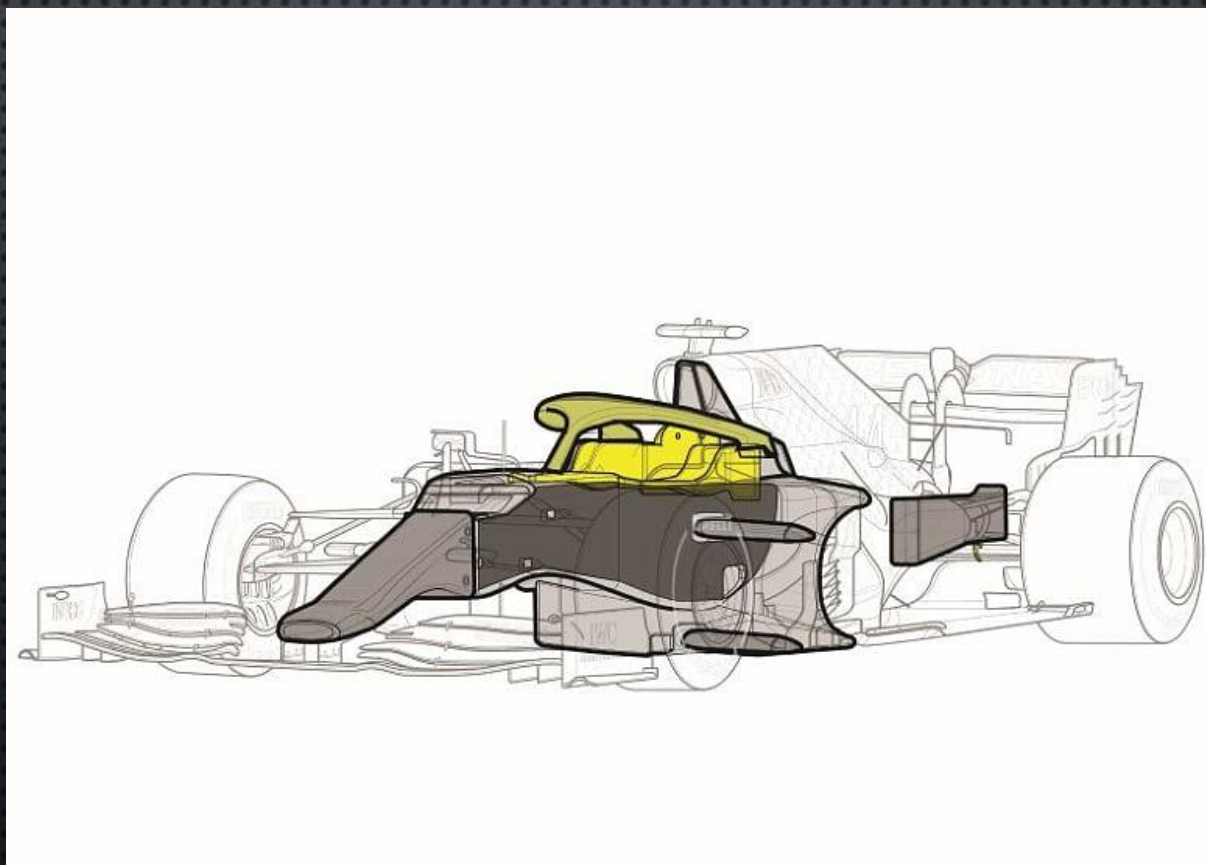


# SAFETY IN FORMULA 1

- AGASTYA KAPUR



# FORMULA 1



alfa romeo 158  
1950 nino farina



maserati 250 f  
1957 juan manuel fangio



