

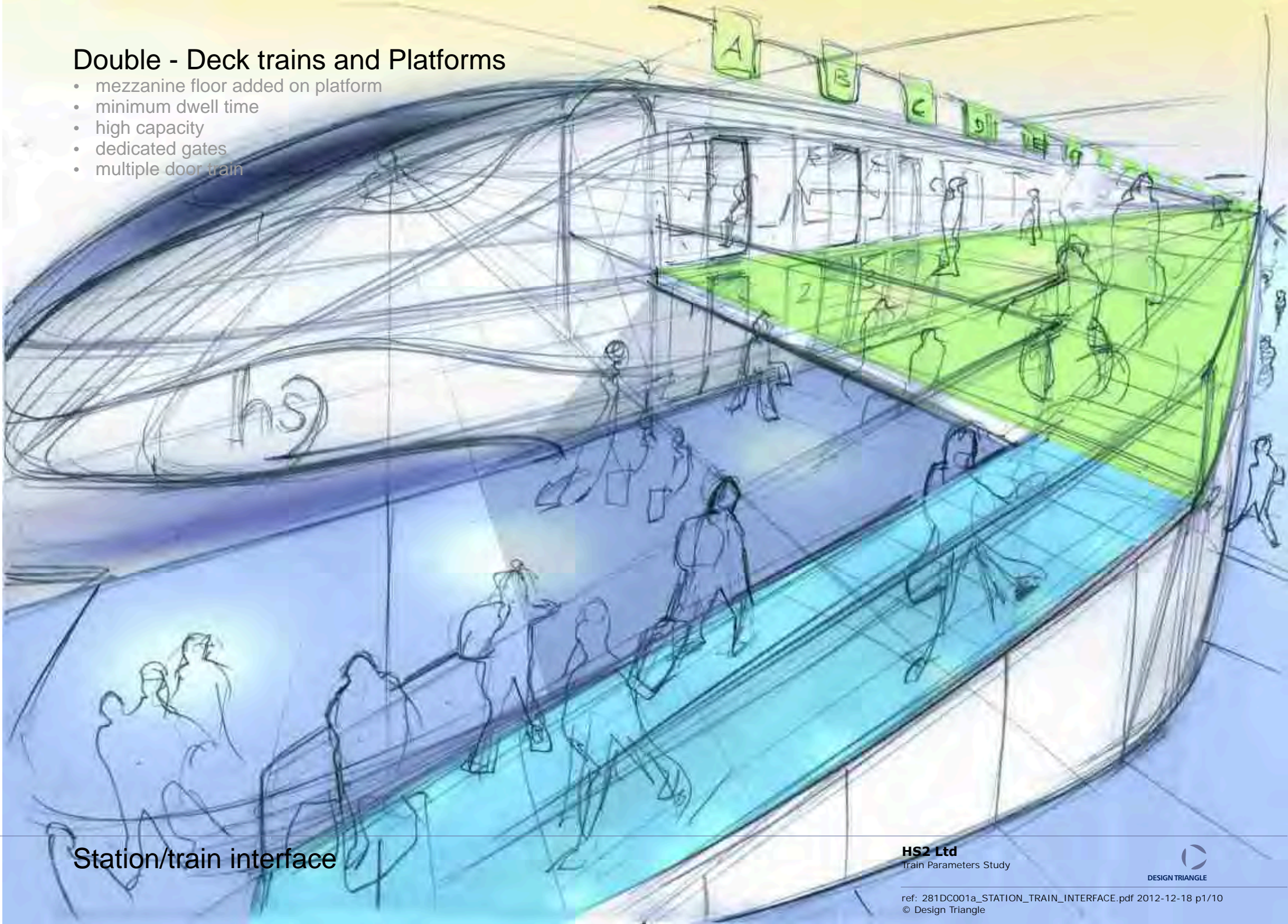


## ANNEX A – CONCEPT SKETCHES

- 281DC001a\_STATION\_TRAIN\_INTERFACE.pdf
- 281DC002d\_INTERIOR\_IDEAS.pdf
- 281DC003a\_EXTERIOR\_IDEAS.pdf
- 281DC004a\_SEATING\_IDEAS\_MISC.pdf
- 281DC007a\_EXTERIOR\_DEV.pdf
- 281DC008b\_BRAND\_POSITIONING\_DRAFT.pdf
- 281DC012a\_EXTERIOR\_HERO\_DRAFT.pdf
- 281DC013a\_INTERIOR\_OPTIONS.pdf
- 281DC014a\_CATERING\_IDEAS.pdf
- 281DC019a\_ZONES.pdf
- 281DC020a\_SEAT\_MISC.pdf

## Double - Deck trains and Platforms

- mezzanine floor added on platform
- minimum dwell time
- high capacity
- dedicated gates
- multiple door train



Station/train interface

**HS2 Ltd**  
Train Parameters Study

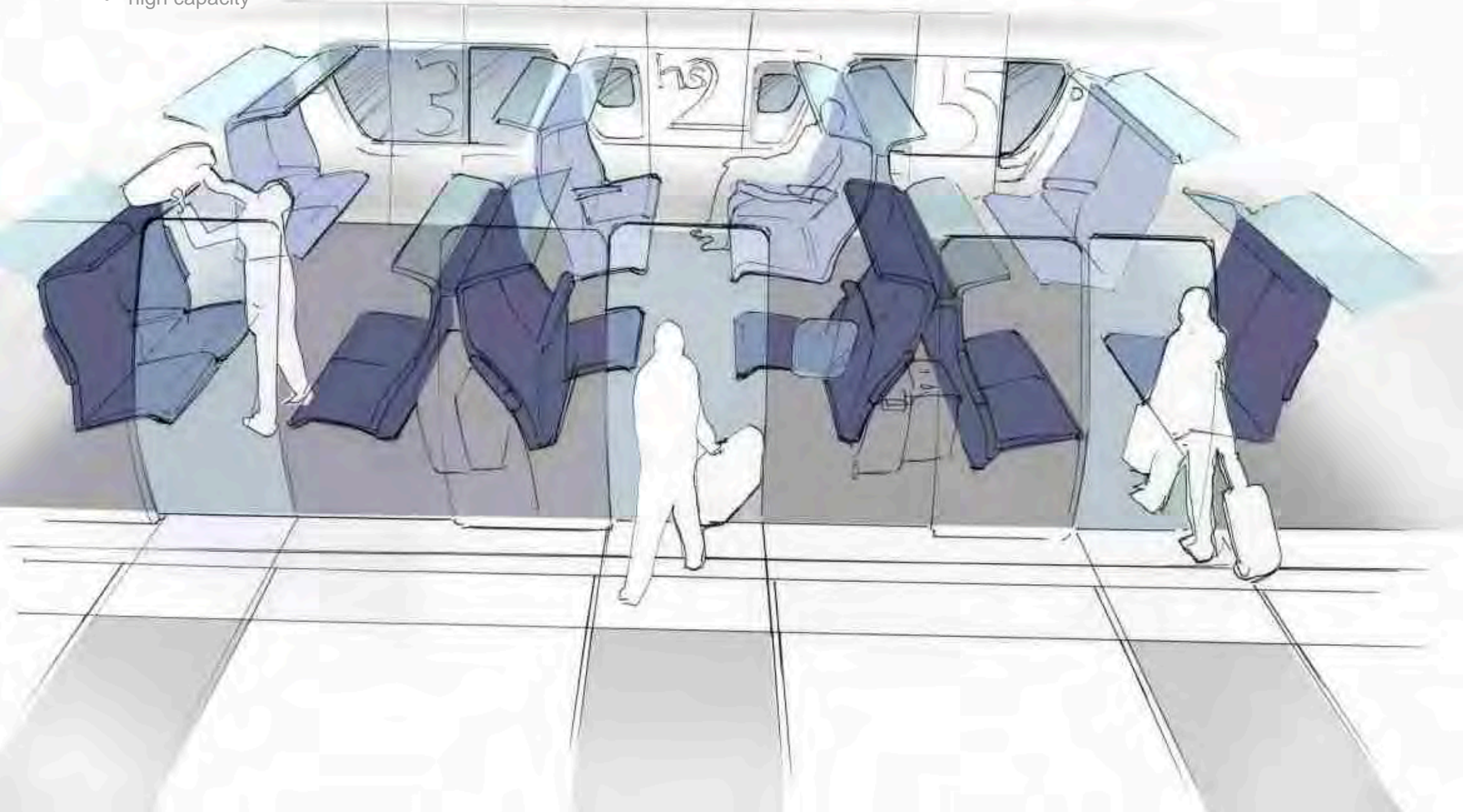
  
DESIGN TRIANGLE

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## Multiple doors

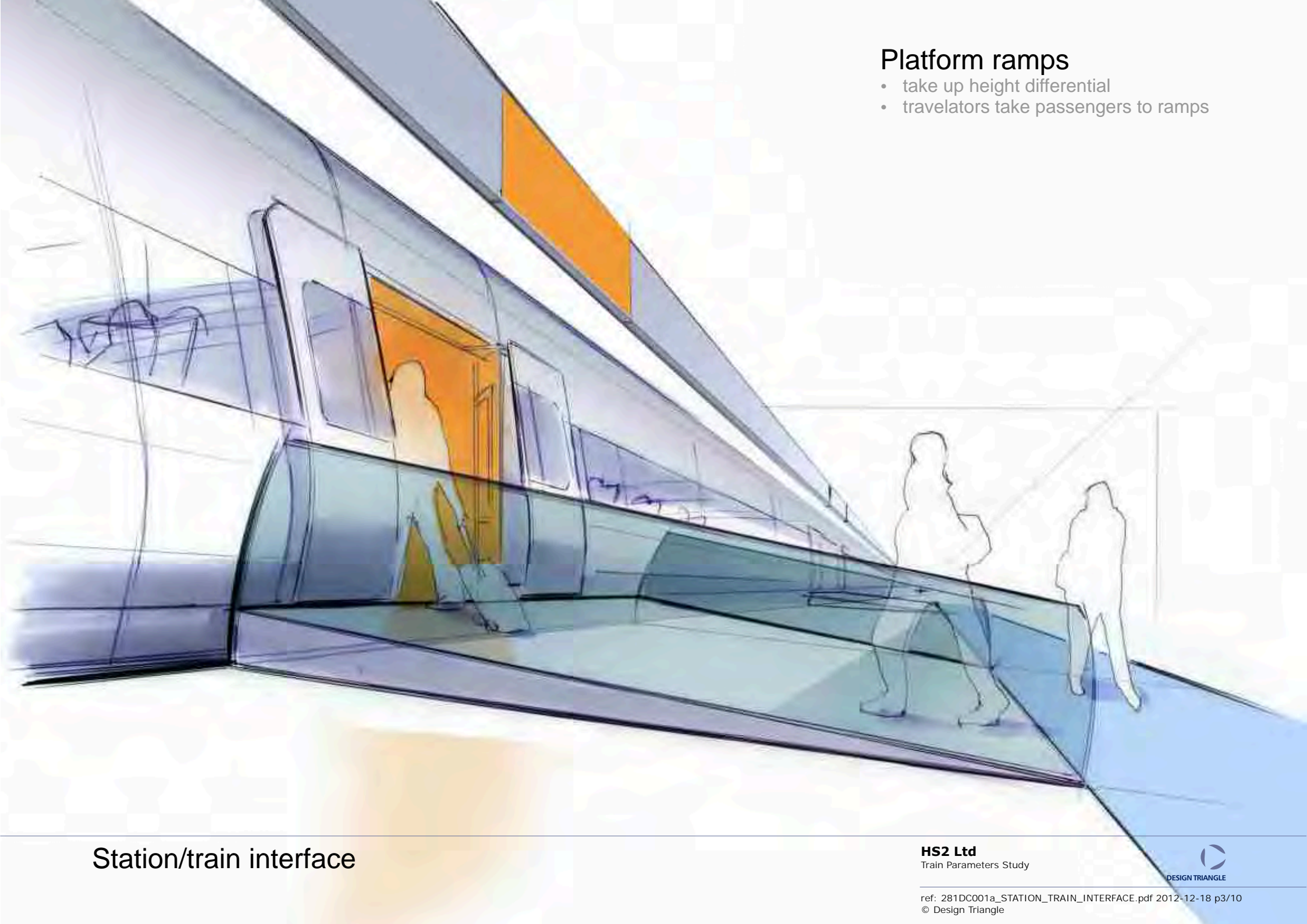
- minimum dwell time
- high capacity



Station/train interface

## Platform ramps

- take up height differential
- travelators take passengers to ramps



Station/train interface

**HS2 Ltd**  
Train Parameters Study

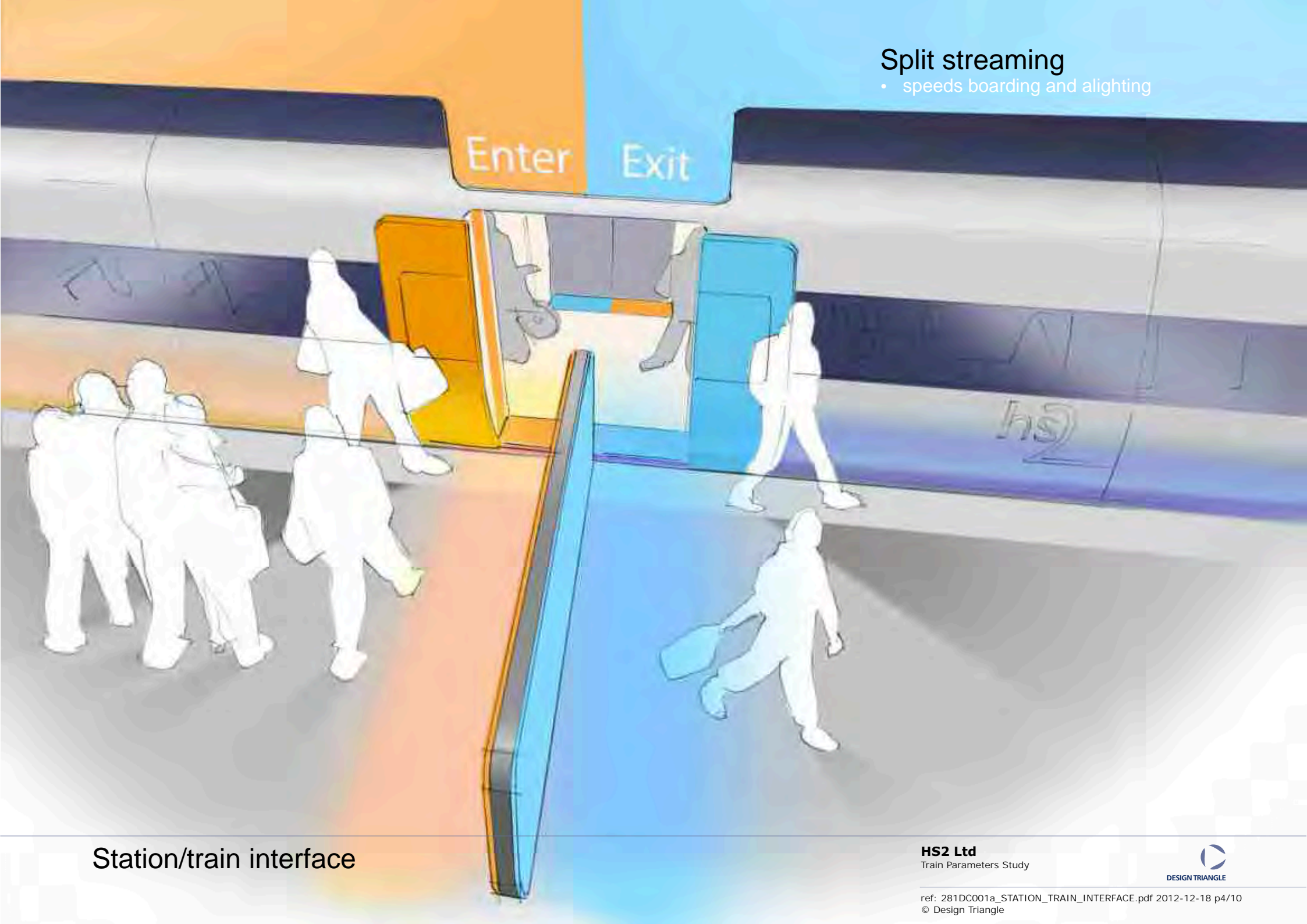


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## Split streaming

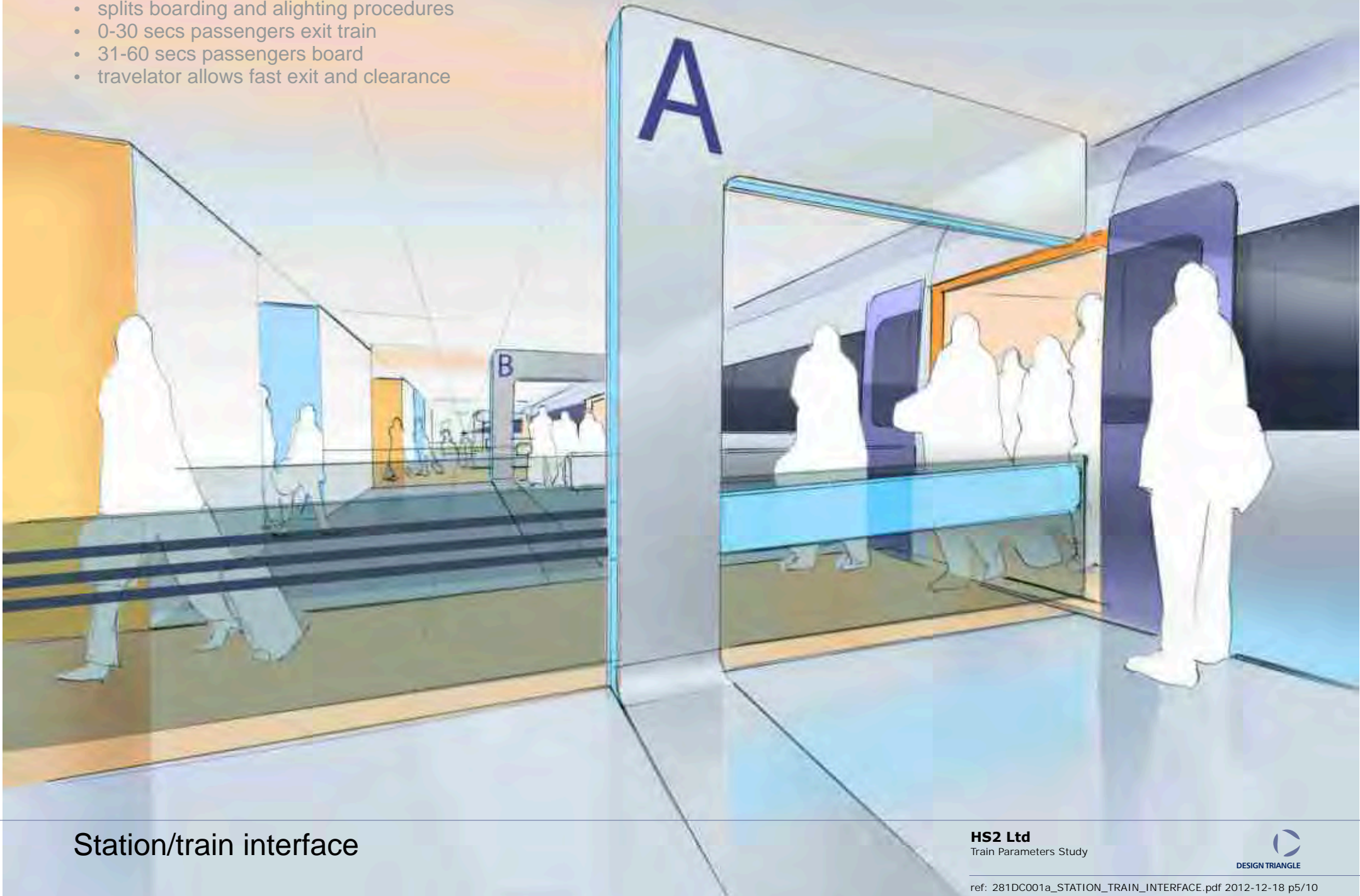
- speeds boarding and alighting



## Station/train interface

## Boarding gates

- splits boarding and alighting procedures
- 0-30 secs passengers exit train
- 31-60 secs passengers board
- travelator allows fast exit and clearance



## Station/train interface

**HS2 Ltd**  
Train Parameters Study

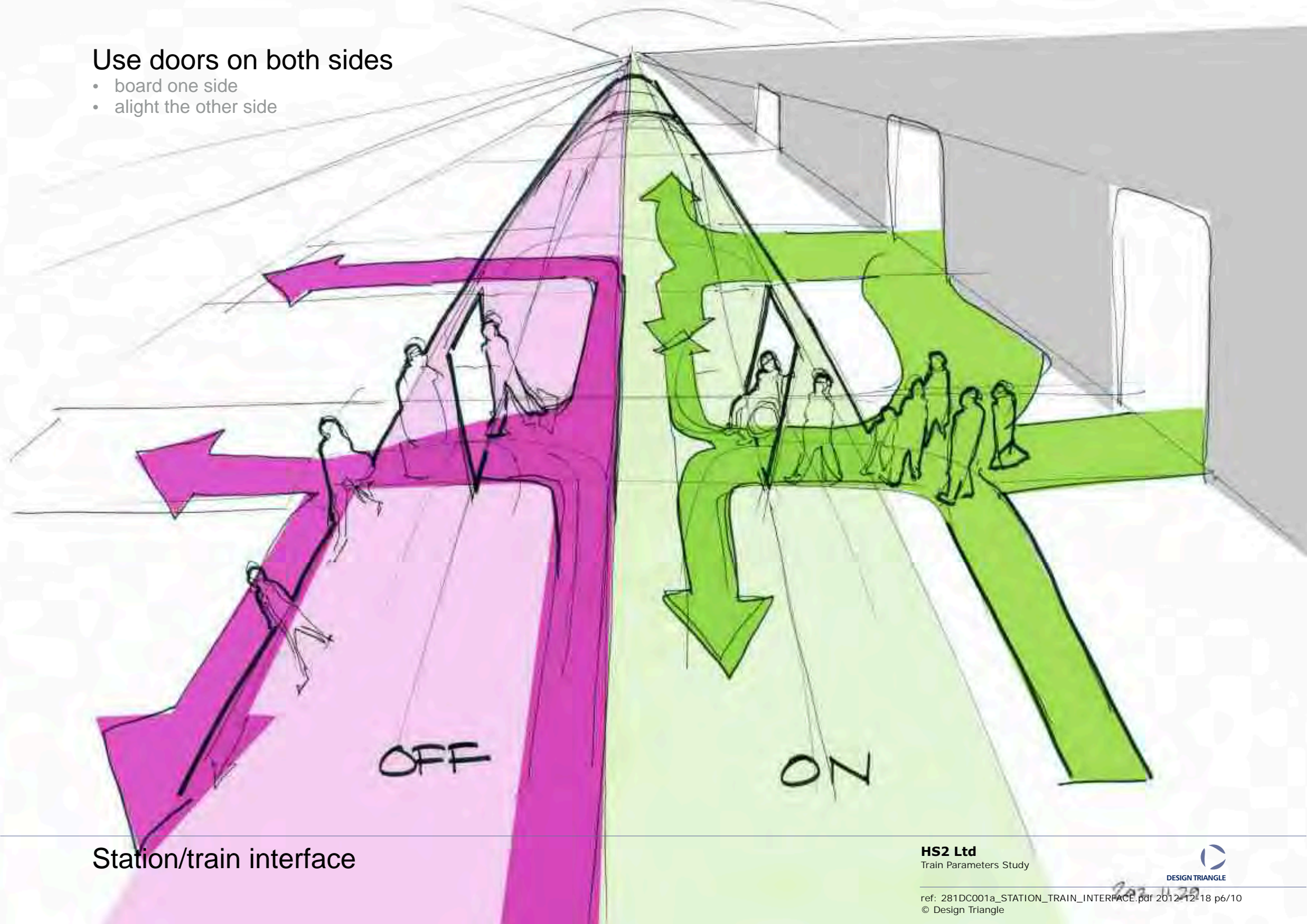


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## Use doors on both sides

- board one side
- alight the other side

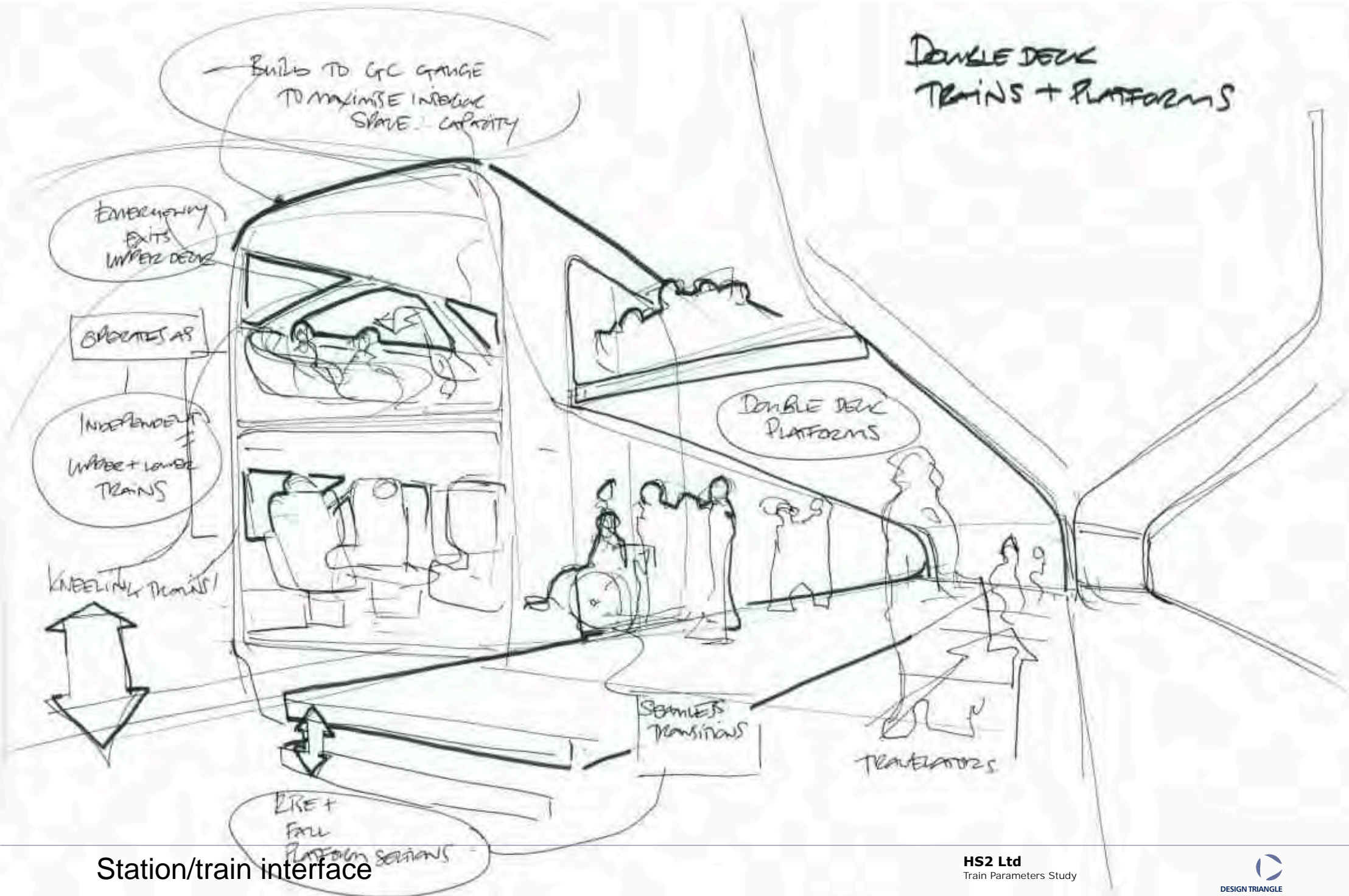


Station/train interface

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## Station/train interface



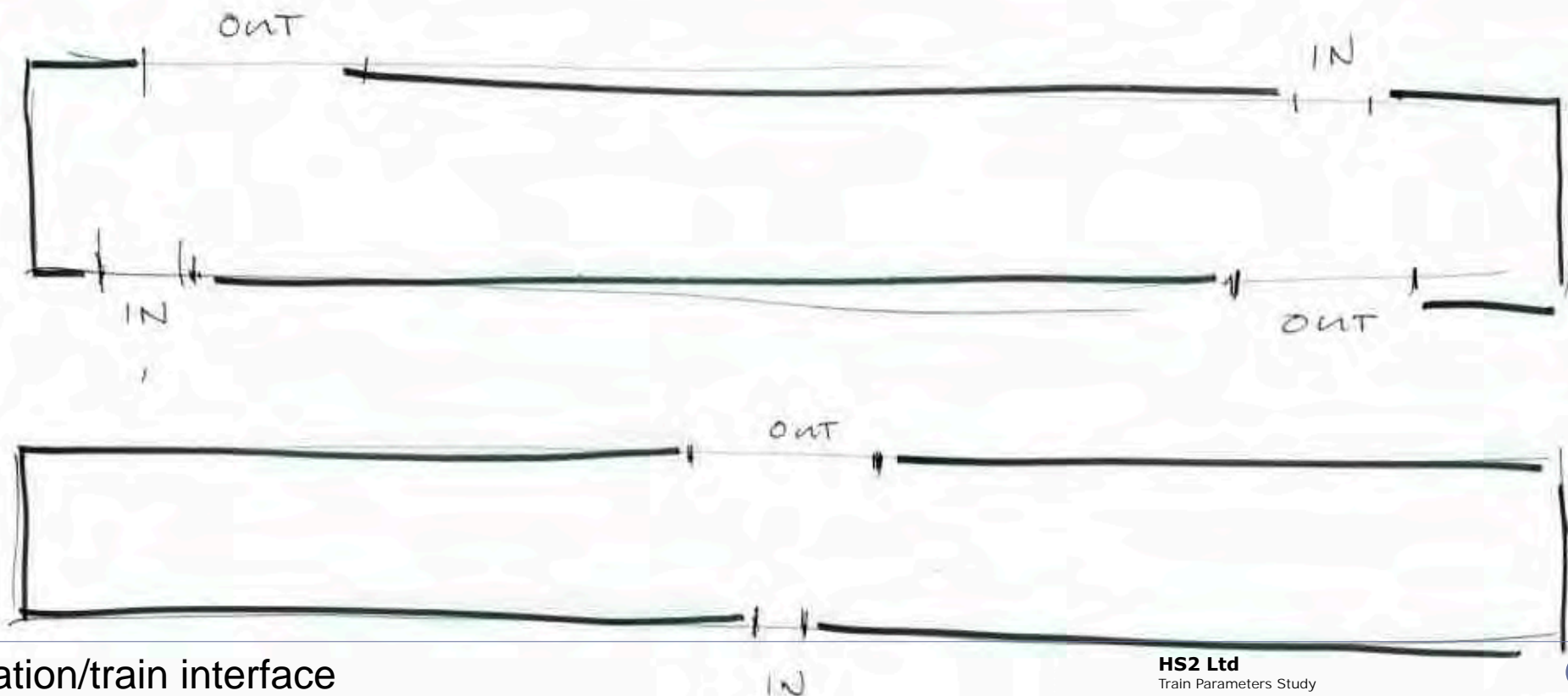
Lombard

Symmetrical train?

Brian



entry/exit



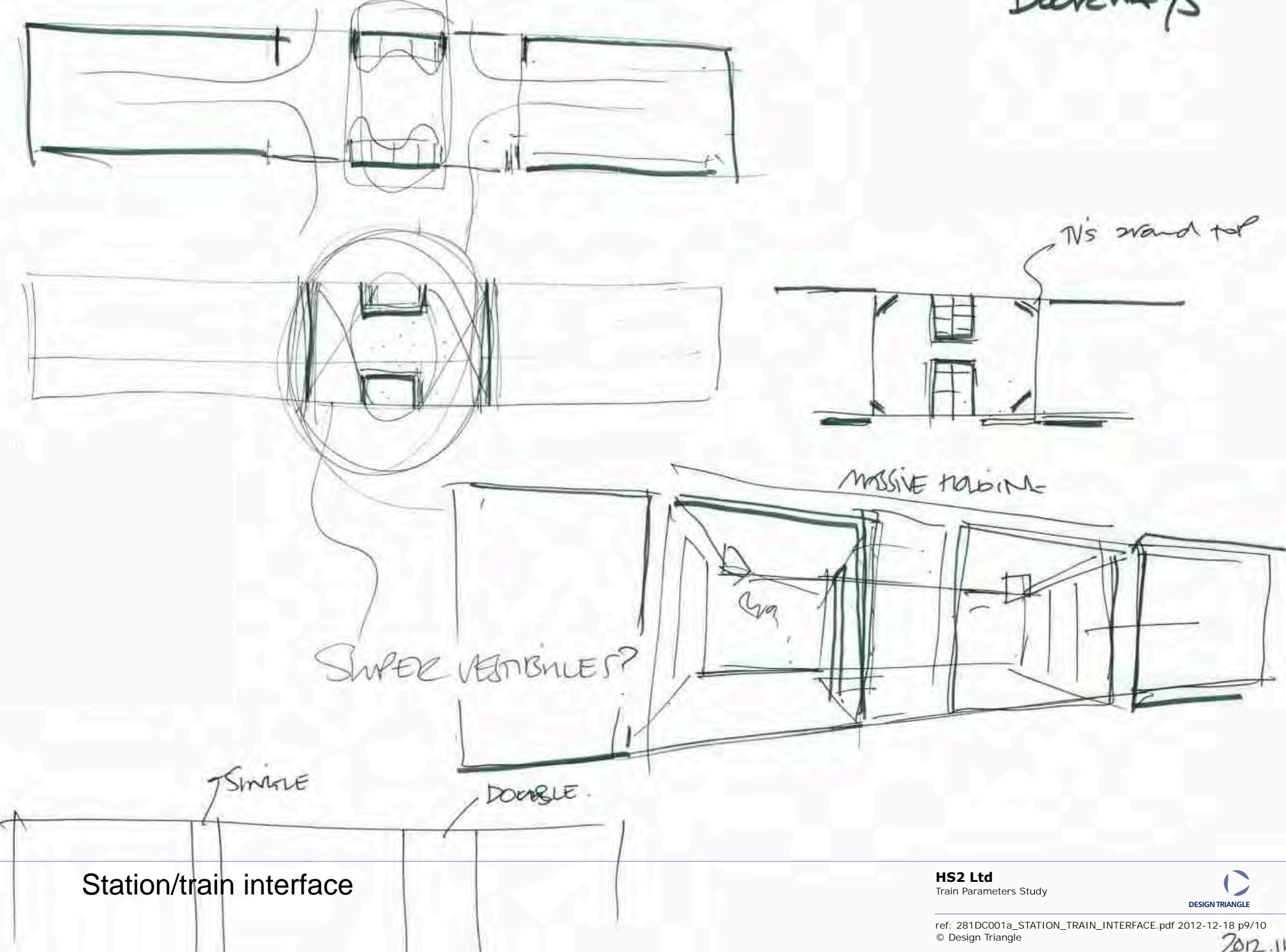
Station/train interface

HS2 Ltd  
Train Parameters Study

DESIGN TRIANGLE

2012.11.30

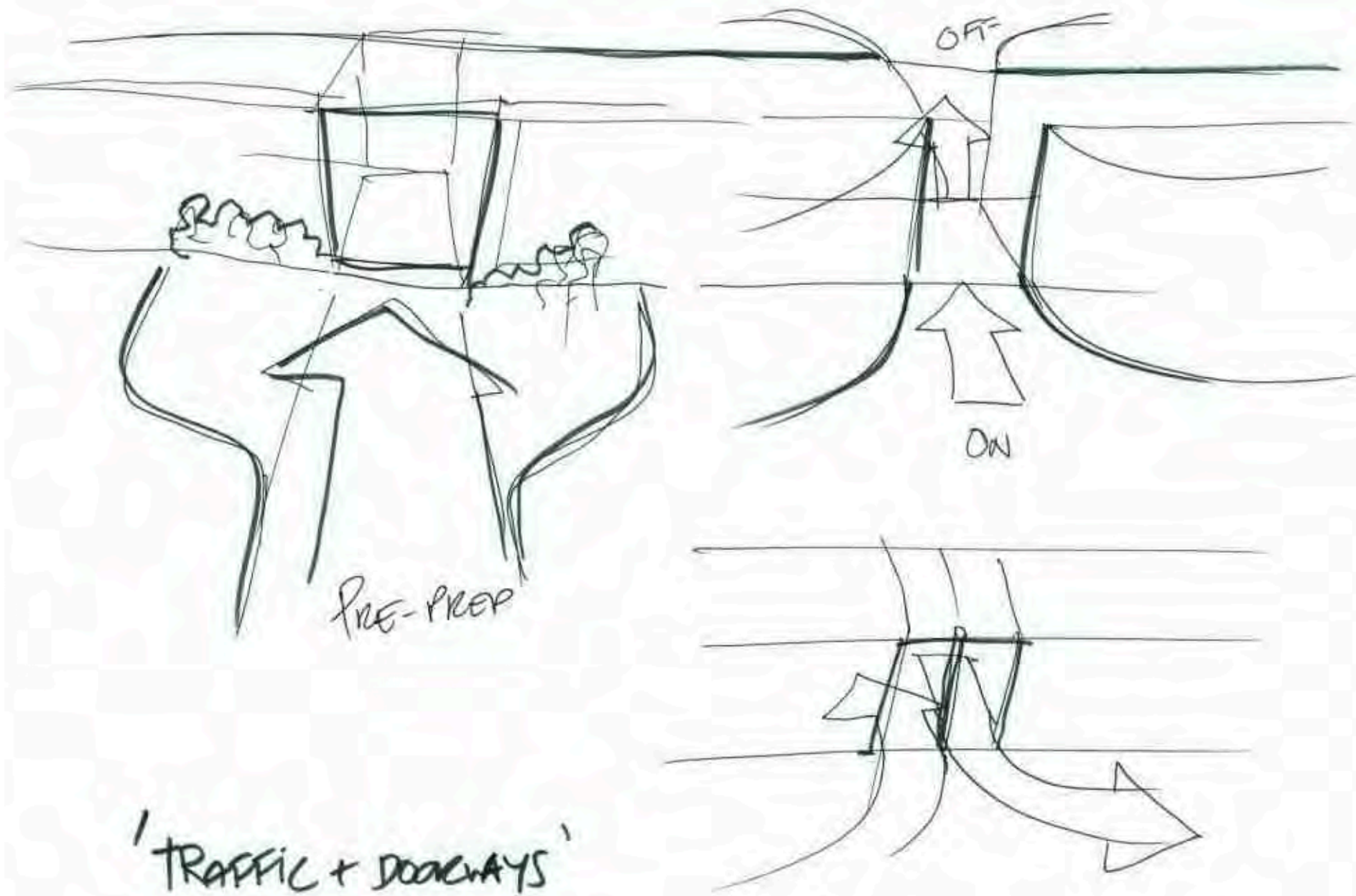
December 13



Station/train interface

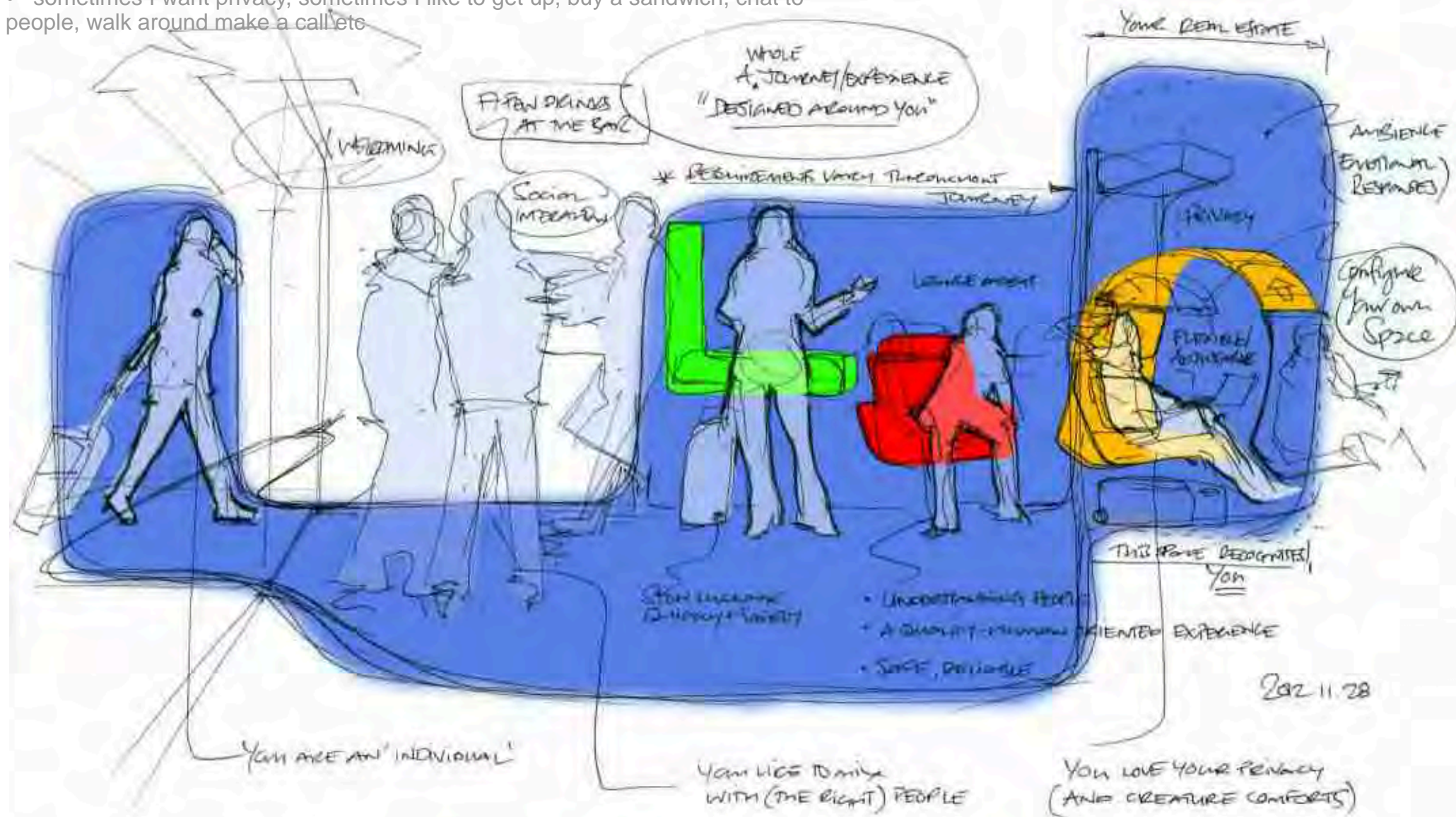
2012.11.30





## Your requirements vary throughout your journey

- Create a whole journey experience 'designed around you'
- why do I need to stay in one place?
- why do I need a seat if I actually stand at the bar for a lot of the journey?
- sometimes I want privacy, sometimes I like to get up, buy a sandwich, chat to people, walk around make a call etc

