

EXTREME PROTOTYPE DEVELOPMENT

automotive
interiors
EXPO 2011
STUTT GART
May 17, 2011

Michael Robinson
Brand & Design Director



EMOTIONAL ACCELERATION



SOCIAL ACCELERATION

50 MILLION USERS WORLDWIDE

STEAM LOCOMOTIVE

YEARS

135



ELECTRIC POWER

80



PERSONAL COMPUTER

16



INTERNET

4



INDUSTRIAL ACCELERATION

CONCEPT CAR DEVELOPMENT TIME

LANCIA DIALOGOS - 1998

MONTHS

24



INDUSTRY STANDARD

8



ALFA ROMEO PANDION

4





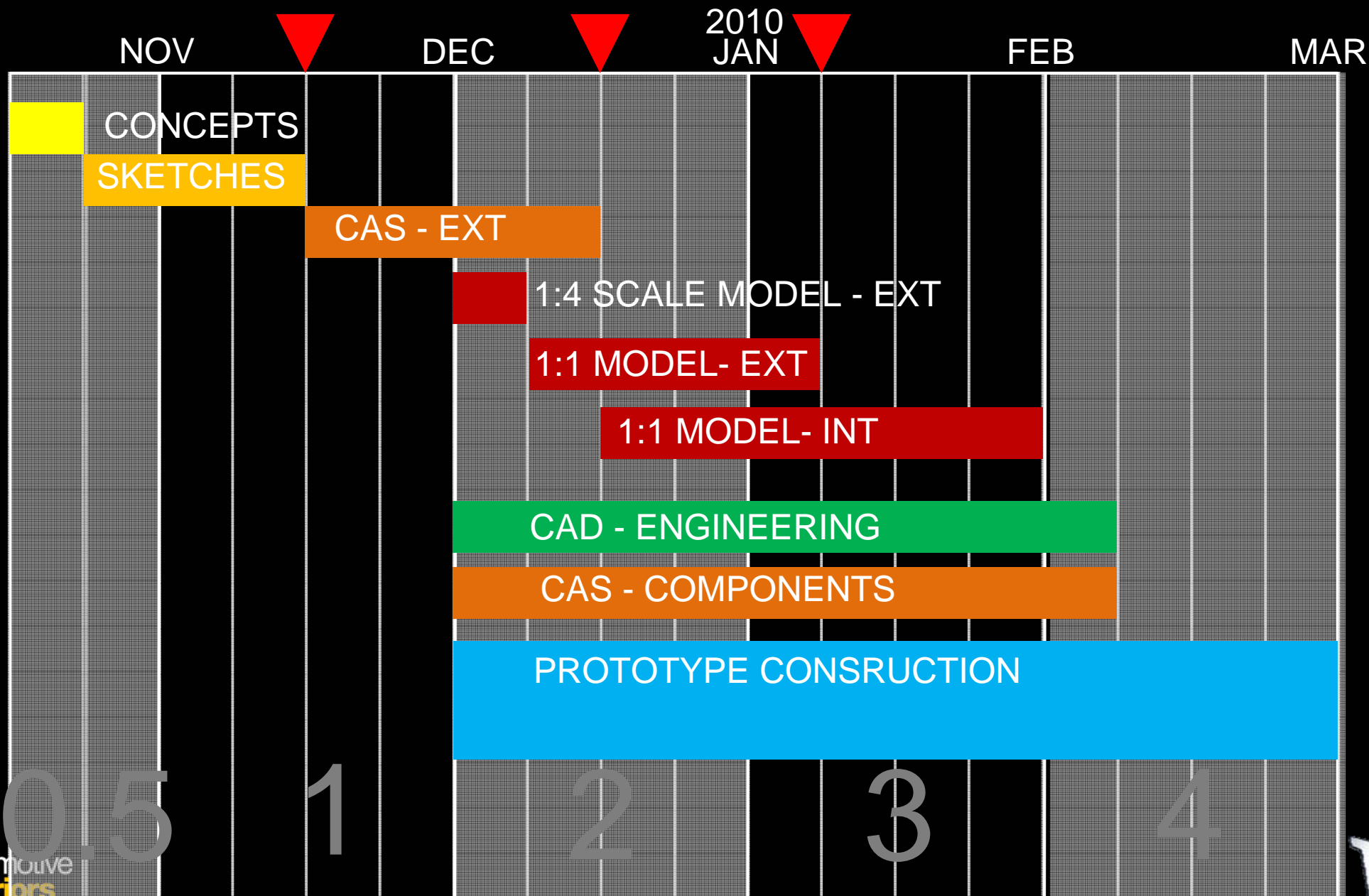
4.5 MONTHS

KICKOFF – OCTOBER 15, 2010

PRESENTATION – MARCH 2, 2010



ALFA ROMEO PANDION DEVELOPMENT TIMELINE





CONCEPT & DESIGN DEVELOPMENT

FIRST CLIENT PRESENTATION

NOVEMBER 15

DESIGN DIRECTION SELECTION



8c myth

1931 1° modello 8c 2.3L
 1933 2.6L
 1934 2.9L
 1935 3.2L

telaio passo lungo 3100mm
 le mans
 (Brienza Castagna Fignon)
 telaio passo corto 2750mm
 strada
 (Zagato Turing)
 telaio 2650mm Gran Prix

1931 tipoA multivento bimotores
 Monza e spider corsa
 1932 TipoB
 Passo Corto
 1932 Zagato spider sport
 1935 Benetton
 Speed 300 km/h
 1937 2000 Touring superleggera
 2000 Spider
 1939 2000 Aerodinamica Pininfarina
 1938 2000 Berlina

8c competizione

SENSIBILITA' ARTIGIANALE

QUALITA' INDUSTRIALE

Family graphic

RETRO DESIGN

THERE IS THE WORLD...

...AND THERE IS BERTONE

INNOVATION:

CONCEPT CAR

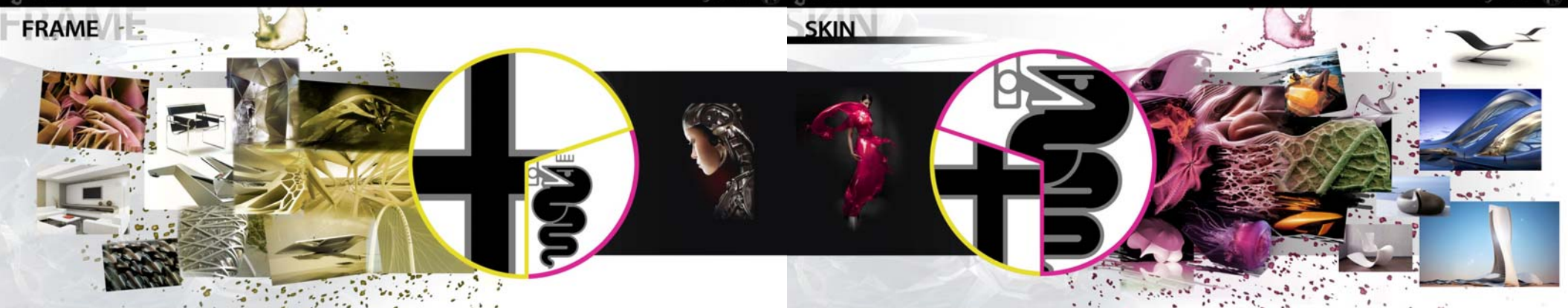
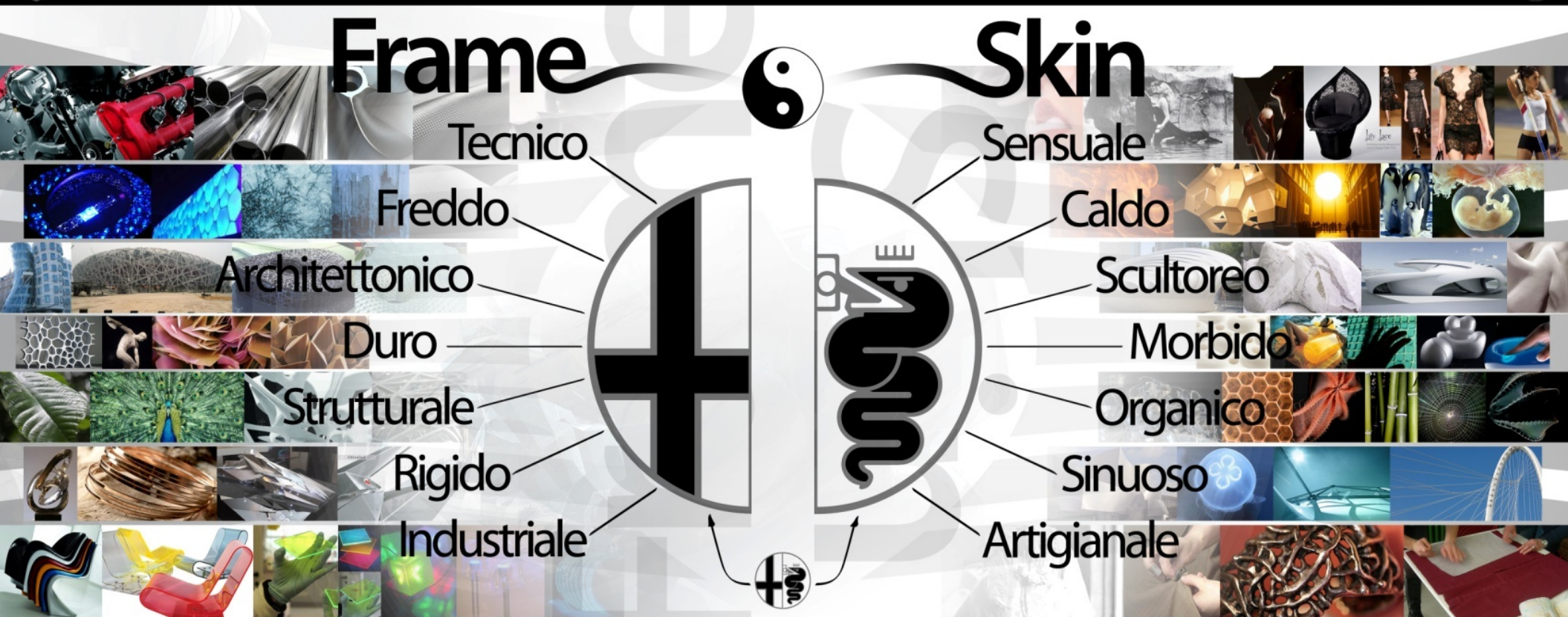
PRODUCTION CAR

DIFFERENT-RECOGNITION

 Bertone							
SPORT							
LOOK TODAY							
LOOK TOMORROW							
ANIMAL							
PERSONALITY							
PRICE	€ 159,300	€ 114,340	\$ 643,330	€ 223,380	€ 1,100,000	€ 450,000	\$ 83,895
FASHION							



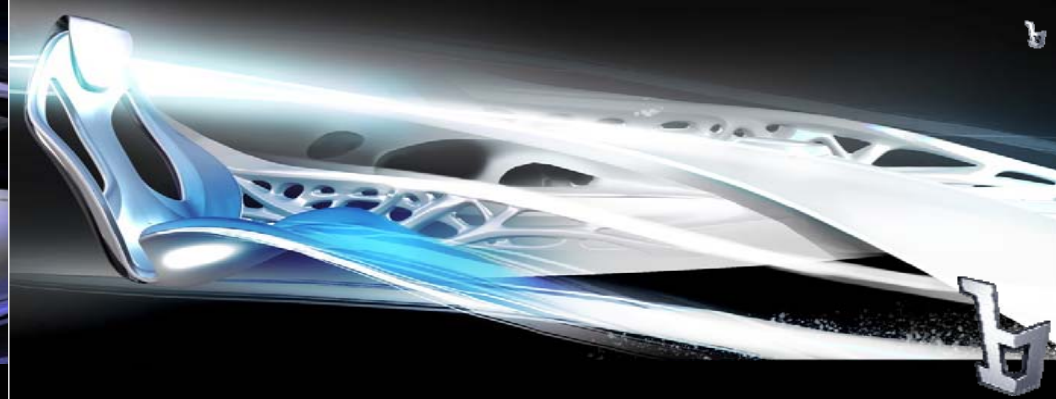
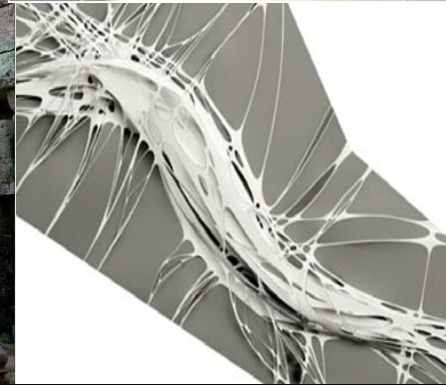
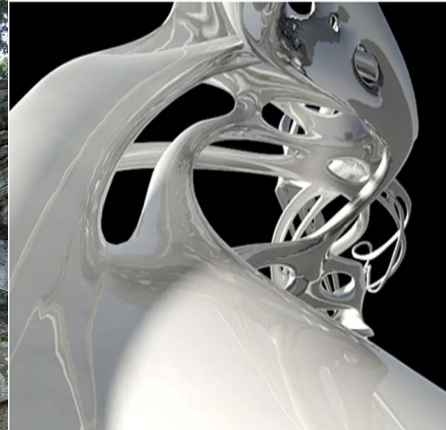