lotus climax 25  
1963 jim clark



ferrari 312 t  
1975 niki lauda



mclaren honda mp4-4  
1988 ayrton senna



ferrari f2004  
2004 michael schumacher



red bull rdb9  
2013 sebastian vettel



Mercedes-AMG F1 W11  
2020 Lewis Hamilton



Red Bull RB18  
2022 Max Verstappen

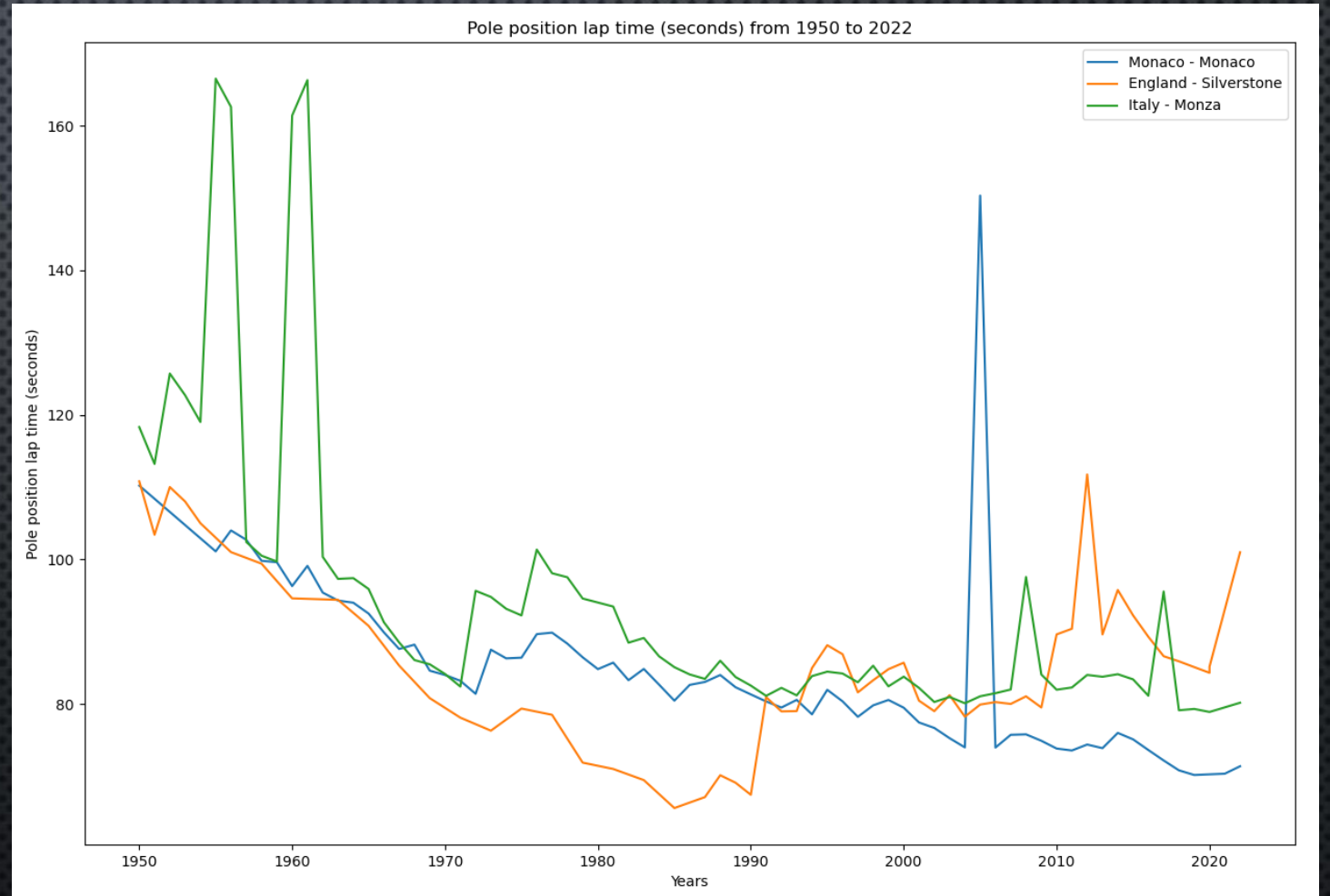
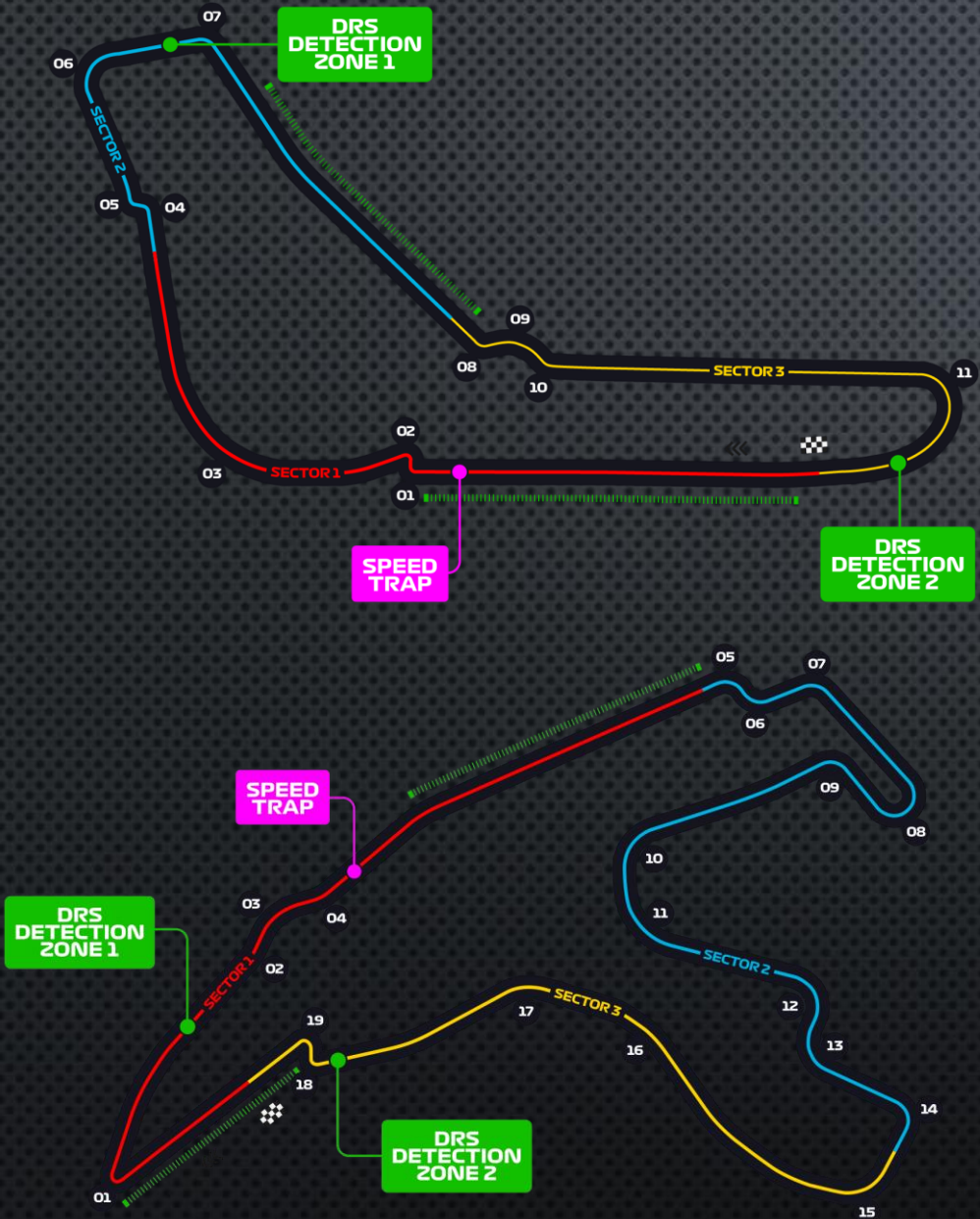