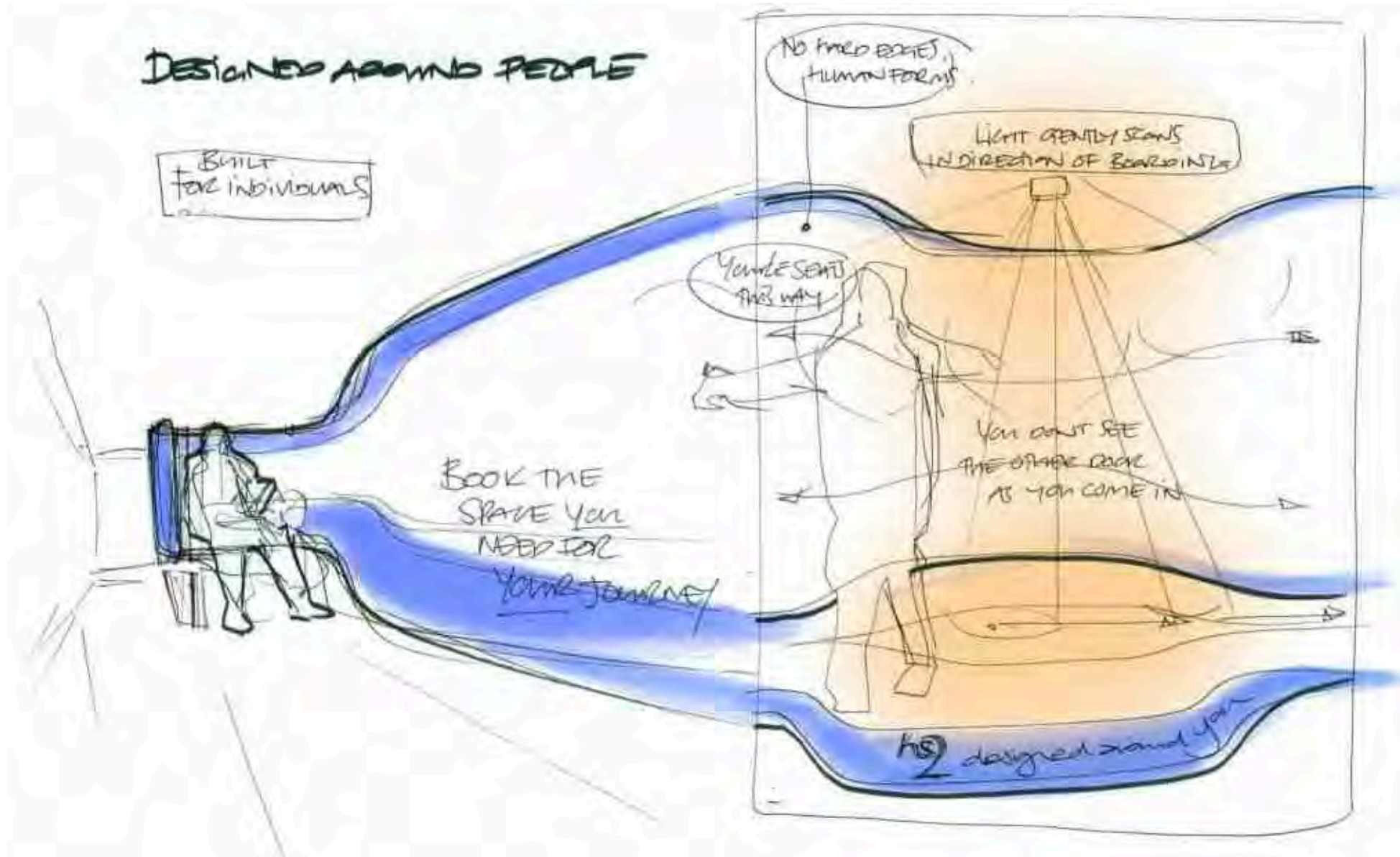


## Interior ideas



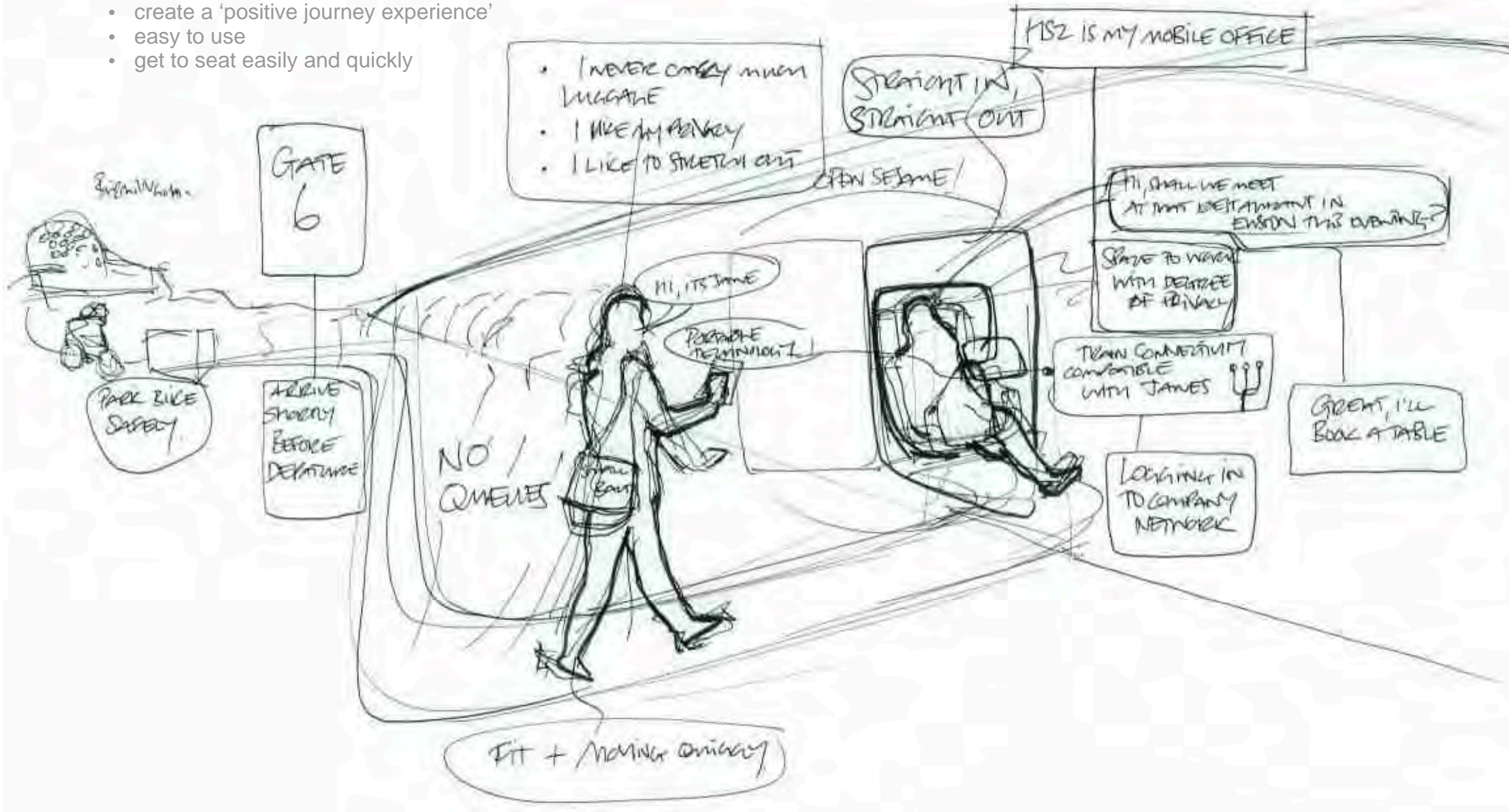
## hs2 'Designed Around People'

- built for individuals
- book the space you need
- 'designed around you' is the new (2010) Volvo philosophy



## Personas - Daily Commuter #1

- Jane 28
- think about the needs of the individual
- create a 'positive journey experience'
- easy to use
- get to seat easily and quickly

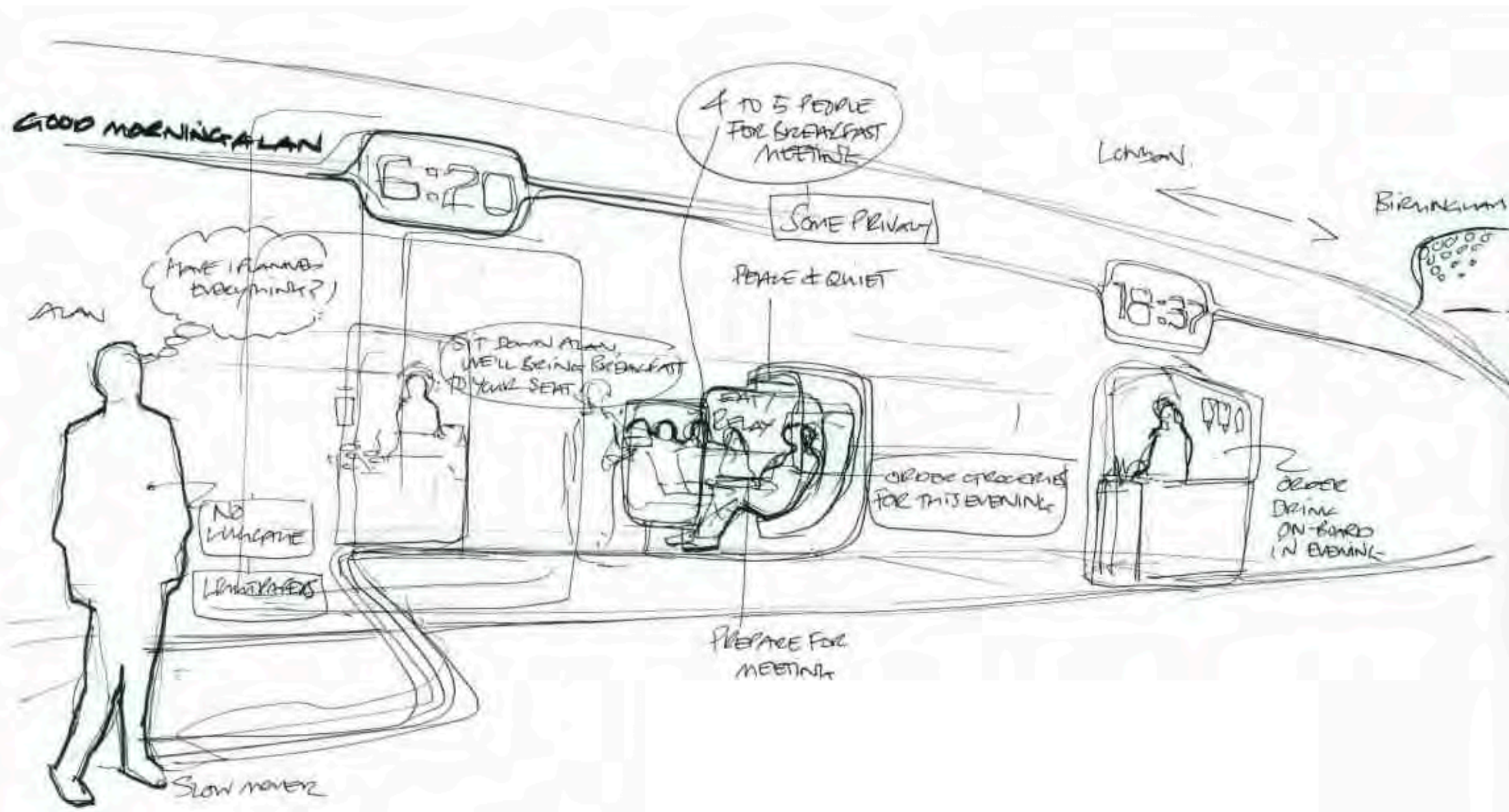


## Interior ideas



## Personas - Daily Commuter #2

• Alan 61



Interior ideas

HS2 Ltd  
Train Parameters Study

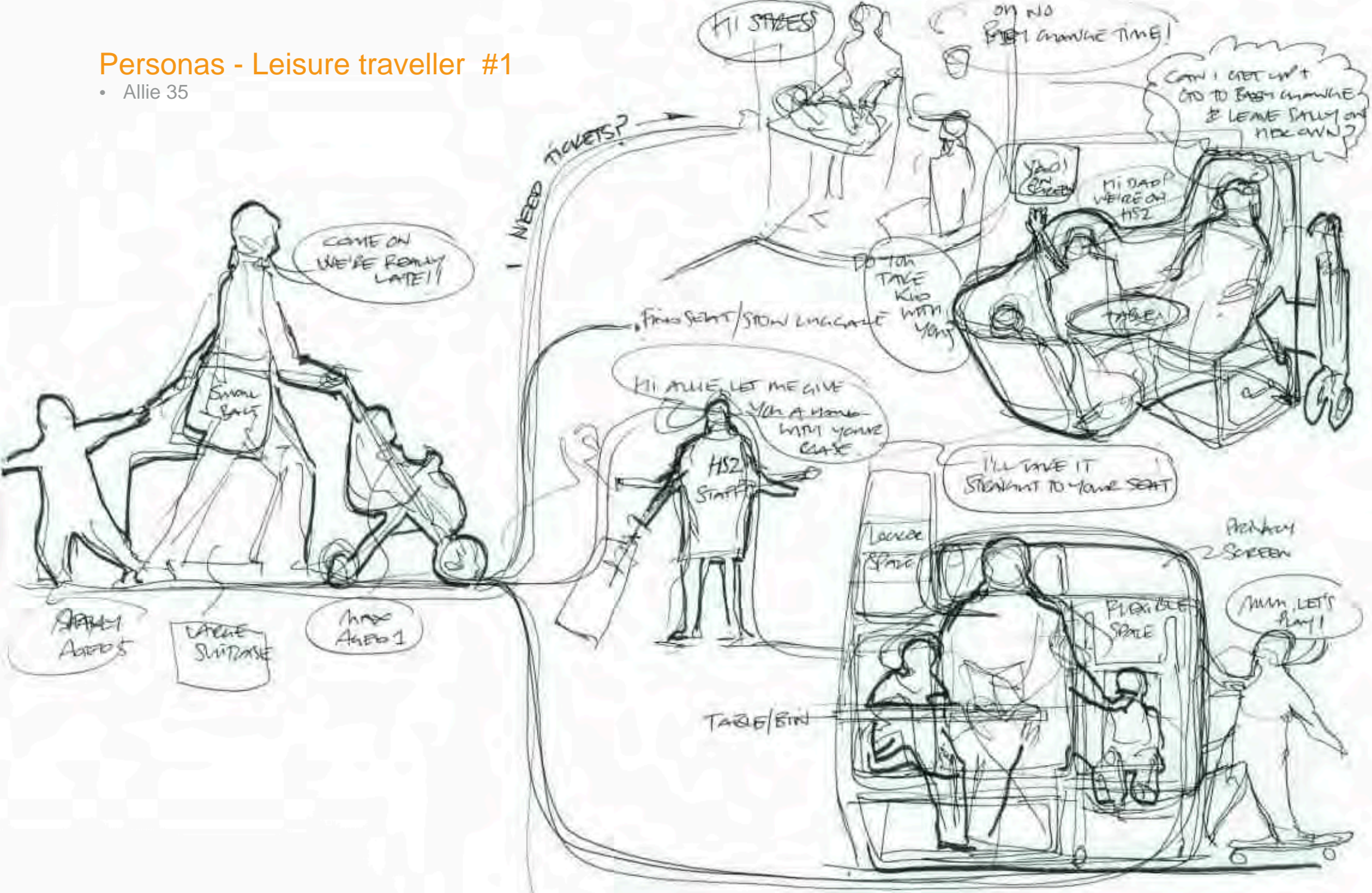


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# Personas - Leisure traveller #1

• Allie 35



Interior ideas

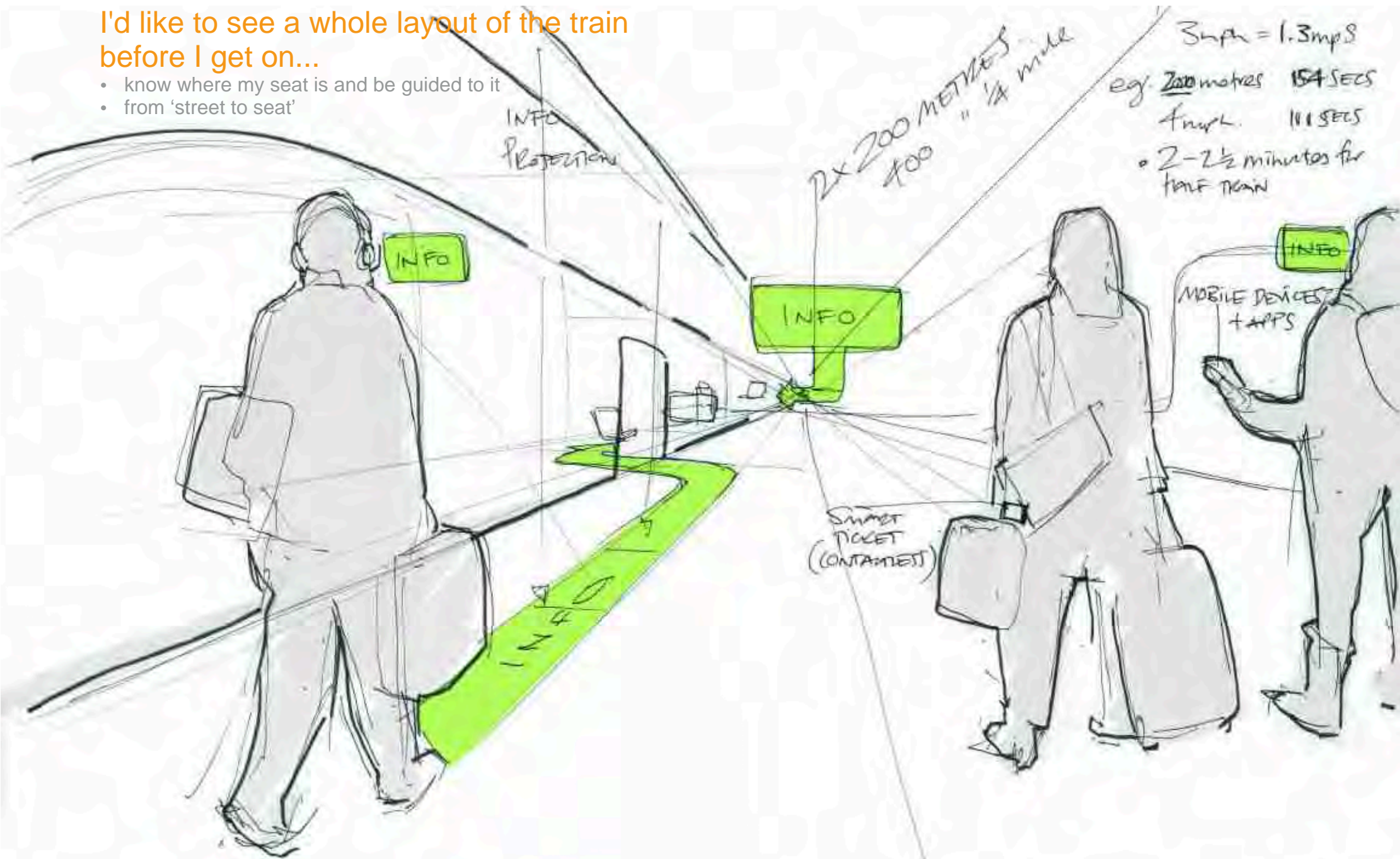
HS2 Ltd  
Train Parameters Study





I'd like to see a whole layout of the train  
before I get on...

- know where my seat is and be guided to it
- from 'street to seat'



Interior ideas

HS2 Ltd  
Train Parameters Study



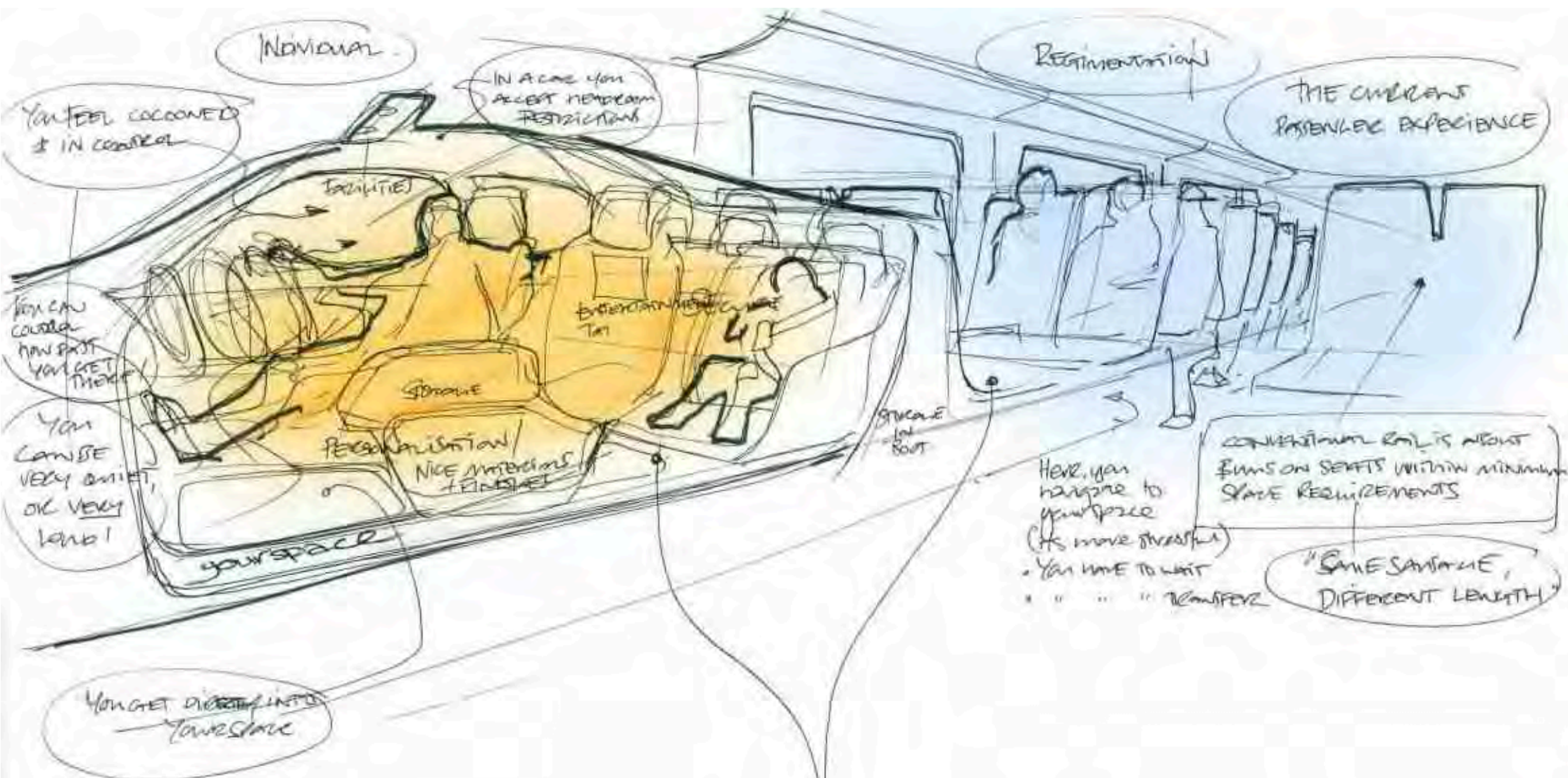
ref: 281DC002d\_INTERIOR\_IDEAS.pdf 2013-01-16 p6/73  
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- get rid of broom cupboard vestibules!
- create large welcoming hotel lobby style areas
- concierge/conductor welcoming and giving boarding directions
- when not in use, make door on opposite side appear like it's not a door

**HS2 Ltd**  
Train Parameters Study





## create 'Cars within Cars'

- accept reduced head and window space offered in car
- research and identify aspects of car travel that make it feel superior to rail
- avoid 'load of seats within a tube' layouts

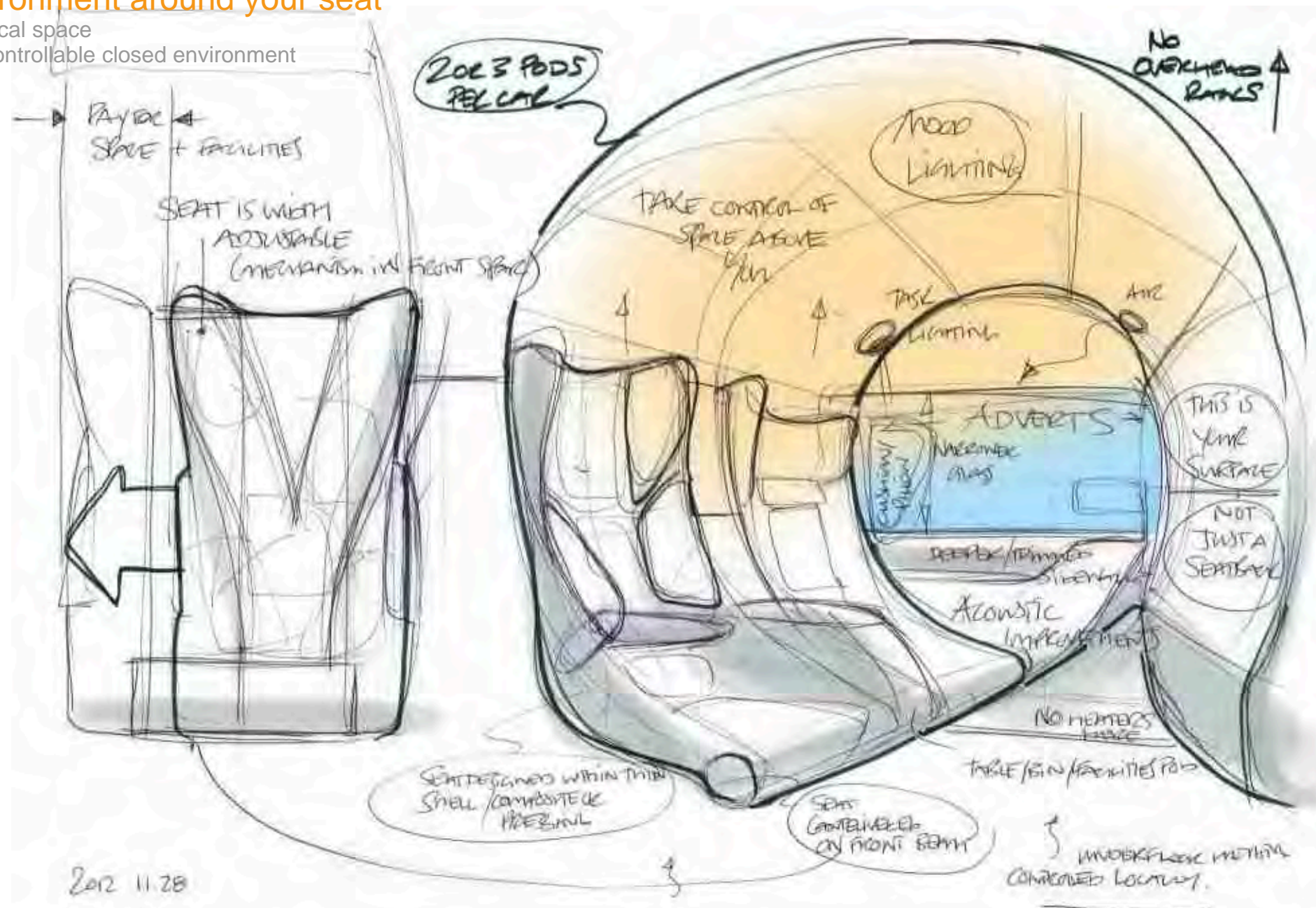
"Y" DO I LIKE MY CAR SO MUCH?

## Interior ideas



## An environment around your seat

- use vertical space
- create controllable closed environment



## Interior ideas



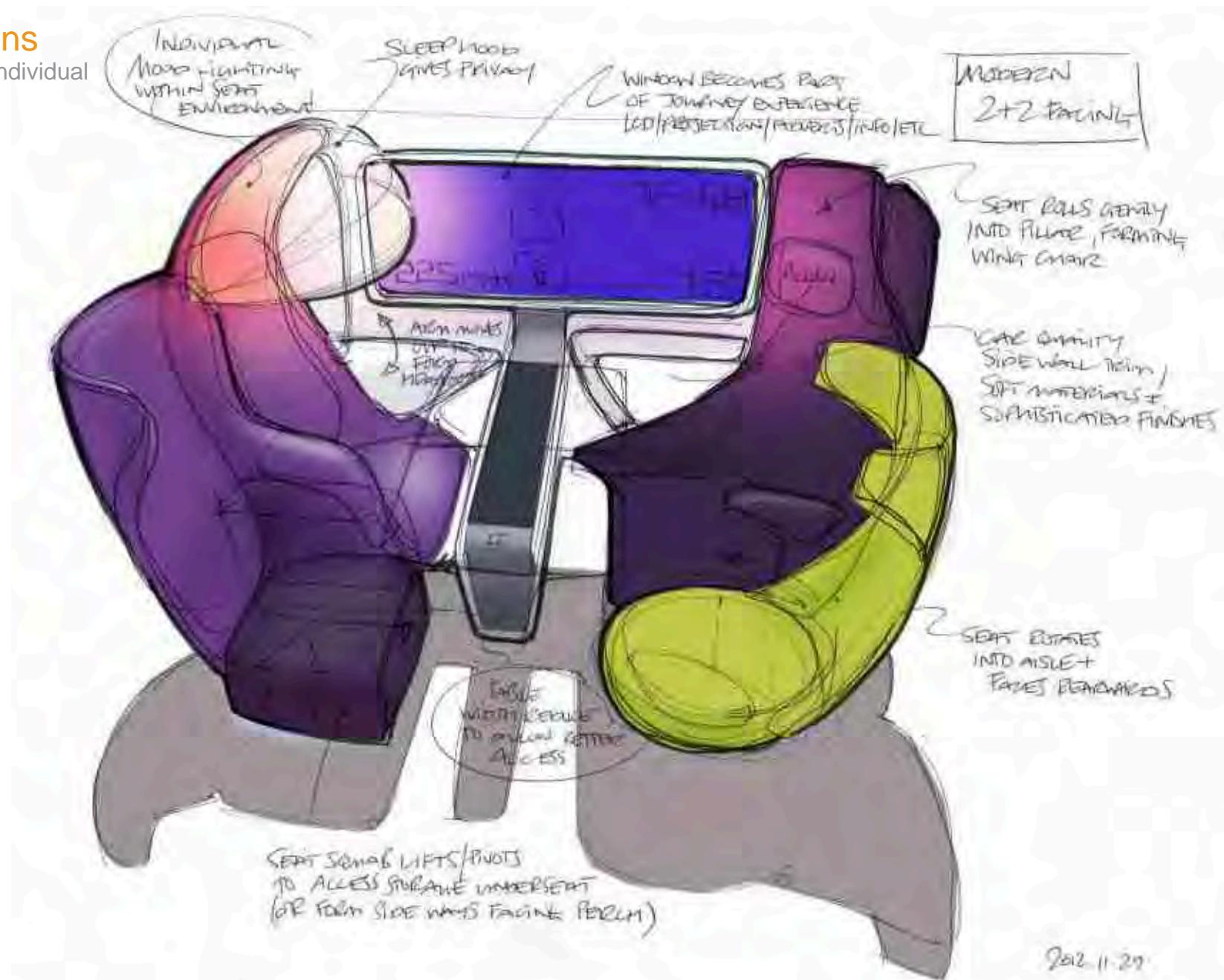
## Configure your own space

- 'smart windows' become a control surface while still allowing vision out
- smart table surfaces allow passengers to configure their own environment, 'throw' communal messages up on windows and create group experiences with other passengers
- seat cushion flips up to allow easy access to luggage under seat
- luggage locking
- integrated table bins
- luggage between seat backs with 'in use' indicator
- lightweight, sculpted seat construction



## A Modern Look to Traditional Solutions

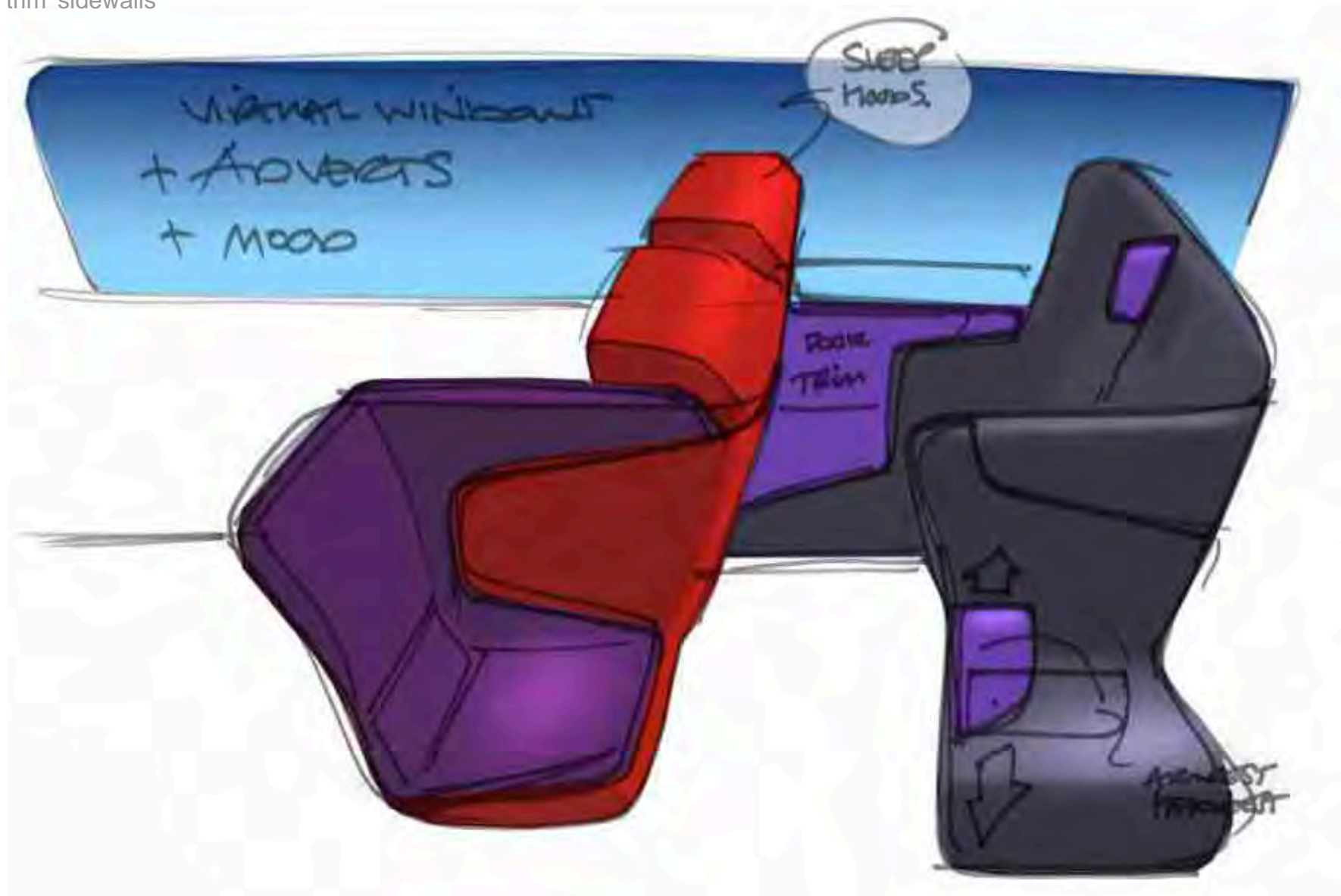
- making vis a vis seat bays individual





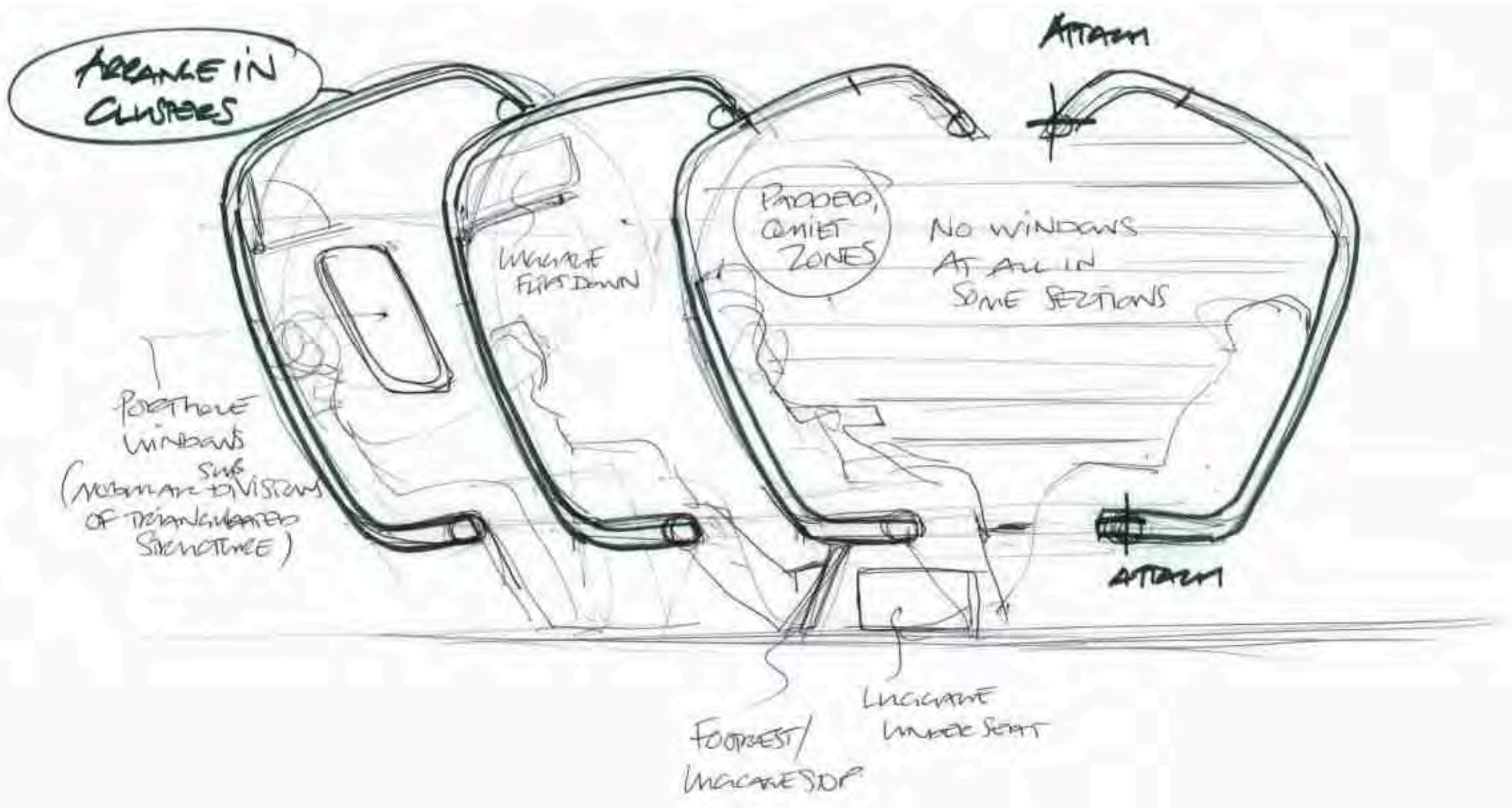
## Multi-directional seats

- makes 3+2 more useable
- sleep hoods
- car quality 'door trim' sidewalls
- virtual windows
- bold colours
- non-corporate
- non-uniform
- individual
- adjustable
- flexible
- re-configurable
- soft
- cocooned
- safe



## An environment around your seat

- use vertical space
- create controllable closed environment

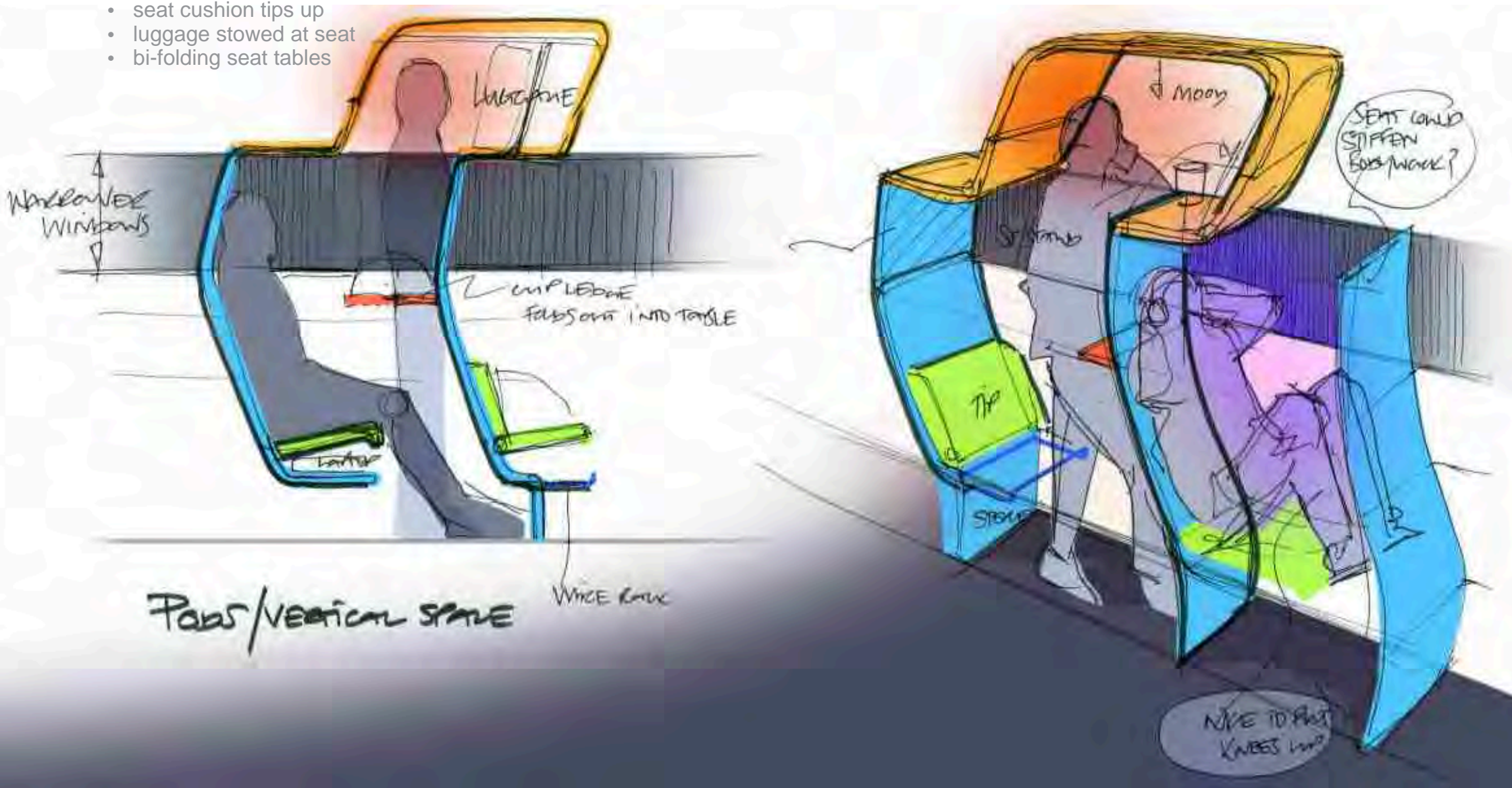


## Interior ideas



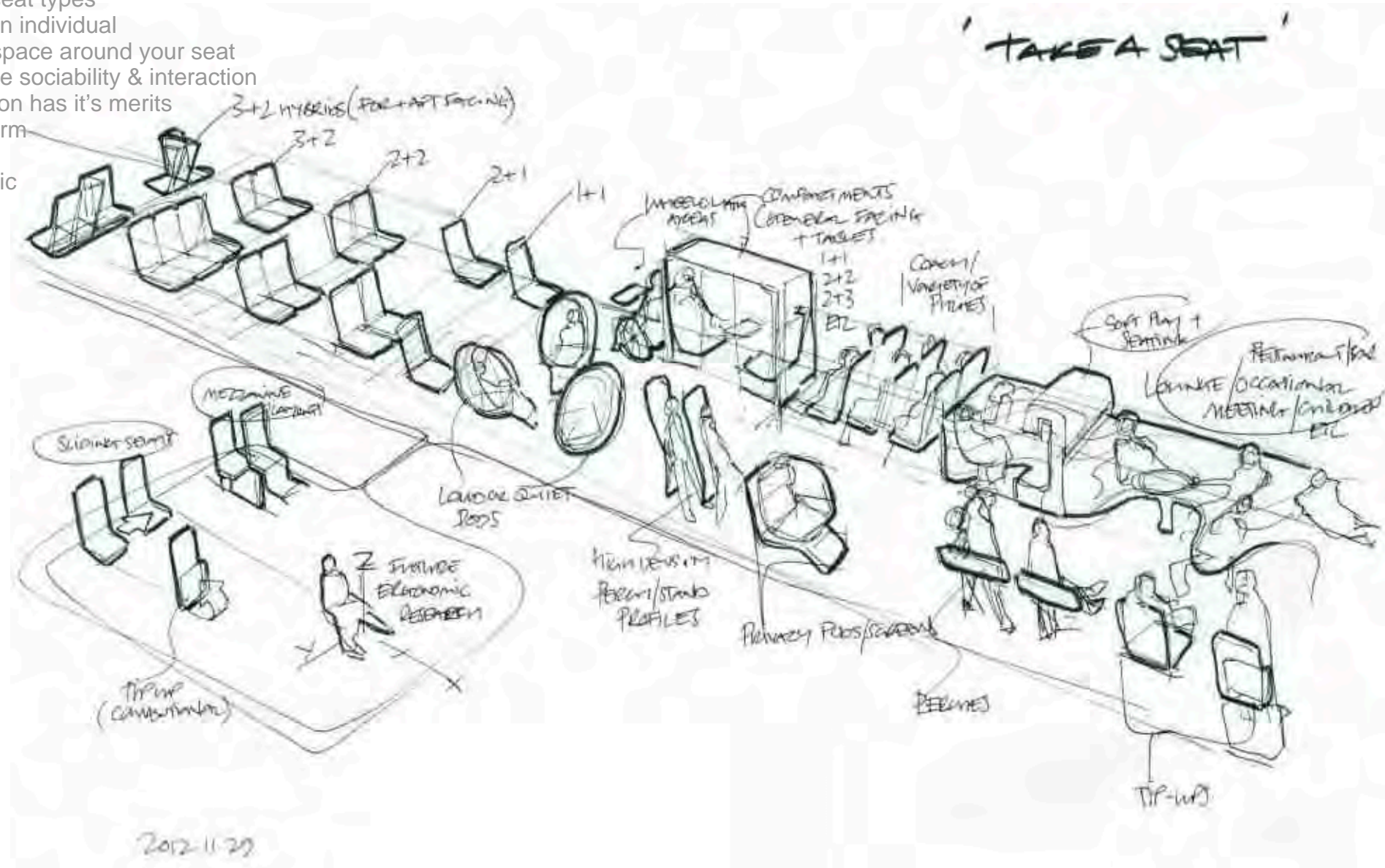
## Pods around seats

- utilize vertical standing space
- create privacy
- seat cushion tips up
- luggage stowed at seat
- bi-folding seat tables



## Mixed use seating

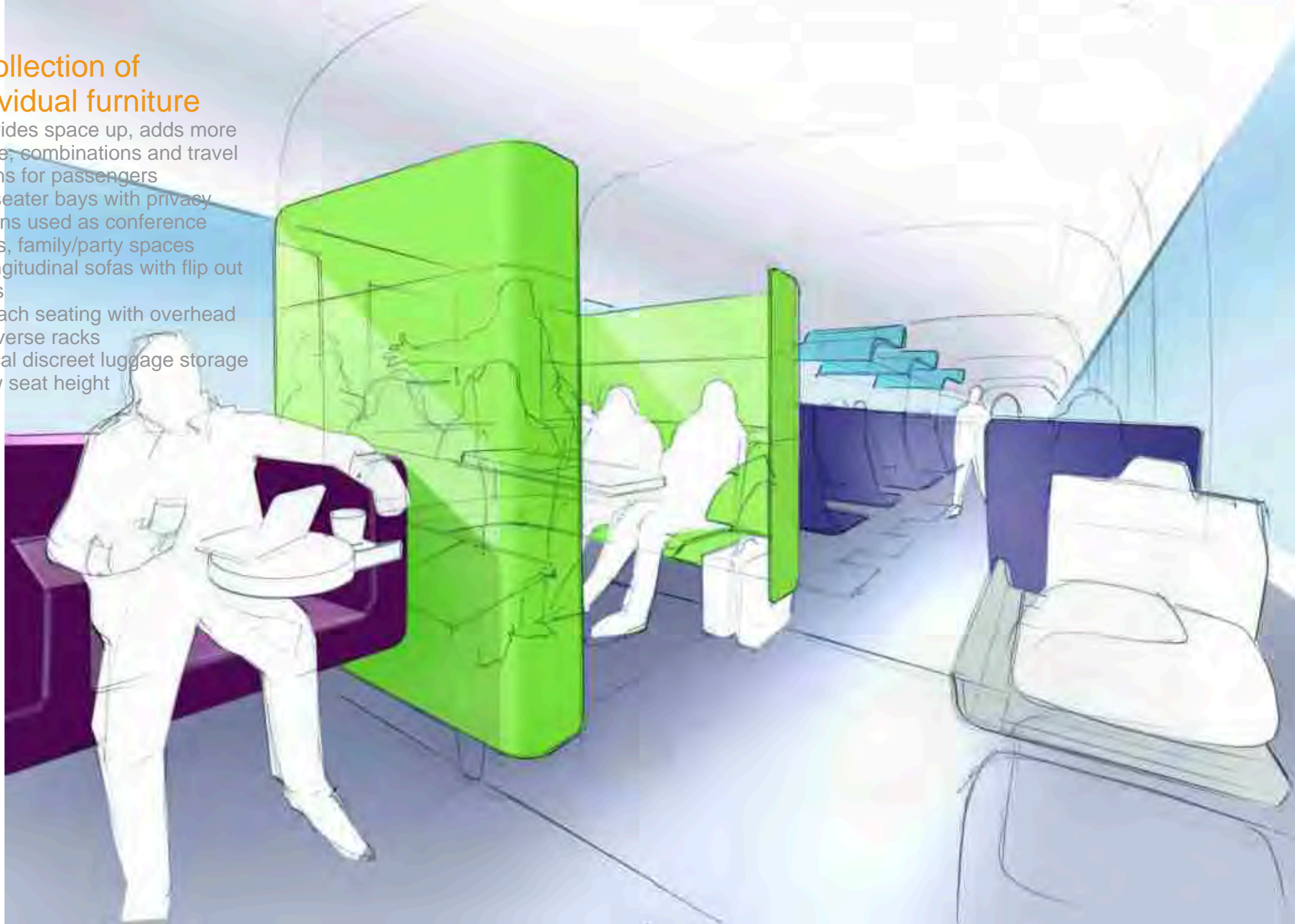
- task based layouts
- multiple seat types
- you are an individual
- own the space around your seat
- encourage sociability & interaction
- each option has it's merits
- non-uniform
- classless
- democratic



