be very, very good if Ayrton was still with us. There is no question about that."

Prost pauses for a moment to remember a peer who came to define his own career so sharply, through the most intense competition, and then continues in a tone of bitter-sweet affection: "It's funny, maybe one week before the accident [Senna's fatal crash at the 1994 San Marino Grand Prix] we were talking on the phone and I said to Ayrton, 'You know, it would be funny one day if I had a team and you could be my driver. And we were laughing about that. We were talking at the time to buy Ligier already. At the start of '94. That would have been fantastic, definitely very good."

HAPPIEST RACING MEMORY

A Senna-led Prost Grand Prix team. Imagine the attention that would have attracted. Alas, the events of Imola '94 prevented it ever coming to pass, although Prost did of course go on to become an F1 team boss, acquiring Ligier early in 1997 and racing that year (and on till the end of 2001) as Prost Grand Prix.

The team never fulfilled its promise, despite a handful of strong results, and Prost, sighing heavily, reveals now that he believes the project was doomed from the start: "Three months after I started the team," he says, "we had some very good results and we almost won a race. But to my family and close friends I was saying 'I'm dead'. I knew from the beginning. I *knew*... I know Formula One too well. I know the country too well. So my biggest mistake... If I made one mistake, it was this. It would have been better not to have done it. I should not have made the decision to do it at the last minute. Two days before I signed the contract I did not want to do it any more. But we had a plan with Peugeot and a contract for five years of free engines with lots of development. Then they came back two days before I signed it and it was only three years and I had to pay for the engine... In the end, I was happy to stop."

It was an inglorious coda to an otherwise stellar F1 existence, so better, maybe, to recall Prost the driver not Prost the team, and savour a racer who won grands prix with four different teams and titles with two. From all that success, through Renault, McLaren, Ferrari and Williams, which period stands out?

Prost is reluctant to compare teams, preferring instead to talk about his career as "a global picture", but he can't stop a smile at the memory of the 1986 Australian Grand Prix, in Adelaide, where he took his second title ahead of the far faster Williams-Hondas of Nelson Piquet and Nigel Mansell, having played a year-long strategic game to perfection. Who can forget the image of Prost leaping off the ground in joy alongside his McLaren MP4-2C after the unlikeliest of victories? "We won not just as a team that day. It was more like a family," he says.

Even this sublime moment, though, doesn't represent the peak of Prost's motor racing happiness. For that, he takes us back to his mid-teens and to mid-France, where an athletically gifted and football-mad kid called Alain Prost was proving to be a star right-winger for his local club in St Etienne, with dreams of turning pro.

"In a way my biggest memory and something I am even more proud of is the start of my career," he says. "I was very close to being a professional football player, but one day I went karting with my brother. I wasn't interested at all. I didn't want to go! But then it was like a revelation – like seeing a star. And I knew: 'this thing is for me.'"

Over the next 18 months Prost worked ceaselessly, helping his dad with odd jobs, doing house removals, staying in at night to save cash, until he'd amassed 700 French Francs (around €100) – enough to buy his first go-kart.

"And from there I began," he says, "just me, without any help from anybody to get in. And that, you know, after all this, is the thing I am very proud about."

A pause, then a final twinkle: "You know I was still playing football for my club when I started in F1? McLaren never knew..." ■

PHOTOGRAPHY: DPPI

Freeze frame

A TEST OF ENDURANCE

With this year's FIA Sport Conference taking place in Mexico City, AUTO recalls one of the country's greatest racing legacies, the Carrera Panamericana

The golden age of sports car racing, that hallowed period in the 1950s and '60s when the world's finest racers took the finest cars from the world's most ambitious and competitive manufacturers to the edge of endurance and beyond, is replete with races that gave rise to some of motor sport's greatest moments. Mille Miglia, Targa Florio, Le Mans, the 12 Hours of Reims – each name is indelibly stamped into the history of racing.

However, while all are defined by the gruelling tests meted out to competitors and cars, perhaps one stands out as being more challenging, more punishing and more perilous than all the others – Mexico's immense Carrera Panamericana.