Algorithmic Design

Exterior Interpretation

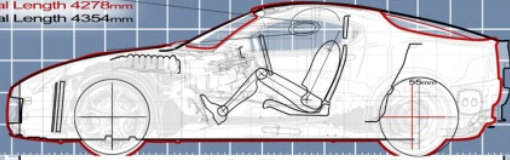
Interior Interpretation



Package Design

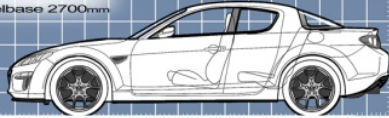
Alfa Romeo 8C Competizione

Wheelbase 2595mm
Length 4278mm
Total Length 4278mm
Total Length 4354mm

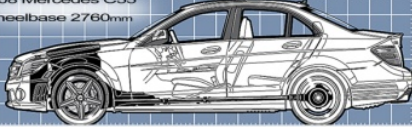


New Alfa Romeo 8C

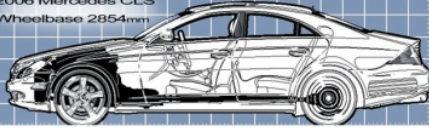
2002 Mazda RX8
Wheelbase 2700mm



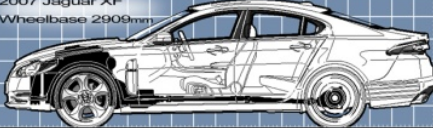
2008 Mercedes C55
Wheelbase 2760mm



2006 Mercedes CLS
Wheelbase 2854mm

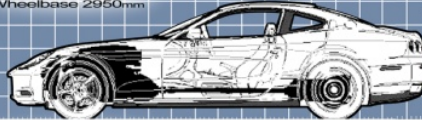


2007 Jaguar XF
Wheelbase 2909mm

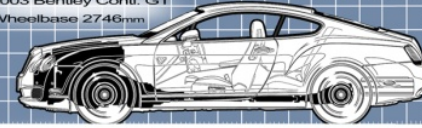


4 Seater & 2+2 Sport Coupes

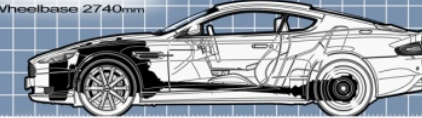
2003 Ferrari 612
Wheelbase 2950mm



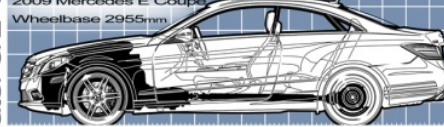
2003 Bentley Conti. GT
Wheelbase 2746mm



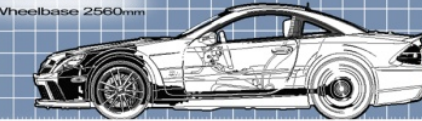
2003 Aston Martin DB9
Wheelbase 2740mm



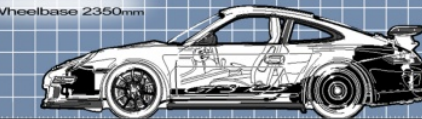
2009 Mercedes E Coupe
Wheelbase 2955mm



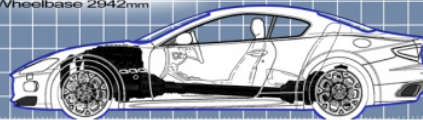
2009 Mercedes SL
Wheelbase 2560mm



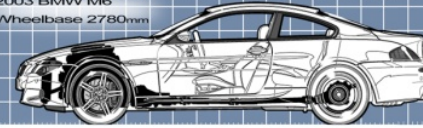
2007 Porsche 997
Wheelbase 2350mm



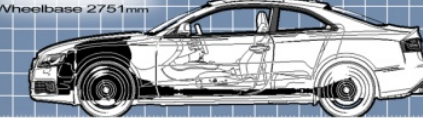
2007 Maserati Gran Turismo
Wheelbase 2942mm



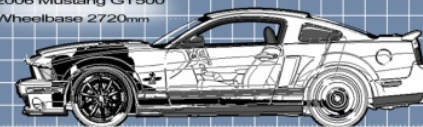
2003 BMW M6
Wheelbase 2780mm



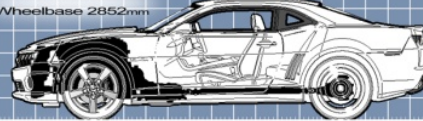
2007 Audi A5
Wheelbase 2751mm



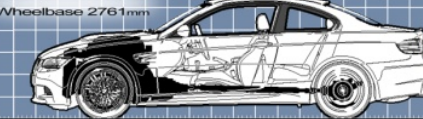
2006 Mustang GT500
Wheelbase 2720mm



2009 Camaro
Wheelbase 2852mm

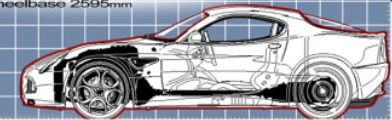


2007 BMW M3
Wheelbase 2761mm

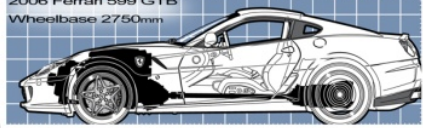


2 Seater Sport Coupes

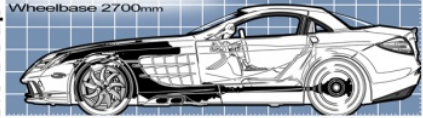
2003 Alfa Romeo 8C Competizione
Wheelbase 2595mm



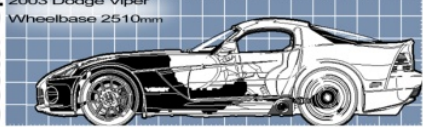
2006 Ferrari 599 GTB
Wheelbase 2750mm



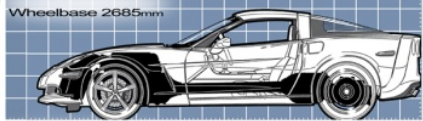
2006 McLaren Mercedes SLR
Wheelbase 2700mm



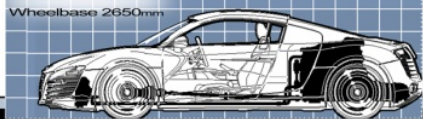
2003 Dodge Viper
Wheelbase 2510mm



2005 Corvette C6
Wheelbase 2685mm



2006 Audi R8
Wheelbase 2650mm



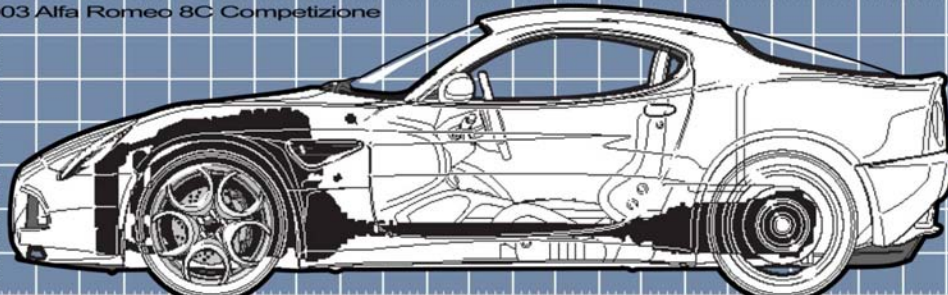
Wheelbase 2595mm
Length 4278mm
Width 1900mm
Height 1250mm
Weight 1500kg



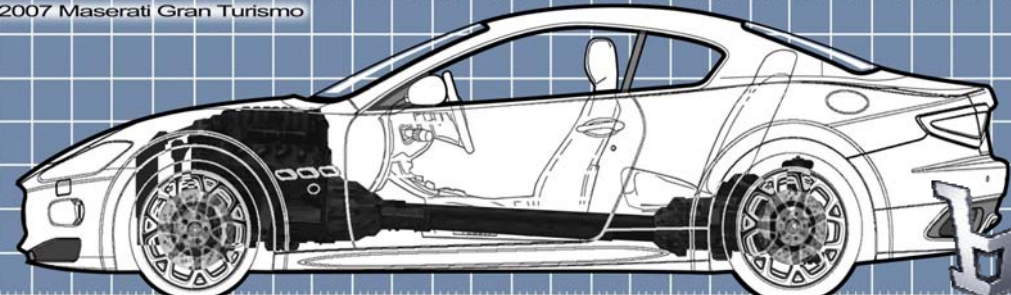
Wheelbase 2942mm
Length 4881mm
Width 1847mm
Height 1353mm
Weight 1880kg