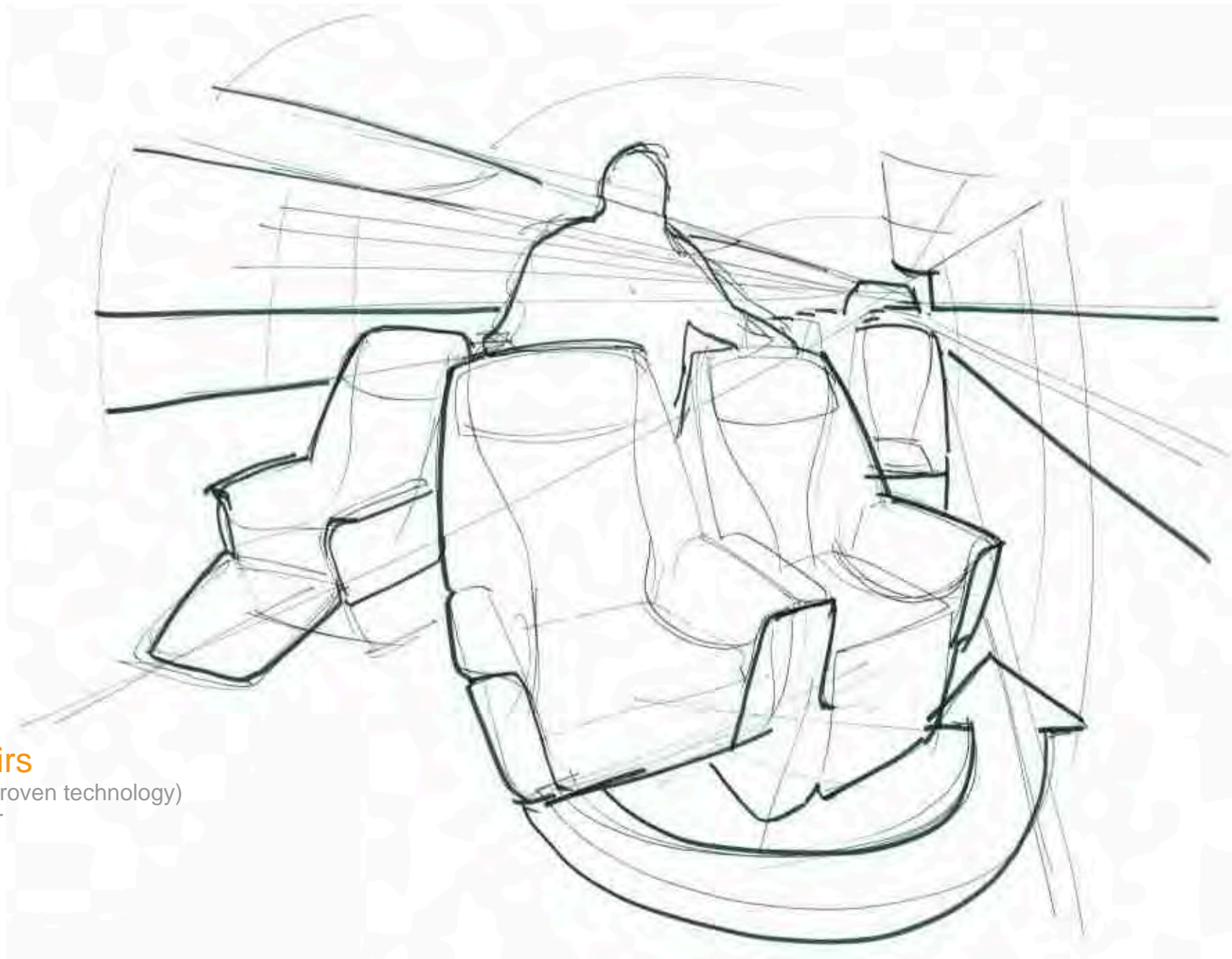


## A collection of individual furniture

- divides space up, adds more choice, combinations and travel options for passengers
- 6 seater bays with privacy screens used as conference rooms, family/party spaces
- longitudinal sofas with flip out tables
- coach seating with overhead transverse racks
- local discreet luggage storage below seat height



Interior ideas



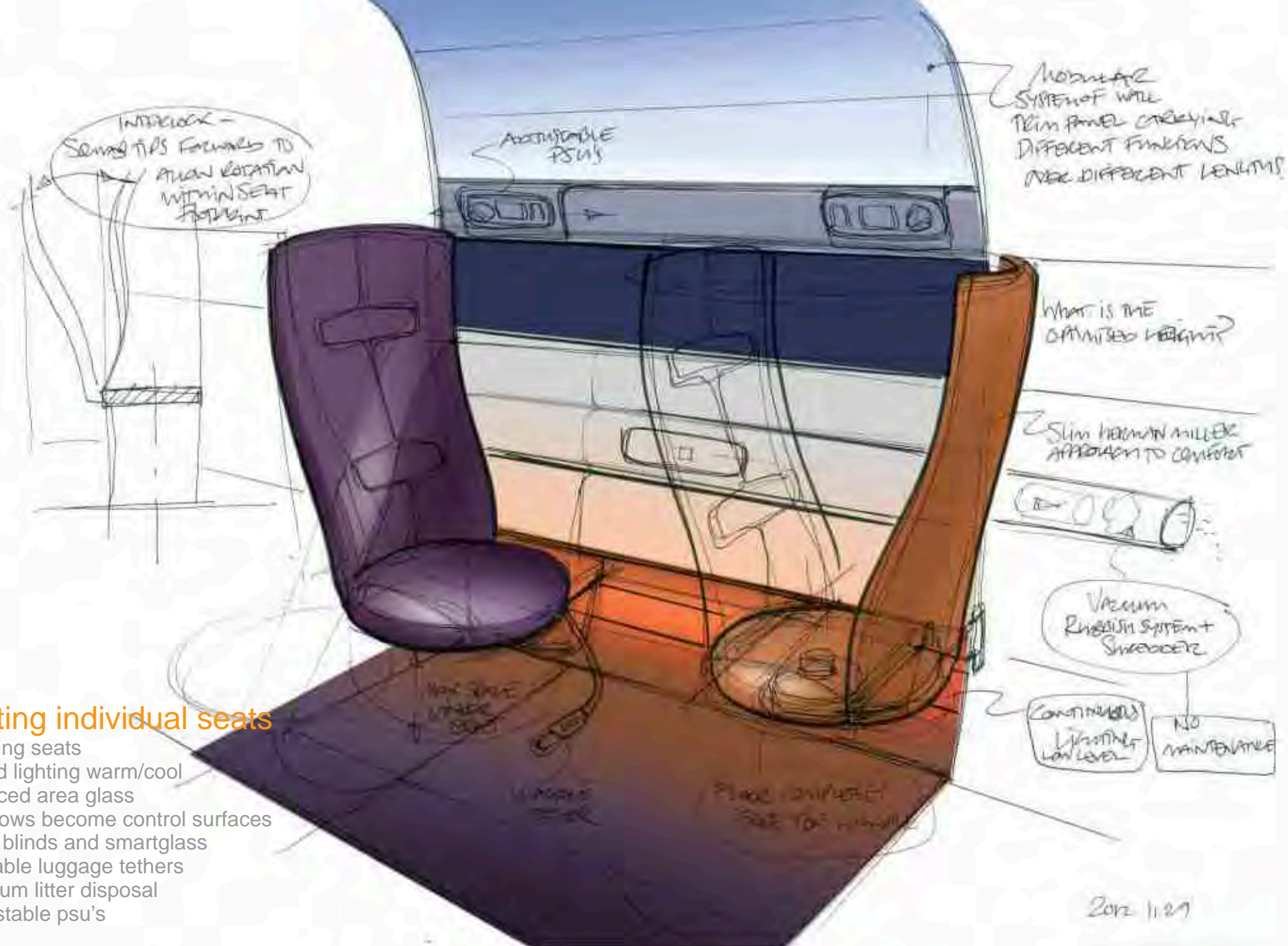
## Rotating seat pairs

- geneva mechanism (proven technology)
- re-configurable interior
- seasonal layouts



## Rotating individual seats

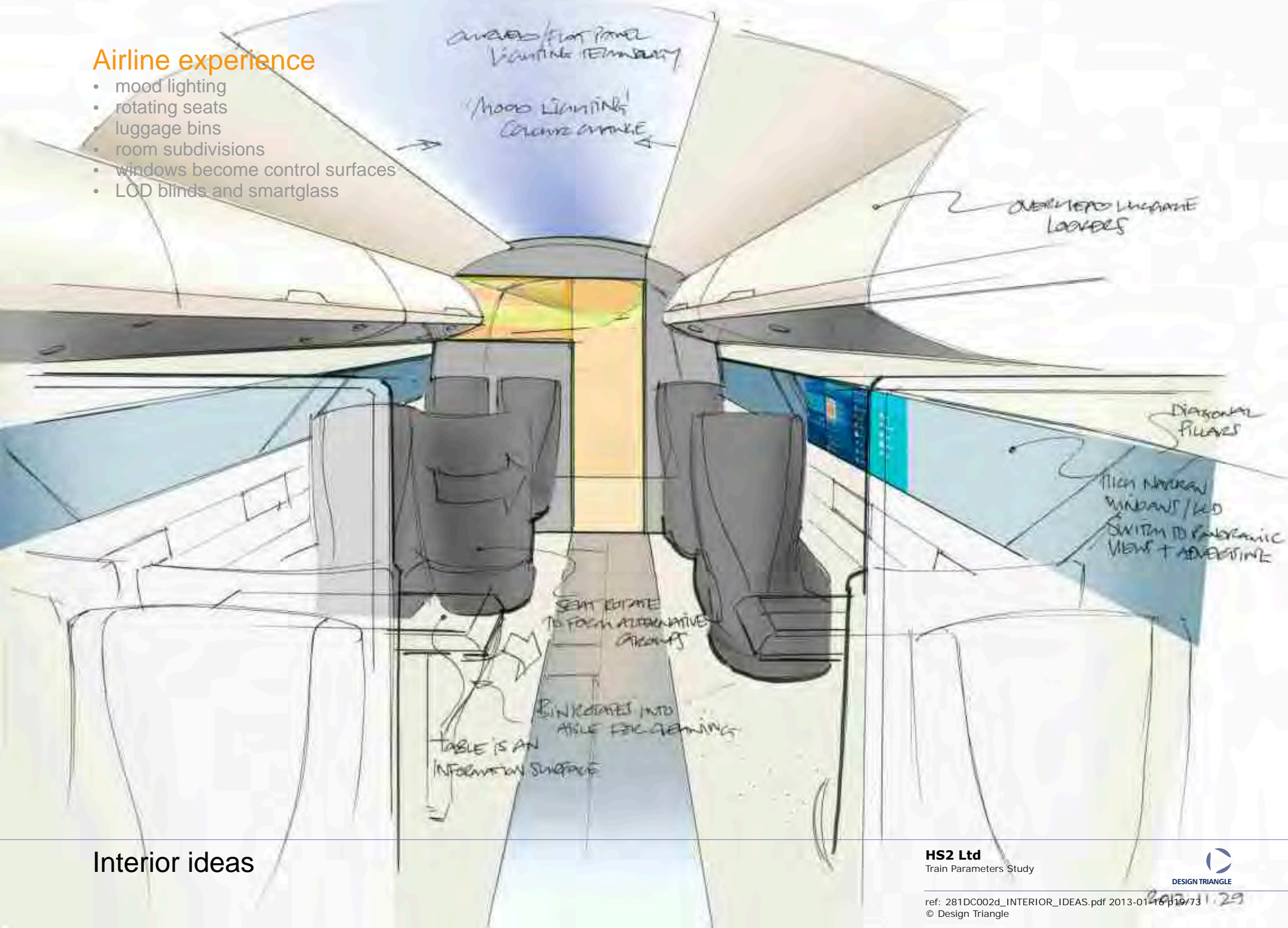
- rotating seats
- mood lighting warm/cool
- reduced area glass
- windows become control surfaces
- LCD blinds and smartglass
- lockable luggage tethers
- vacuum litter disposal
- adjustable psu's



## Interior ideas

## Airline experience

- mood lighting
- rotating seats
- luggage bins
- room subdivisions
- windows become control surfaces
- LCD blinds and smartglass

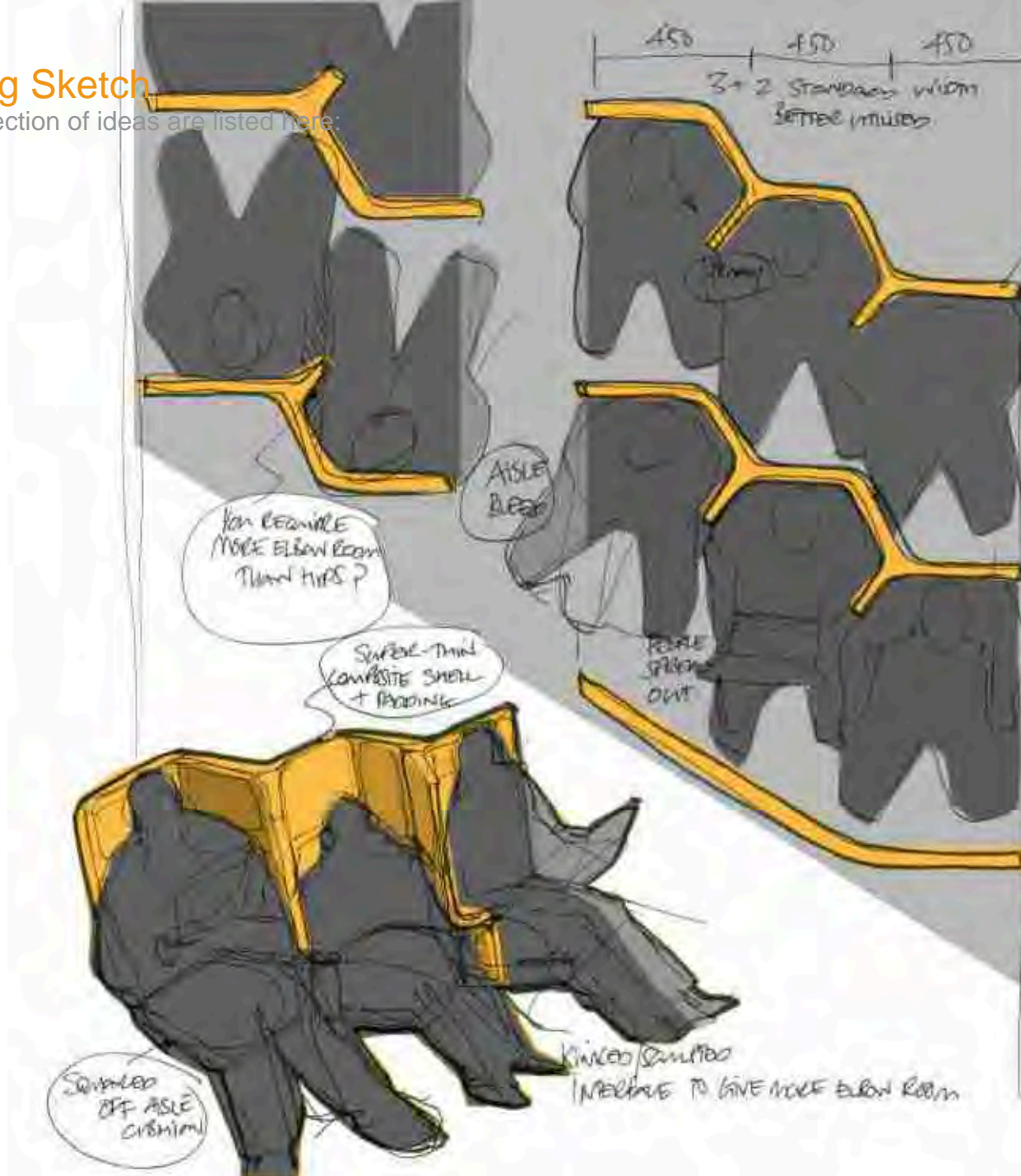


Interior ideas



## Talking Sketch

- a collection of ideas are listed here:



## 'honeycomb SEATING'

OFFER  
"INDIVIDUALITY" AT  
A LOWER COST THAN 2+2 TRAVEL



ELBOWS ARE  
WIDER THAN  
HIPS



EXTRA  
SPACE/COMFORTABLE  
SPACE

2012.05

## Interior ideas

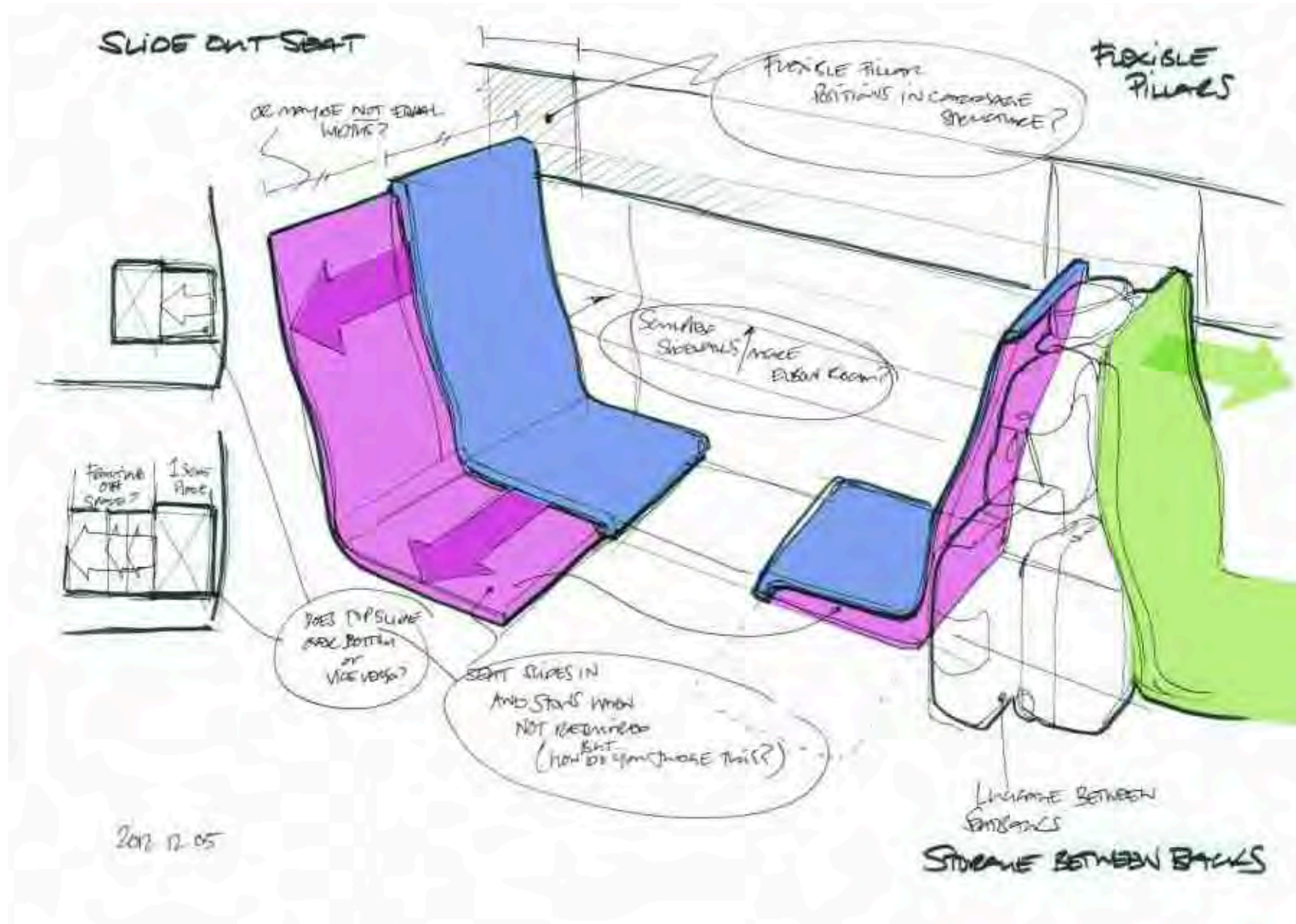
HS2 Ltd

Train Parameters Study



## Talking Sketch

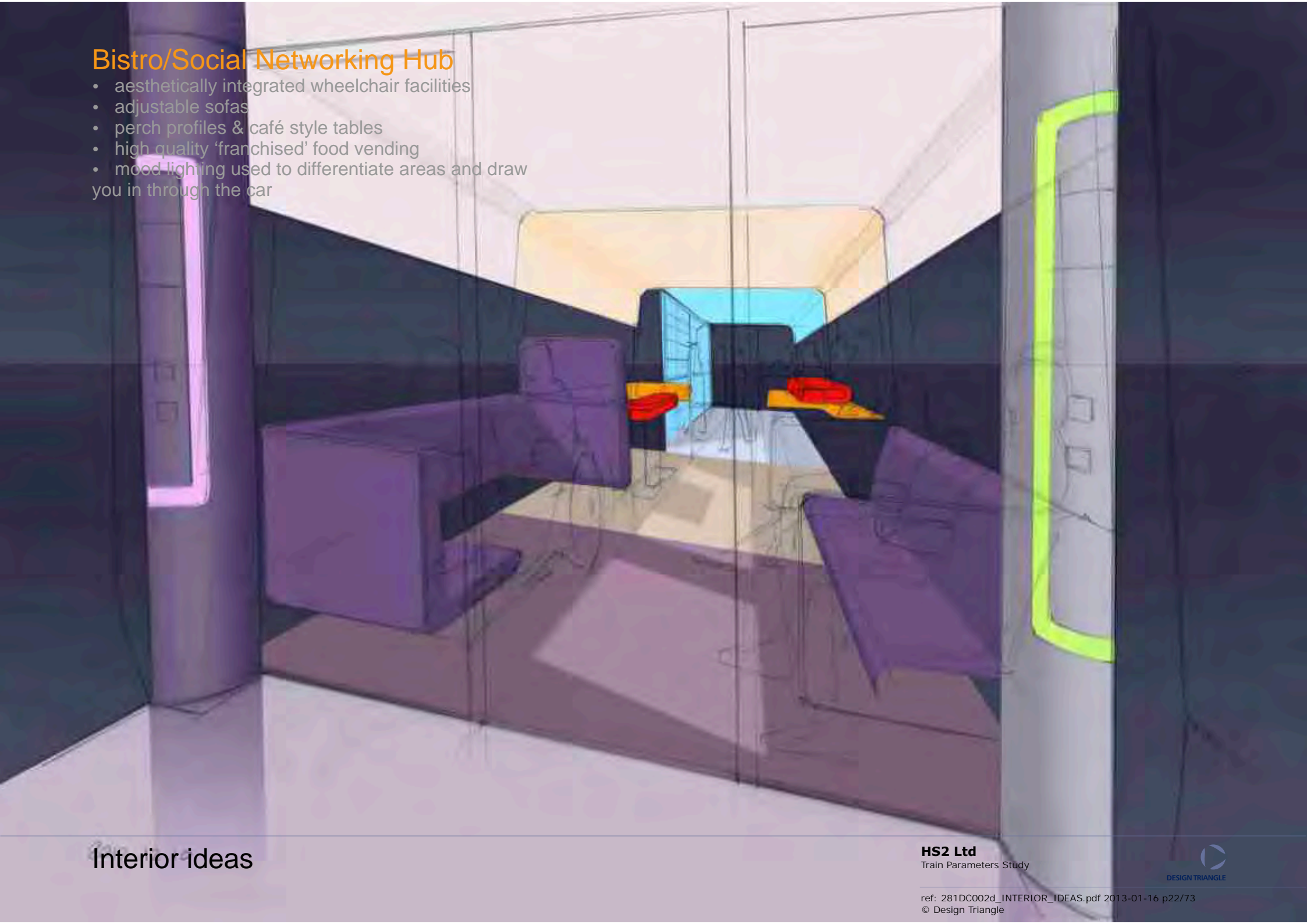
- a collection of ideas are listed here:





## Bistro/Social Networking Hub

- aesthetically integrated wheelchair facilities
- adjustable sofas
- perch profiles & café style tables
- high quality 'franchised' food vending
- mood lighting used to differentiate areas and draw you in through the car



Interior ideas

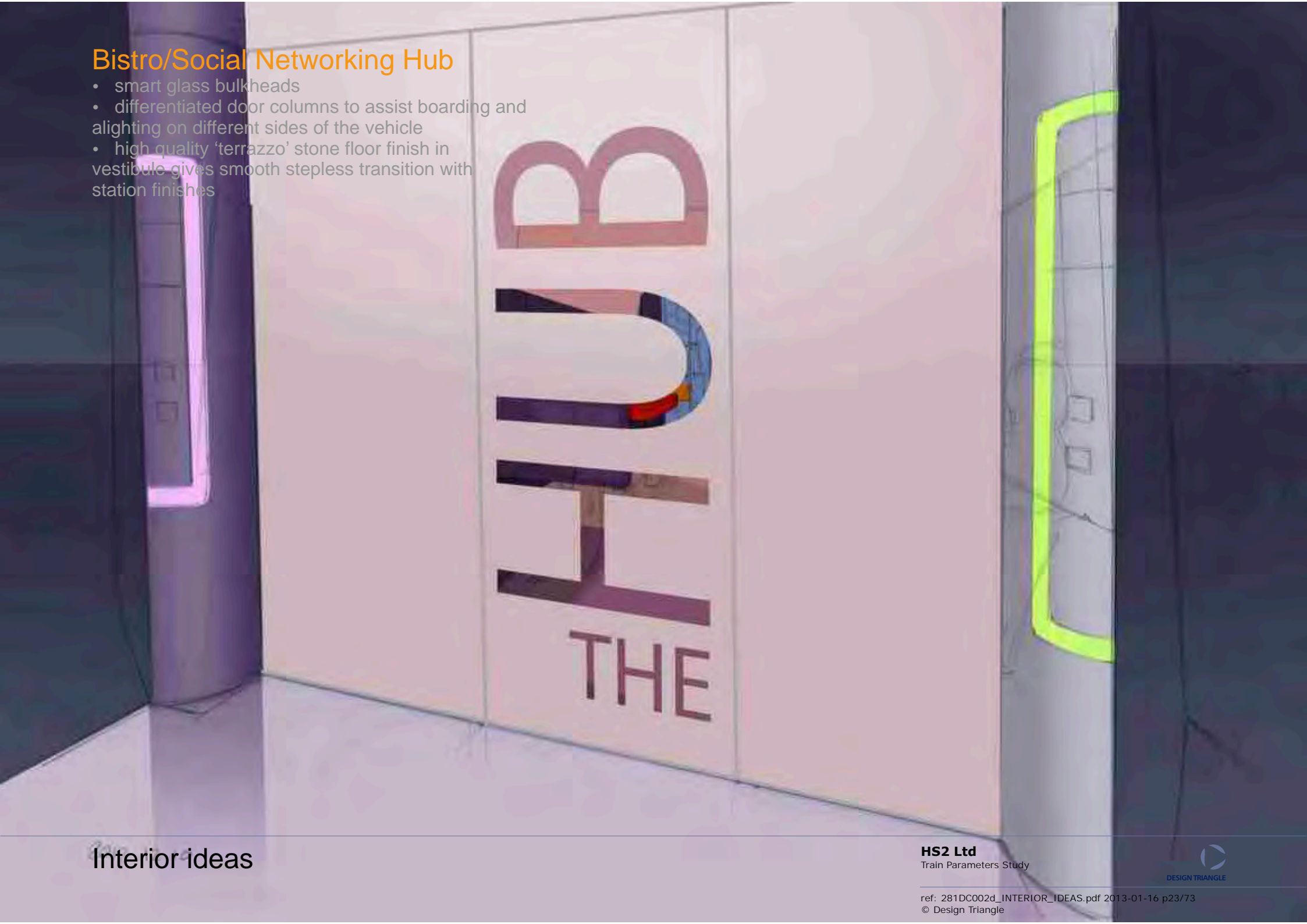
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## Bistro/Social Networking Hub

- smart glass bulkheads
- differentiated door columns to assist boarding and alighting on different sides of the vehicle
- high quality 'terrazzo' stone floor finish in vestibule gives smooth stepless transition with station finishes





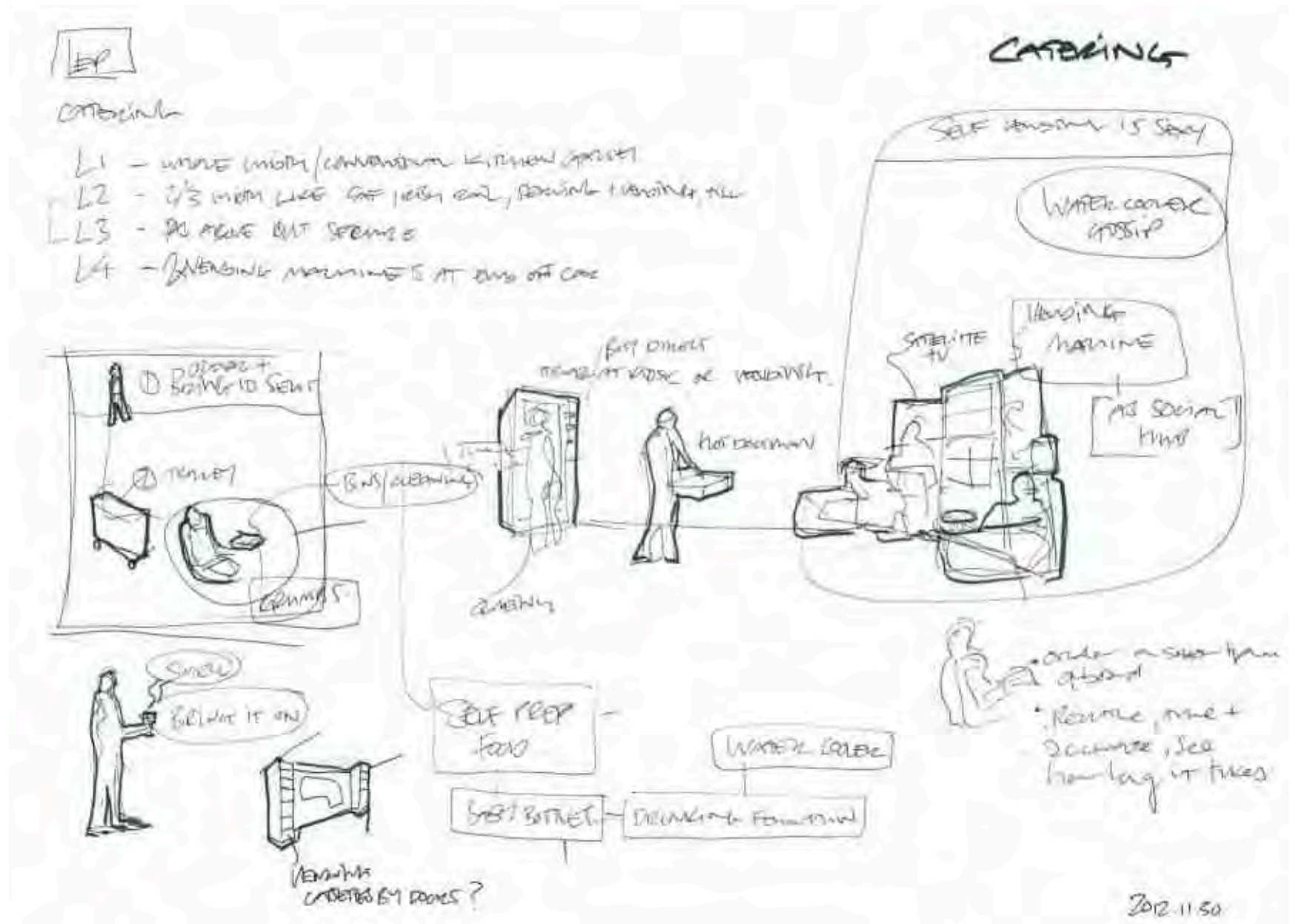
## The Family Car

- bright colours
- fun activities
- educational areas
- interactive walls
- 'themed' vending
- family zone
- mother & child seating
- chill out zones
- hot rooms
- loud spaces
- luggage space
- group activities
- soft play

Interior ideas

# Catering

- a collection of ideas are listed here:

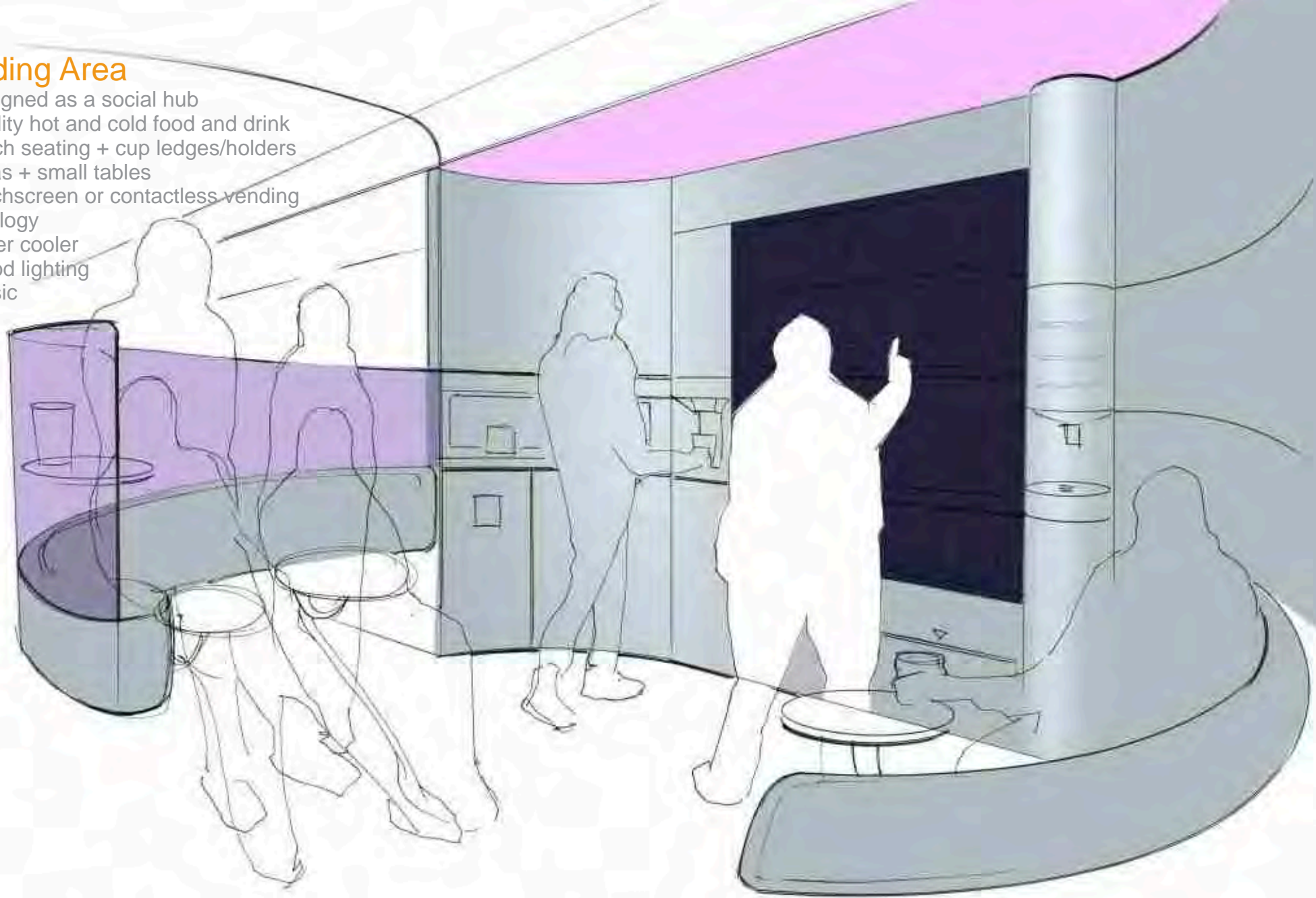


## Interior ideas



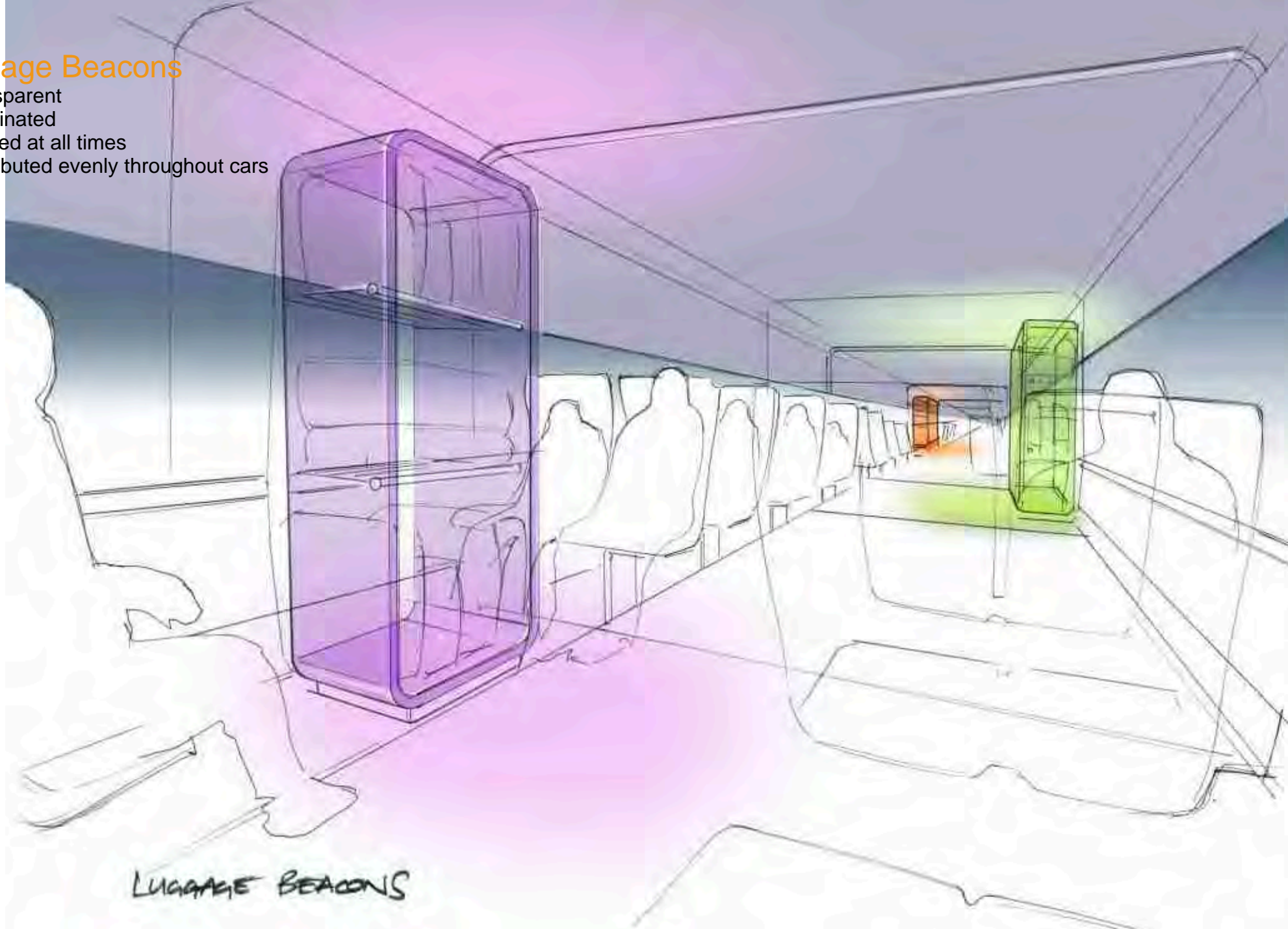
## Vending Area

- designed as a social hub
- quality hot and cold food and drink
- perch seating + cup ledges/holders
- sofas + small tables
- touchscreen or contactless vending technology
- water cooler
- mood lighting
- music
- bin



## Luggage Beacons

- transparent
- illuminated
- viewed at all times
- distributed evenly throughout cars

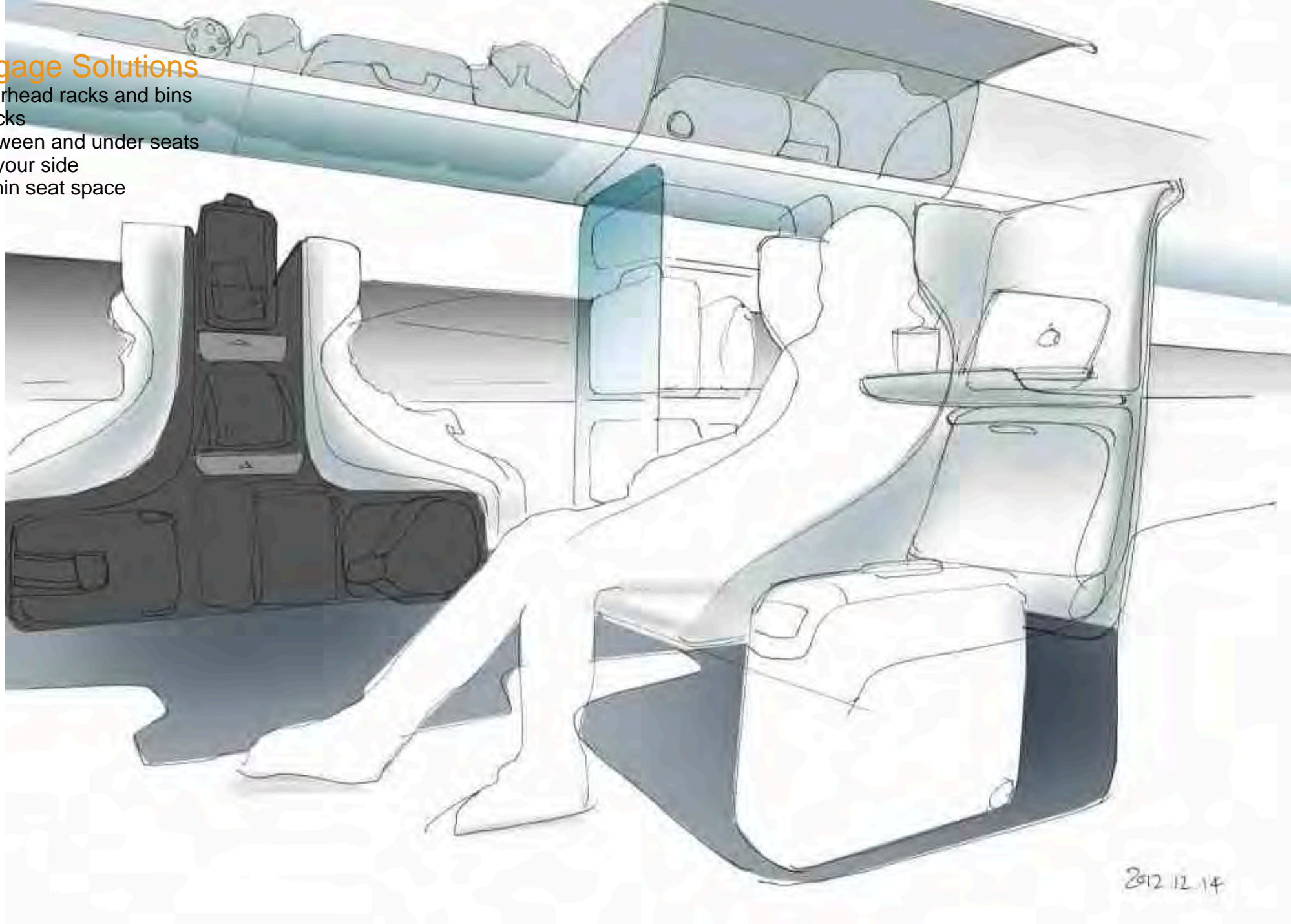


Interior ideas



## Luggage Solutions

- overhead racks and bins
- stacks
- between and under seats
- by your side
- within seat space