At over 3,000 kilometres long – twice the length of the Mille Miglia and more than four times longer than the 1950s Targa Florio – the race, which eventually settled on a route from Tuxtla Gutierrez close to the Guatemalan boarder to Ciudad Jerez on the US frontier, was widely perceived as the world's toughest road race.

And none was tougher than the third edition of the race, run in 1952. With the event attracting increased interest from top European manufacturers, it was split into two categories: a stock car class for the powerful but heavy US machines that had formed the bulk of entries in the opening two years, and a sports class for the lighter, quicker and more nimble European machines.

It was in the latter class that Mercedes competed, entering three 300SL cars driven by the teams of Karl Kling and Hans Klenk, Hermann Lang and Edwin Grupp, and John Fitch and Eugen Geiger, with Kling, Lang and Fitch being the primary drivers.

Despite stiff competition from Ferrari, Kling and Klenk won out, completing the eight stages in just 18 hours, 51 minutes and 19 seconds at an average speed of 103mph. The victory wasn't without incident, however. During a long right-hand bend in the opening stage, taken at almost 200km/h (120mph), Kling failed to spot vultures sitting by the side of the road.

As the birds scattered at the sound of the virtually unsilenced 300SL, one smashed into the windscreen on the passenger side, briefly knocking Klenk unconscious. Despite bleeding badly from facial injuries from the shattered windscreen, Klenk ordered Kling to maintain speed and held on until a tyre change almost 70km (43 miles) later to wash himself and the car of blood, bird and glass. For extra protection, eight vertical steel bars were bolted over the new windscreen and undaunted the pair raced on to victory.

Others were not so fortunate and over the original event's five-year lifespan a staggering 27 drivers lost their lives. Amid escalating concerns about increasing speeds, poor safety infrastructure and lack of political will to continue, the race was cancelled after 1954. However, despite its short history, the Carrera Panamericana had captured the imagination of motor sport fans worldwide and to this day it remains a touchstone for racing at the edge of possibility.

PHOTOGRAPHY: MERCEDES

Winners Karl Kling and Hans Klenk's 300SL in the 1952 Panamericana, complete with windscreen grill after a bird strike.

CHILD ROAD SAFETY

At least 500 children are killed on the world's roads every day - the equivalent of two Secondary or High Schools being emptied each and every day. While many of these injuries occur away from the school commute, a significant proportion do happen as children walk, cycle or are driven to and from school.

The problem worsens depending on the region. In Sub-Saharan Africa, for instance, over 15 children (under 19 years old) per 100,000 people die each year. That's almost 150,000 child deaths per annum in that region.

A new report from UNICEF and the FIA Foundation focuses on child safety on the roads and recommends steps to improve the situation. It argues that a focus on ensuring safe routes to schools is a vital first step to building political and community support for wider road safety actions, and particularly for low-speed regimes in urban and peri-urban areas where high concentrations of child pedestrians and cyclists interact with motorised traffic.

The UNICEF/FIA Foundation report also highlights examples of successful 'safe to learn' strategies in high- and middle-income countries, from the United States to South Korea, where investment of hundreds of millions of dollars has shown that streets can be made safer, creating conditions in which walking and cycling to school increases as child casualties and vehicle speeds drop.

10 STRATEGIES FOR KEEPING CHILDREN SAFE

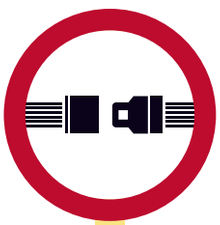
SOURCE:
Ten strategies to keep children safe on the road. World Health Organization