2003 Alfa Romeo 8C Competizione



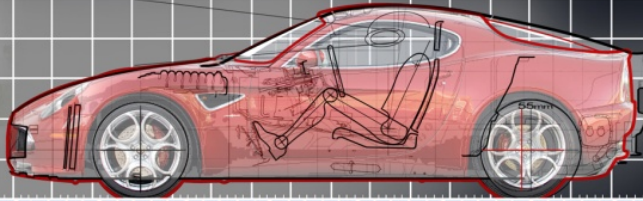
2007 Maserati Gran Turismo



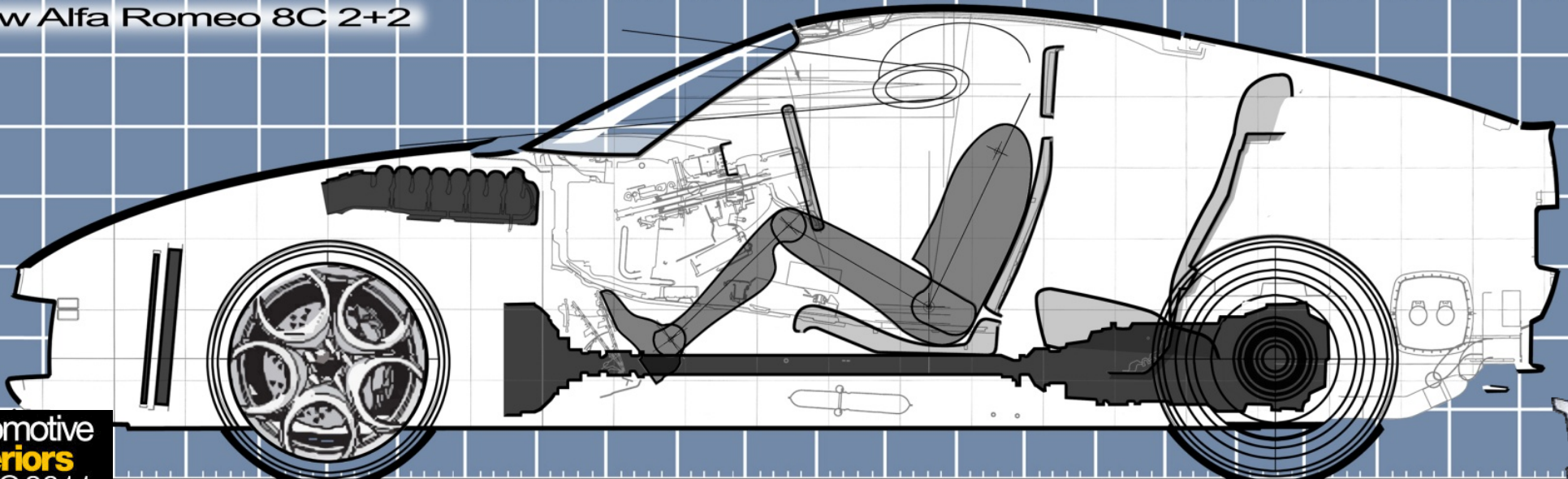
Package Design



Wheelbase	2650mm
Length	4354mm
Width	2100mm
Height	1320mm

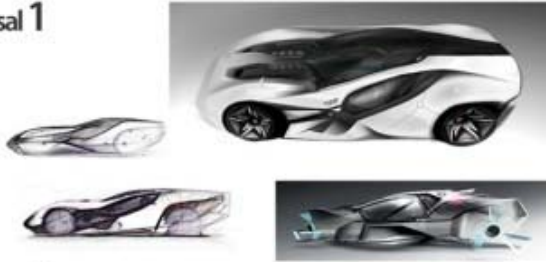


New Alfa Romeo 8C 2+2



FIRST Presentation

Proposal 1



1

Proposal 2



2

Proposal 3



3

SELECTED



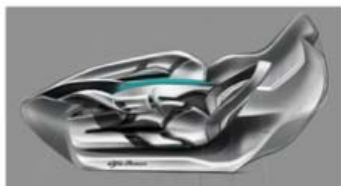
FIRST Presentation

Proposal 1



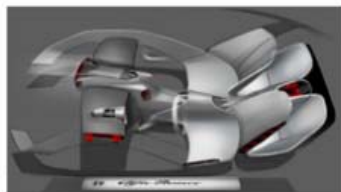
1

Proposal 2



2

Proposal 3

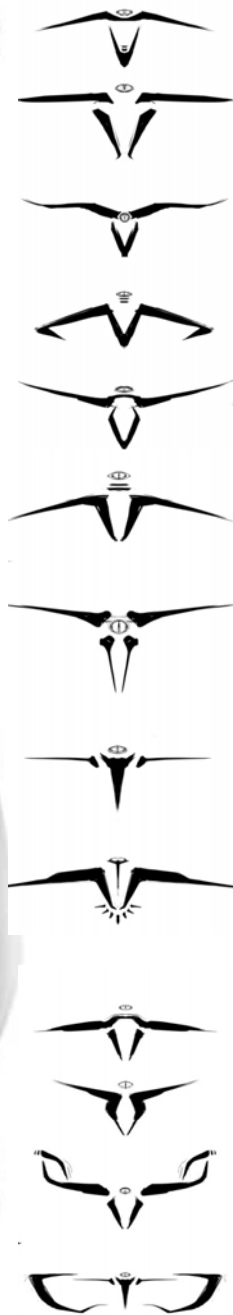