Interior ideas

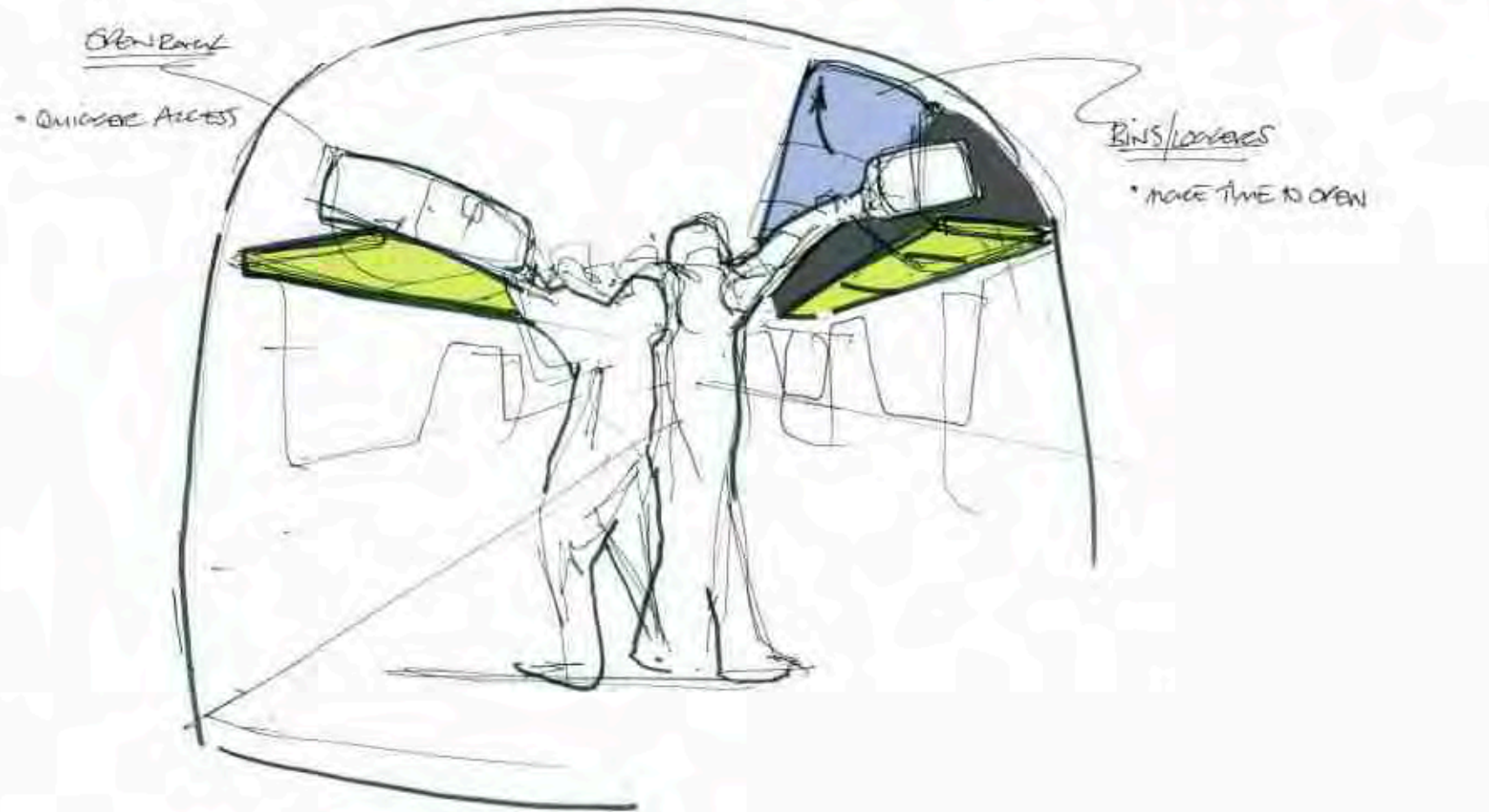
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Train Parameters Study



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## Racks vs Lockers

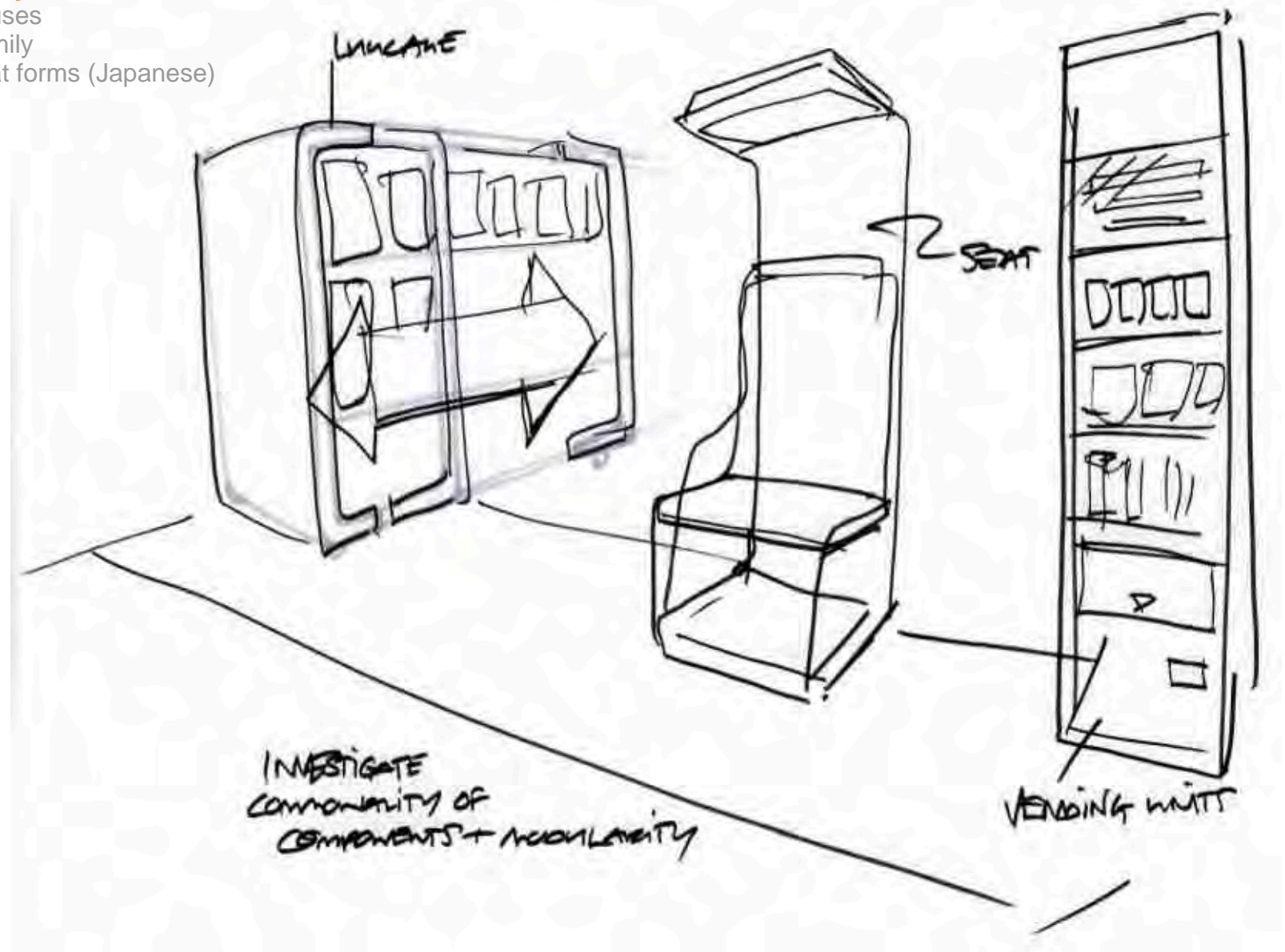
- effects on dwell time
- security
- safety
- visibility





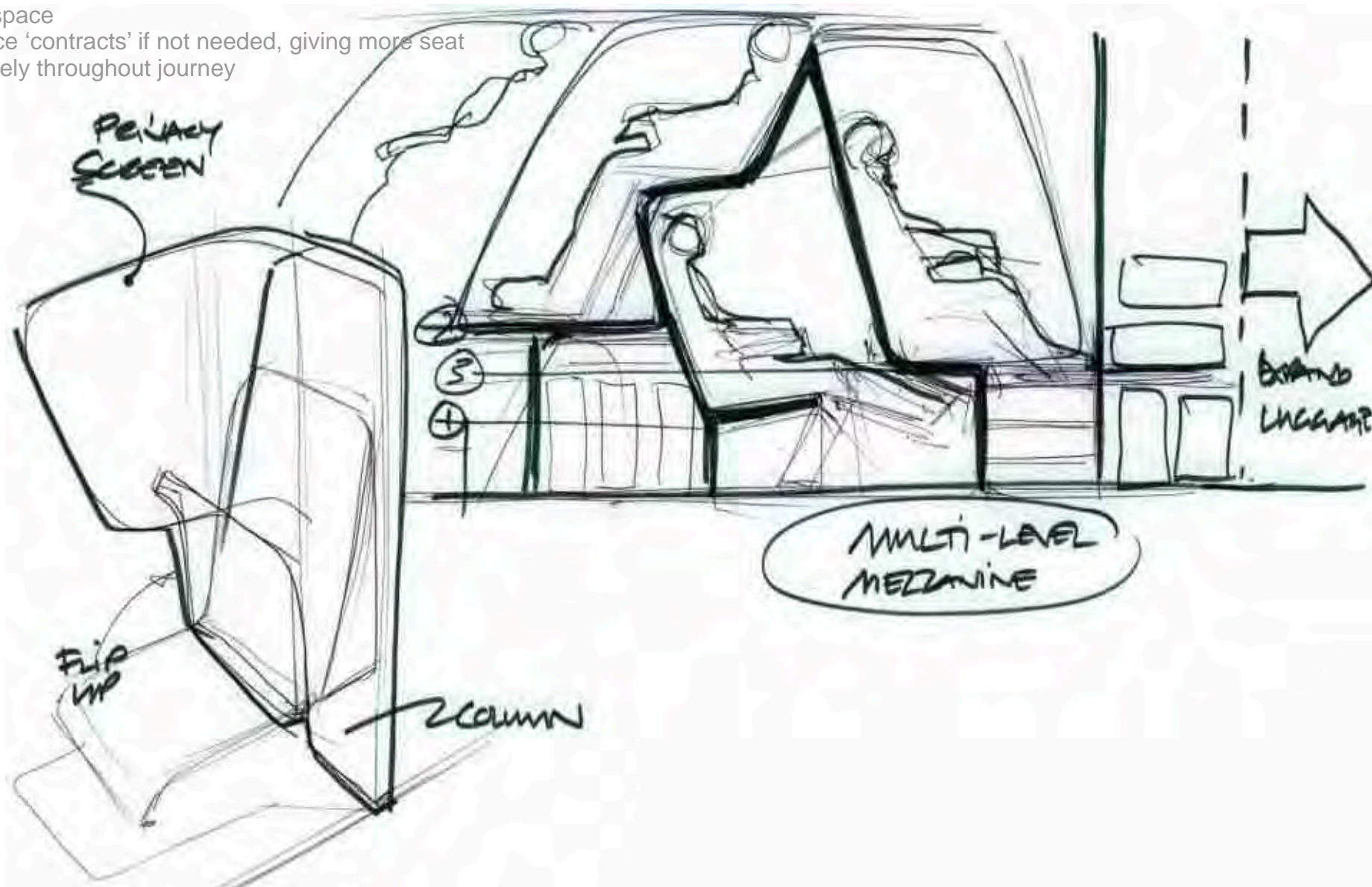
## Maximise modularity

- one component/several uses
- develop a component family
- aesthetic based on repeat forms (Japanese)



## Achieving Privacy

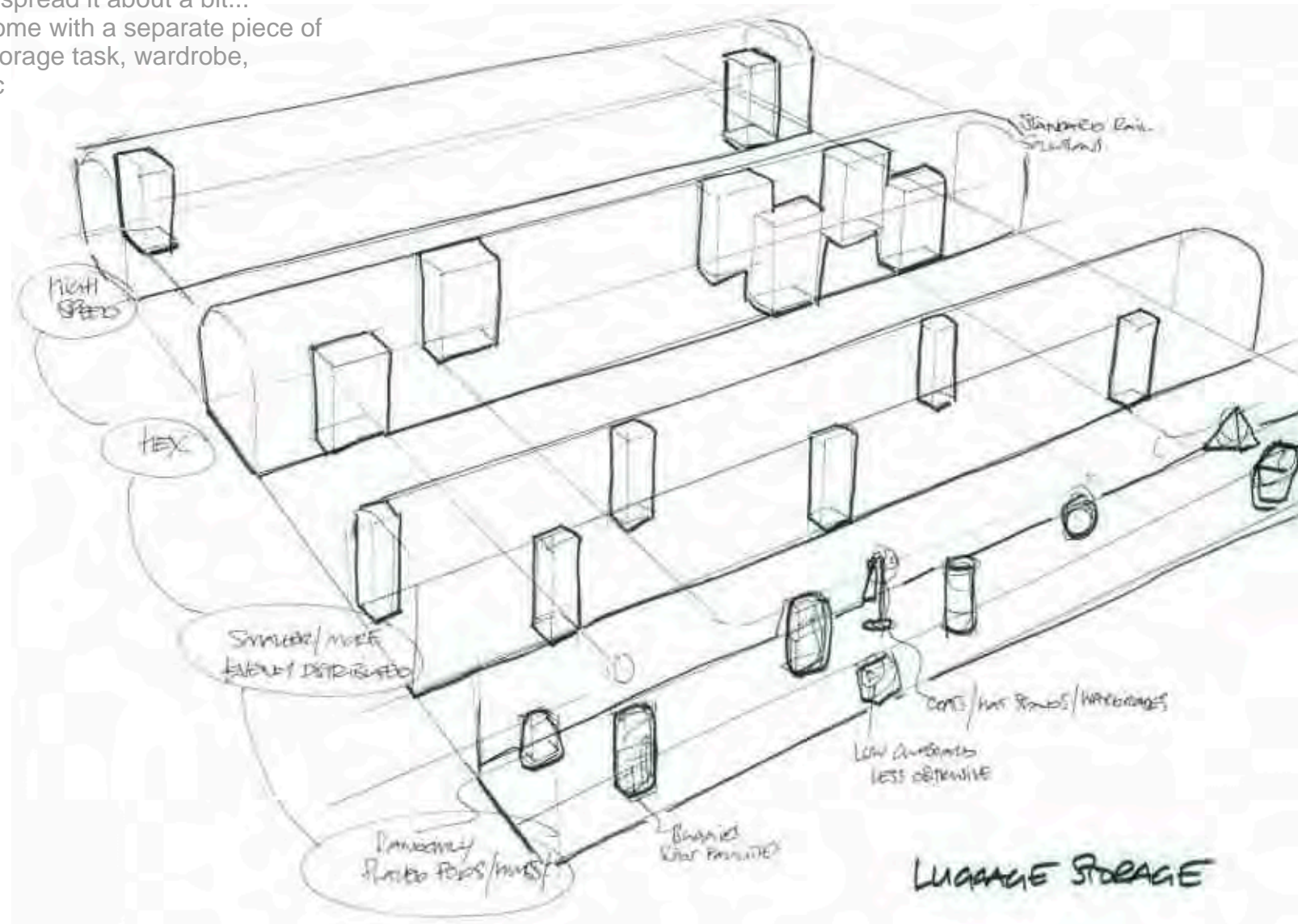
- local screens around seats
- seats in tessellating pods arrangements
- multi-level
- use vertical space
- luggage space 'contracts' if not needed, giving more seat space interactively throughout journey





## Where's do I put my luggage?

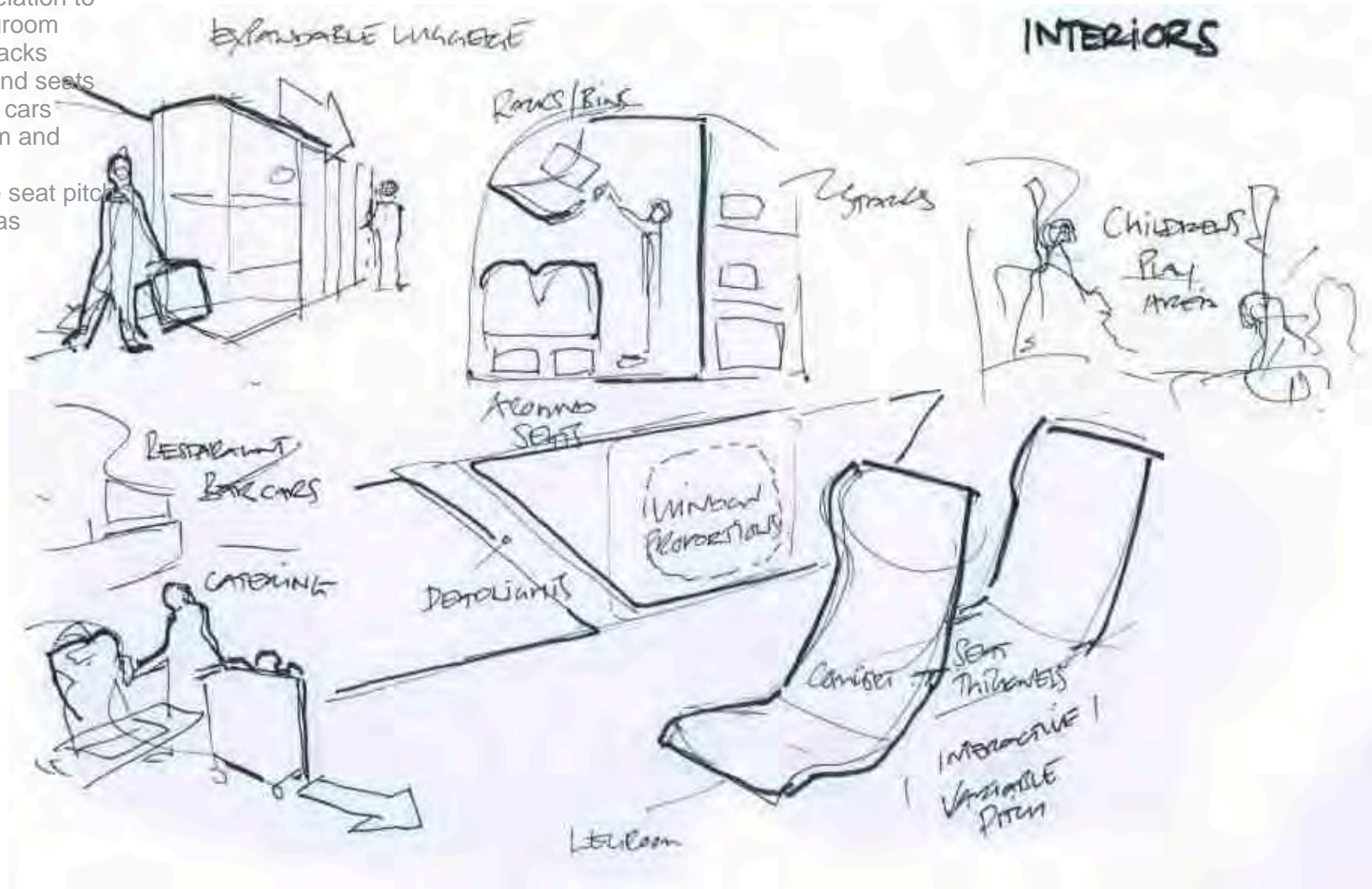
- conventional high speed vestibules block-up
- Heathrow Express boarding times are very long
- Try distributed luggage and spread it about a bit...
- why can't it feel more like home with a separate piece of interesting furniture for each storage task, wardrobe, coatstand, buggies, trolleys etc



# Talking Sketch

a collection of ideas are listed here:

- expandable luggage
- seat thickness in relation to comfort, pitch and legroom
- racks vs bins vs stacks
- environments around seats
- restaurant and bar cars
- deadlight/pillar form and thickness
- interactive variable seat pitch
- children's play areas

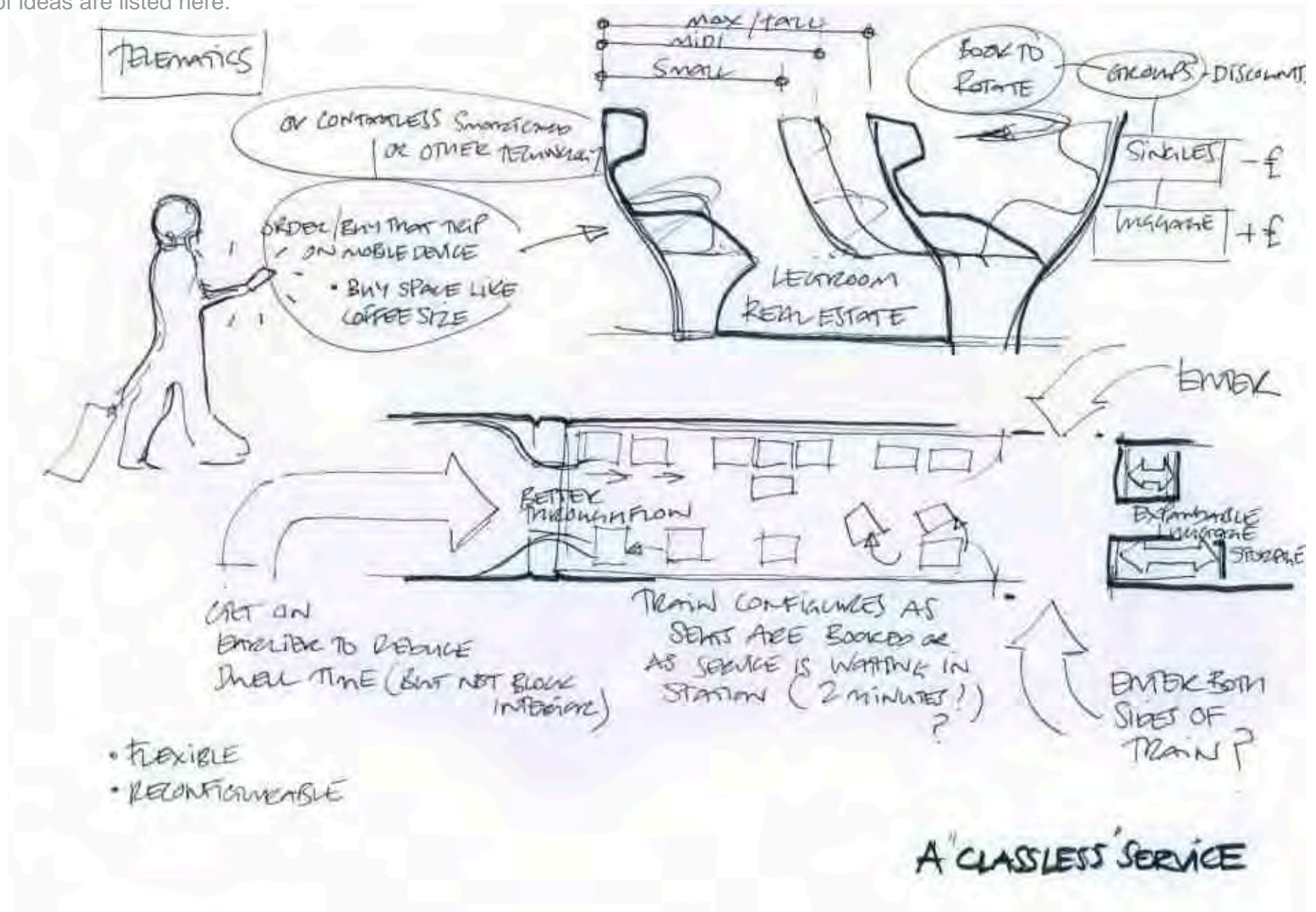


## Interior ideas



# Talking Sketch

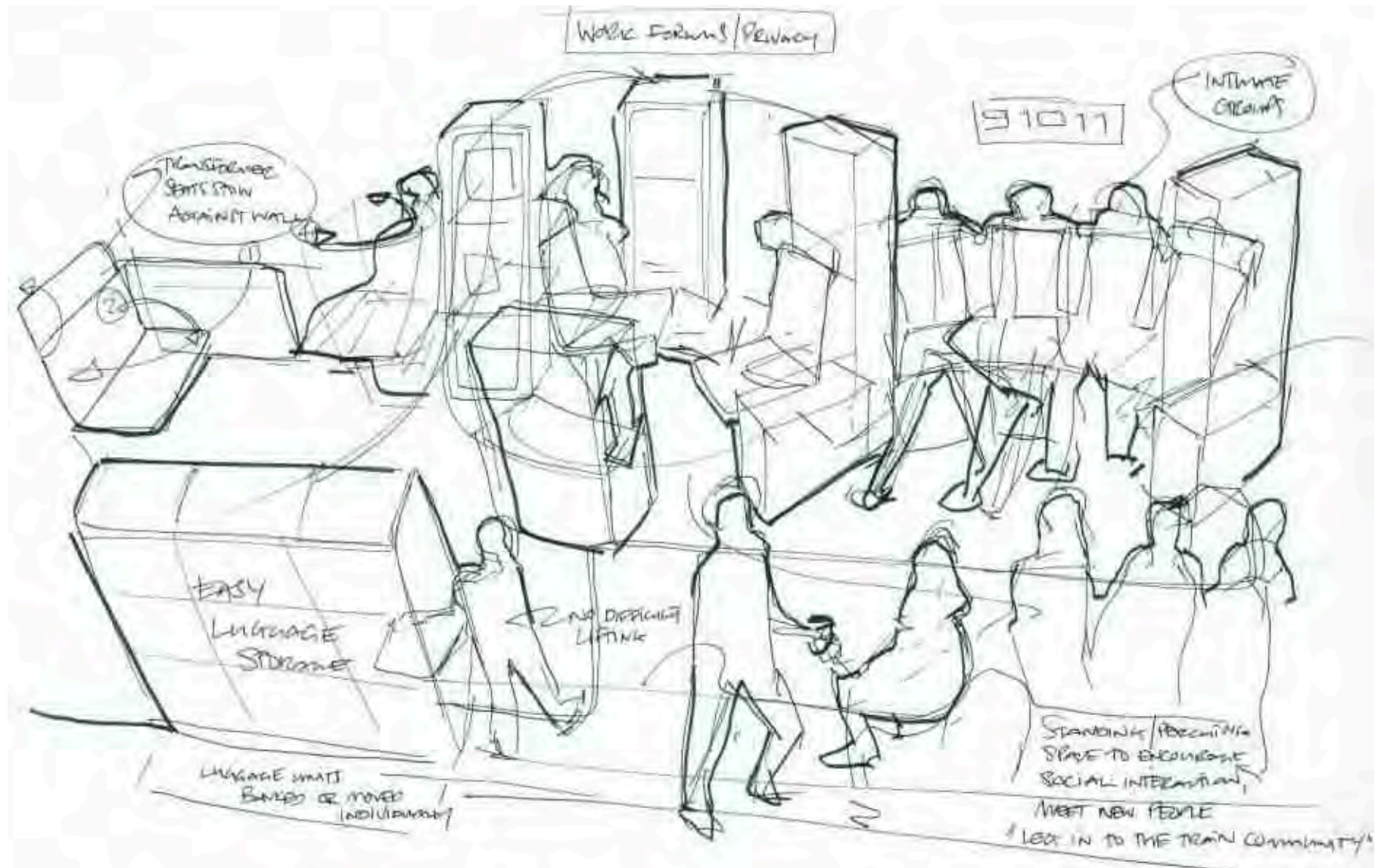
- collection of ideas are listed here:



## Interior ideas

## hs2 - 'Log in to the Moving Community'

- through contactless technologies the train recognises you and adapts to your journeys needs



## Interior ideas



# Talking Sketch

- a collection of ideas are listed here:



## Interior ideas

HS2 Ltd

Train Parameters Study



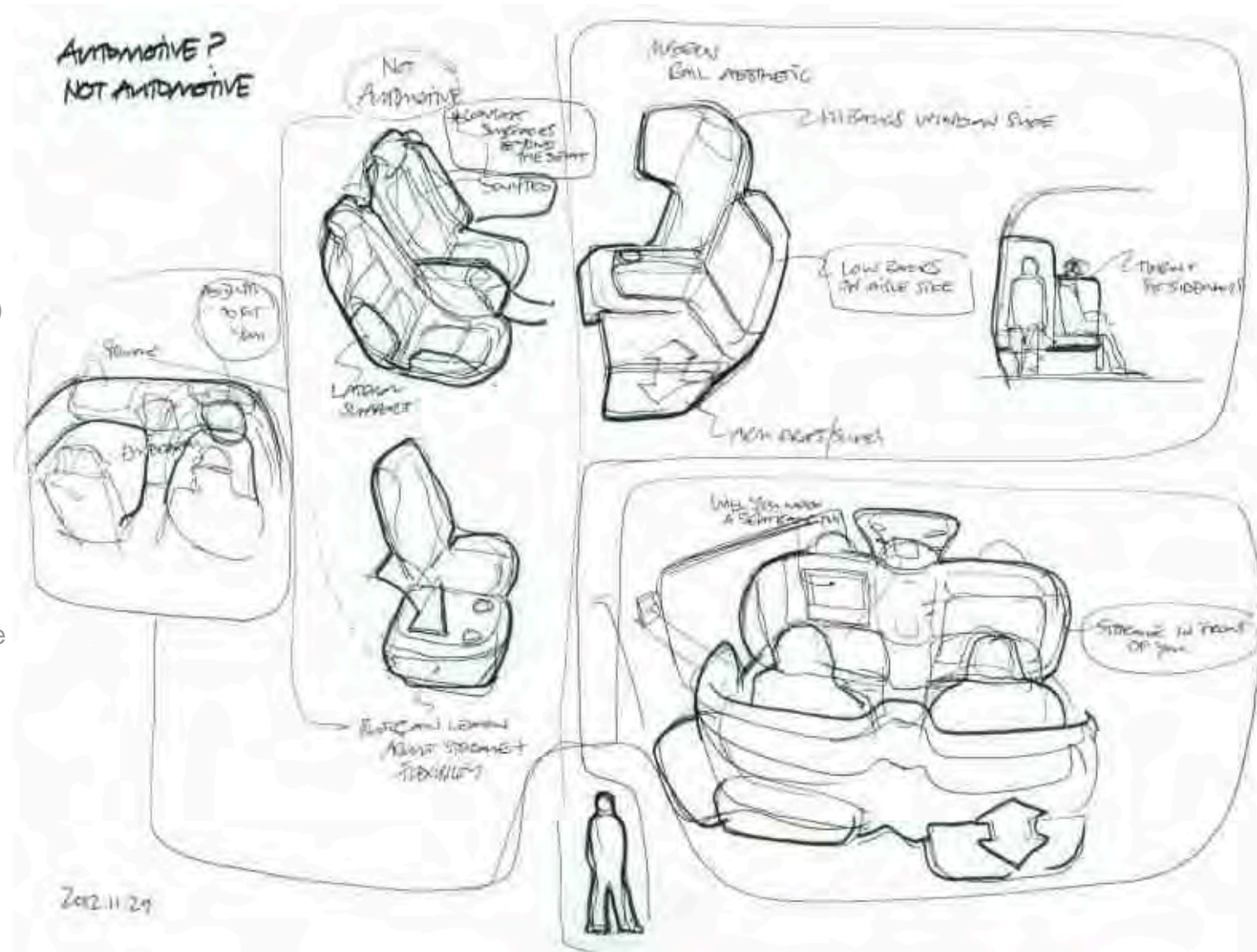
DESIGN TRIANGLE

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## Rail - learning from Automotive design

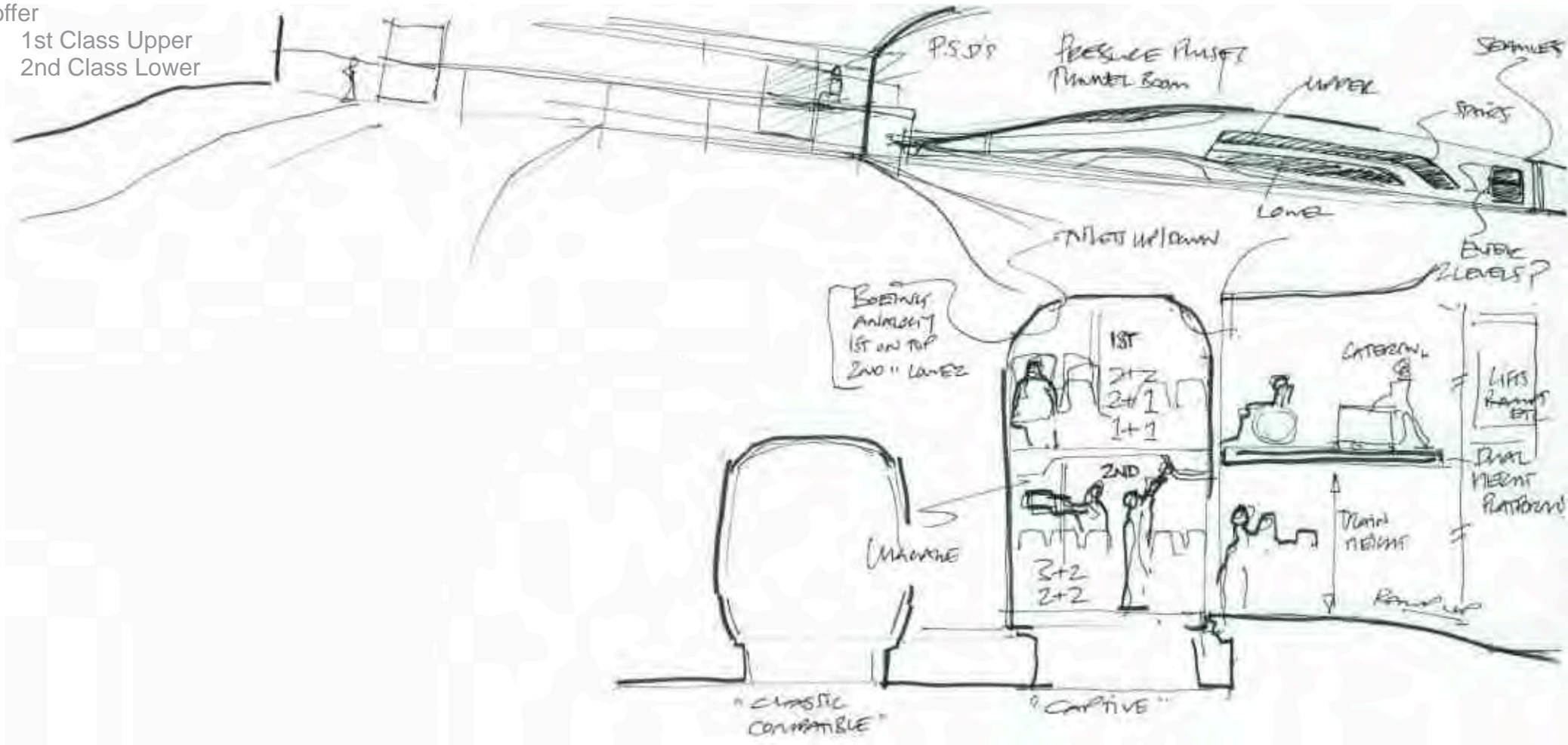
- is automotive design a relevant comparison to public transport?
- in cars the contact surfaces for the passenger/occupant extend beyond the seat space
- they adjust and fit to you
- there is lots of cleverly thought out storage solutions (some lockable)
- lots of lateral seat support (hugging)
- modern rail aesthetic should rival or surpass what's achievable in cars and become the aspirational way to travel
- entertainment
- high and low back seats as in the front and backs of cars
- would be nice to store everything you have in front of you, like a car dashboard
- seatback TV's will be redundant
- turn sideways and legitimately make use of the aisle width for legroom, chatting to the people opposite etc





## Double Deck trains and platforms

- collection of ideas are listed here:
- platform screen doors
- double deck trains and platforms
- tunnel boom
- toilets in upper deck
- catering trolley/lifts
- seamless/stepless
- classic compatible and captive commonality of service offer
- 1st Class Upper
- 2nd Class Lower

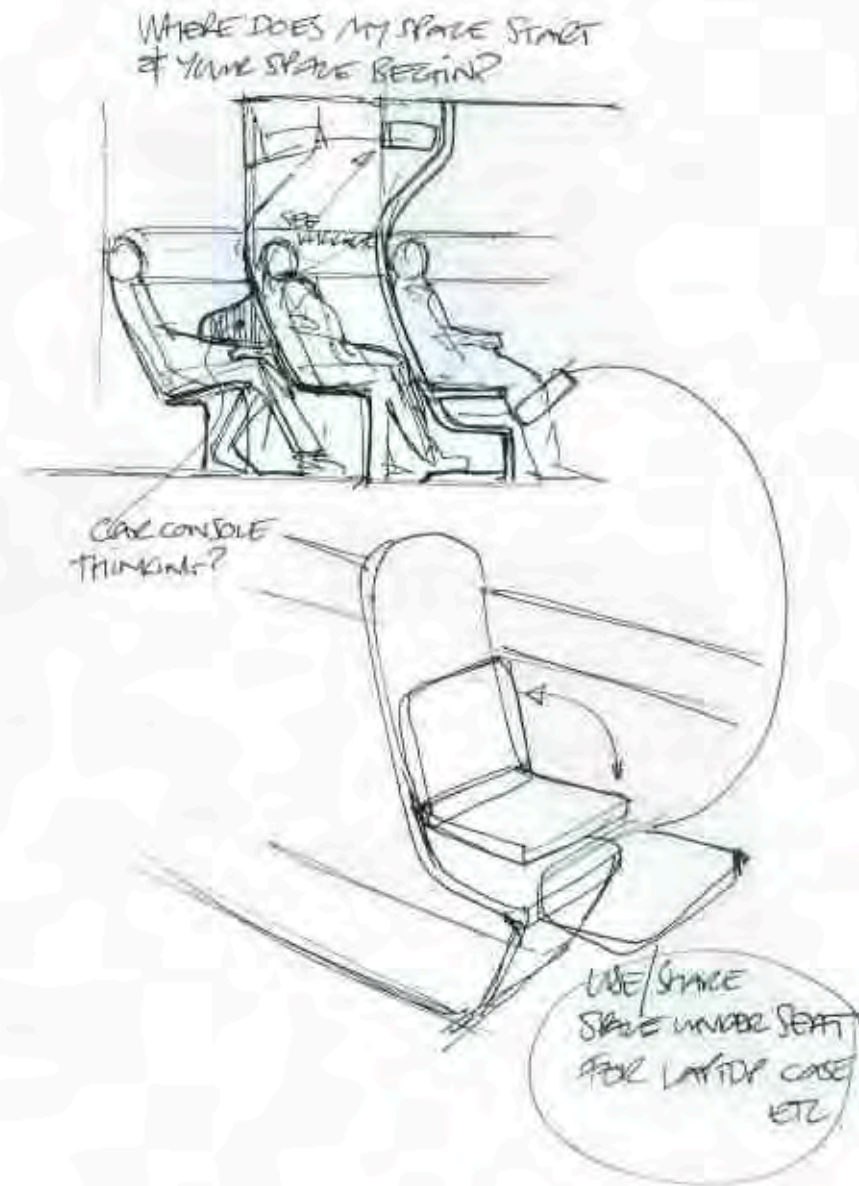


## Interior ideas

- CONFIGURE YOUR OWN SPACE
- DESIGNED AROUND YOU

## Take control of space within reach from your seat place

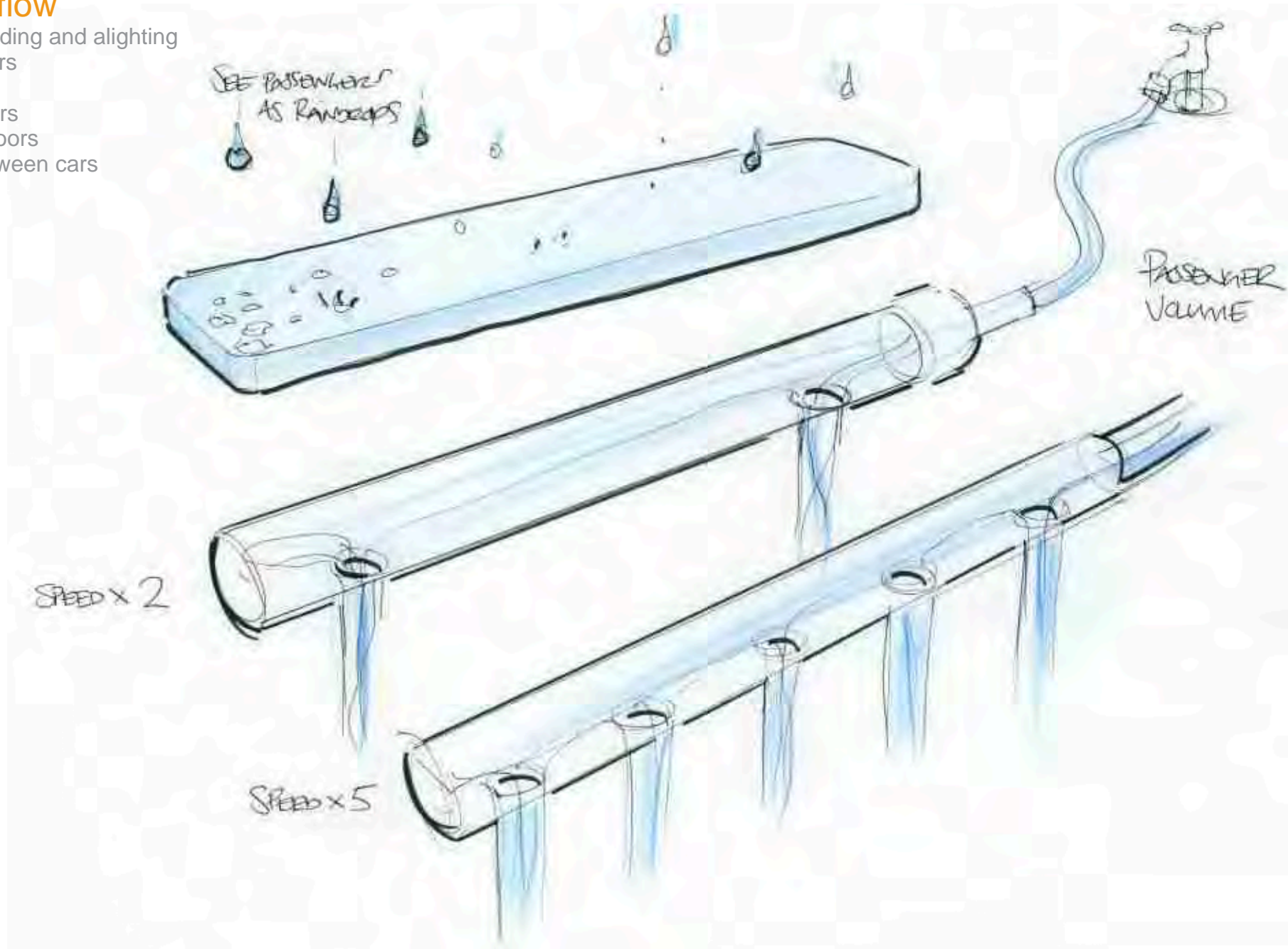
- configure your own seat space to your requirements
- adopt a 'designed around you' design philosophy with car console type thinking around seat space
- utilize space under seat for luggage, laptops etc
- make seat underframe slimmer and more discreet (or delete in favour of a monocoque)





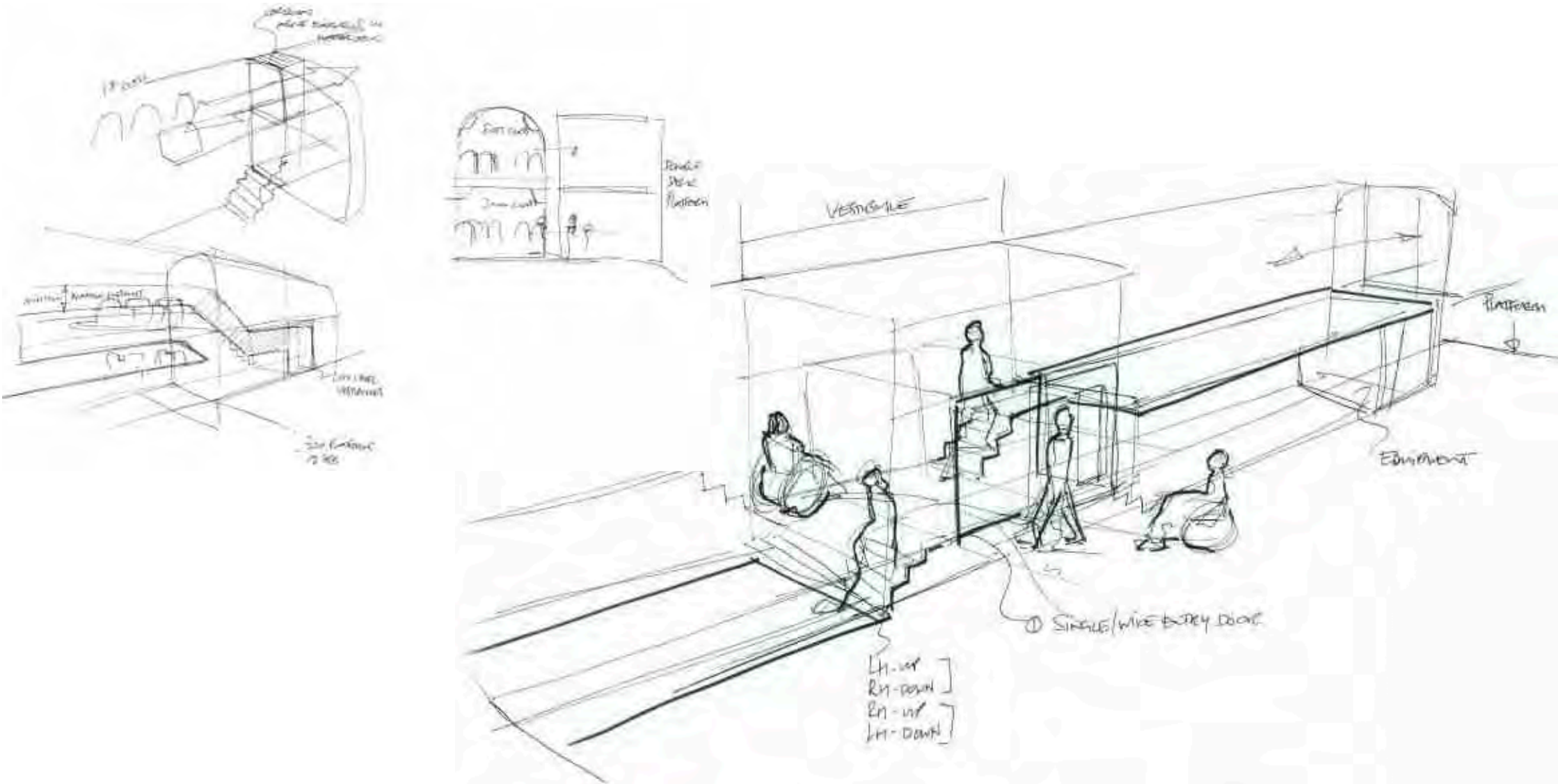
## Passenger flow

- maximise boarding and alighting
- number of doors
- size of doors
- position of doors
- symmetry of doors
- flow within/between cars



## Double Deck design issues

- wheelchairs restricted to vestibules
- equipment cupboards
- limited car to car access
- platform heights etc