# THE DRIVER





# THE DRIVER





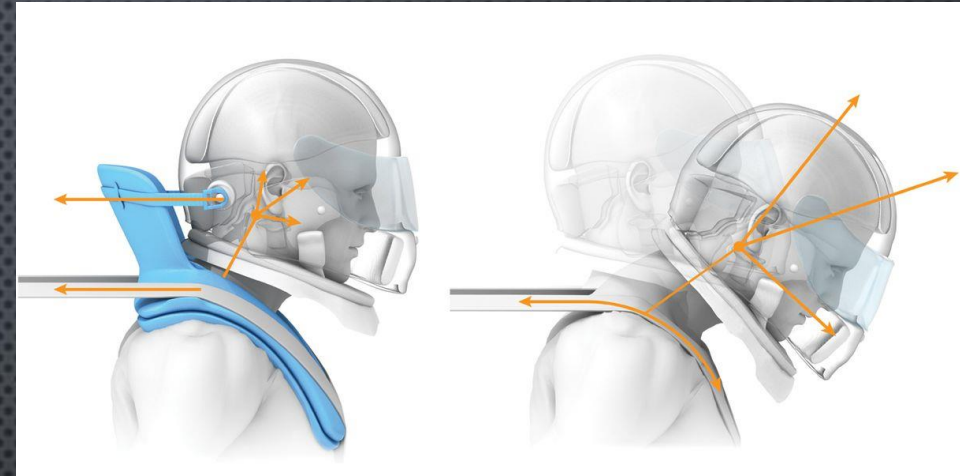
# DRIVER EQUIPMENT



Replica of Fangio's helmet & goggles



Headrest



Hans device



Fire and heat resistant balaclava and race suit



Massa's helmet in 2009



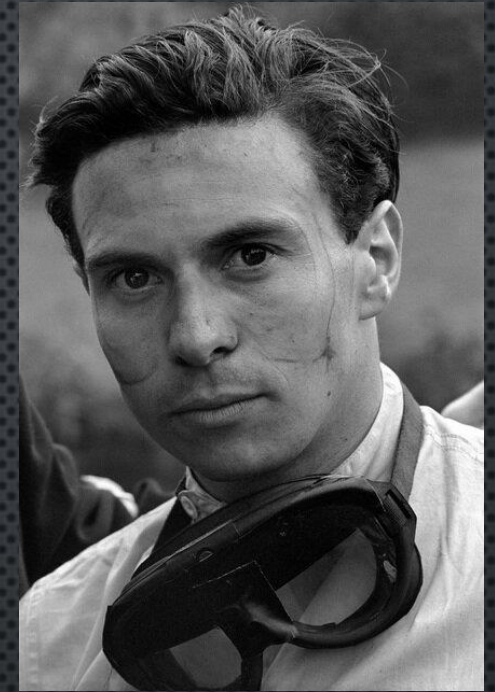
Biometric sensors in gloves



# THE TRACKS – SAFETY BARRIERS



Wolfgang von Trips



Jim Clark



Phil Hill

Italian Grand Prix 1961





# THE TRACKS – SAFETY BARRIERS

$$F \Delta t = m \Delta v = \Delta p$$



Straw bale



Armco Barrier (and Debris Fencing)