1
CONTROLLING SPEED

2
REDUCING DRINKING AND DRIVING

3
USING HELMETS FOR CYCLISTS AND MOTORCYCLISTS

4
RESTRAINING CHILDREN IN VEHICLES



5
IMPROVING CHILDREN'S ABILITY TO SEE AND BE SEEN

6
ENHANCING ROAD INFRASTRUCTURE

7
ADAPTING VEHICLE DESIGN

8
REDUCING RISKS FOR YOUNG DRIVERS

9
PROVIDING APPROPRIATE CARE FOR INJURED CHILDREN

10
SUPERVISING CHILDREN AROUND ROADS

ILLUSTRATION: FRASER LYNESS

Final lap

BRAKES & LADDERS

A key topic for this year's FIA Sport Conference in Mexico is young driver development. One of the experts speaking on this subject is former IndyCar star Gil de Ferran, Global Ambassador for driver development site SAFEisFAST.com. He talks to AUTO about racing ladders and the prospects for young drivers today

Q How hard is it for a young driver to succeed in motor sport today?
A In a way I think it has always been hard to rise through the motor sport ladder to a point that you can make a living from driving. Frankly, this is not dissimilar to any career in professional sports. There are many people who start at the bottom and only a few who will make it through the funnel. In the end, many things have to go right for one to make it all the way. It is easily understood that racing costs money and financial support has to come from somewhere, but I am still a firm believer that truly exceptional talents somehow always rise to the top.

Q Is there a clear racing ladder in the United States?
A In open-wheel racing, whether on roads or ovals, IndyCar has made a significant effort to establish a clear route over the years with some success. In general, I still believe there are too many competing formulas at a similar level and not enough mileage. The FIA has been trying to rationalise the progression of series, an initiative that I believe is very positive. Personally, I would campaign for increasing testing miles and technical freedom on lower formulas. Although miles cost money, the lower the category the cheaper the cost per mile. Therefore I would attempt to structure things in a way that drivers would get much more testing at the beginning of their careers and have more freedom to modify and therefore understand how cars work. In the end, one learns the most about driving and racing cars away from the pressures of a race weekend. Obviously you learn a lot by racing, but accumulating miles racing and testing will lead to a more complete schooling.

Q How do young drivers in the US compare with their European counterparts?
A Your competition defines you in many ways, so when a young driver meets the hardest competition at one particular level, he (or she) will develop their skills more. I find it interesting that when Europeans come to America, or vice versa, no one seems to find it a walk in the park, which appears to indicate that the level of competition on both sides of the Atlantic is quite comparable. Regardless, what is currently happening in F3 is fantastic. It's like a world championship at F3 level!

Q What tools are there to help drivers develop today?
A Firstly, I wish there were programmes like SAFEisFAST.com when I was beginning. The wealth of information is unparalleled and the chance to get advice from the best in the business is a dream for any aspiring driver. In general, the technology available to drivers today, even at karting level, is mind-blowing. There is so much know-how and information that has permeated from the top levels of our sport all the way down. Compared to when I started in Brazil, back in the early '80s, young drivers have an enormous amount of data they can use to help develop their skills and gain a better understanding on how to maximise the performance of a car. There is visual data, coming from cameras, GPS data, car data, timing data, on and on... Interestingly, this environment probably favours talented drivers who have a greater capacity to digest all this information and learn how best to put it to good use.

Q Should there be a more structured ladder for motor sport?
A Well, the clearer the path the better it is for drivers, fans, sponsors, promoters, media, technical suppliers, etc. Just analysing the fan and media perspective, at the very least you know what to follow and where to find the next superstar. I believe that the fewer the formulas and championships, the better young drivers are. There are several reasons for this, the main one is how talent would be more concentrated and what effect that has. Further, it would be easier to identify great talents and therefore promote them.

Q How would you improve the prospects for young drivers today?
A This is a subject for a book! Nevertheless, my typical advice for young drivers is the following: focus on what you have and make the most of it. Don't focus on things you can't control. Conquer the mountain you are on before you start daydreaming about the future. Success in the present will lead to success in the future. Learn how to be self-critical, while at the same time not losing self-confidence. You can always develop and improve. Improve your 'mind management' skills, I can assure you that you will need it. Practice, think, practice, think, practice, think, practice, think... All of the above only applies if you are fit, determined and not lazy!