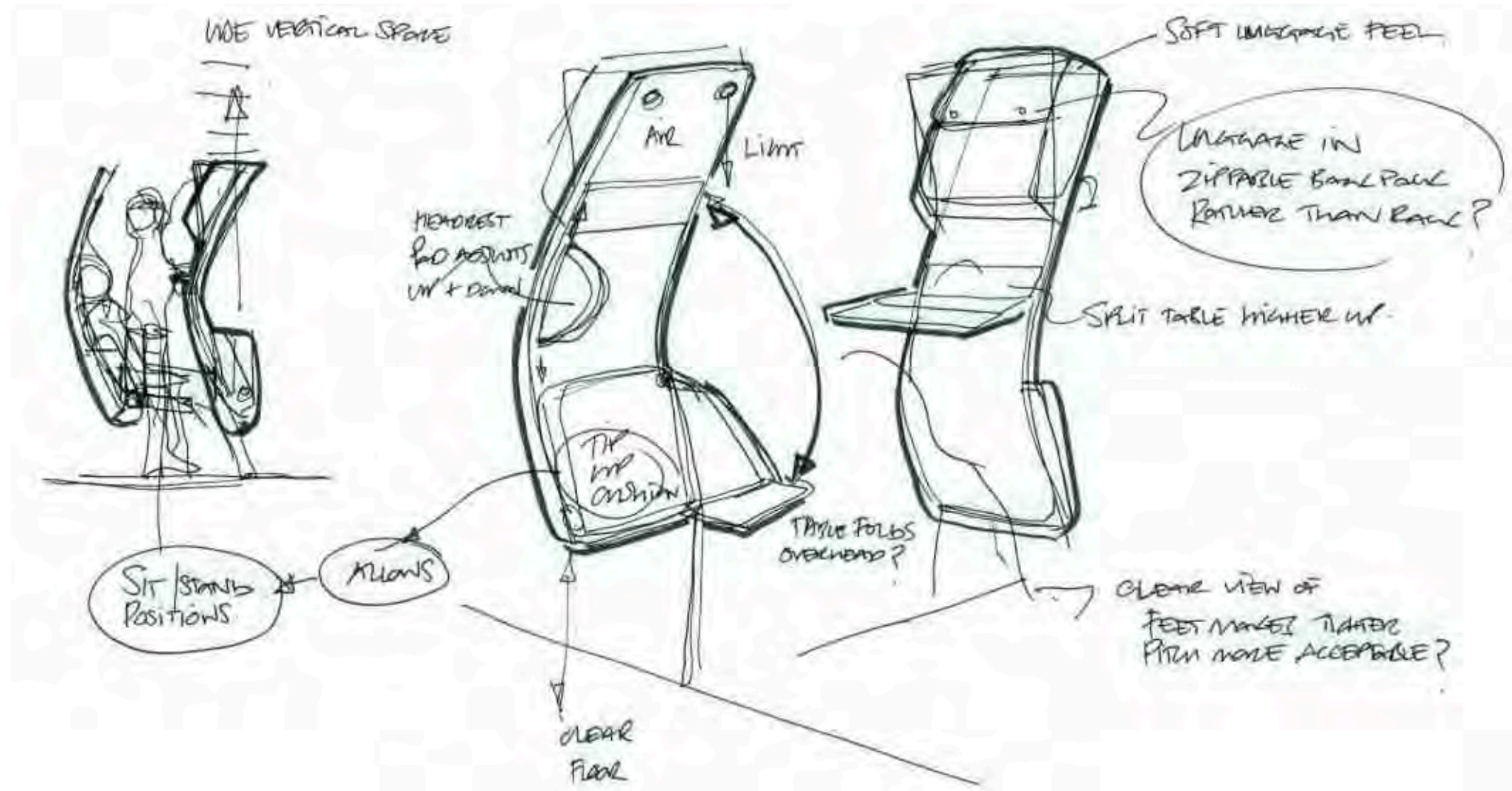


## Interior ideas



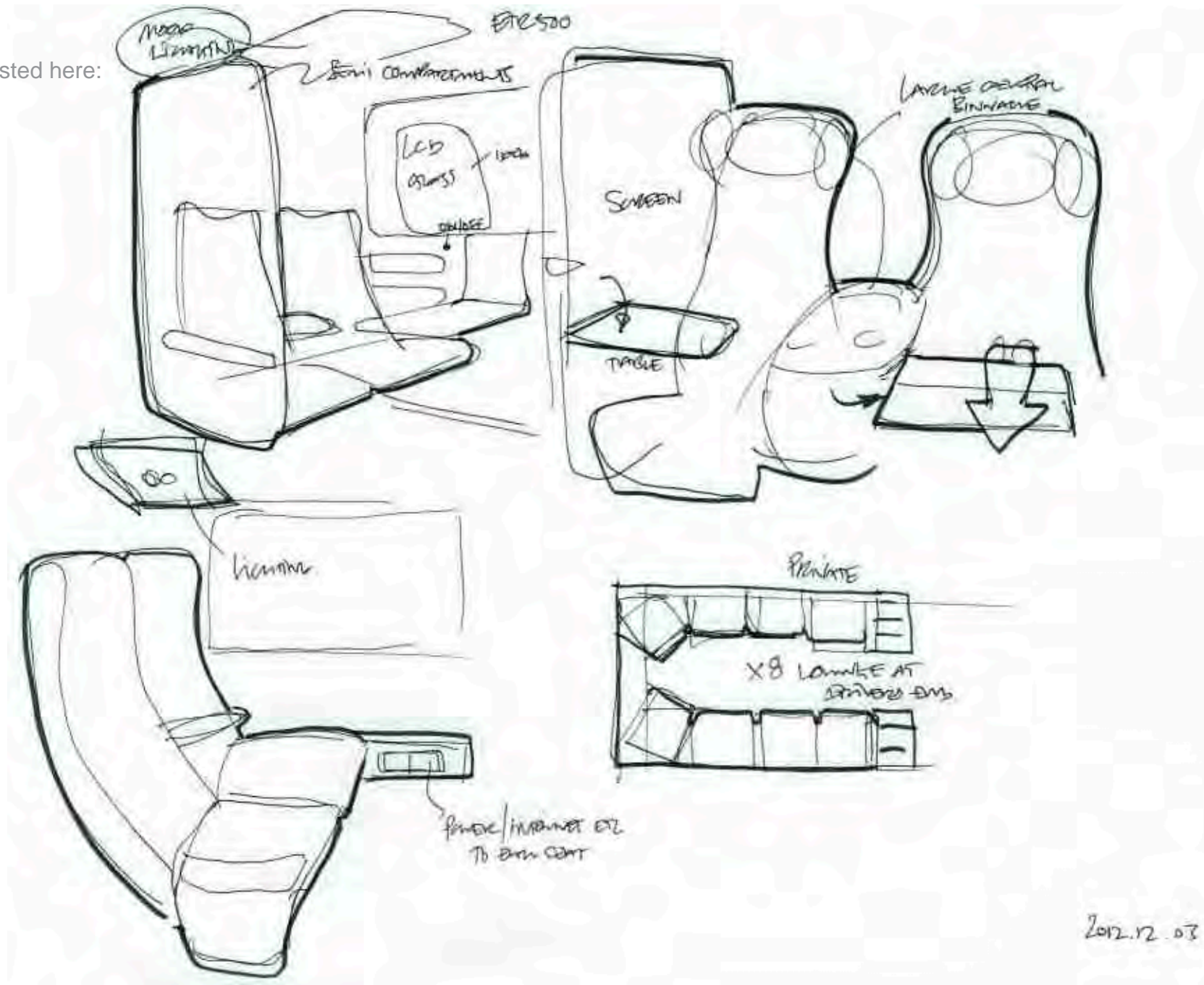
## Wear your seat on your back!

- design as if seat were a backpack
- put it anywhere you like within saloon
- comfortable sit/stand positions



## Talking Sketch

- a collection of ideas are listed here:

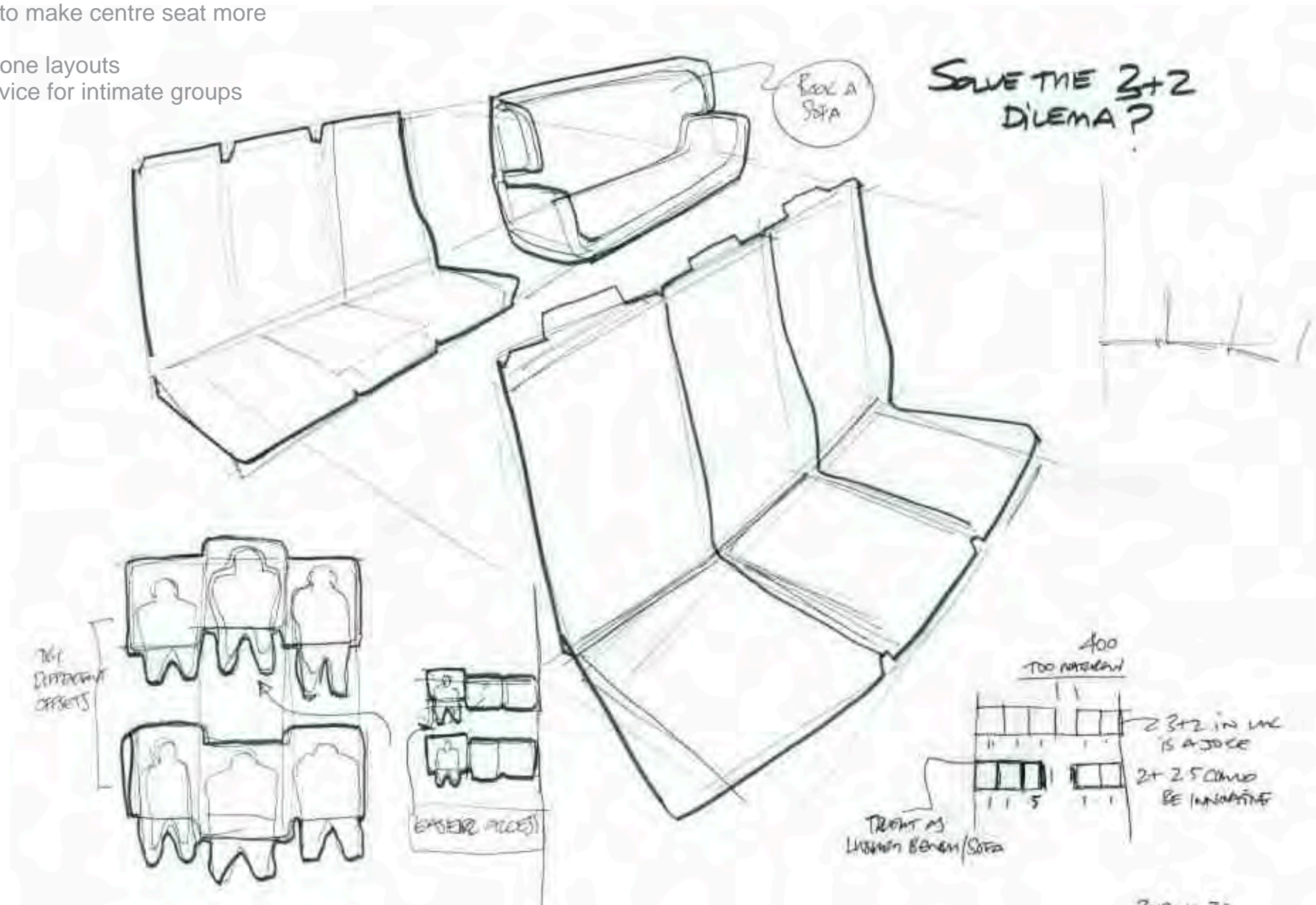


## Interior ideas



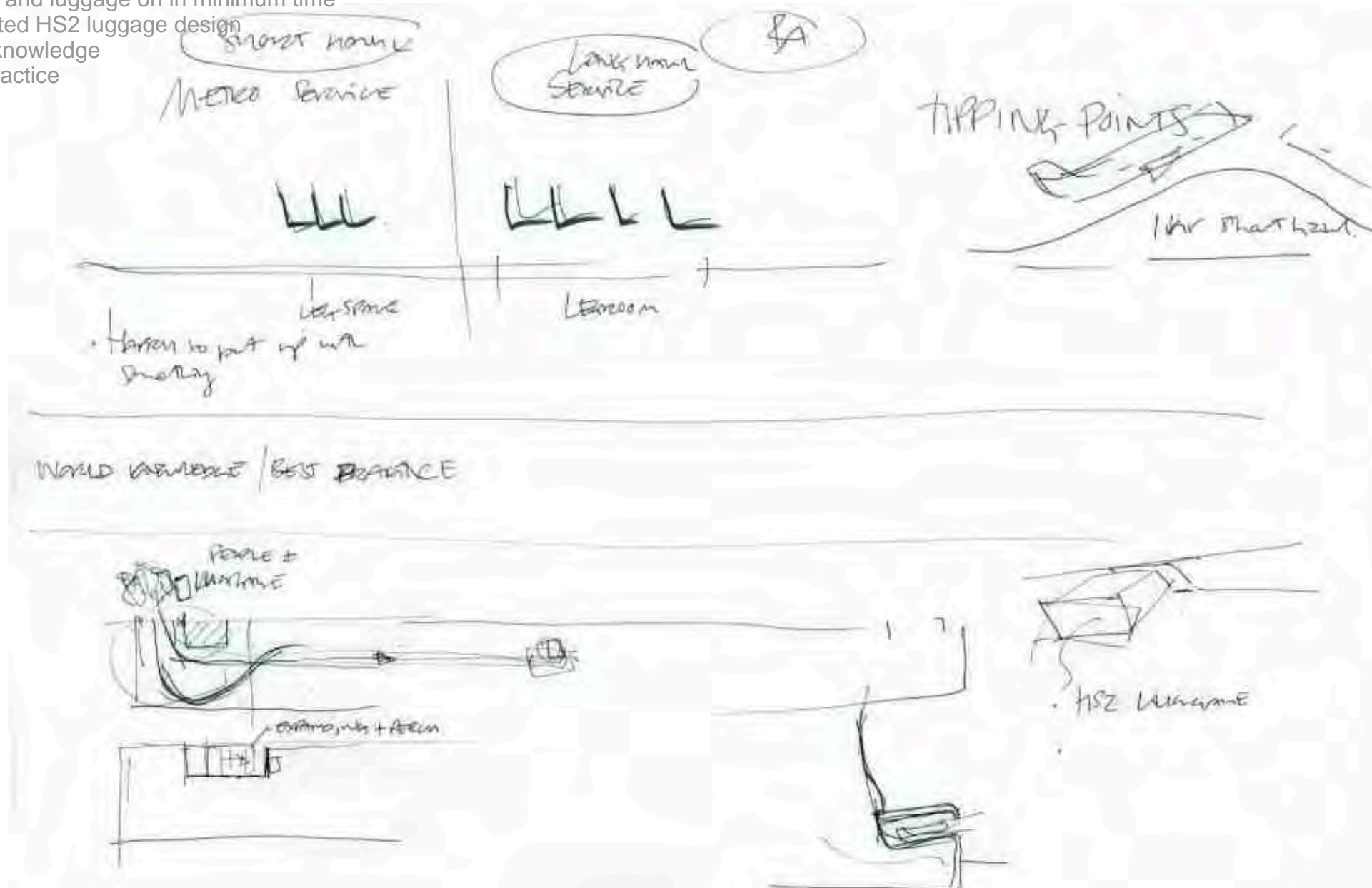
## Dedicated 3 seater sofas

- conventional compromised 3 seats arrangements converted into modern luxury benches or sofas
- consider offsets to make centre seat more accessible/attractive
- fan and herringbone layouts
- 'book a sofa' service for intimate groups



## Operational Tipping Points

- when does short haul become long?
- people and luggage on in minimum time
- dedicated HS2 luggage design
- world knowledge
- best practice

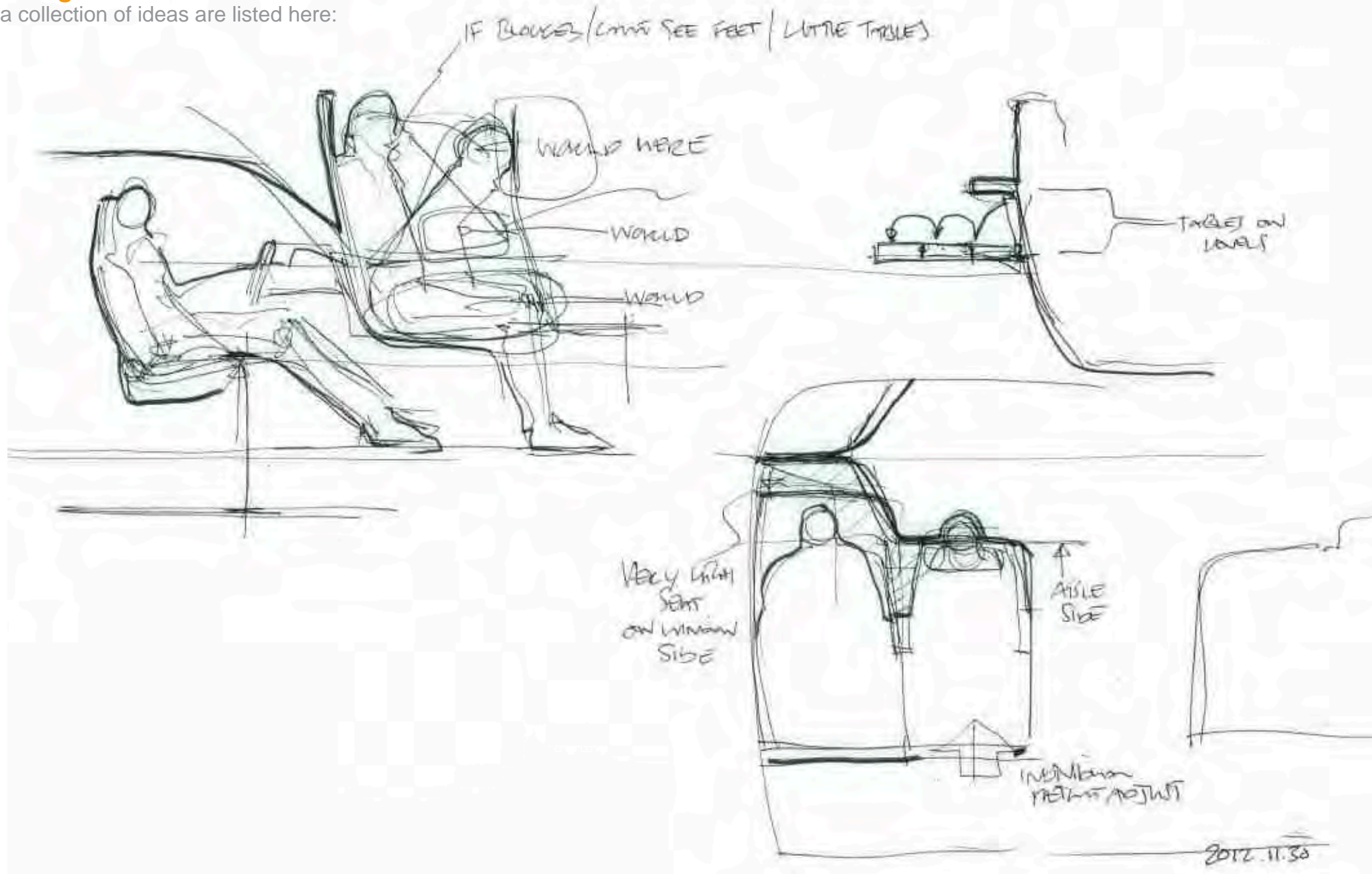


Interior ideas



## Talking Sketch

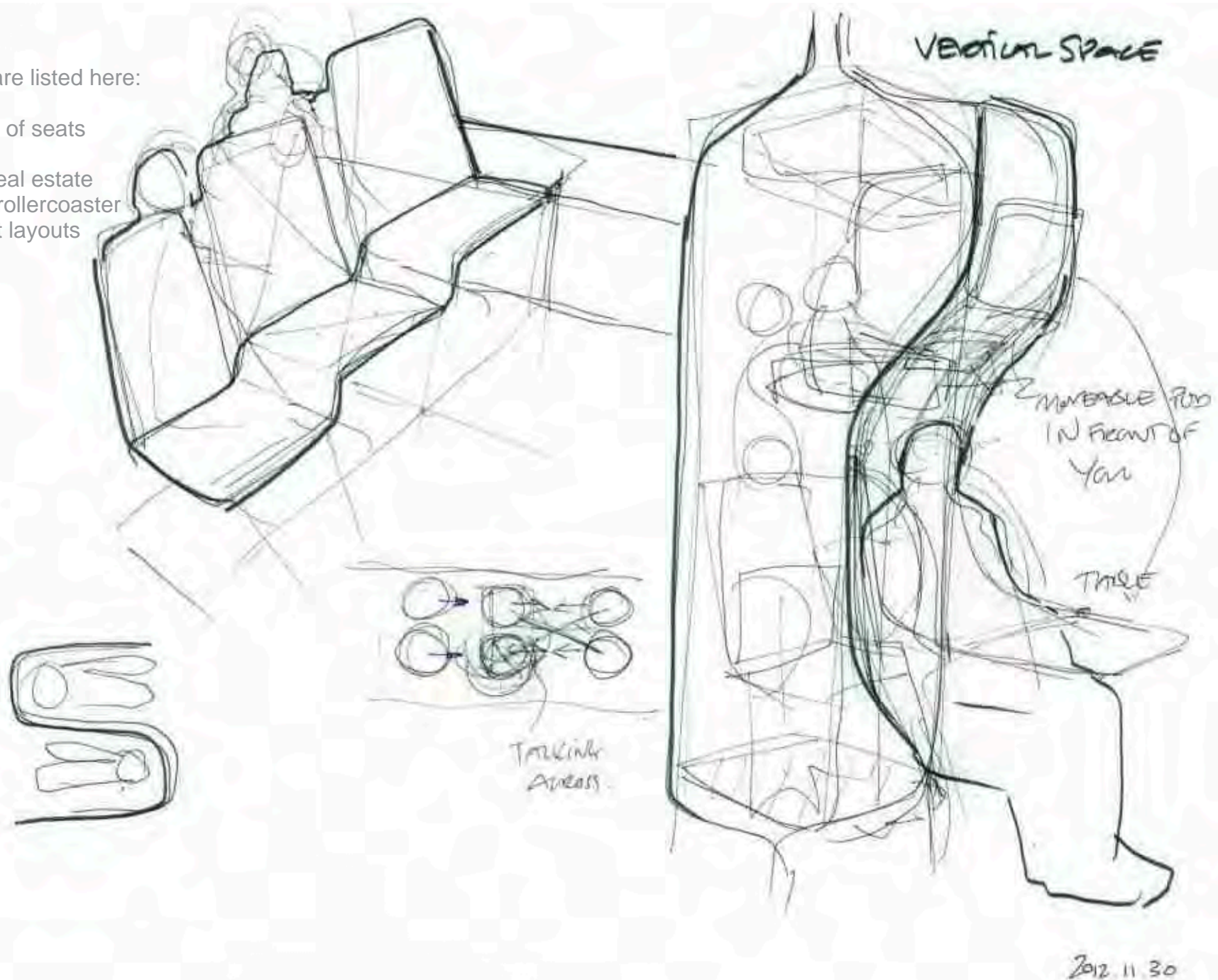
- a collection of ideas are listed here:



## Interior ideas

## Talking Sketch

- a collection of ideas are listed here:
- tiered seating
- talking across groups of seats
- rotating seats
- maximise your seat real estate
- table folds down like rollercoaster
- kissing/opposing seat layouts





- feels like airport lounge
- augmented reality environment
- HS2 apps for assistance
- Facebook meets vending
- wheelchair
- train recognises you
- low and high key moods
- lectures
- real social networking
- buy a 'nomad' ticket
- see who's on the train
- seat swap network



- a collection of ideas are listed here:



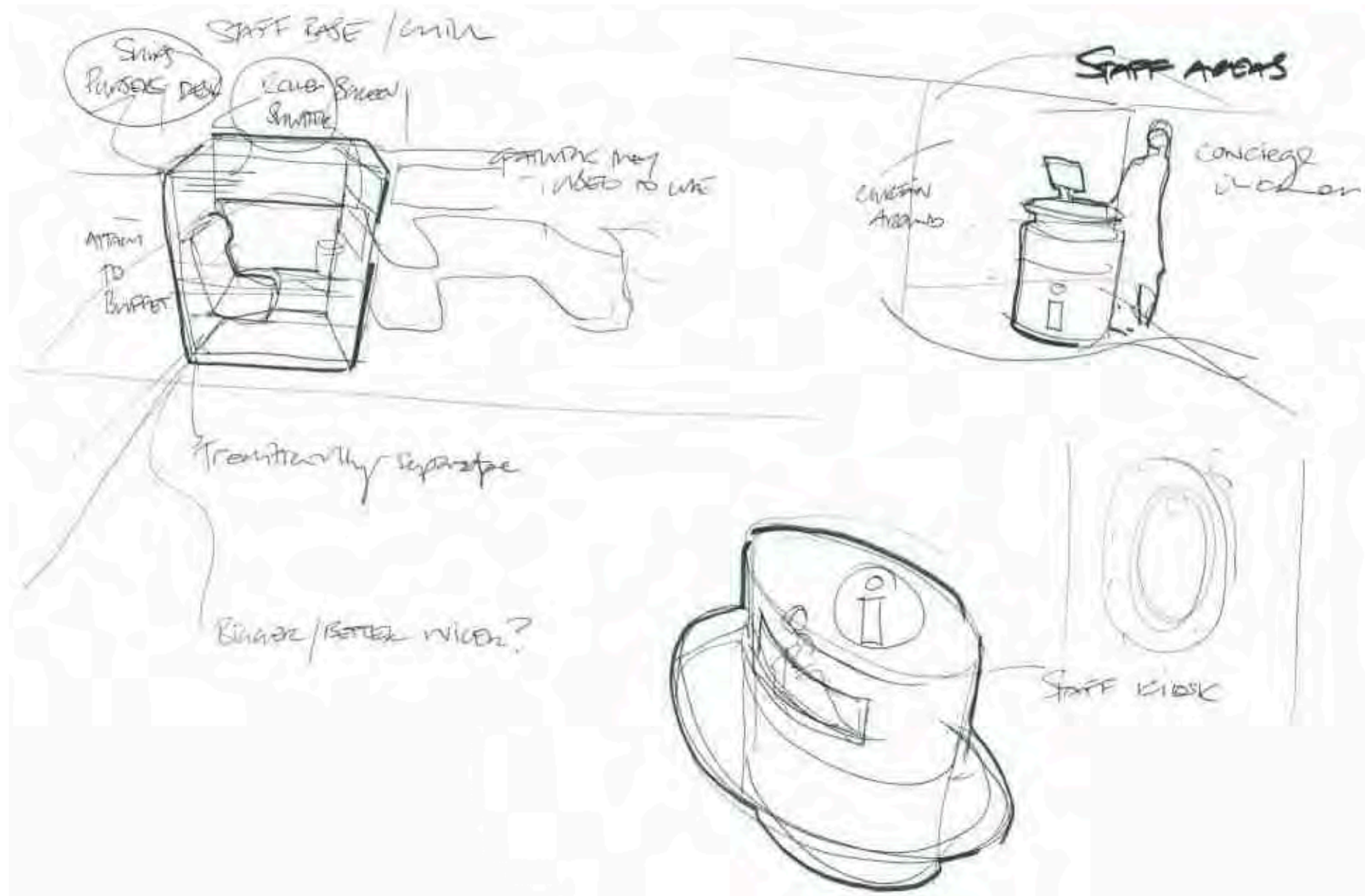


- a collection of ideas are listed here:

- 
- of ideas are listed here:
- Diagram illustrating a seating arrangement with various annotations:
- Annotations:**
    - Diagram 11
    - COLONN
    - ELONGATED LIGHTING
    - 7pm - 7am
    - ULTRA VIOLET (2, 3 AM)
    - LINE COORDINATE
    - LOCAL LIGHT / SPD
    - WHAT MAKES BEHAVIOR BLUE
    - AMBIENT
    - LOCAL
    - 300 Lx
    - Point Sources Don't Need Light
    - THICK
    - WARMER LIGHT
    - FREEZING
  - Seating Arrangement:** The sketch shows two large, angular, offset seating units. The left unit is labeled "WARMER LIGHT" and the right unit is labeled "FREEZING".
  - Lighting Design:** The diagram includes a section labeled "ELONGATED LIGHTING" and a section labeled "7pm - 7am ULTRA VIOLET (2, 3 AM)". A note "LINE COORDINATE" points to a line in the diagram. Another note "LOCAL LIGHT / SPD" points to a specific area. A section labeled "AMBIENT" is also present.
  - Other Notes:**
    - "WHAT MAKES BEHAVIOR BLUE" is written in a circle.
    - "LOCAL" and "300 Lx" are written near the bottom right.
    - "Point Sources Don't Need Light" is written near the bottom left.
    - "THICK" is written near the bottom right.
  - Offset Seating:** The title "OFFSET SEATING" is written at the bottom left.
  - Date:** The date "2012.11.30" is written at the bottom right.

# Talking Sketch

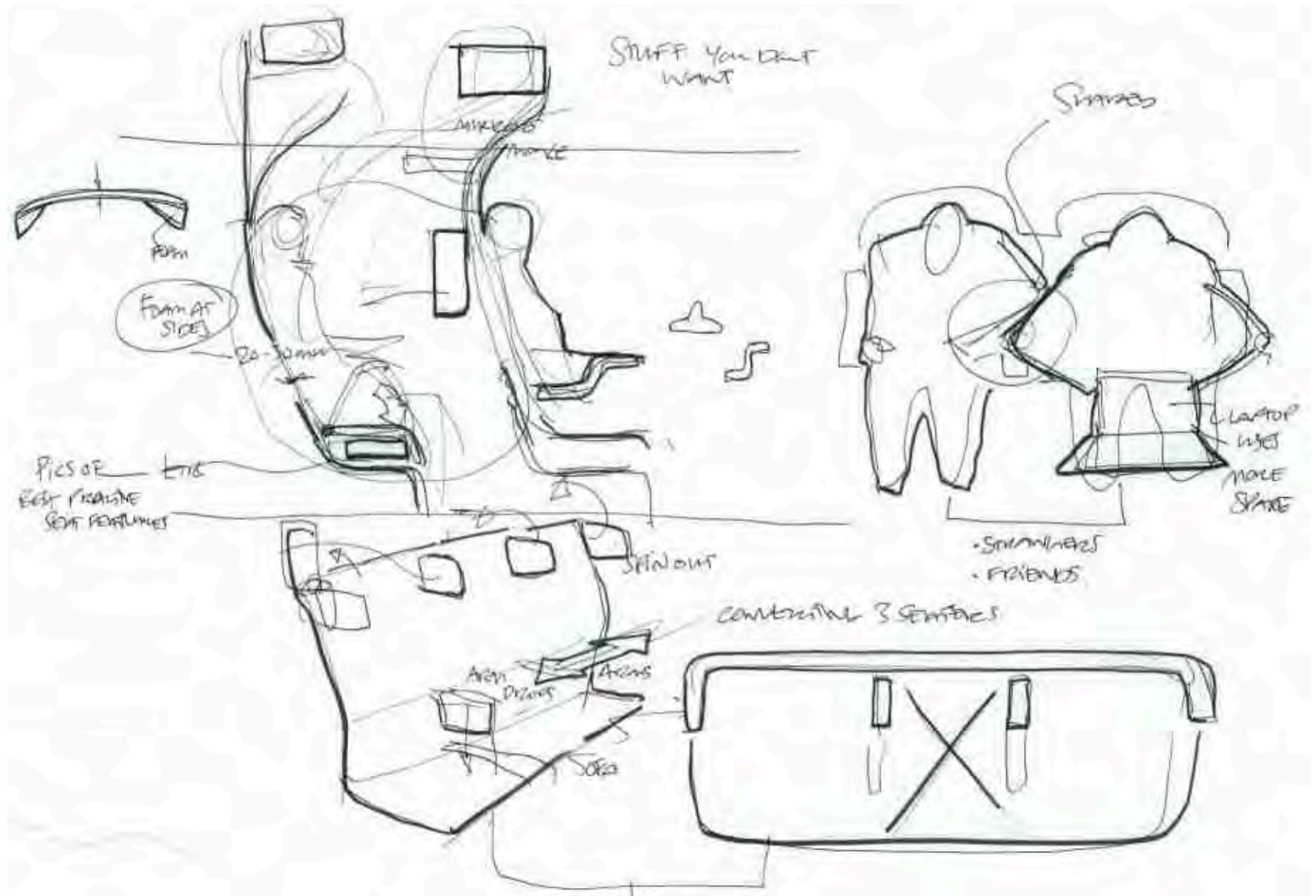
- a collection of ideas are listed here:





## Talking Sketch

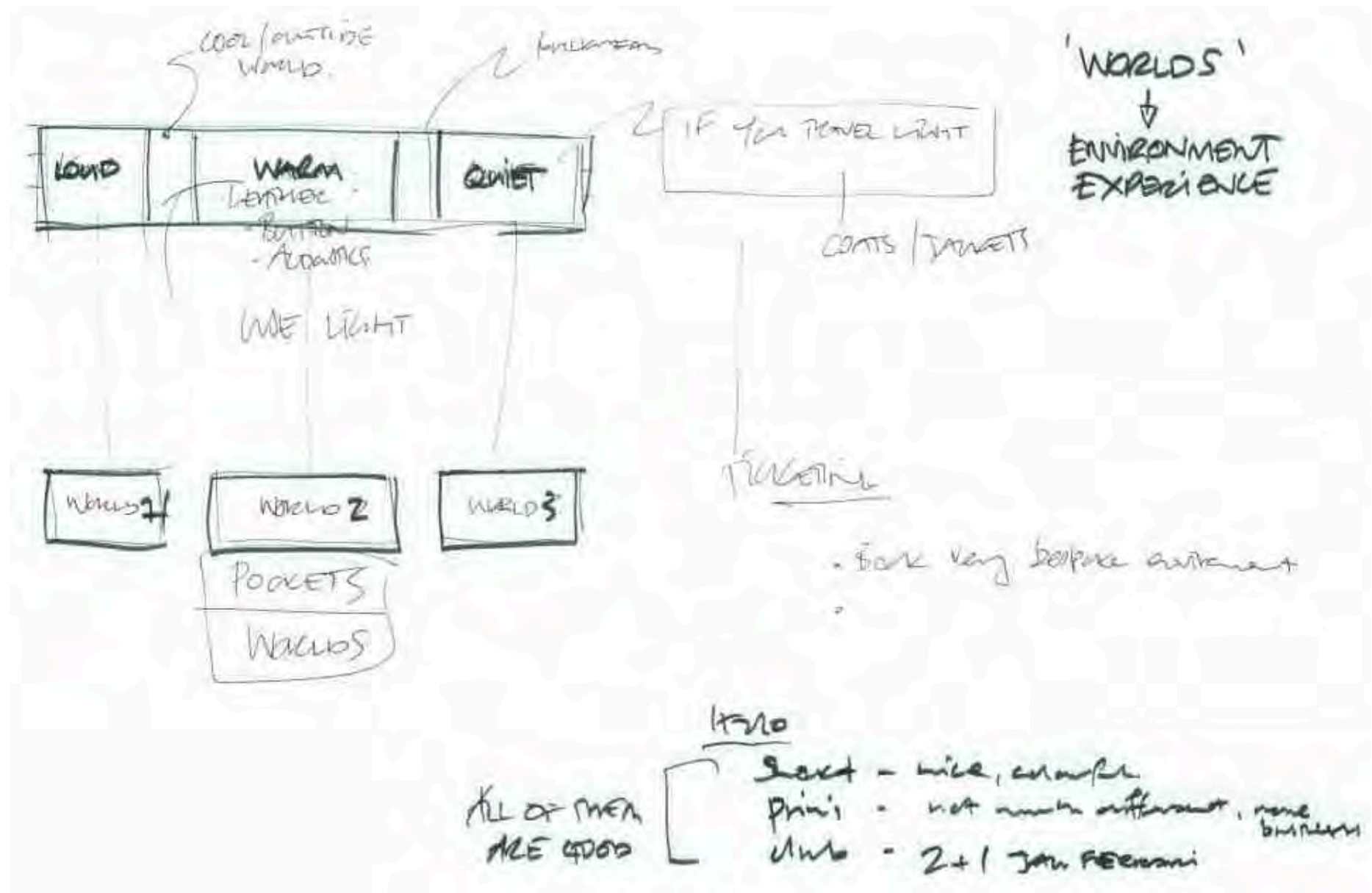
- a collection of ideas are listed here:



## Interior ideas

## Talking Sketch

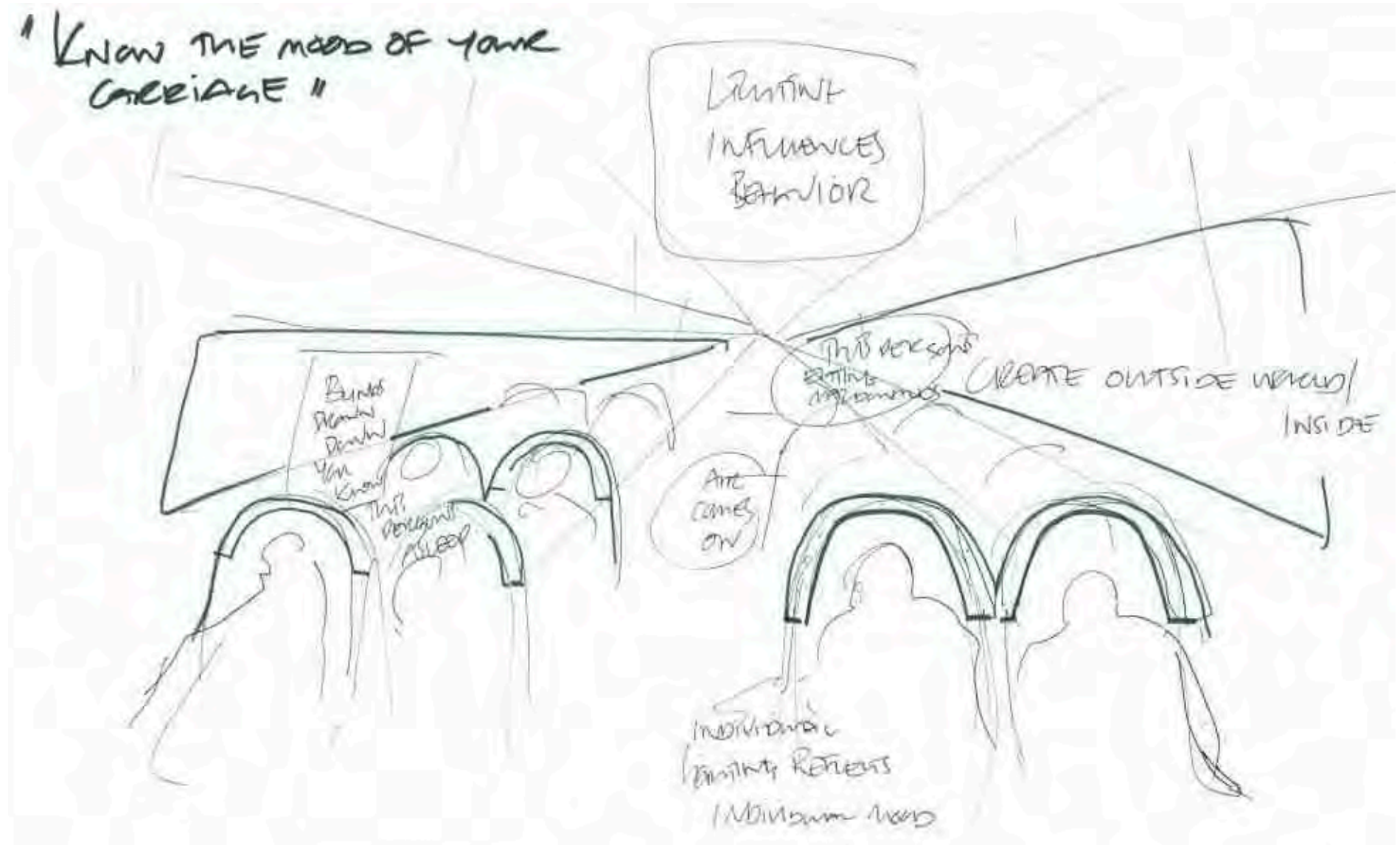
- a collection of ideas are listed here:





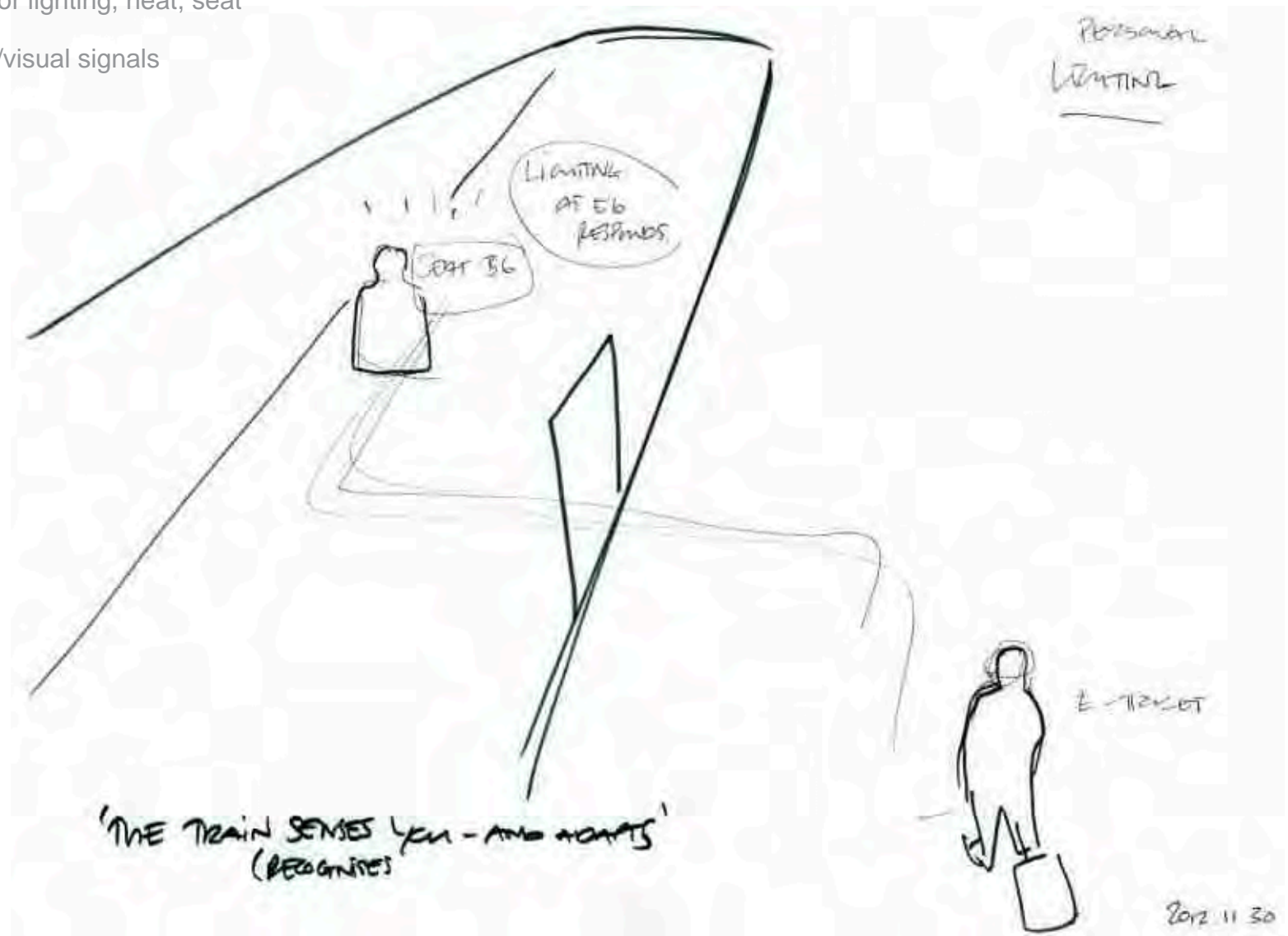
## Know the mood of your carriage

- a collection of ideas are listed here:

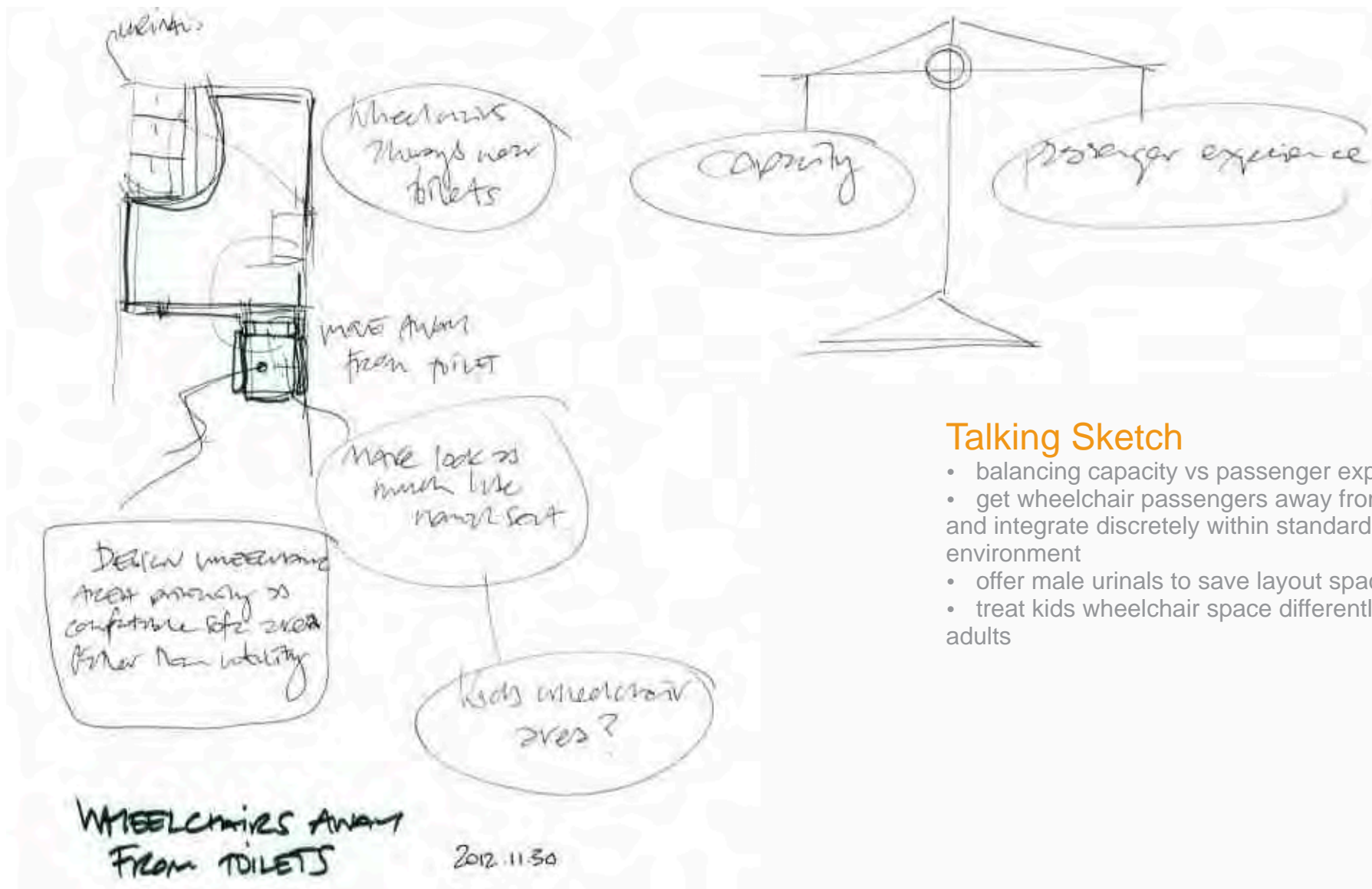


## The train senses you

- and adapts and responds to your requirements
- facilities interact as you board and alight
- key in your personal profile for lighting, heat, seat ergonomics etc
- soothing personalised audio/visual signals