3





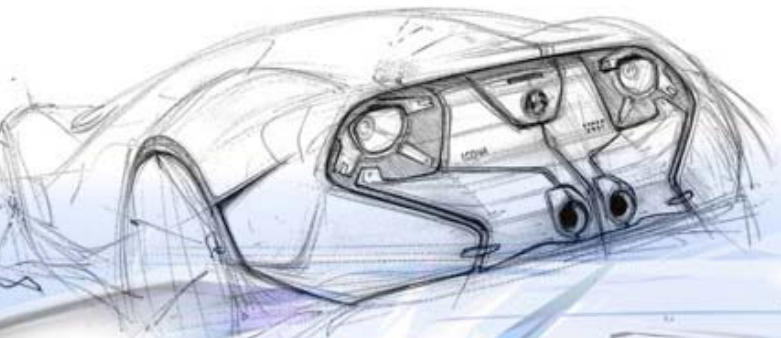
FRONT Research

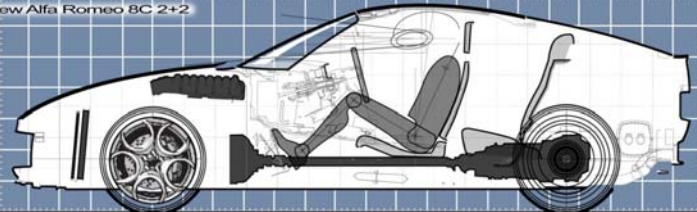


Icona

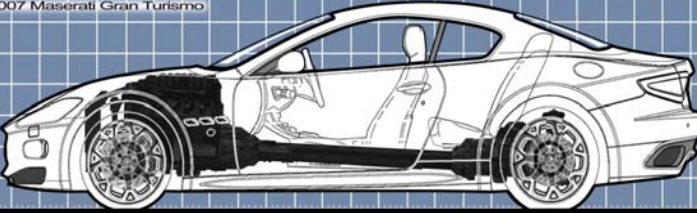


REAR Research

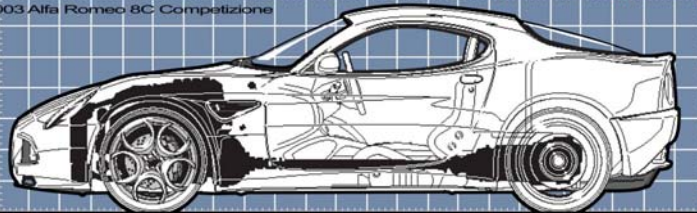




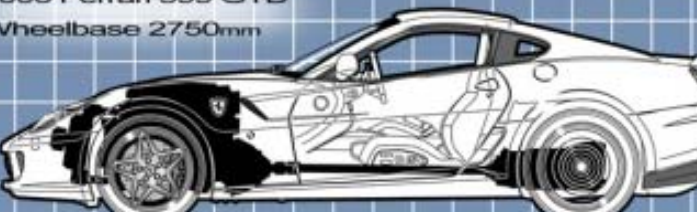
2007 Maserati Gran Turismo



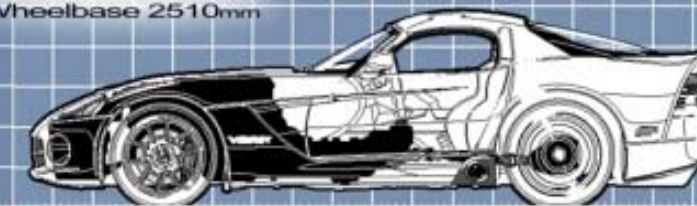
2003 Alfa Romeo 8C Competizione



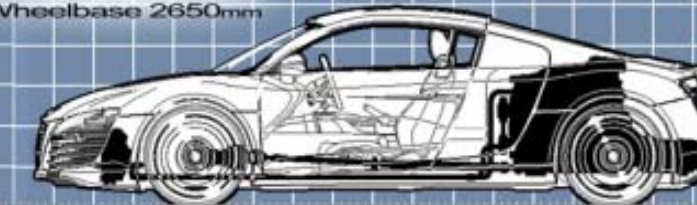
2006 Ferrari 599 GTB
Wheelbase 2750mm



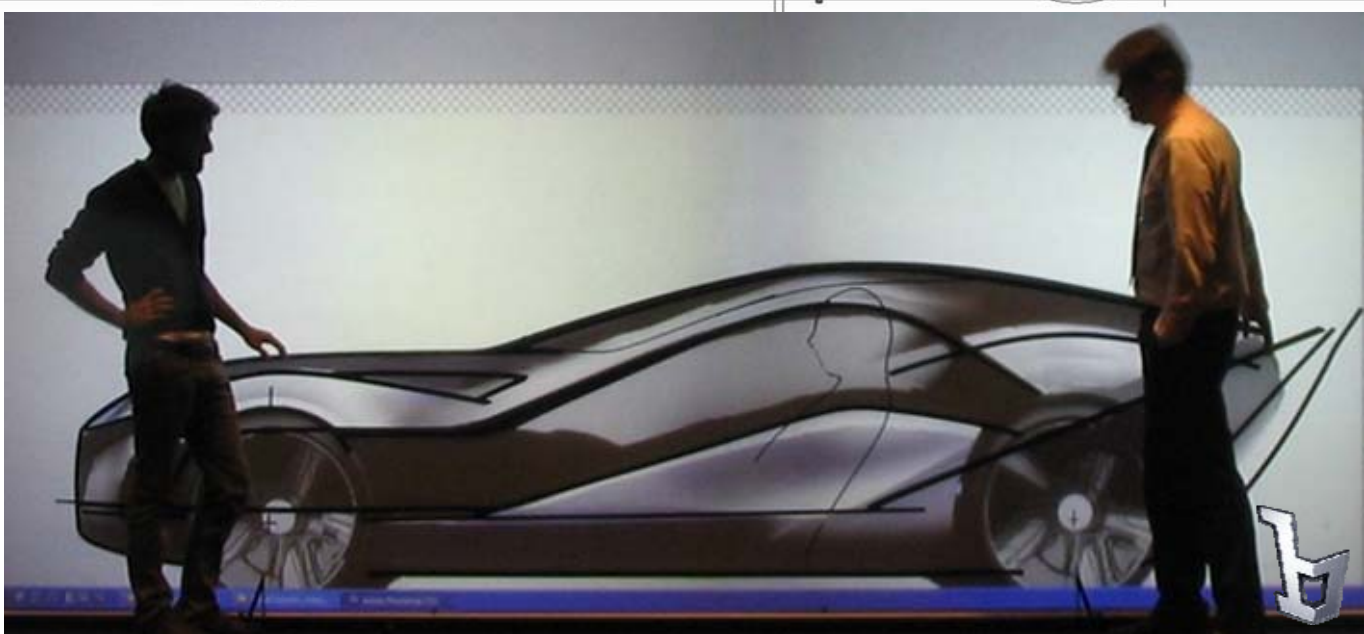
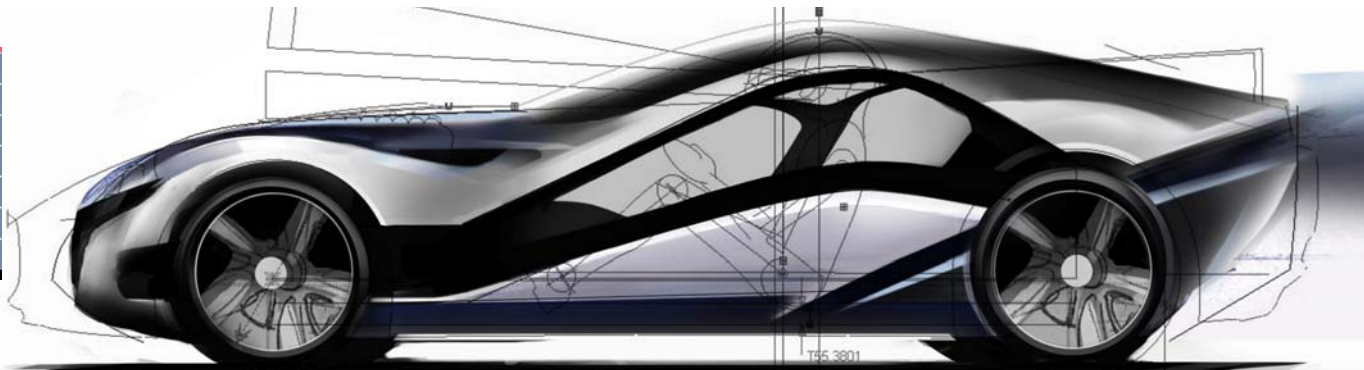
2003 Dodge Viper
Wheelbase 2510mm