Concrete Walls



TECPRO Barrier



Tyre Barrier



# THE TRACKS – LAYOUTS AND RUNOFF AREAS



Eau Rouge, Raidillon - Spa



Circuit Paul-Ricard - Asphalt runoffs



Runoff Areas



Gravel Traps

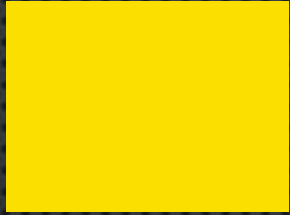


Chicanes



# TRACK MARSHALS

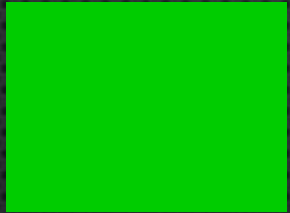
## Flag System



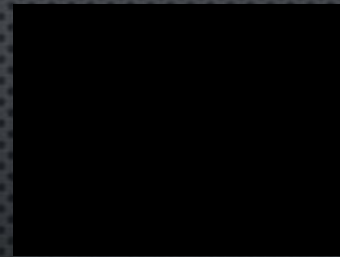
Yellow flag



Safety Car



Green Flag



Black Flag



Red Flag



Chequered Flag





# TRACK MARSHALS



Roger Williamson



David Purley



# TRACK MARSHALS AND DRIVERS



Niki Lauda



Arturo Merzario, Brett Lunger, Guy Edwards  
and Harald Ertl



# SAFETY CARS





# THE PITLANE





# THE CAR – SURVIVAL CELL

**1950s**



**NOW**



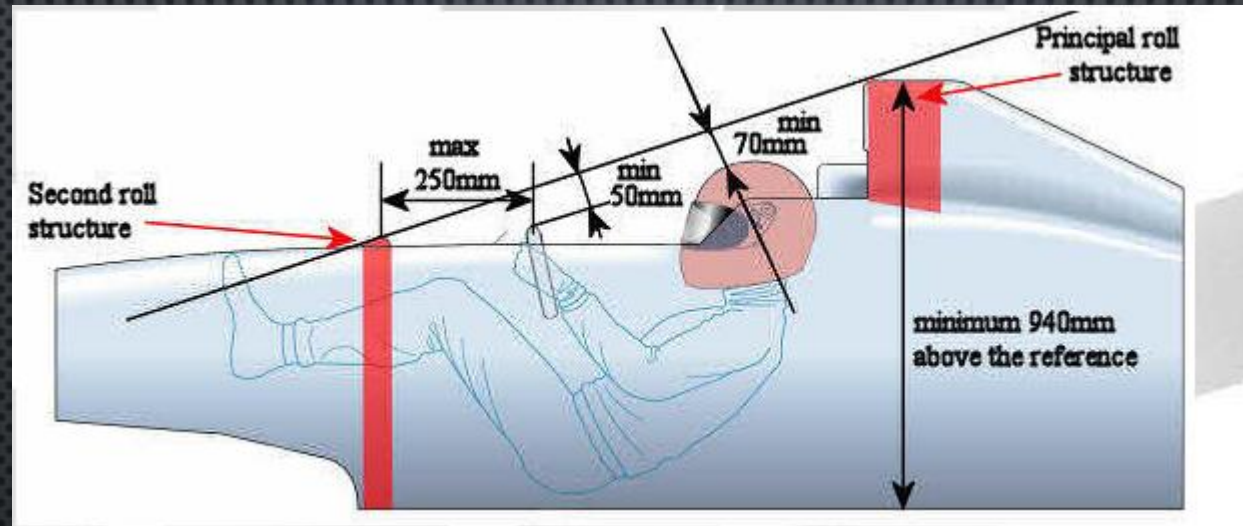
Driver sitting positions



Survival cell monocoque

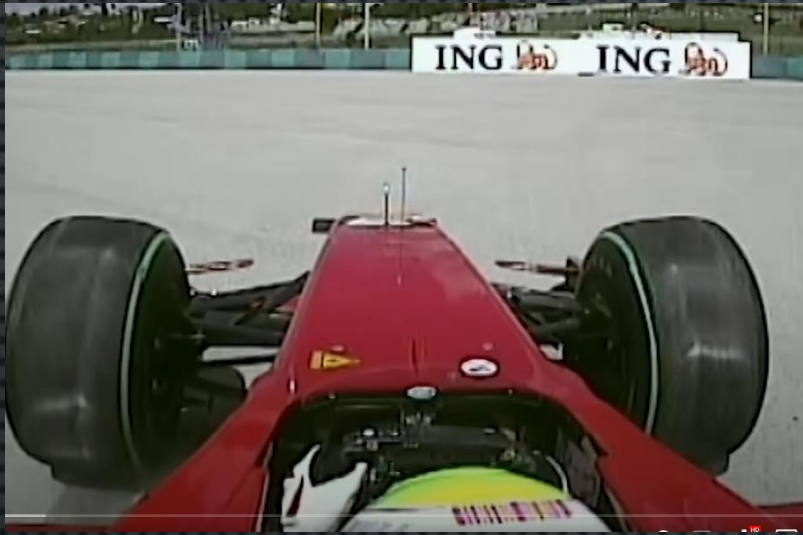


# THE CAR – ROLL STRUCTURE



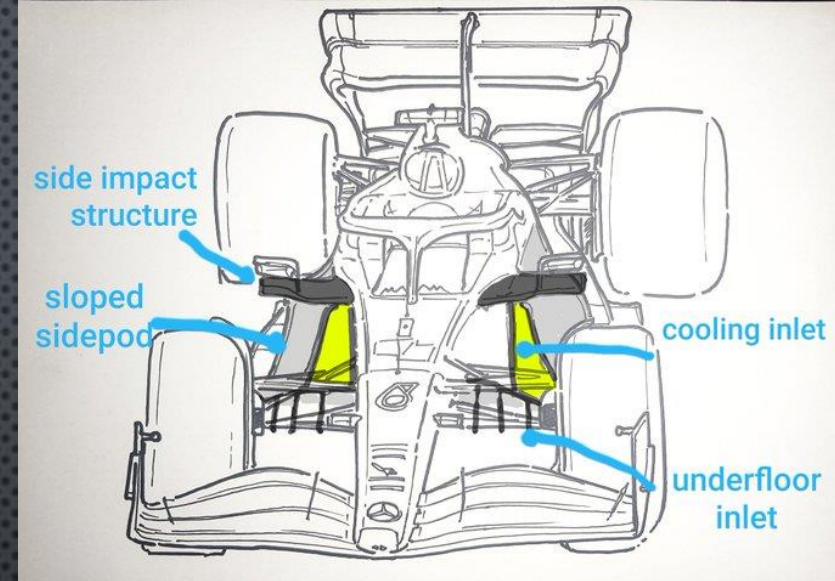


# THE CAR – FRONT AND REAR IMPACT STRUCTURES





# THE CAR – SIDE IMPACT STRUCTURES





# THE CAR - HALO





# CONCLUSION AND QUESTIONS