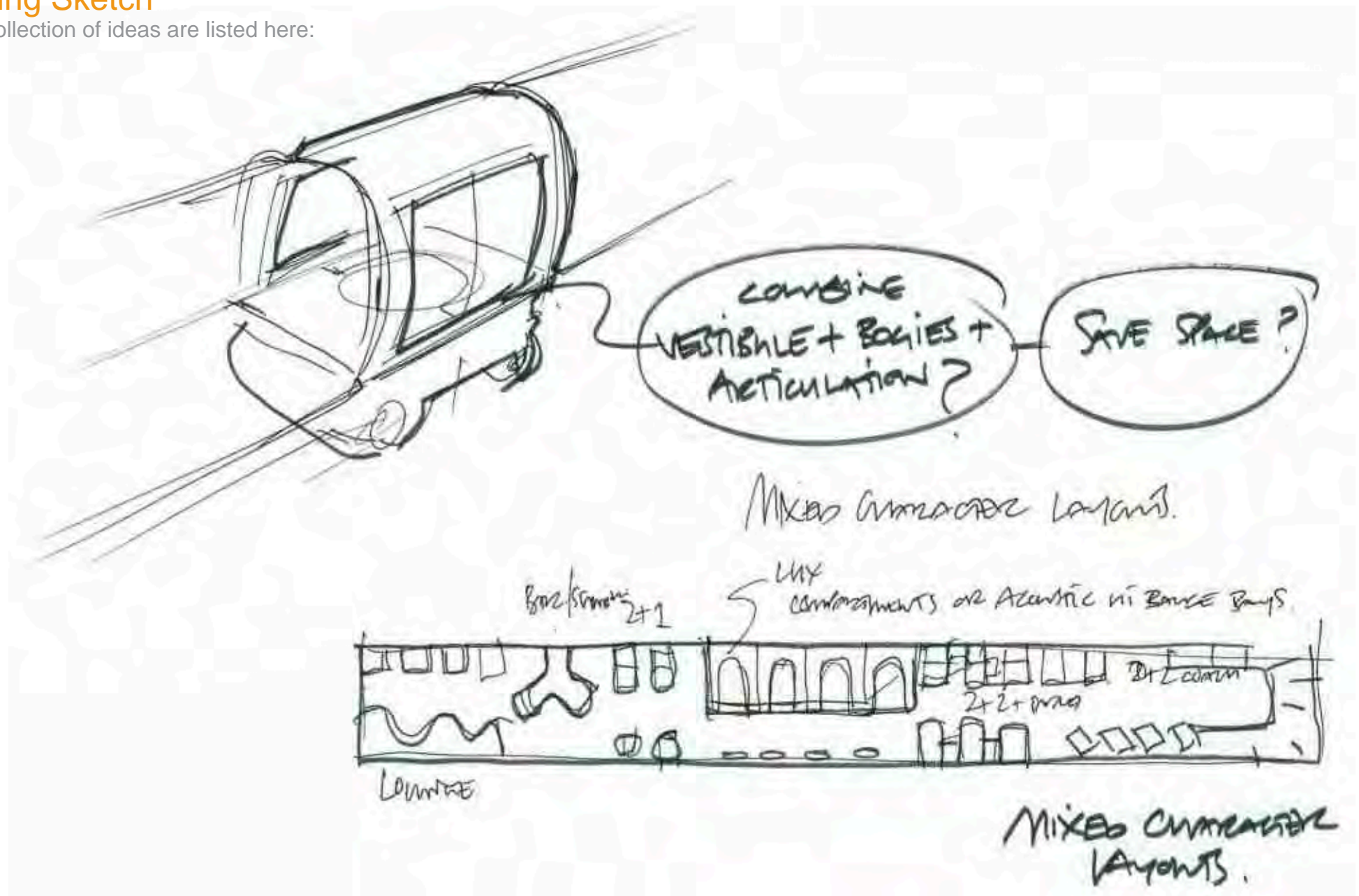






## Talking Sketch

- a collection of ideas are listed here:





## Talking Sketch

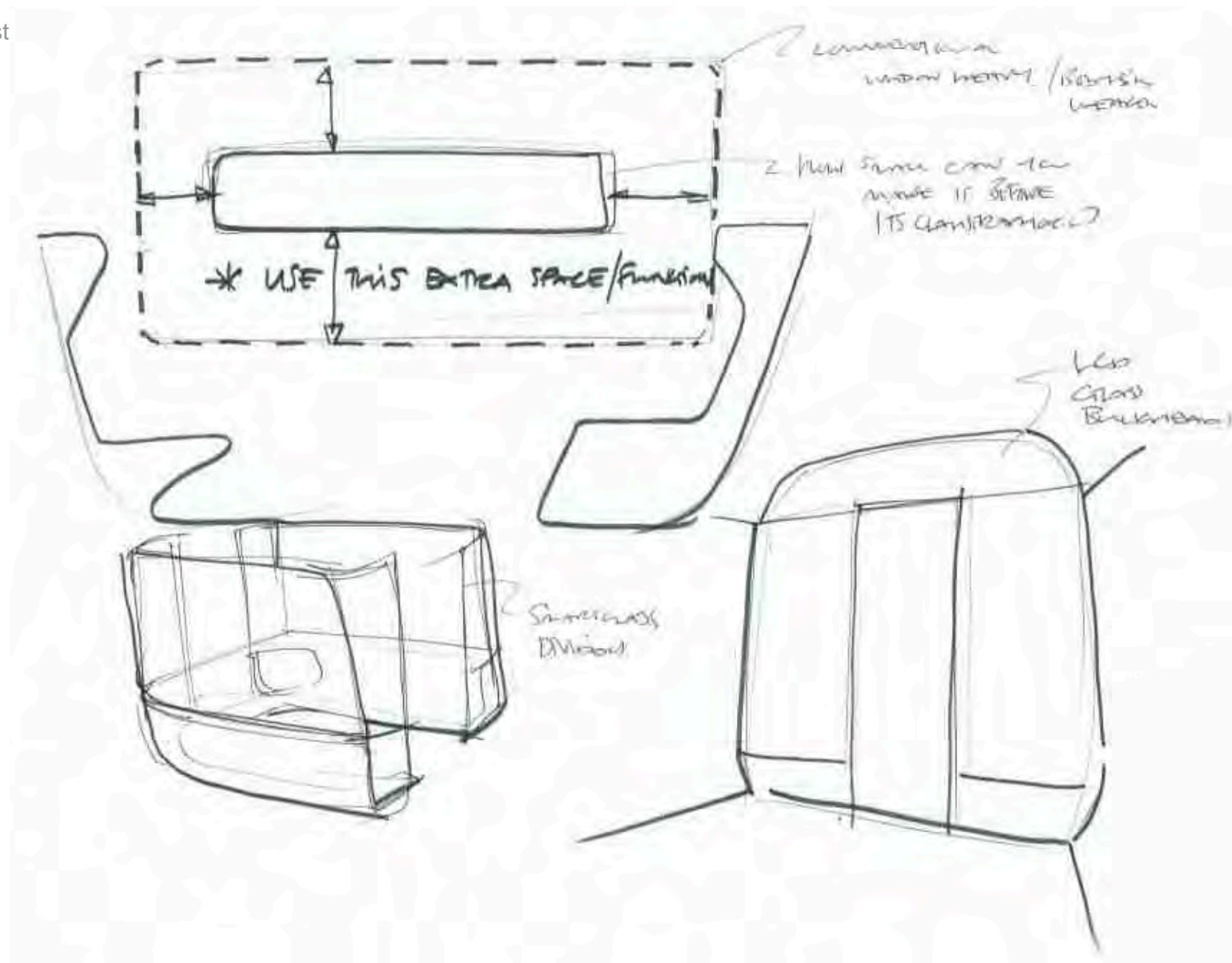
- a collection of ideas are listed here:
- light tube technologies
- eco aesthetics
- smartglass
- stepless journey
- common materials and finishes across stations and vehicle



## Interior ideas

## Talking Sketch

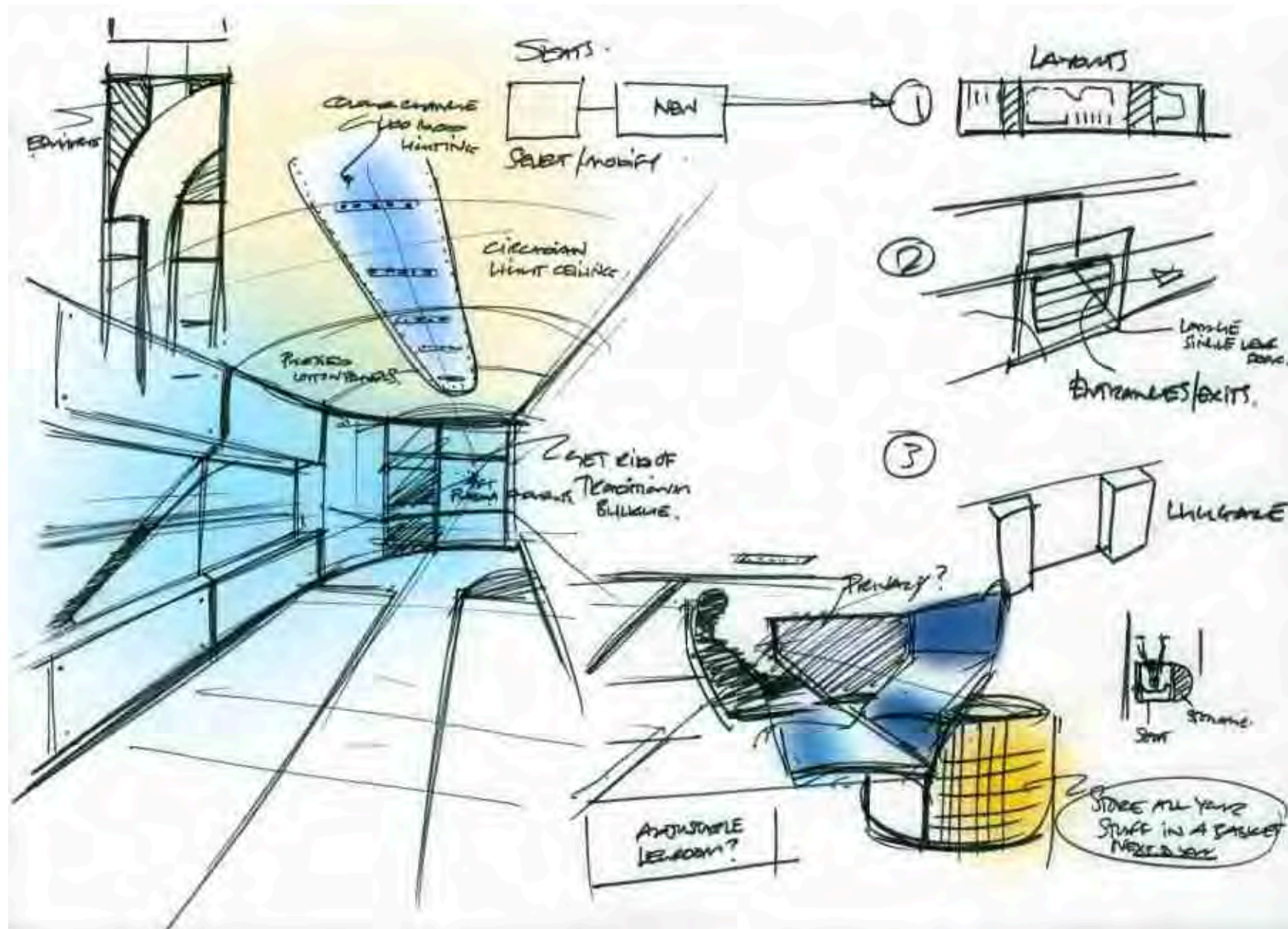
- a collection of ideas are list





## Talking Sketch

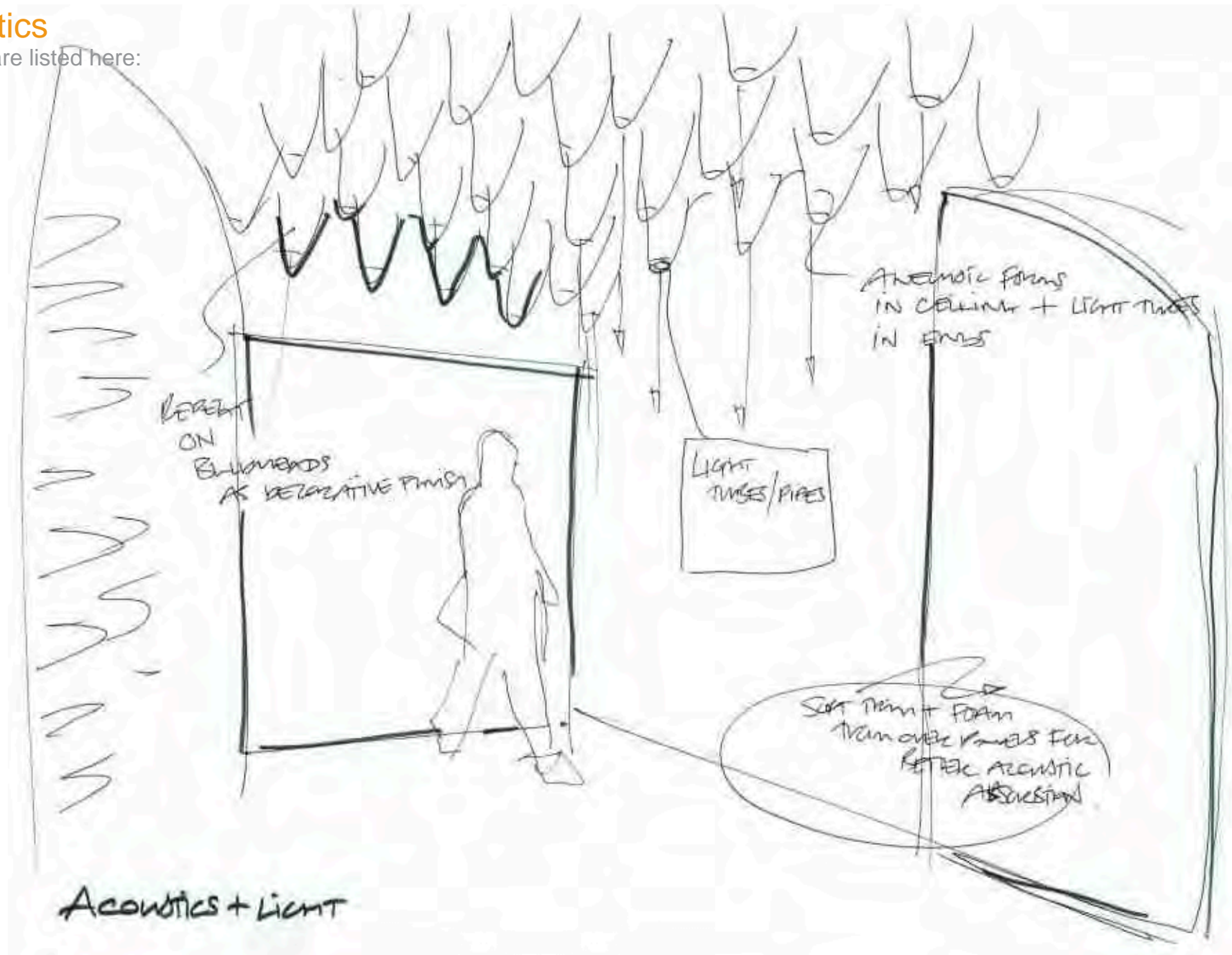
- a collection of ideas are listed here:



## Interior ideas

## Acoustic aesthetics

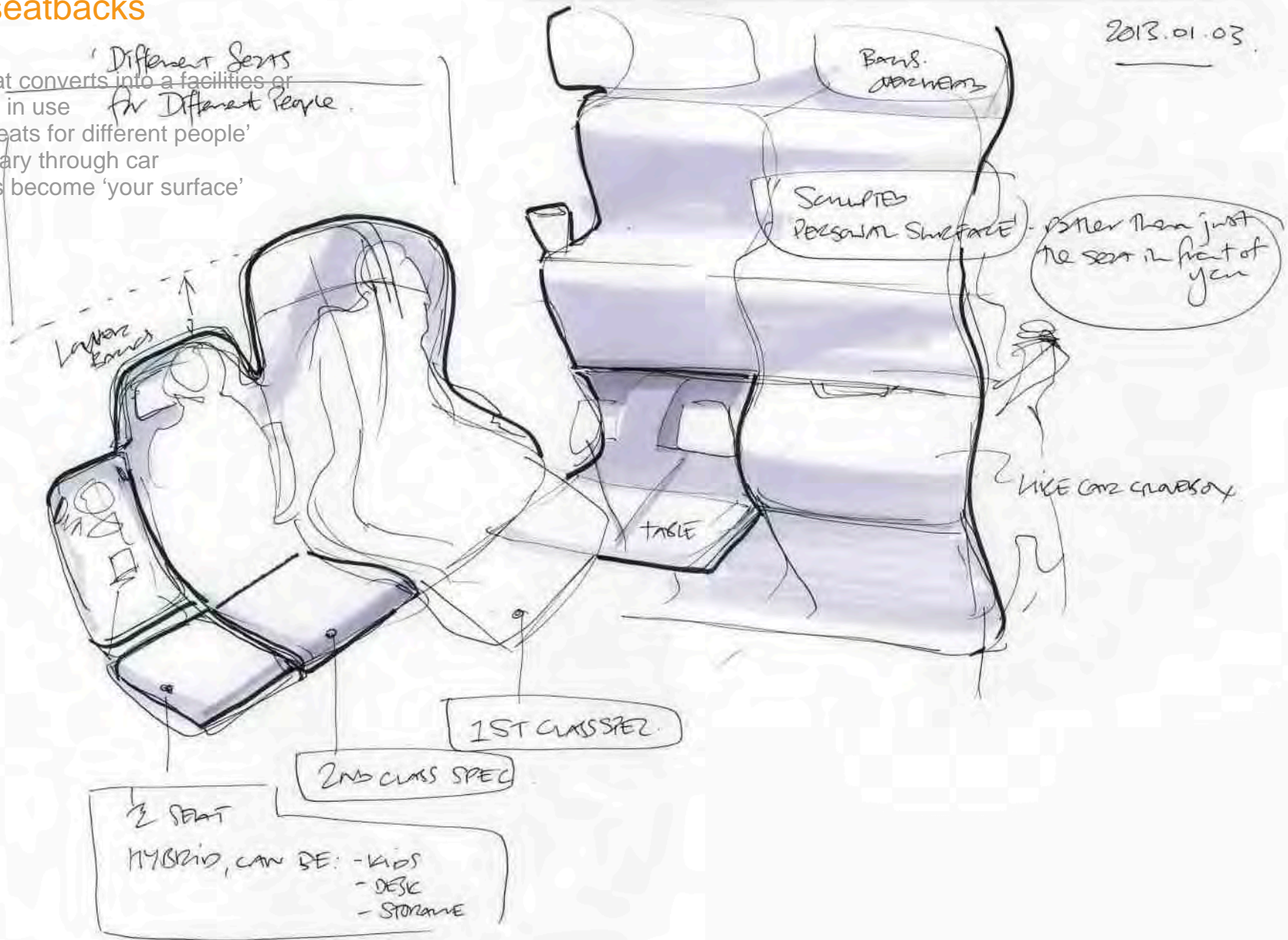
- a collection of ideas are listed here:





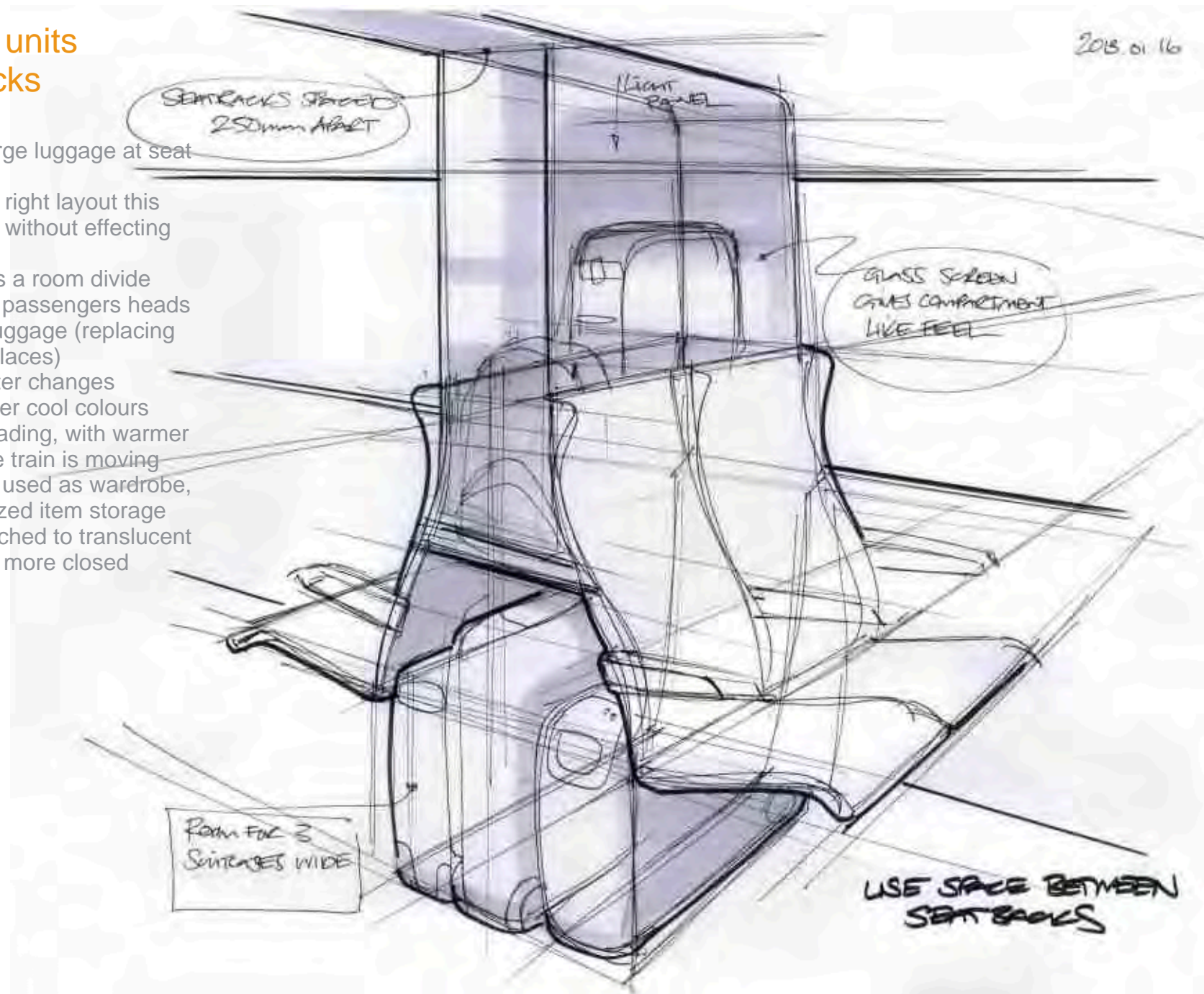
- dedicated child seat converts into a facilities or storage unit when not in use
- provide 'different seats for different people'
- seatback heights vary through car
- sculpted seatbacks become 'your surface'

- dedicated child seat converts into a facilities or storage unit when not in use
- provide 'different seats for different people'
- seatback heights vary through car
- sculpted seatbacks become 'your surface'



## Luggage storage units between seat backs

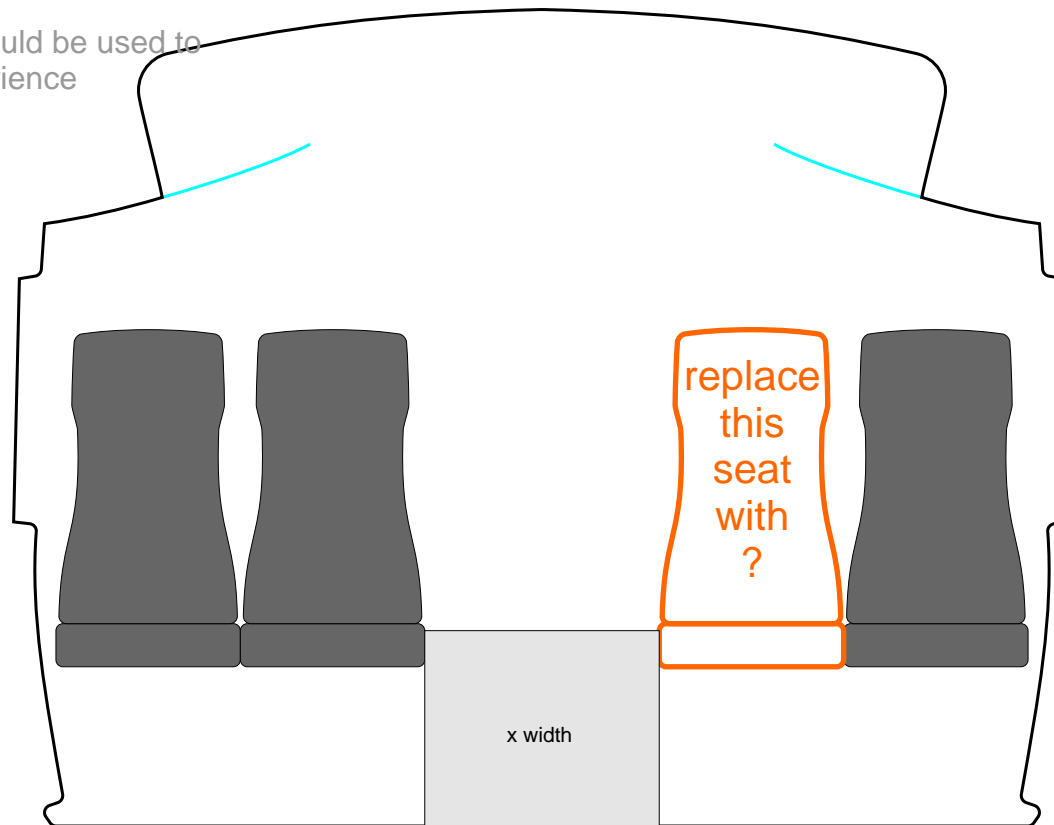
- allows for storage of large luggage at seat place
- in combination with the right layout this solution could be adopted without effecting overall seating capacity
- glass upper unit acts as a room divide
- narrow space between passengers heads utilized for smaller hand luggage (replacing overhead racks in some places)
- internal lighting character changes throughout journey. Brighter cool colours enhance security when loading, with warmer mood effects applied once train is moving
- variant of unit could be used as wardrobe, buggies, bikes and oversized item storage
- smartglass can be switched to translucent during journey to create a more closed environment





**'2 + 2 seating layout enhanced'**  
*Occasional single seats  
replaced by other facilities*

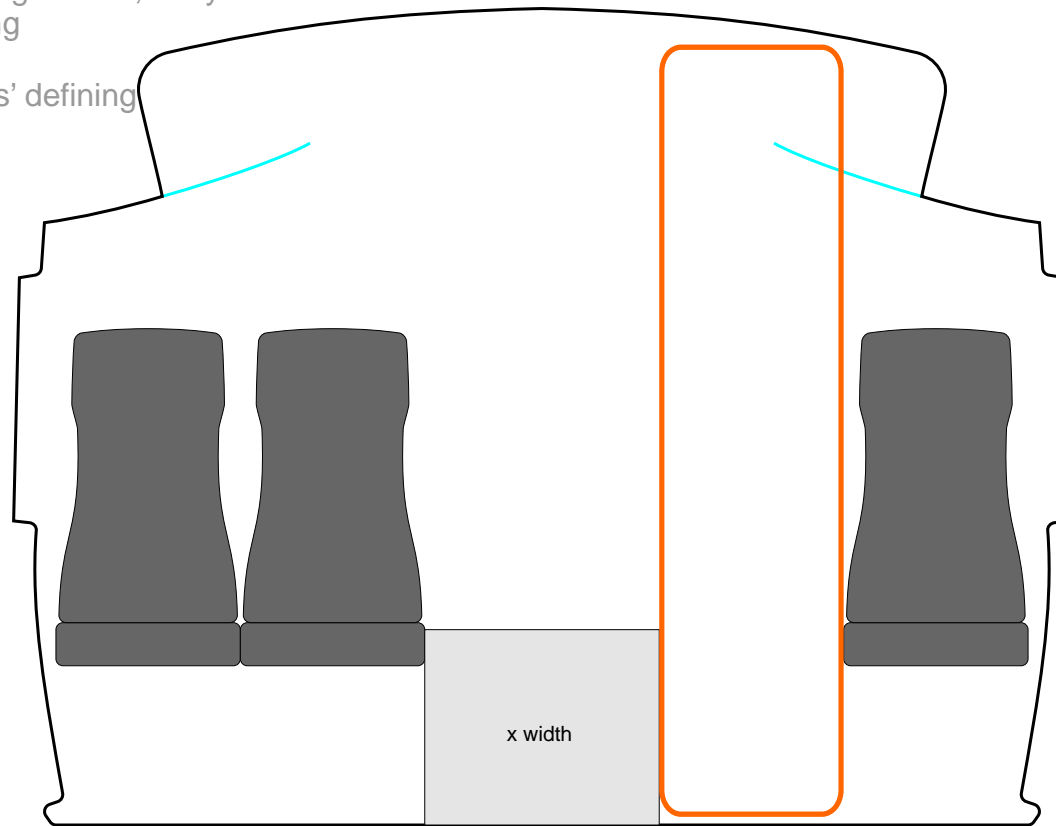
- consider how this space could be used to enhance the passenger experience



## '2 + 2 seating layout enhanced'

### *Floor to ceiling luggage stacks*

- evenly distributed units along the car, may help encourage faster boarding
- allows luggage within view
- act as 'beacons' or 'sentries' defining individualised spaces

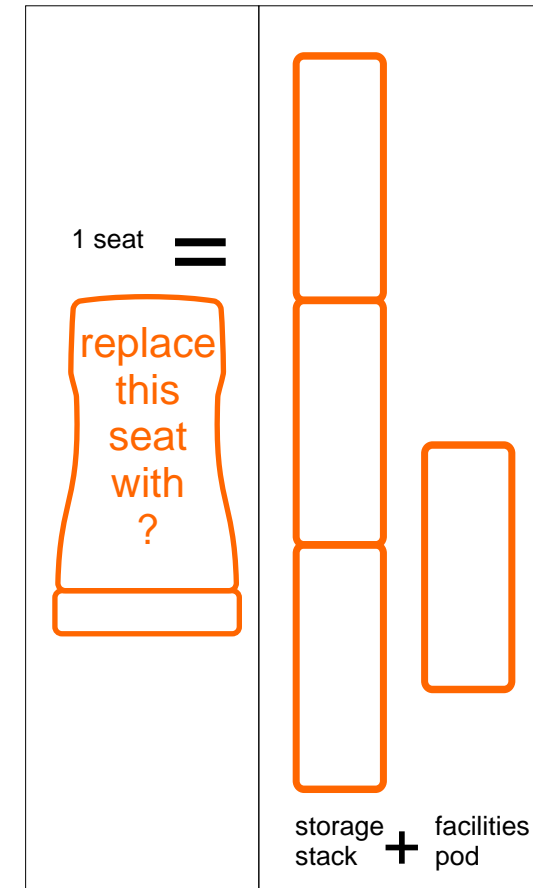
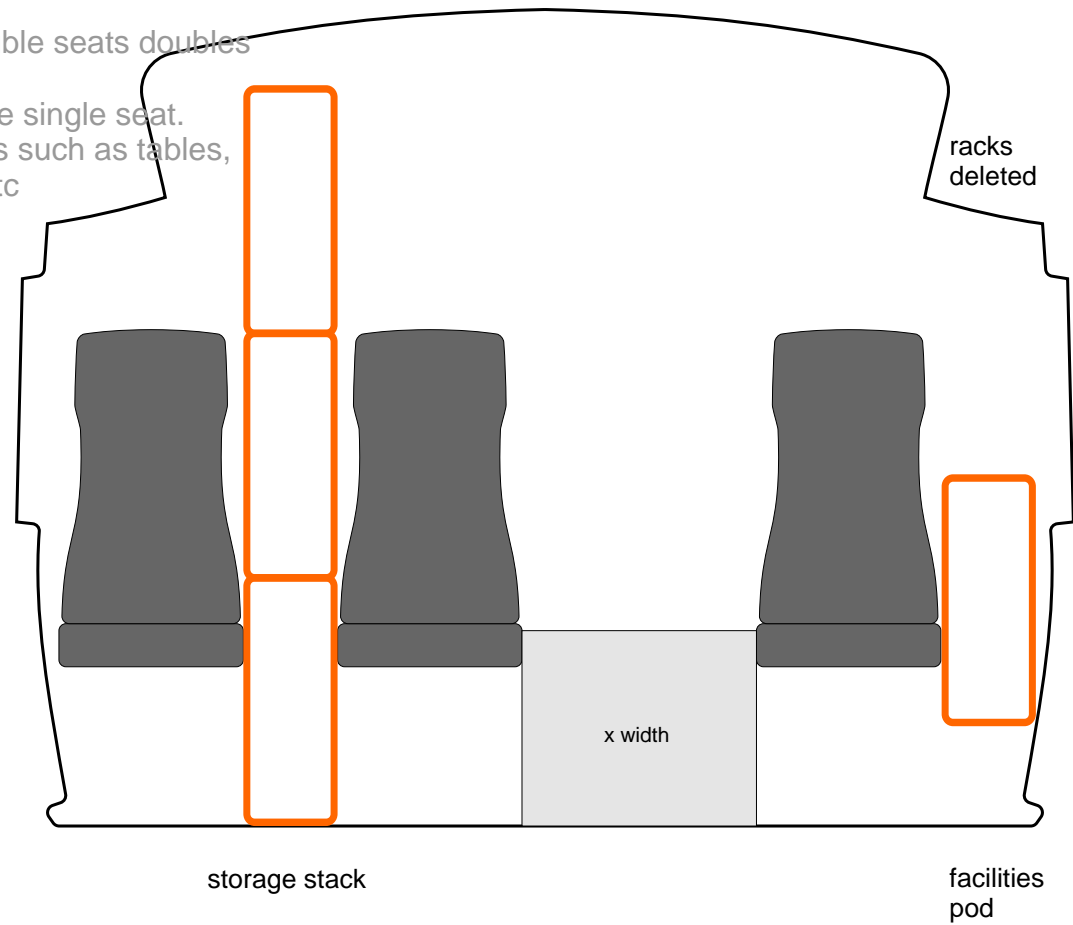




## '2 + 2 seating layout enhanced'

### *Stacks define individual seat spaces*

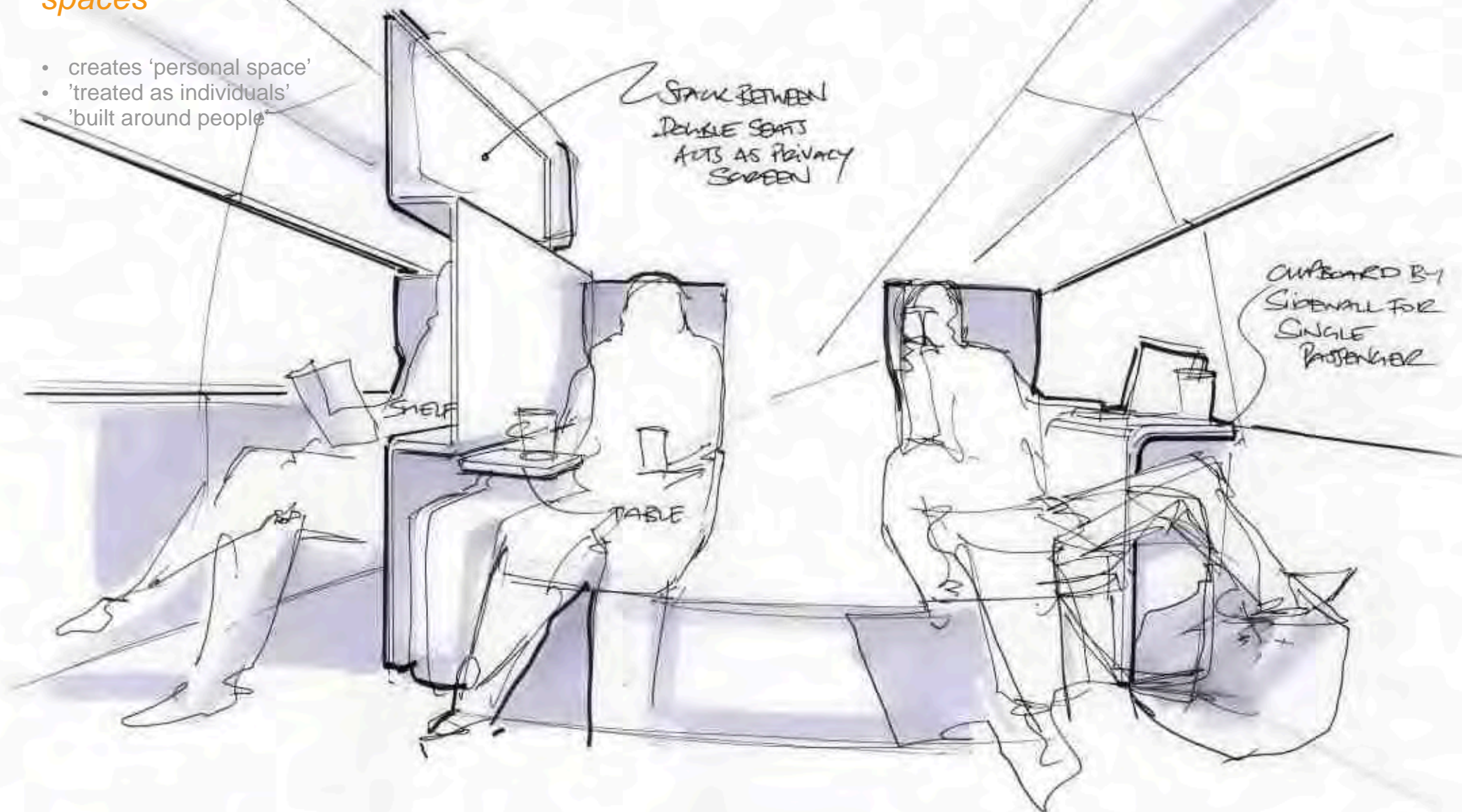
- storage stack between double seats doubles as a privacy screen
- storage/facilities pod beside single seat.
- pods might include facilities such as tables, psu's, monitors, coat hooks etc
- overhead racks deleted



## '2 + 2 seating layout enhanced'

### *Stacks define individual seat spaces*

- creates 'personal space'
- 'treated as individuals'
- 'built around people'

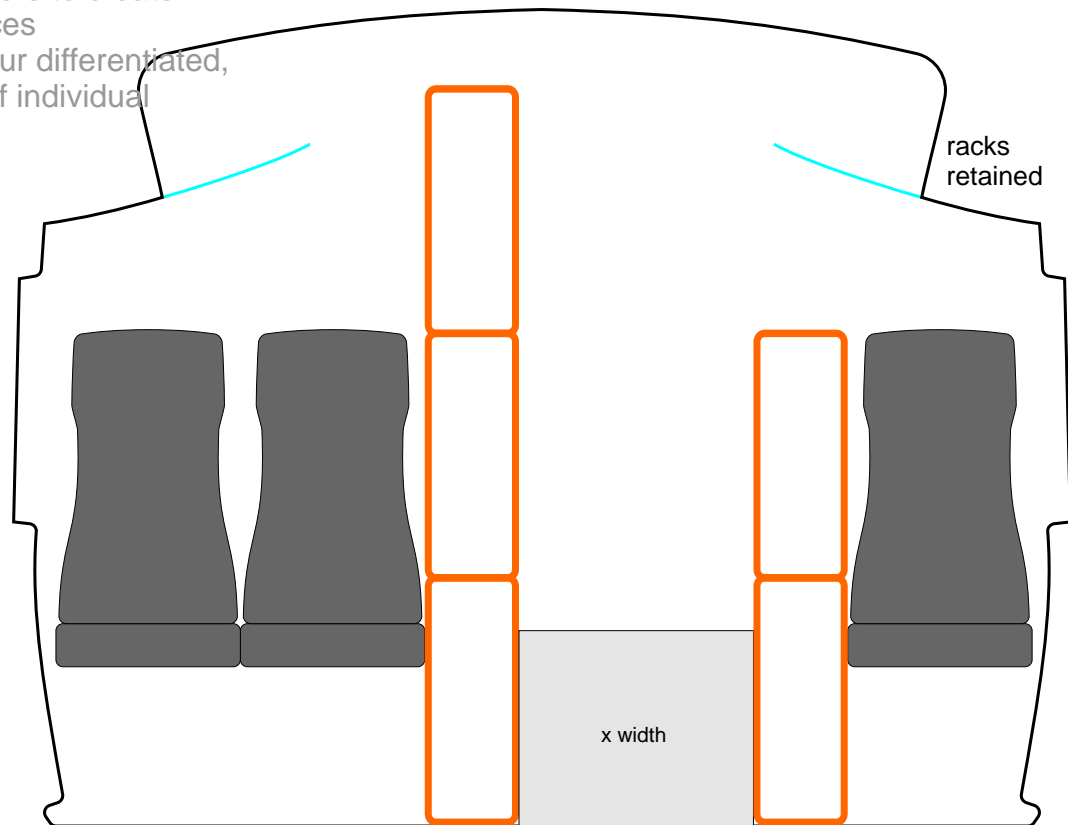




## '2 + 2 seating layout enhanced'

### *Stacks as room dividers*

- stacks used as 'room' dividers to create semi-compartmentalised spaces
- stacks illuminated and colour differentiated, acting as totems or markers of individual spaces
- overhead racks retained

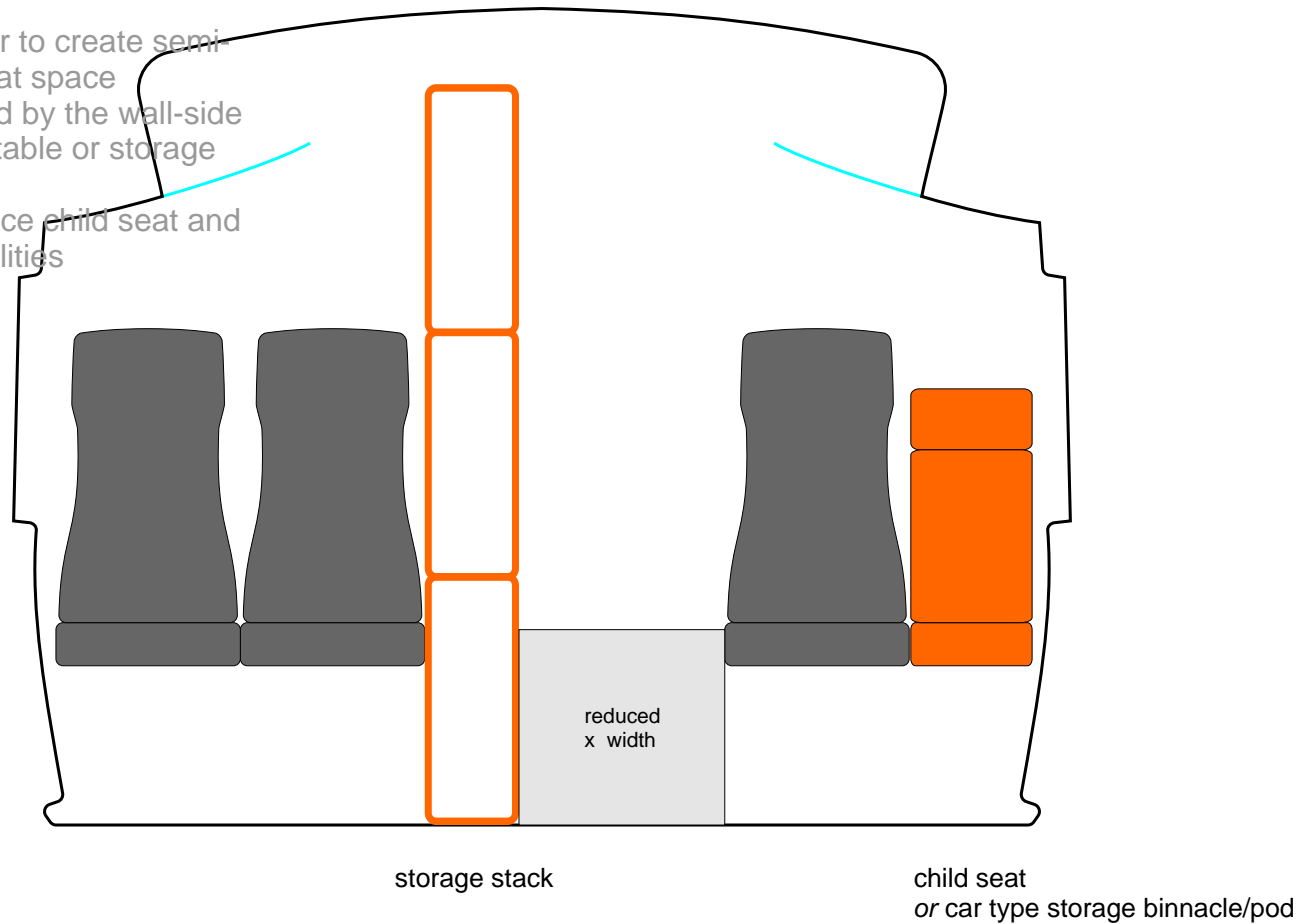


storage stacks allows fast access to luggage locally around seats and acts as a room divider