2006 Audi R8
Wheelbase 2650mm



PACKAGE Research





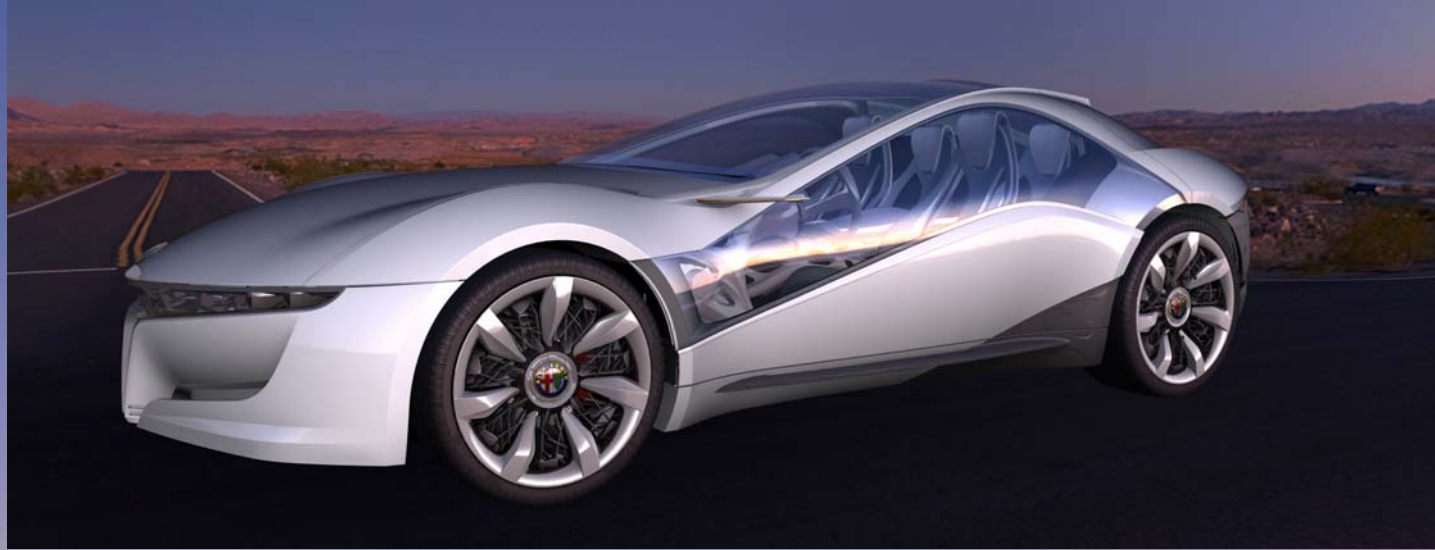


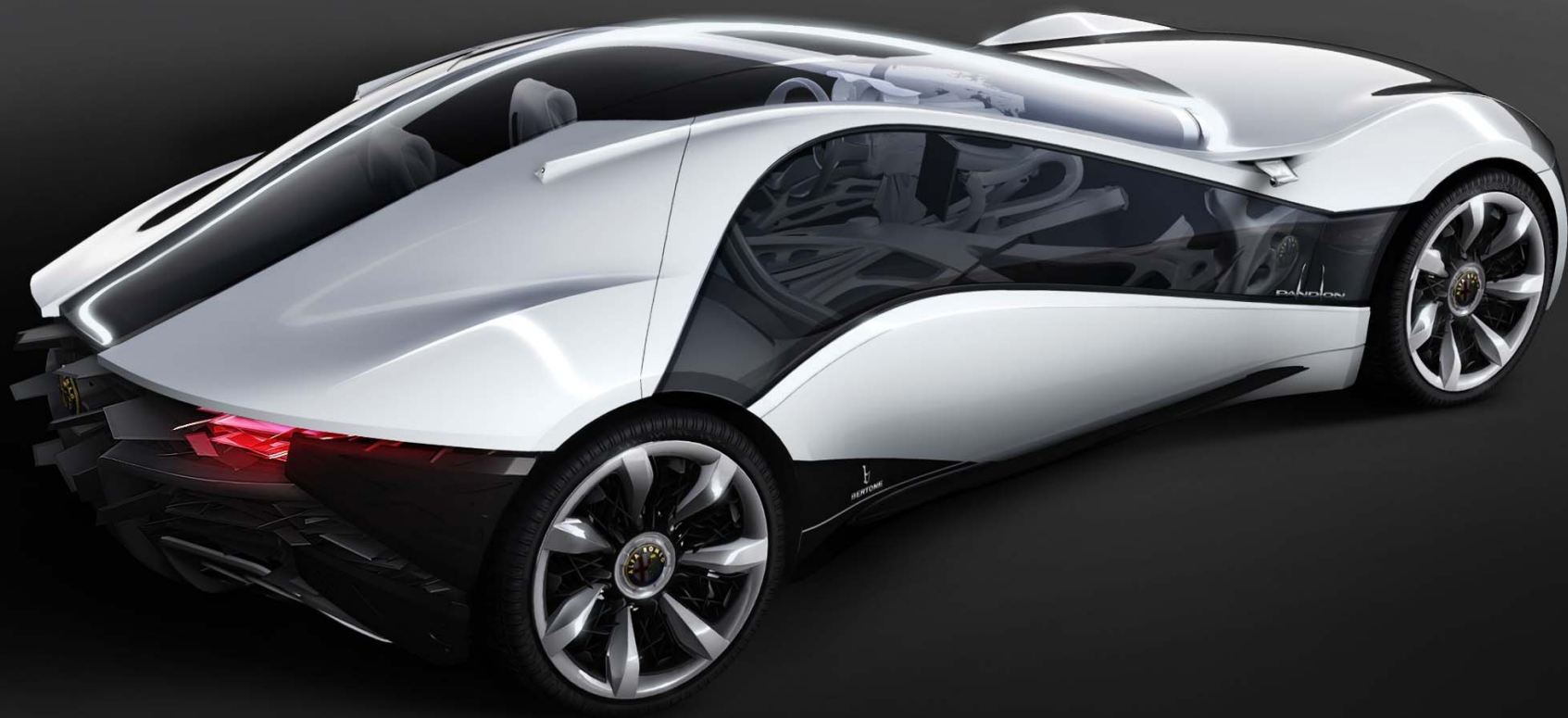
VIRTUAL MODEL DEVELOPMENT
SECOND CLIENT PRESENTATION

DICEMBER 15

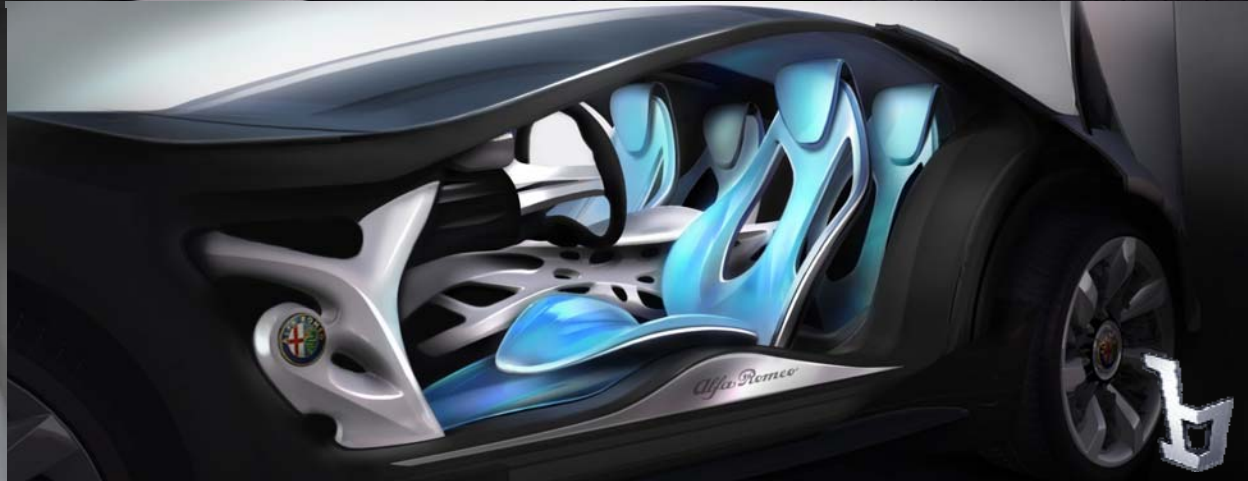
CAS ANALYSIS IN VIRTUAL REALITY ROOM













PHYSICAL MODEL DEVELOPMENT
THIRD (FINAL) CLIENT PRESENTATION
JANUARY 8
FULL SIZE EXTERIOR & INTERIOR MODELS



1:4 SCALE MODEL



FULL SIZE MILLING



FULL SIZE REFINEMENT



PRESENTATION TO:
ALFA CEO
FIAT DESIGN VP

SEATING BUCK



FULL SIZE MILLING

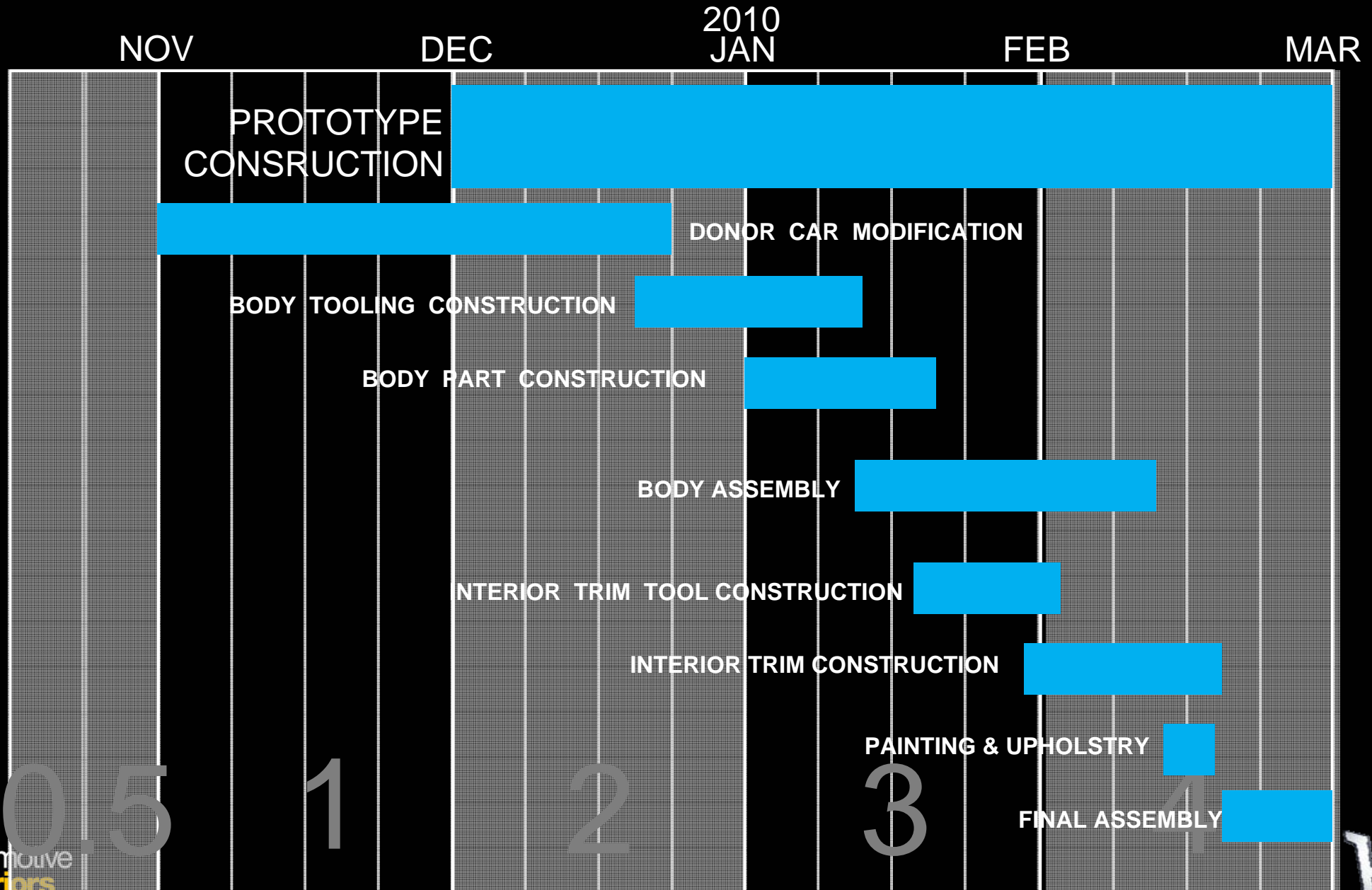


FULL SIZE REFINEMENT



INTERIOR DESIGN MOCK-UP

ALFA ROMEO PANDION – CONCEPT CAR GENEVA 2010



MASERATI GT DONOR CAR



PROTOTYPE SHOP



WHEELBASE WAS SHORTENED 300MM



CARBON FIBER DOORS IN MOLDS



EPOWOOD CONSOLE



SOFT-GEL MOLDS



MILLING SOLID ALUMINIUM



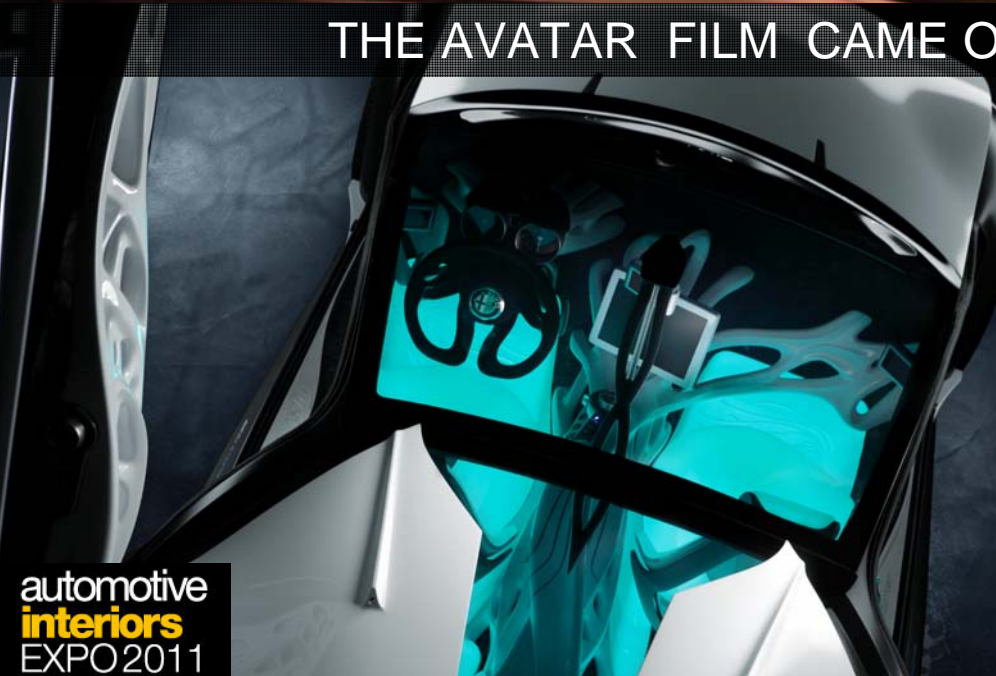
RETRO-ILLUMINATED GEL SEATS AND FLOOR



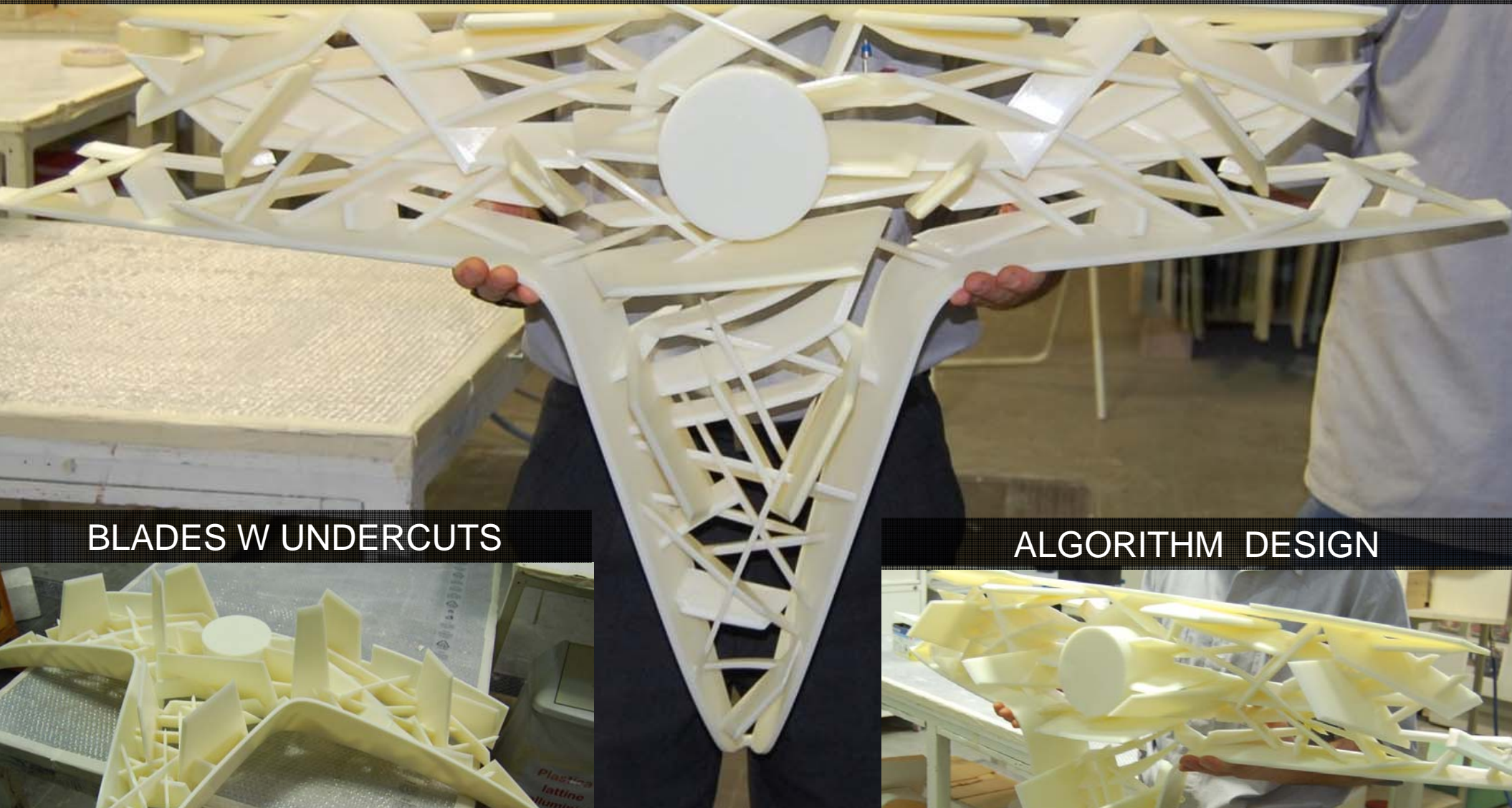
EXPERIMENTATION PHASE



THE AVATAR FILM CAME OUT 6 MONTHS AFTER PANDION



VERY EXPENSIVE STEREO LITHOGRAPHY



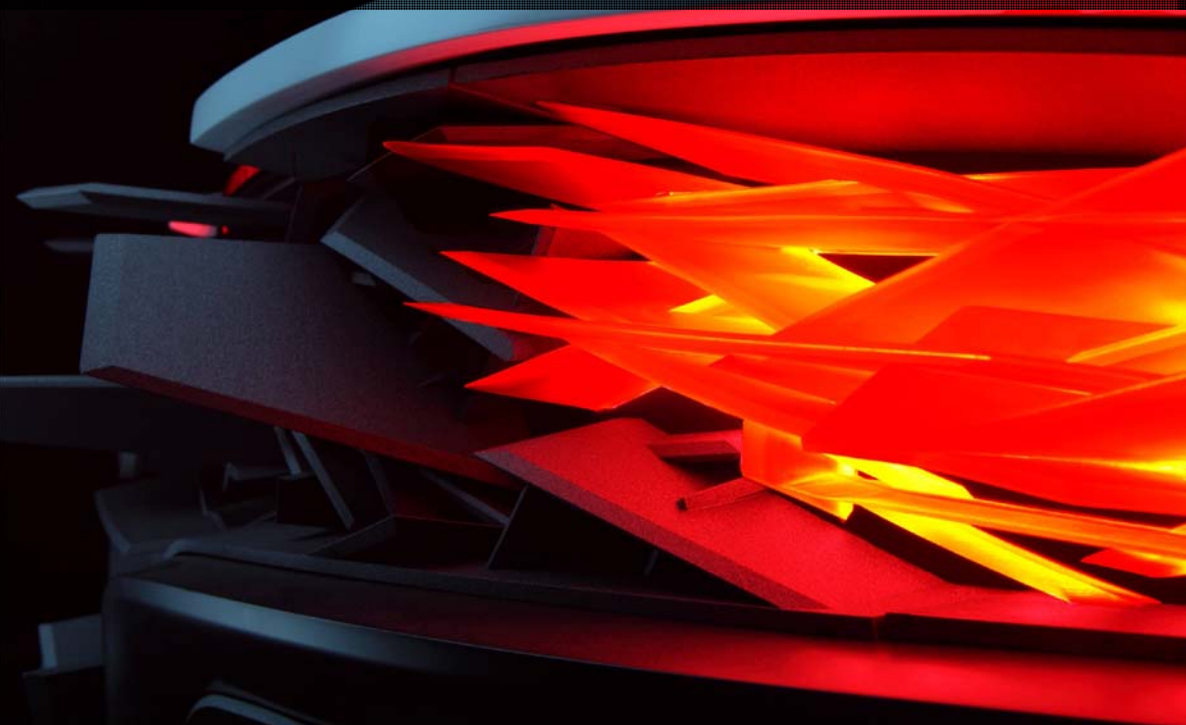
BLADES W UNDERCUTS



ALGORITHM DESIGN



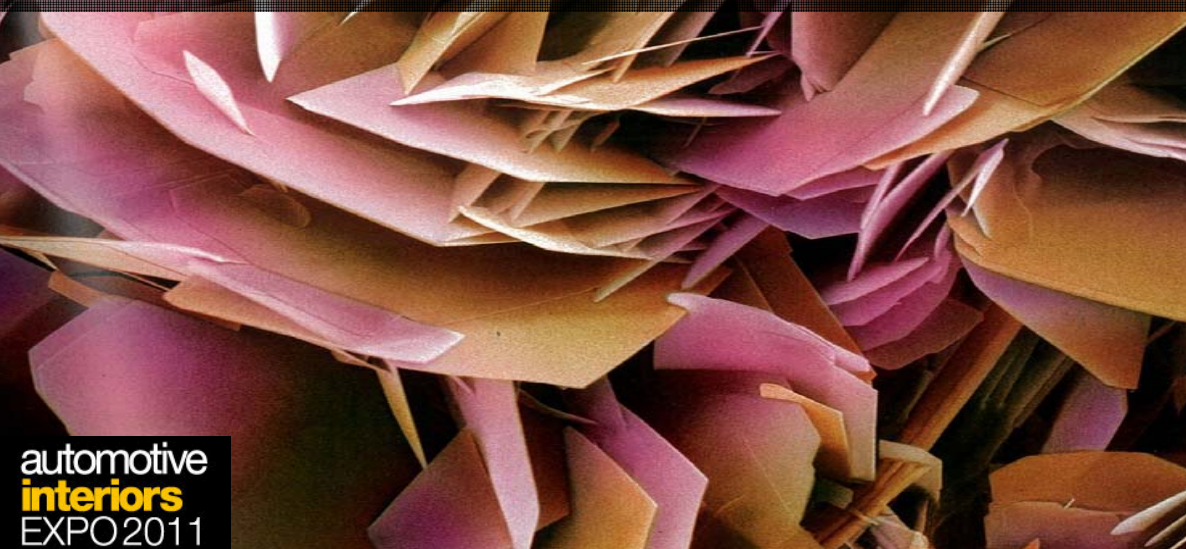
WORLD'S MOST BEAUTIFUL TAILLIGHTS