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+44 (0)20 7220 0130
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ellisclowes.com

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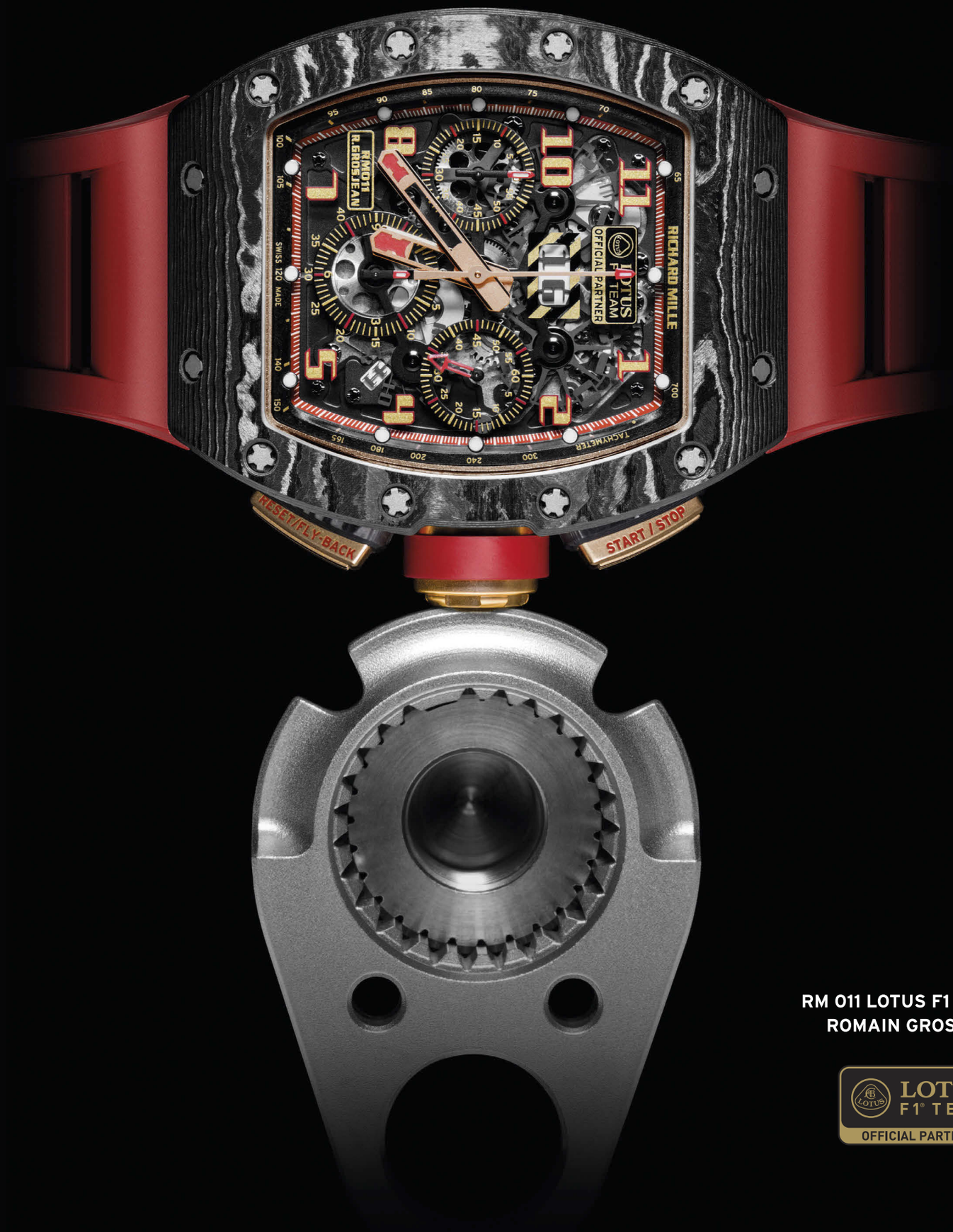
A RACING MACHINE ON THE WRIST



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