## '2 + 2 seating layout enhanced'

### *Stack as room divider between family and business areas*

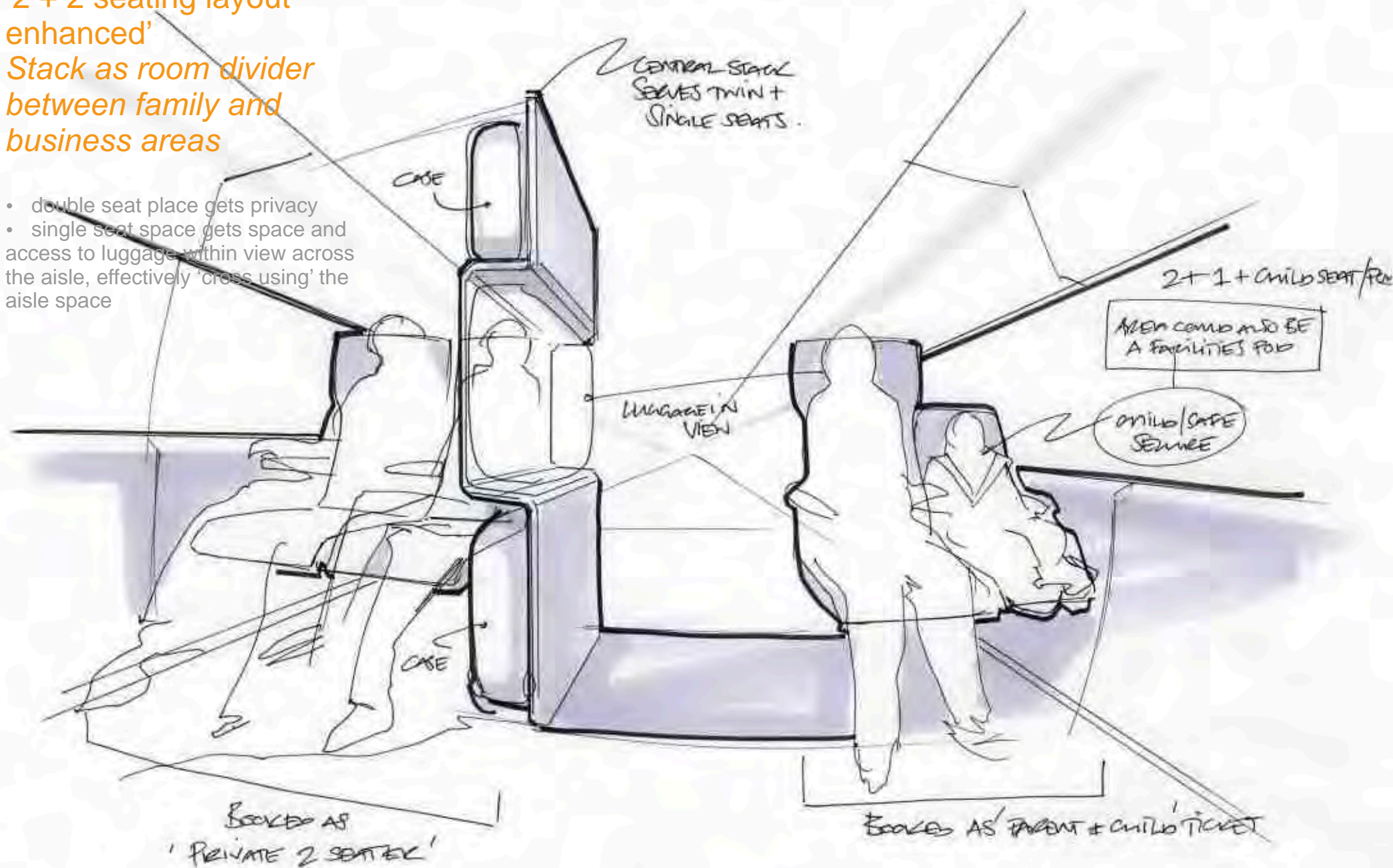
- stack used as 'room' divider to create semi-compartmentalised double seat space
- convertible child seat added by the wall-side of the single seat, provides a table or storage surface when not in use
- pod or binnacle could replace child seat and offer car type storage and facilities
- overhead racks retained





**'2 + 2 seating layout enhanced'**  
*Stack as room divider between family and business areas*

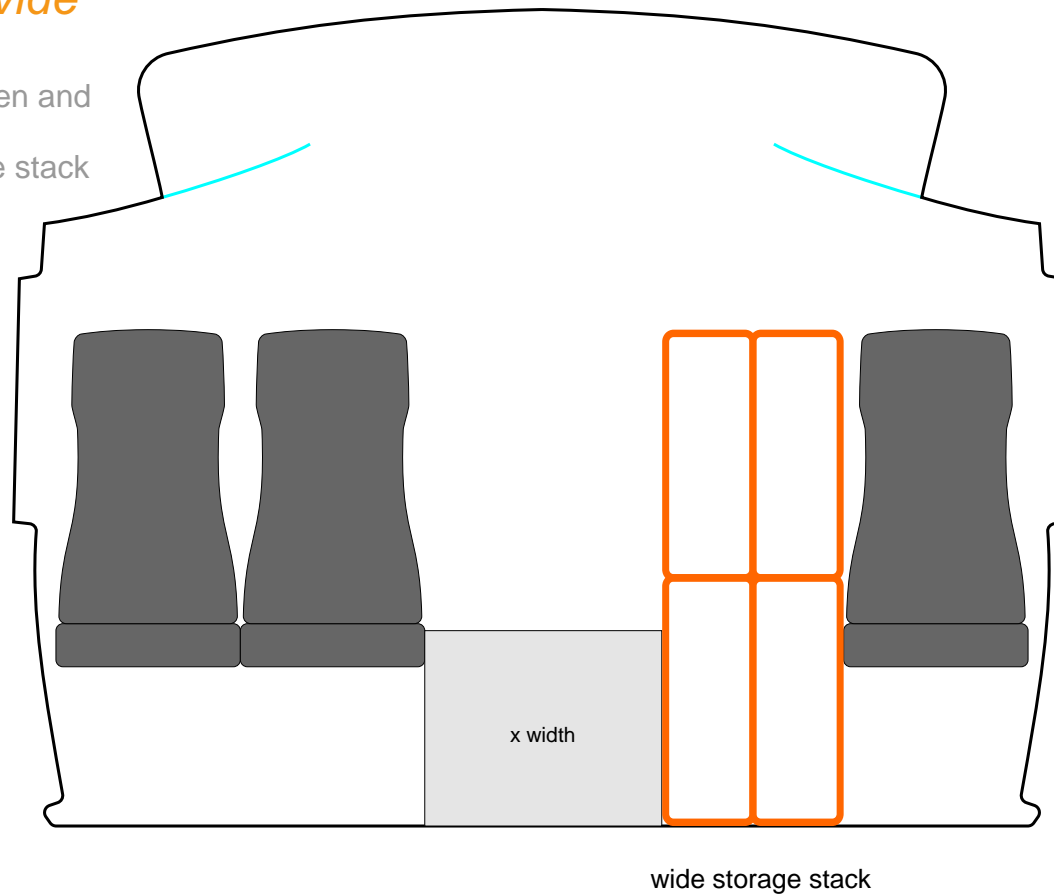
- double seat place gets privacy
- single seat space gets space and access to luggage within view across the aisle, effectively 'cross using' the aisle space



## '2 + 2 seating layout enhanced'

*High capacity stack used as acoustic room divide*

- double seat place more open and uses 'cross aisle' space
- single seat isolated by wide stack

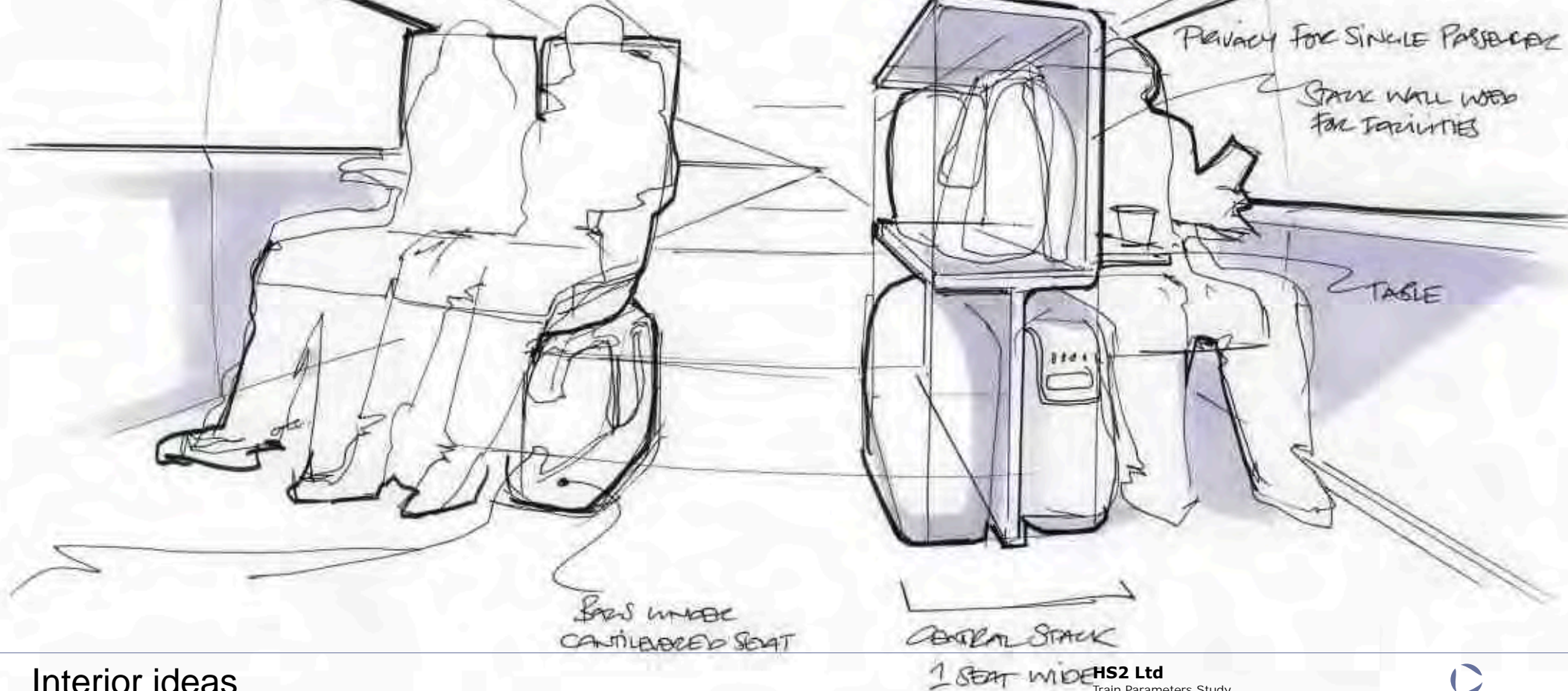




## '2 + 2 seating layout enhanced'

### High capacity stack used as acoustic room divide

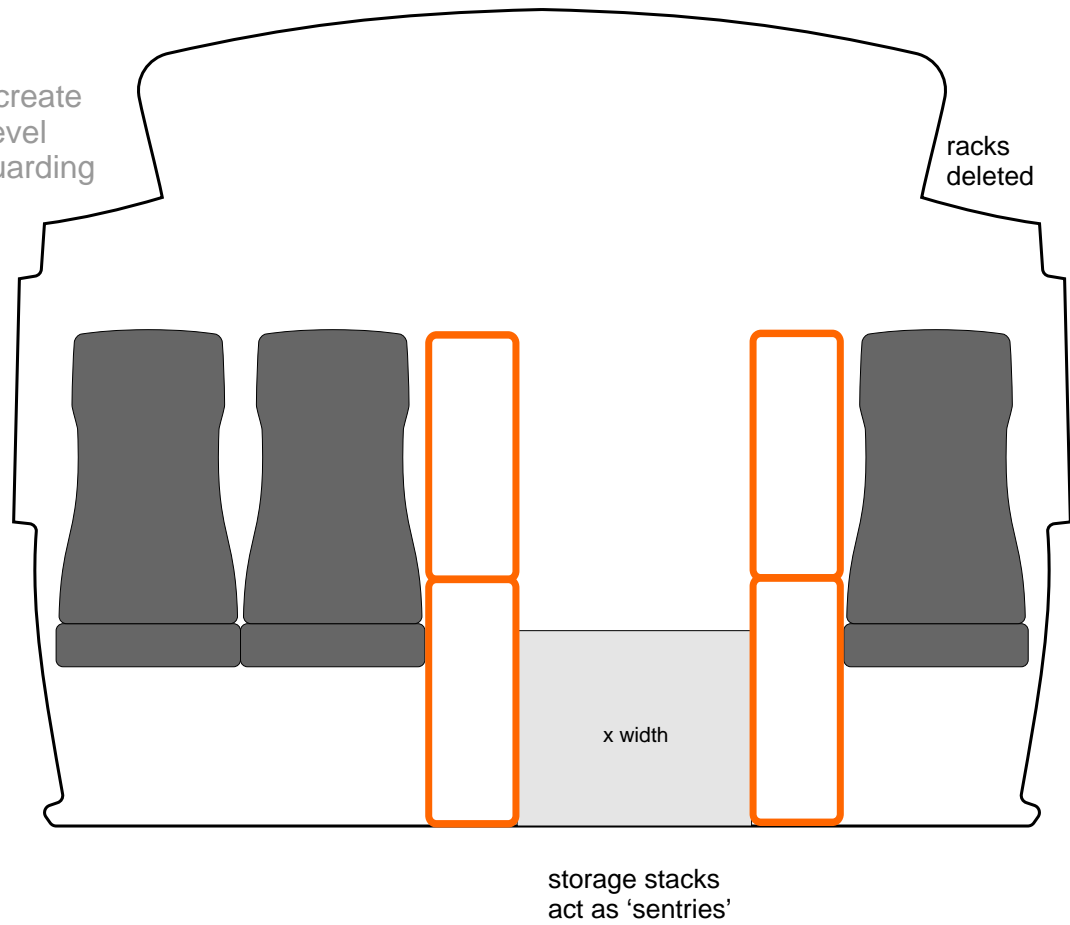
- double seat place is more open and passengers they can utilise the 'cross aisle' space
- single seat environment is isolated by the wide stack creating greater sense of privacy



## Interior ideas

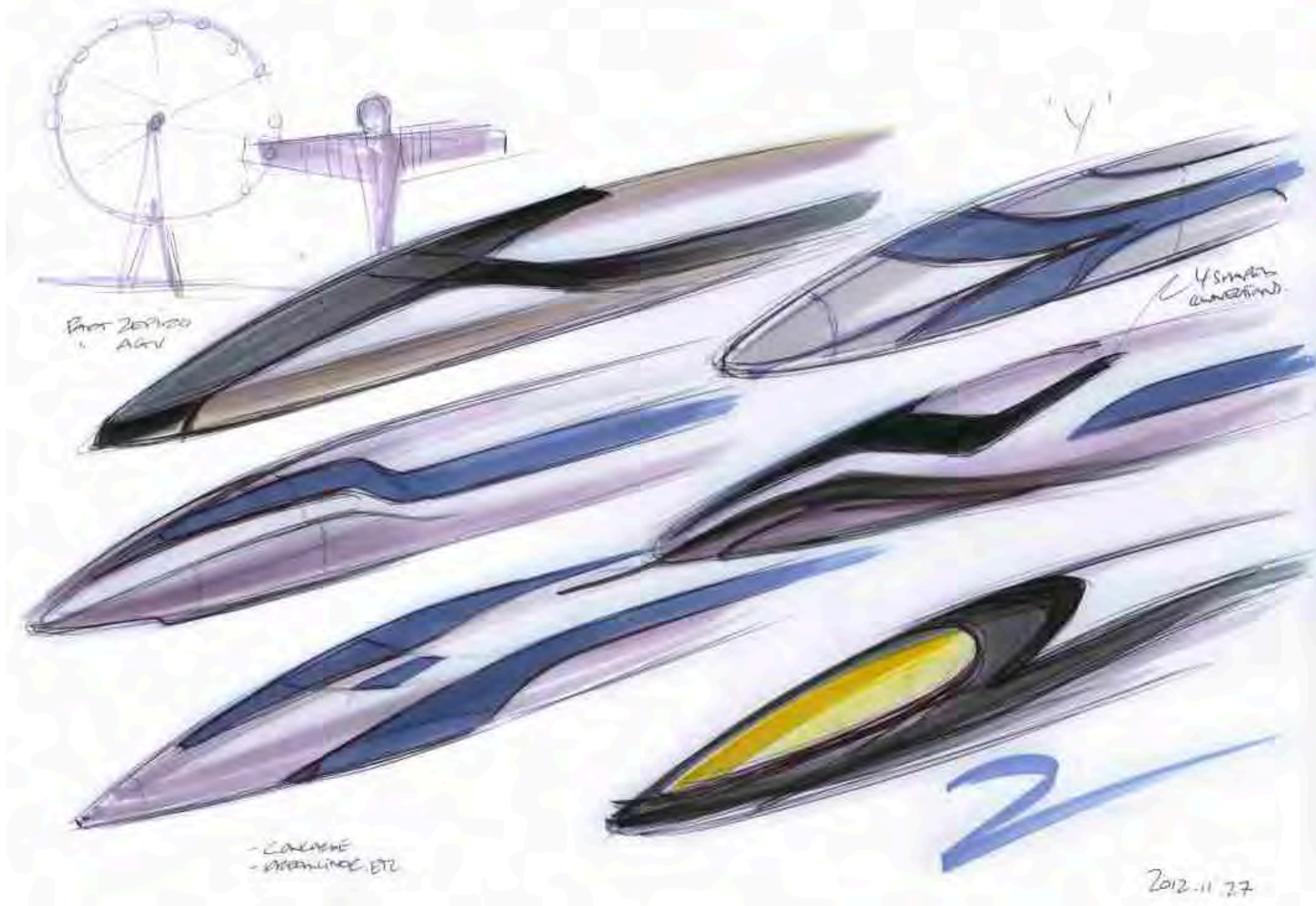
**'2 + 2 seating layout  
enhanced'**  
*Low level stacks either  
side of the aisle*

- overhead racks deleted to create wider more open feel at eye level
- stacks used as 'sentries' guarding personal space





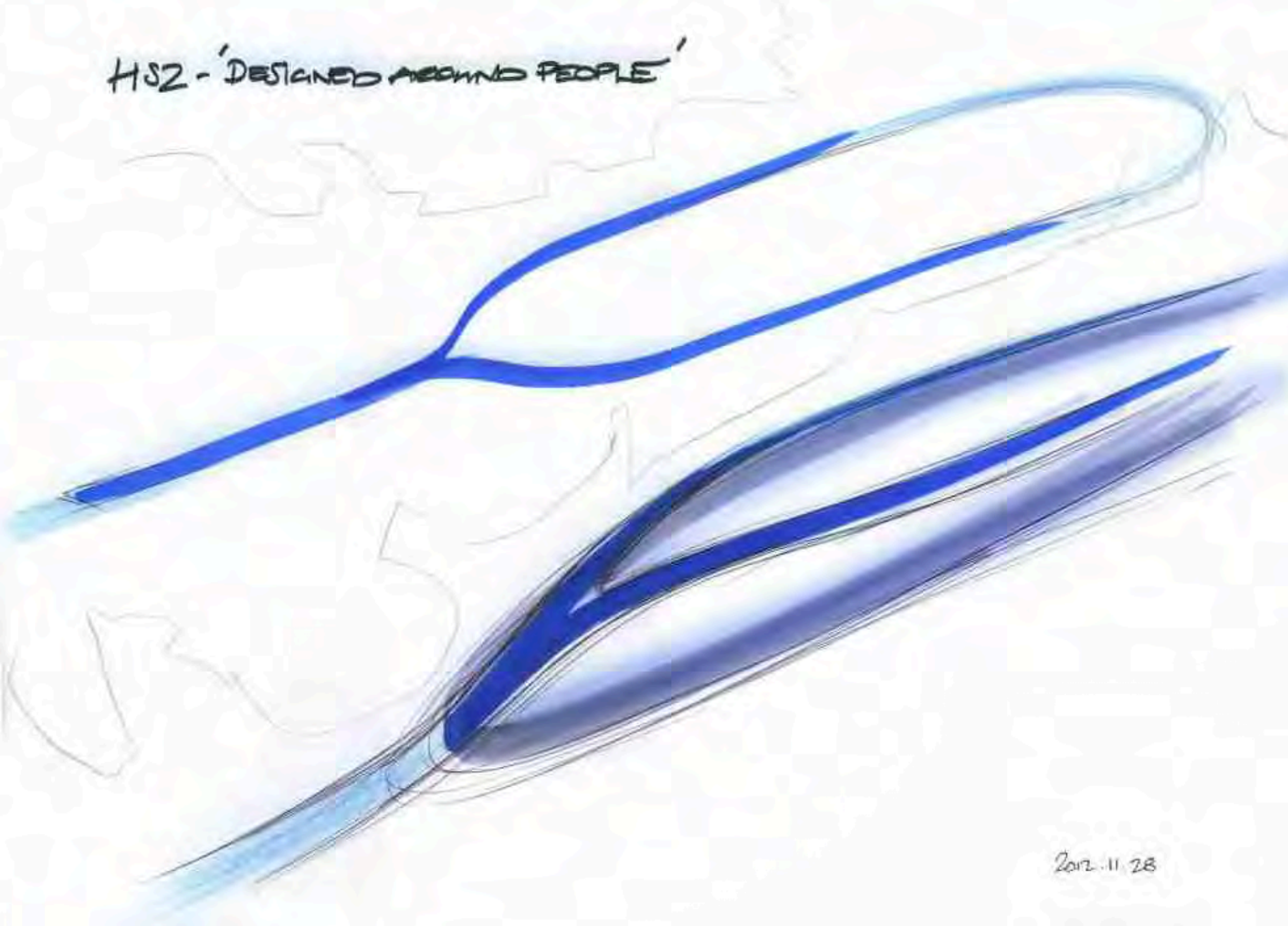
fast  
modern  
iconic



## Exterior ideas



HS2 - 'DESIGNED AROUND PEOPLE'