FROSTED ICE CRYSTALS



QUARTZ CRYSTALS UNDER A MICROSCOPE



LED LIGHT POWERS BLADES



REAR BUMPER



SIDE IMPACT PROTECTION



NEW ALFA GRILL



FINAL ASSEMBLY IN THE PROTOTYPE SHOP



LOADING THE COMPLETED CAR ONTO THE TRUCK



GROUP PHOTO AFTER MIDNIGHT



MODEL SELECTION IS TOUGH WORK



BERTONE DESIGNED OUTFIT



CONCLUSIONS



ADVANTAGES

- Last minute theme selection
- Less time taken away from production projects
- Creatives and management are forced to make their research and their decisions faster, invites more serendipity
- Full emersion, high intensity projects generate great teamwork – with designers, modelers, and engineers
- Results are immediate – you don't have to wait 3-4 years for feedback from the public like in production projects
- In the press, all concept cars are given equal chance to shine, regardless of development time or cost – some do, some don't



RISKS

- design gets one shot and it must be good
- all green lights are mandatory during development
- research can be reduced if you don't have clear ideas
- full runners add extra complications to prototyping
- often performance is reduced:
 - wheels were milled and welded
 - chassis was shortened 300mm
 - drive shaft was shortened and rewelded
 - gas tank was eliminated and replaced with a small one
 - HVAC was eliminated and replaced with a tiny air cond.
 - engine ECU go haywire and limit max speed to 80kmh
- no total vision of the vehicle until it goes onto the truck
- system testing is always limited
- teamwork under **stress** can create volatile reactions
- no time for photo shoots or test drives
- These deadlines are not flexible – no mercy



What it takes

The overall Pandion project was designed, engineered and constructed in 30,000 hours total: 20,000 for the shops and 10,000 for design and engineering.

Design team: all 15 designers participate initially while only 5 finish the project: 2 exterior, 2 interior, and 1 Color & Trim.

5 Engineers and 5 CAS also contributed to the project.

30 people in the shops worked on the car: Plaster exterior modeling, Clay interior modeling,, Milling, Upholstery, Paint, Trim, Headlight shop, Prototype construction

An average of 15-20 years of prototype construction experience in the shops

Planning control organization – limiting overtime wastes



Recent Bertone Prototype Projects



Alfa Pandion (2010) – 30,000 hours – 4 ½ months



FAW X SUV (2011) – 20,000 hours - 5 months



Jaguar B99/B99GT (2011) – 12,000 hours – 4 months



THANK YOU