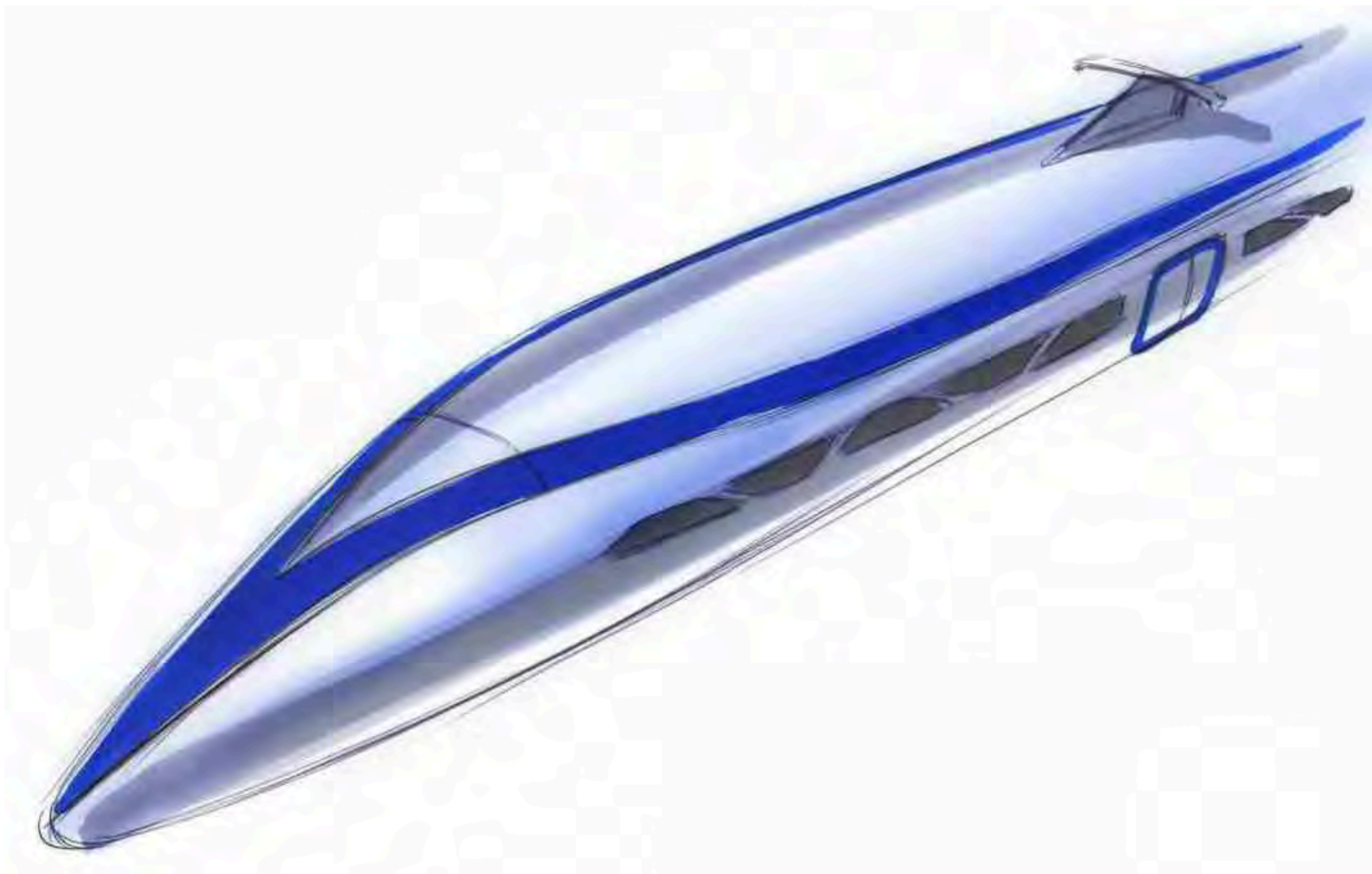
2012.11.28

## Exterior ideas

**HS2 Ltd**  
Train Parameters Study

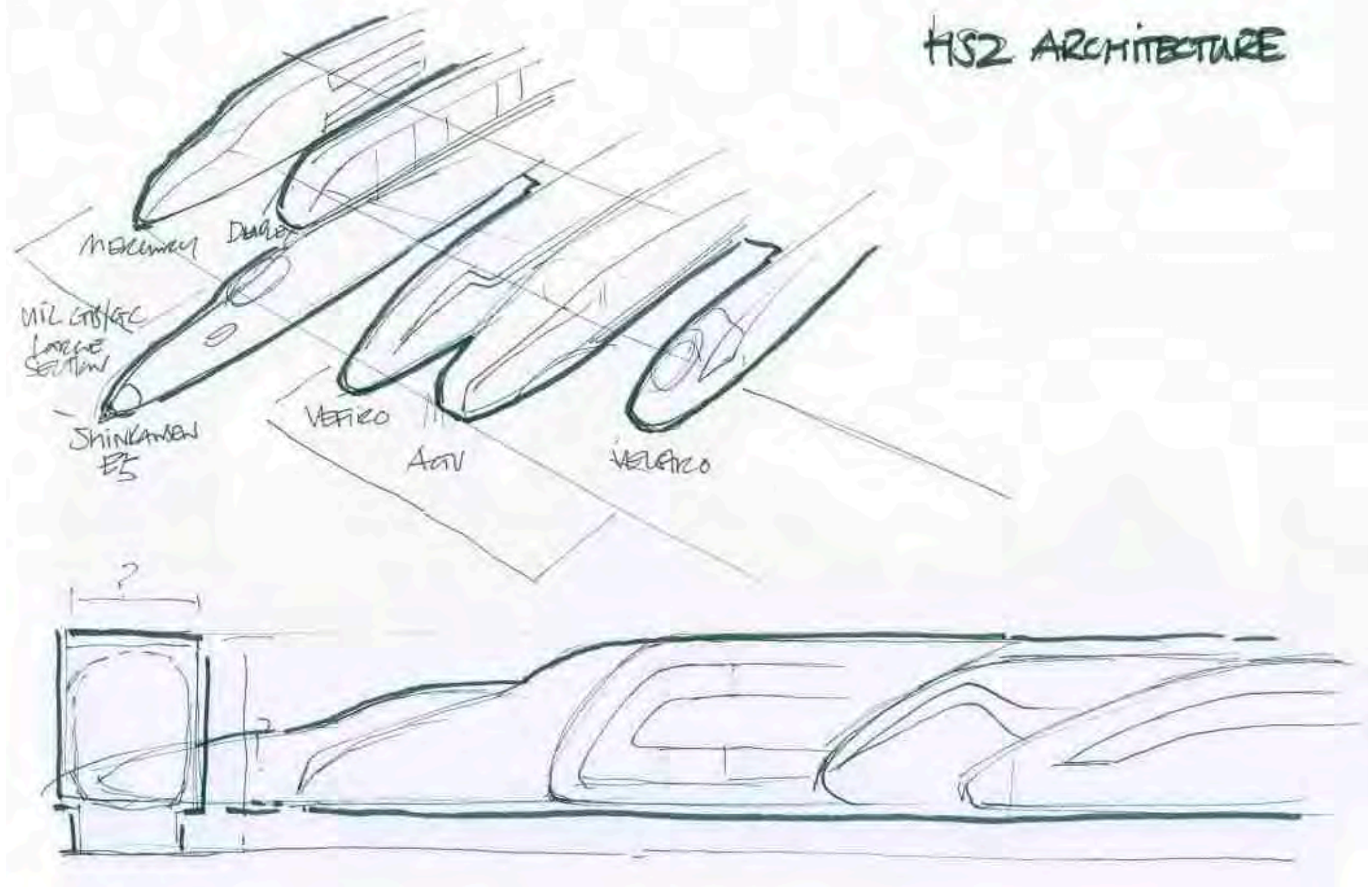


ref: 281DC003a\_EXTERIOR\_IDEAS.pdf 2012-12-18 p3/55  
© Design Triangle

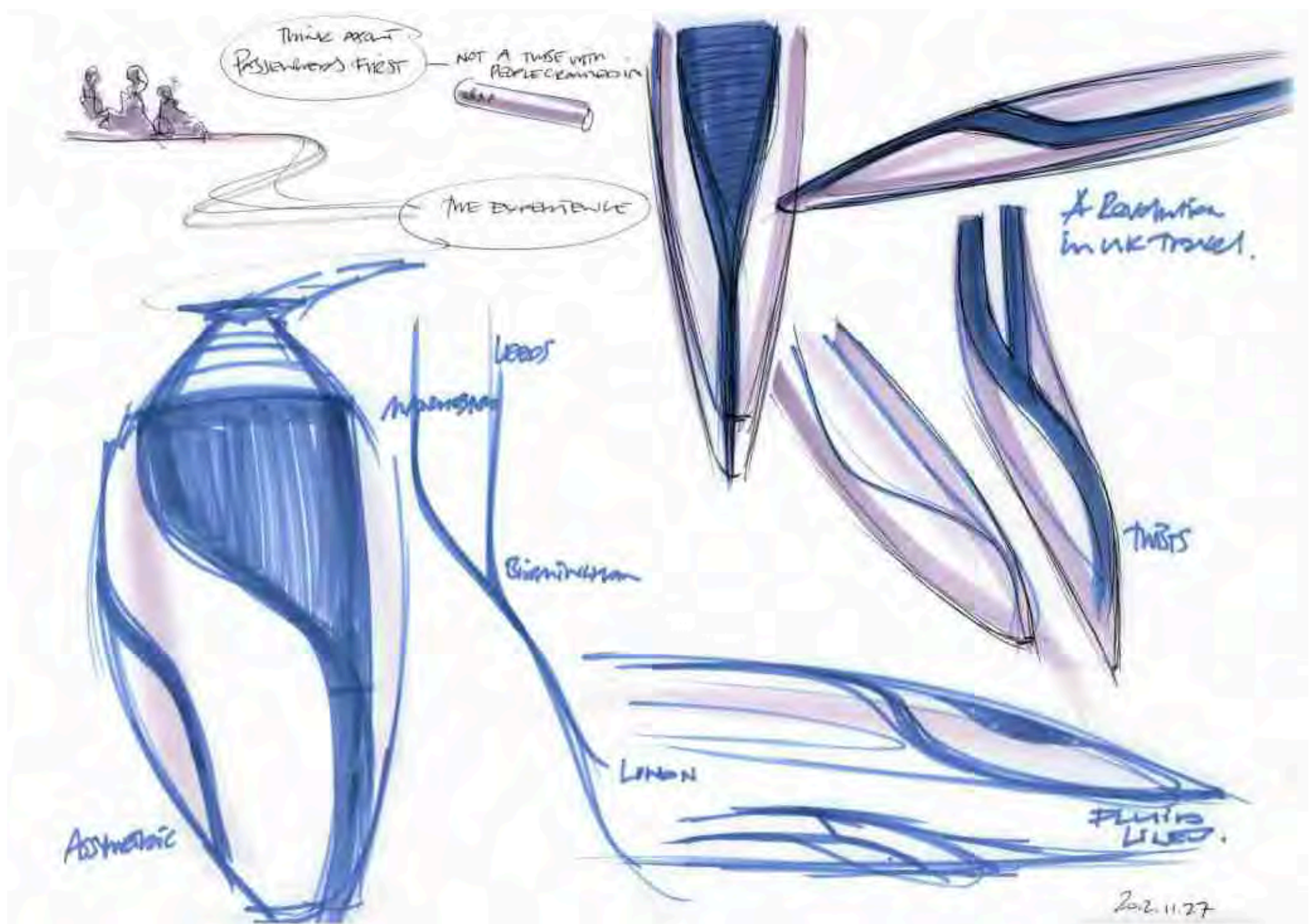


## Exterior ideas



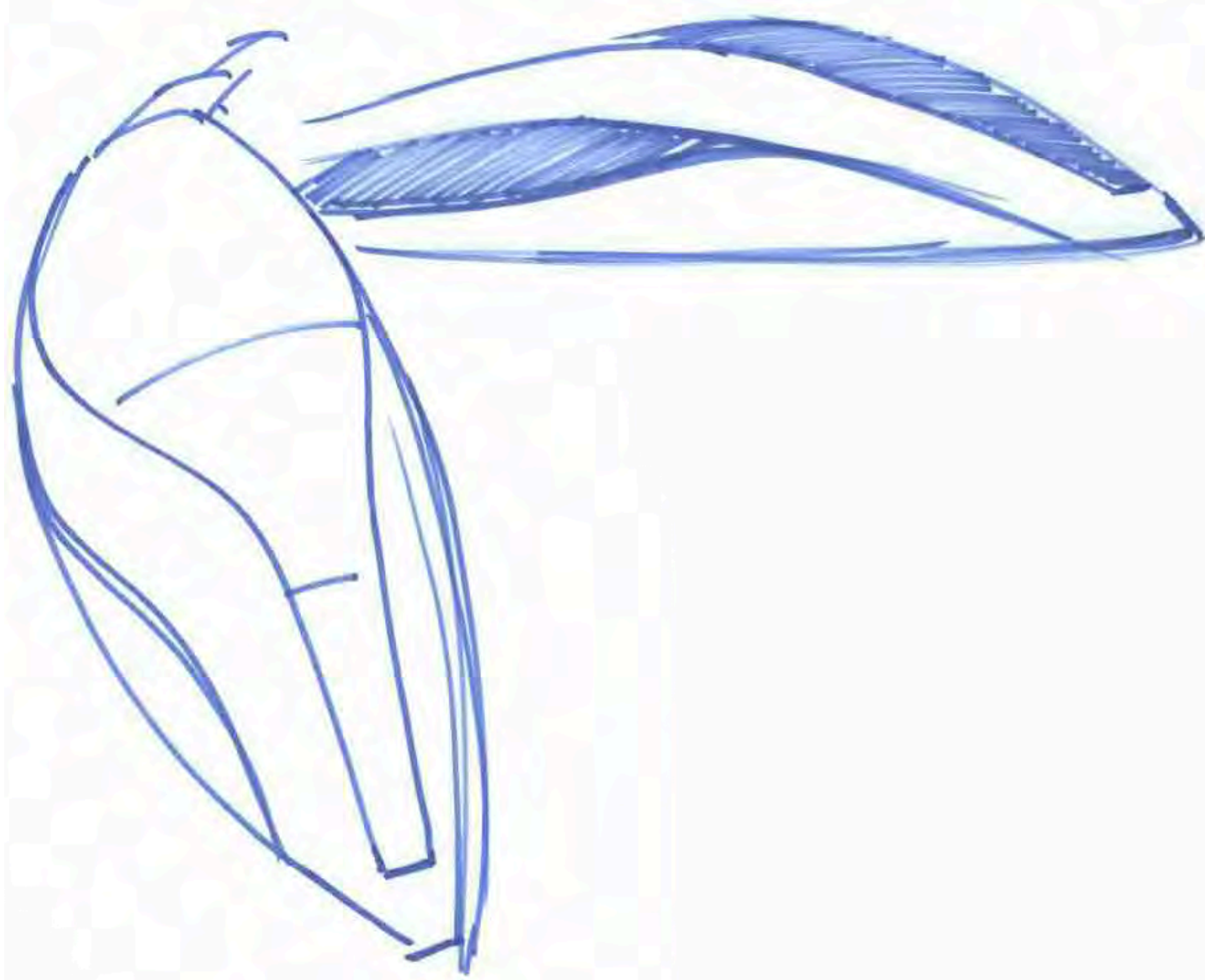


## Exterior ideas

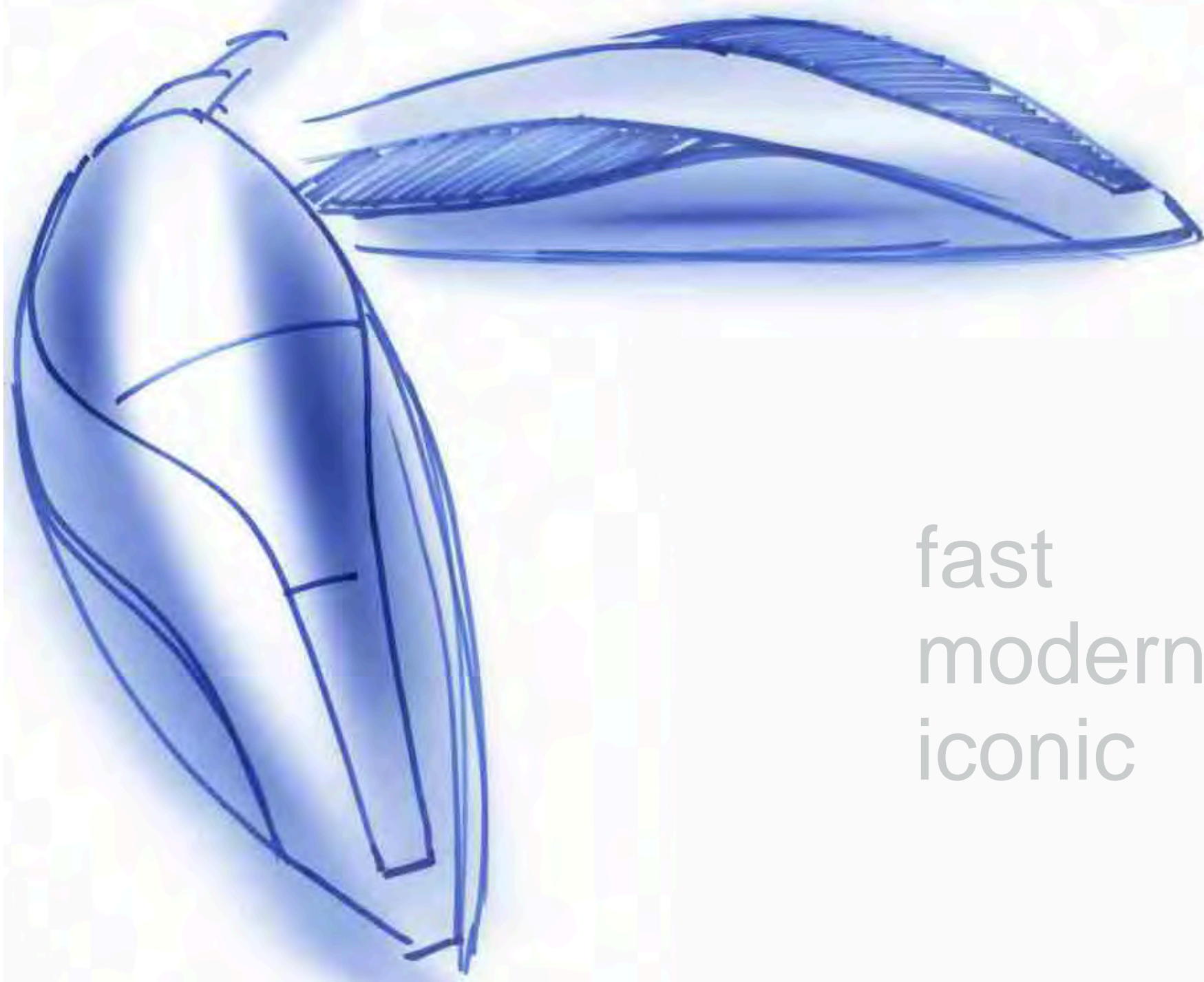


## Exterior ideas



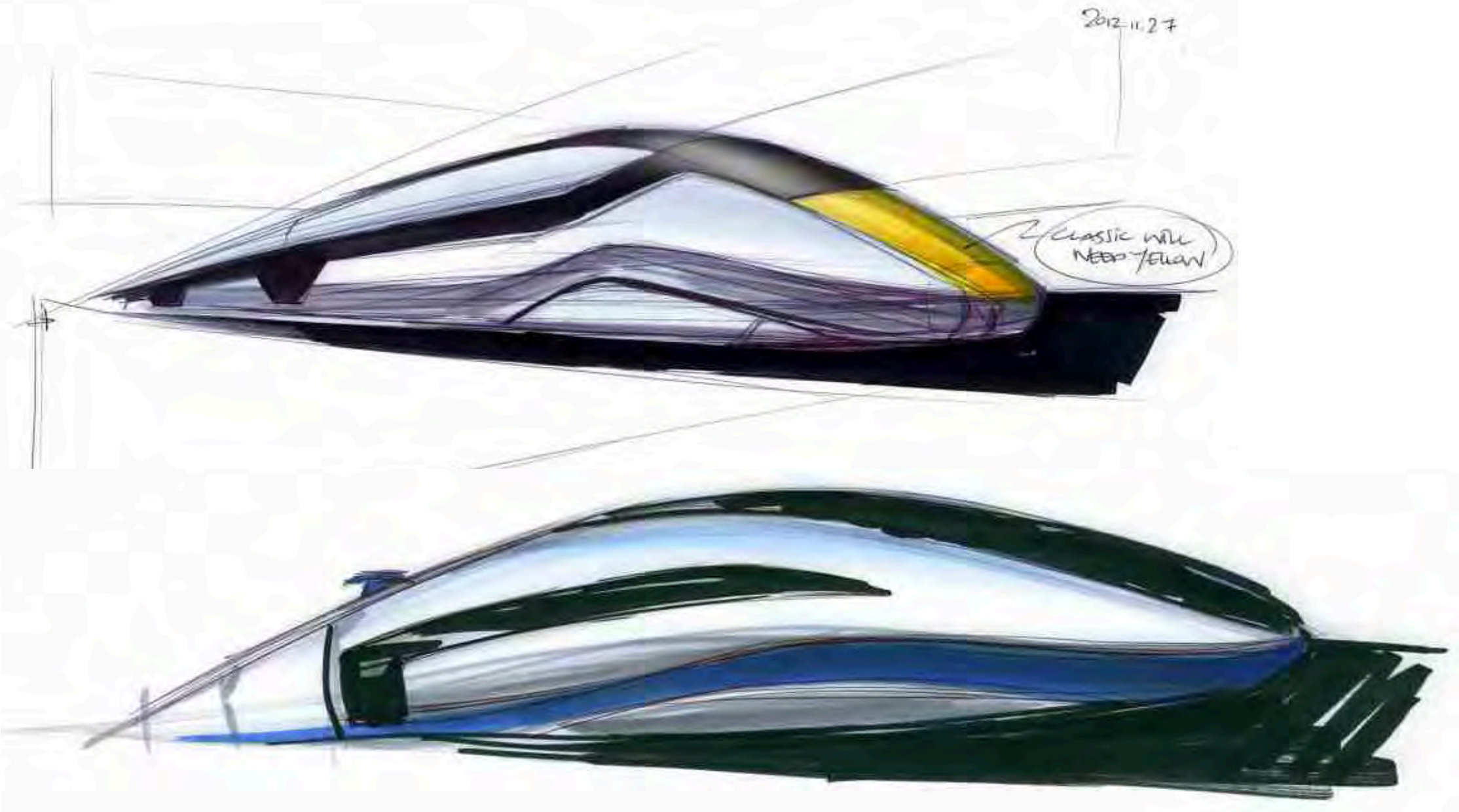


## Exterior ideas



fast  
modern  
iconic



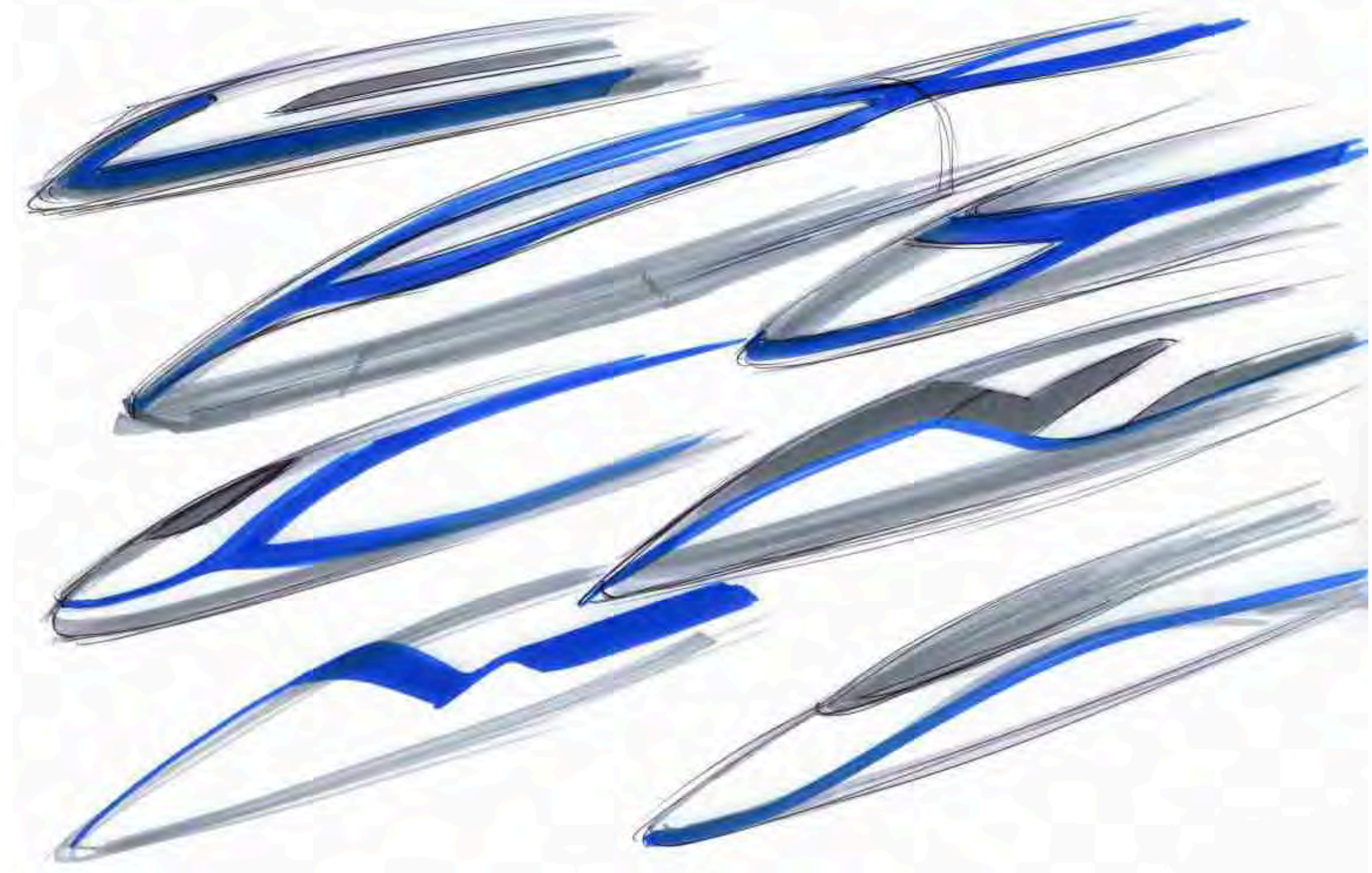


## Exterior ideas



## Exterior ideas



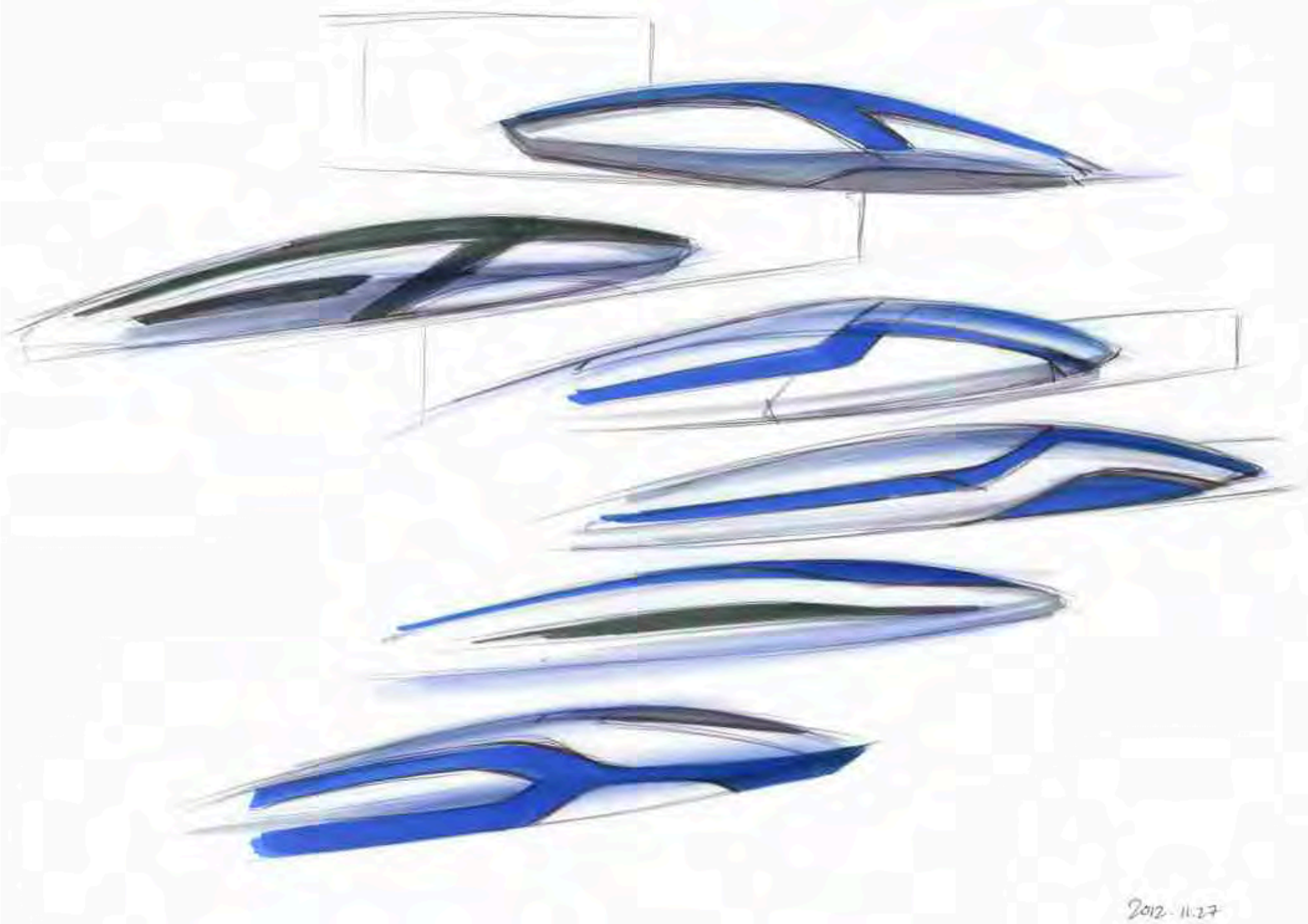


## Exterior ideas

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2012-11-27

## Exterior ideas

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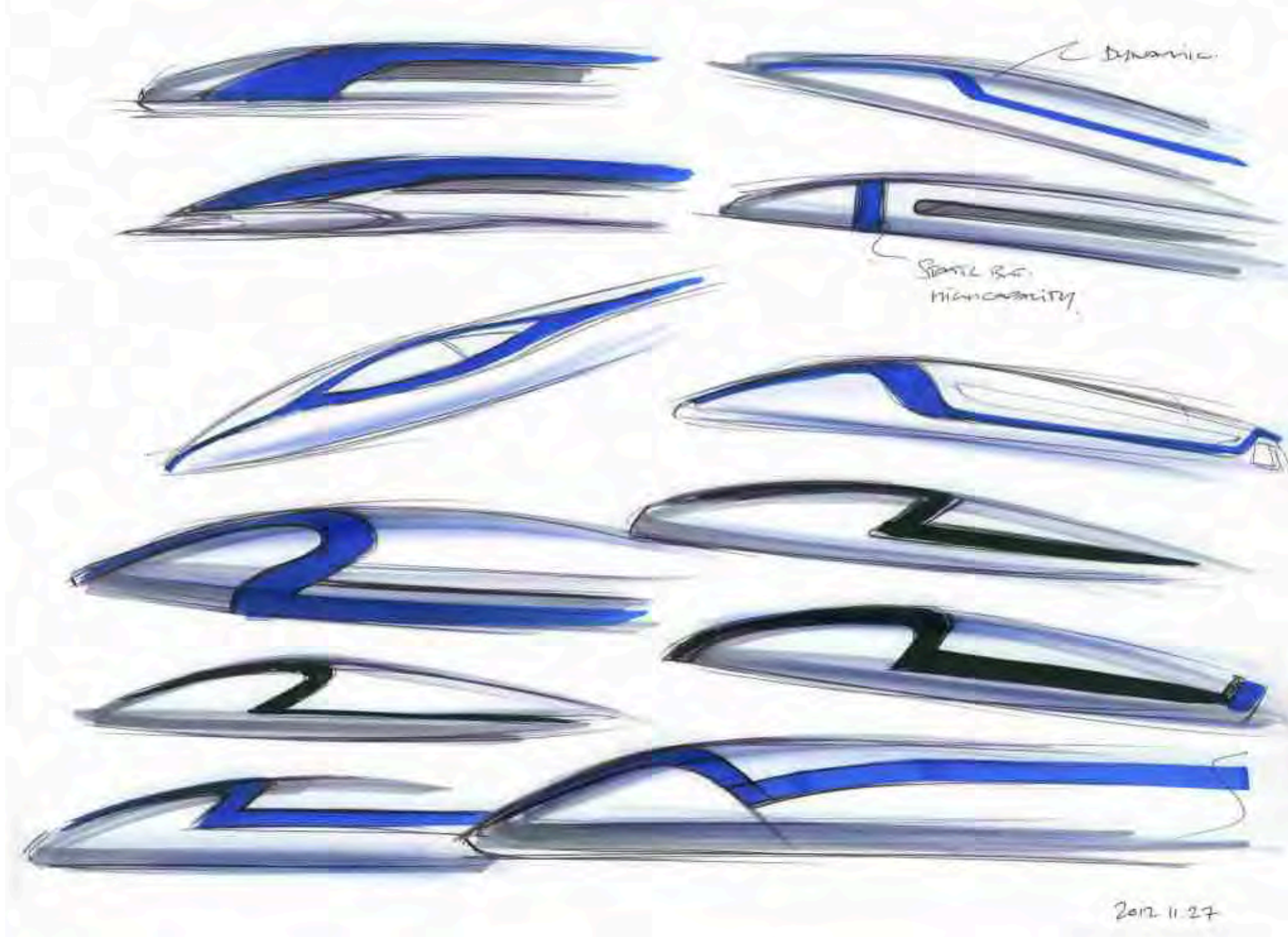


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## Exterior ideas



## Exterior ideas



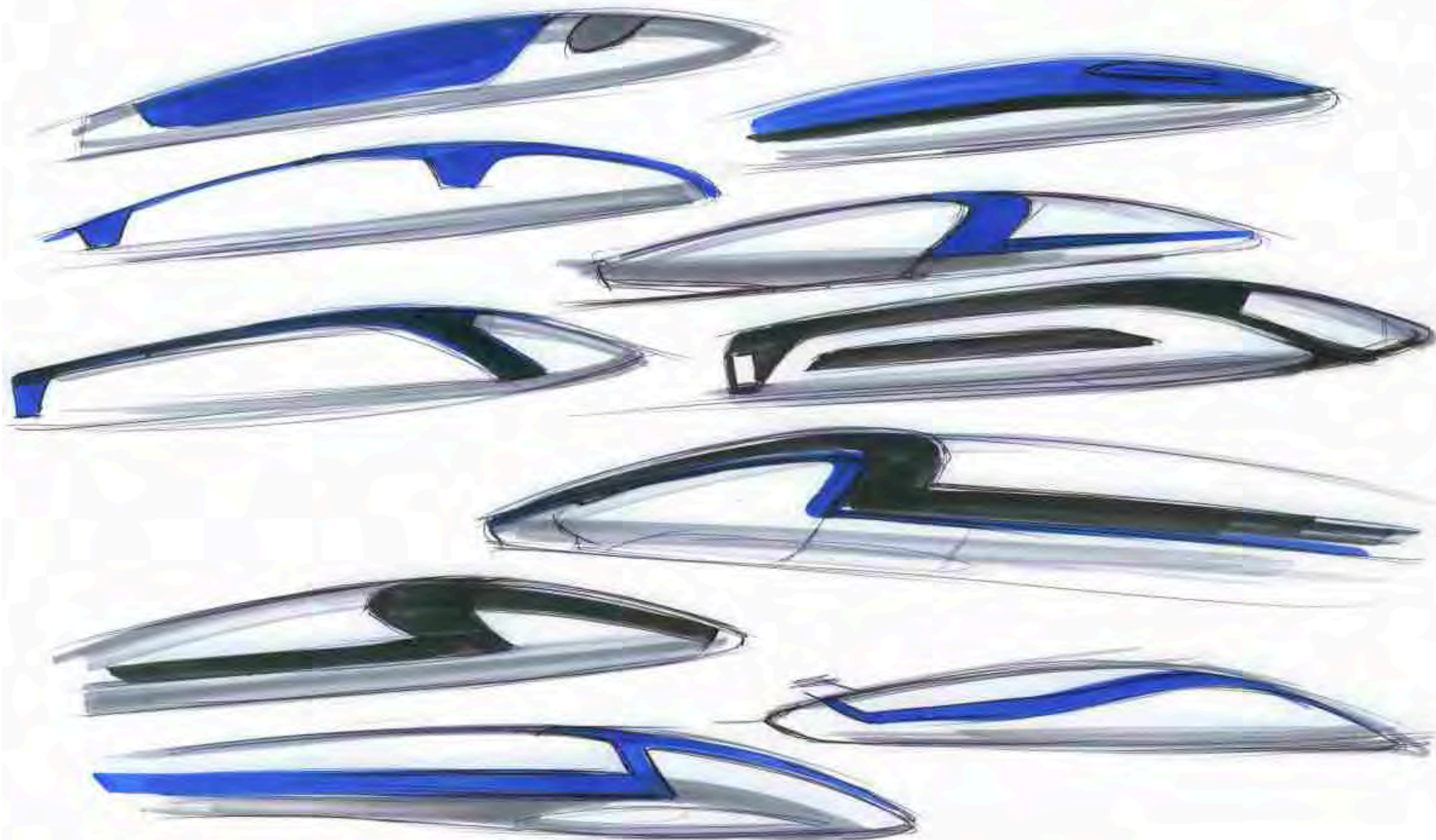


## Exterior ideas

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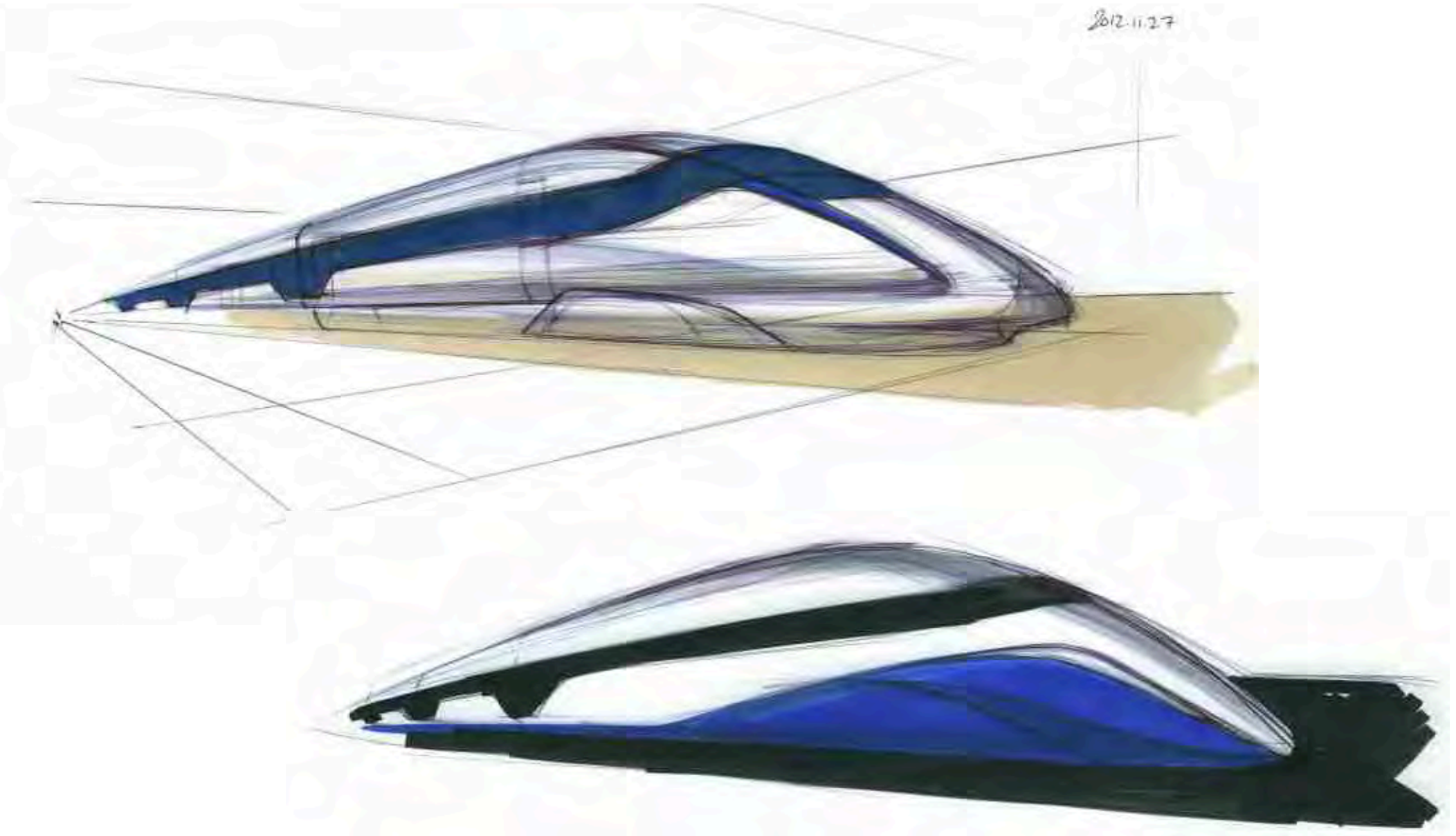


2012.11.27





## Exterior ideas

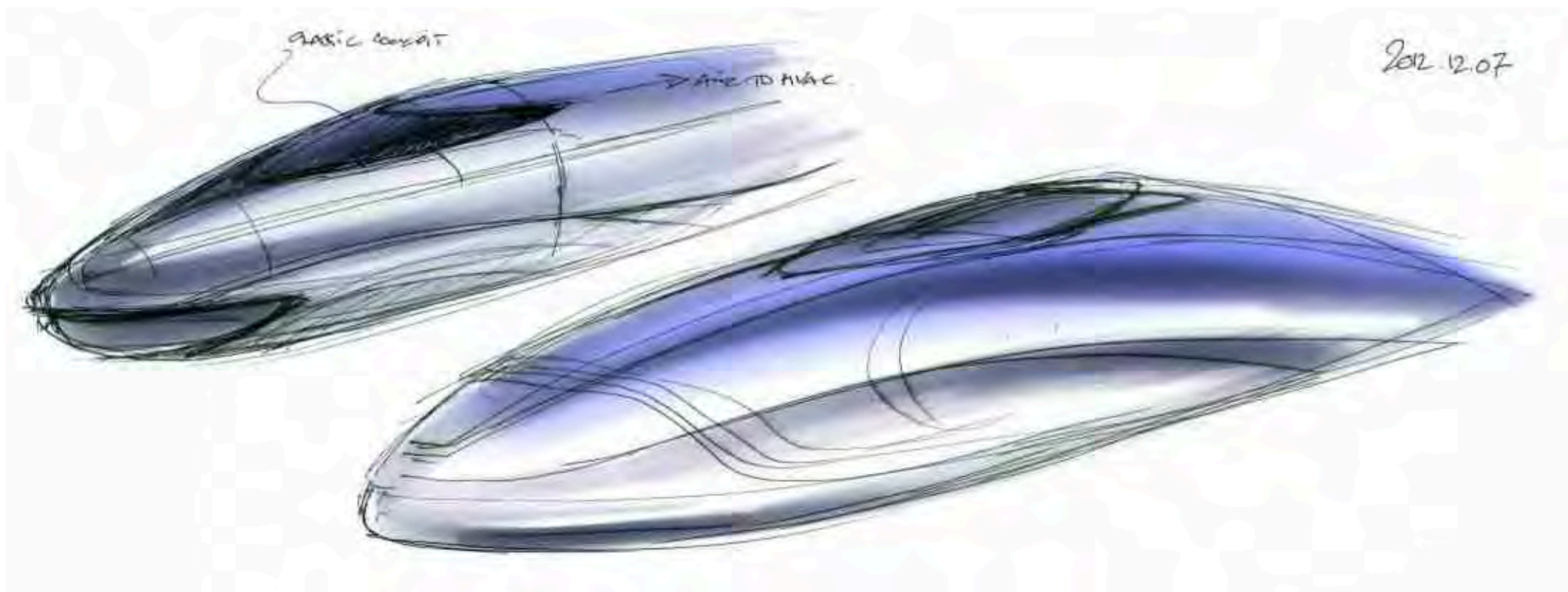


## Exterior ideas



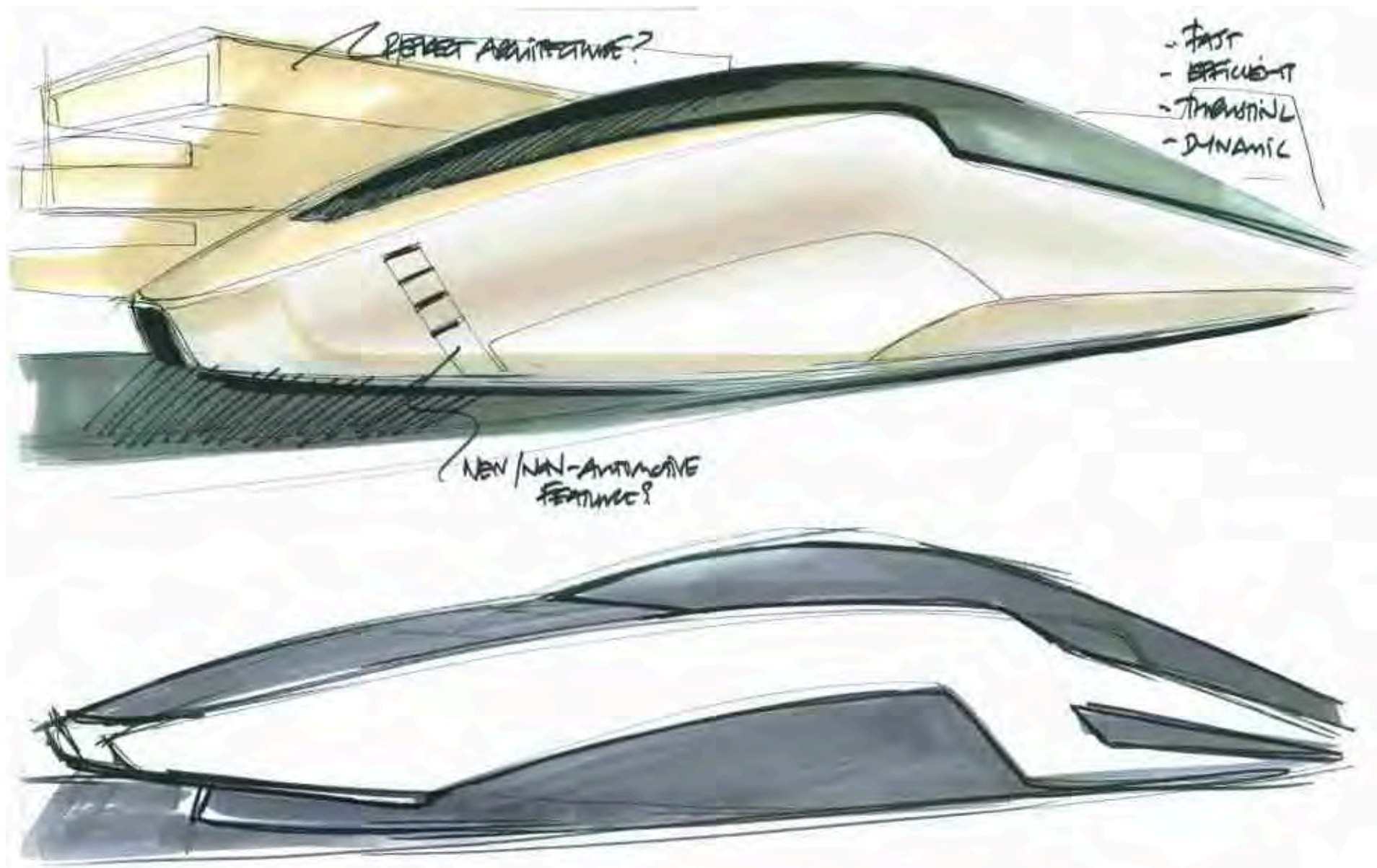


## Exterior ideas



## Exterior ideas





## Exterior ideas

british  
prestige  
character  
individuality





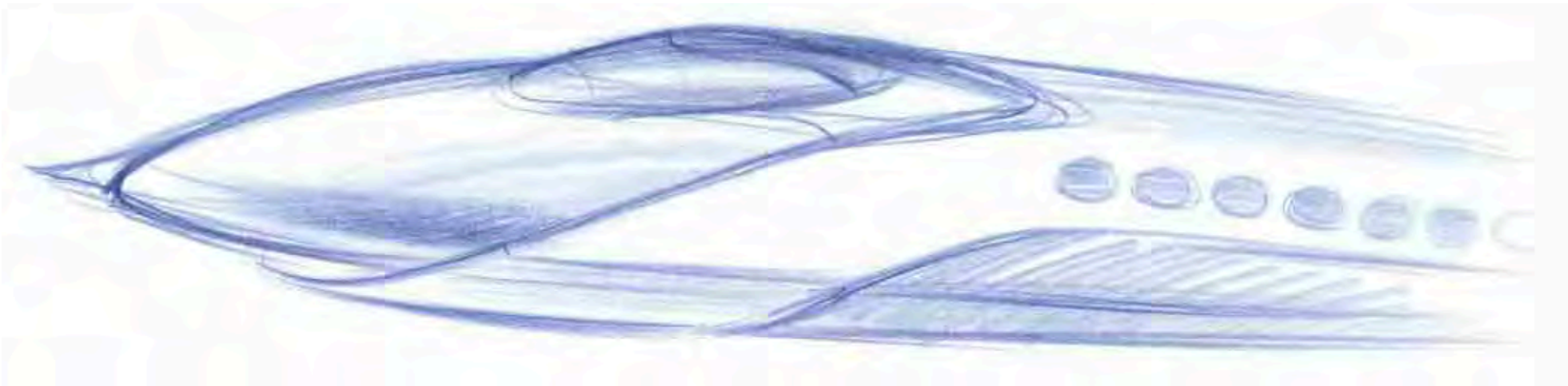
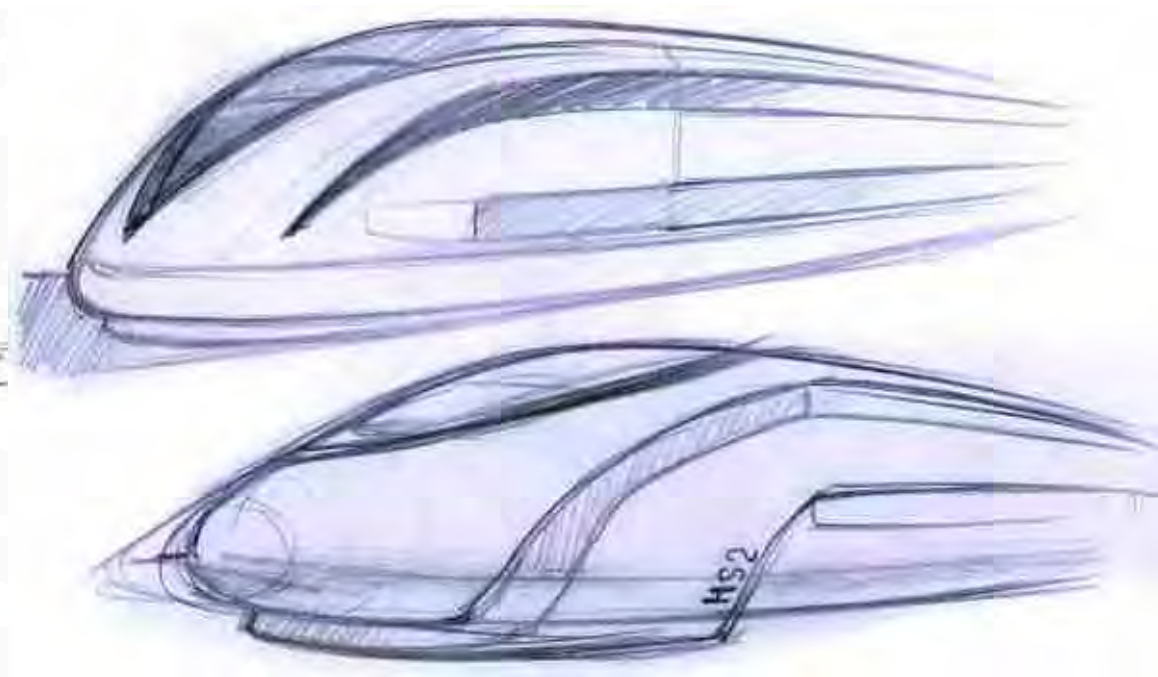
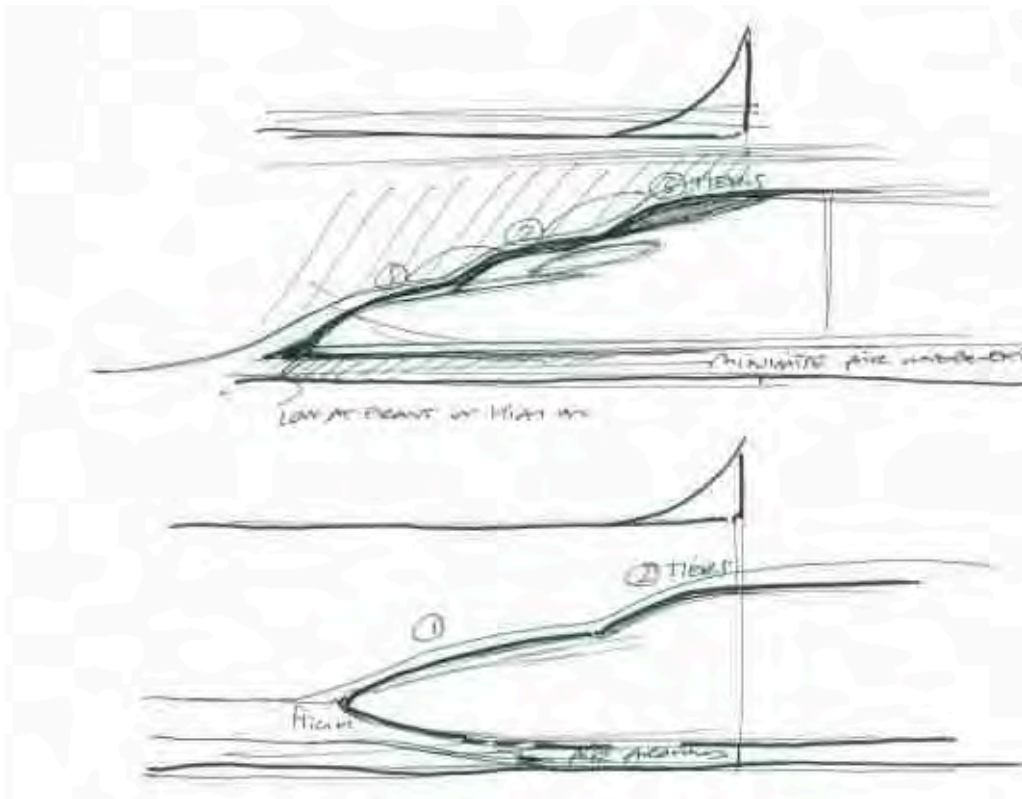
## Exterior ideas



## Exterior ideas

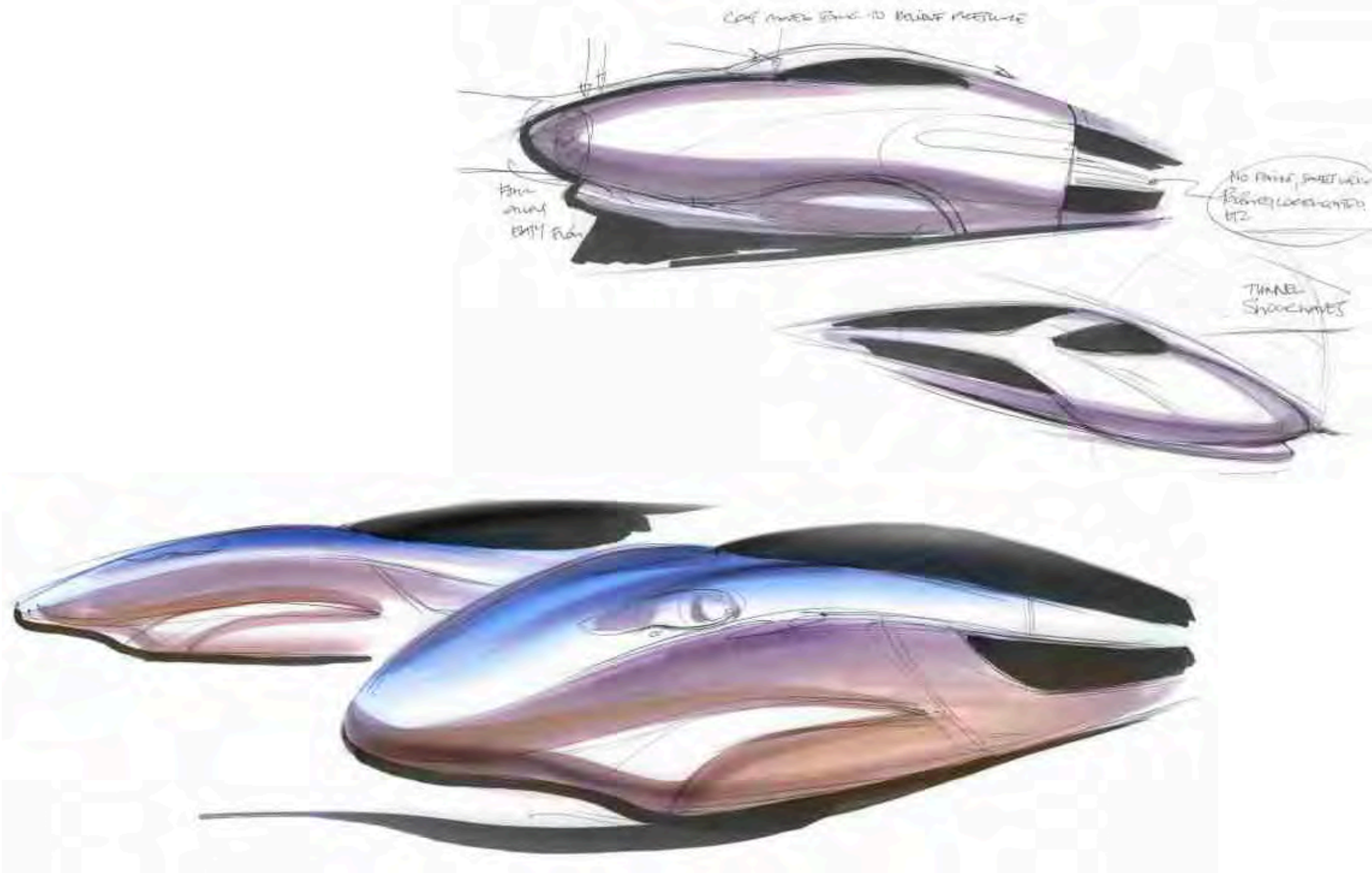


bullet  
aero  
eastern

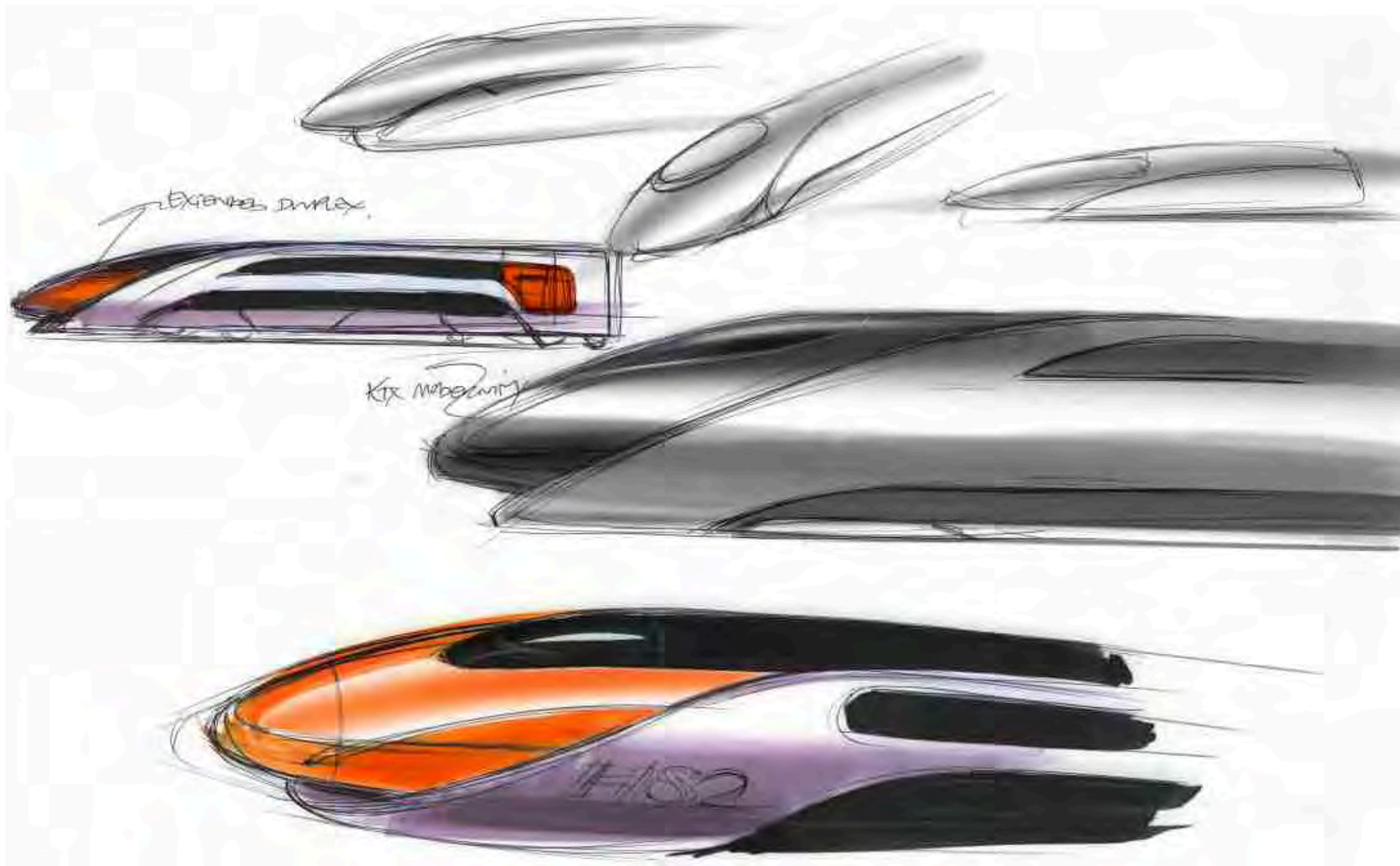


## Exterior ideas





## Exterior ideas

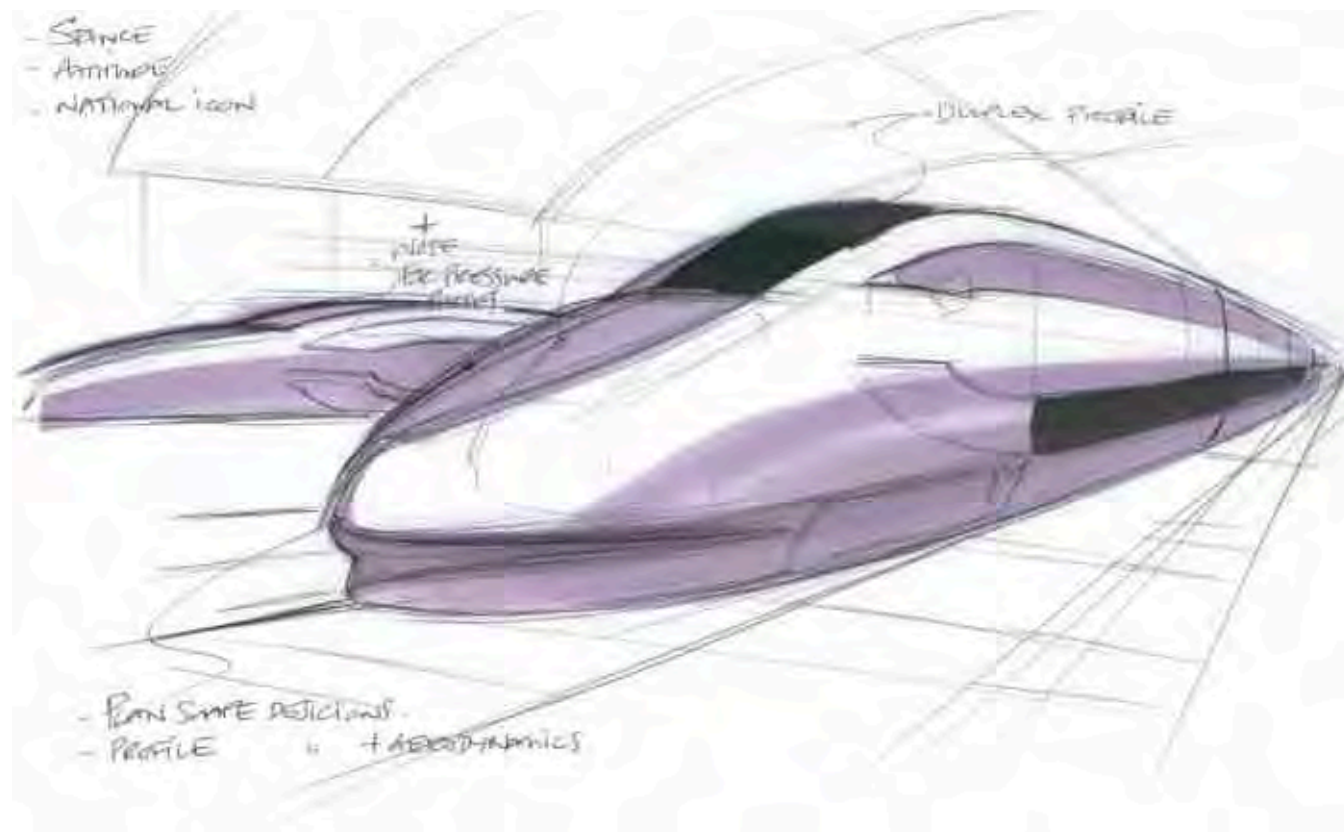


## Exterior ideas





## Exterior ideas

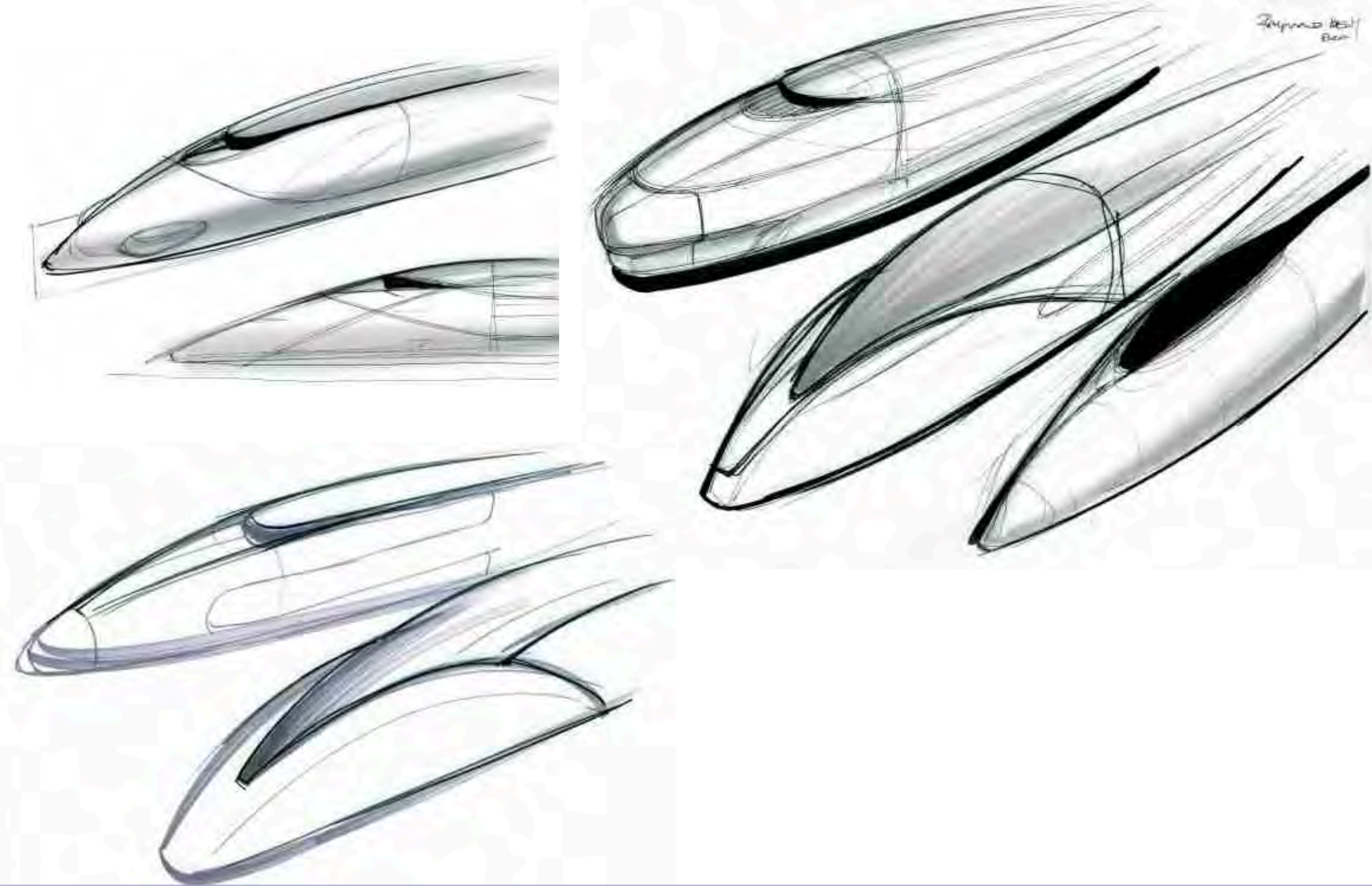


## Exterior ideas



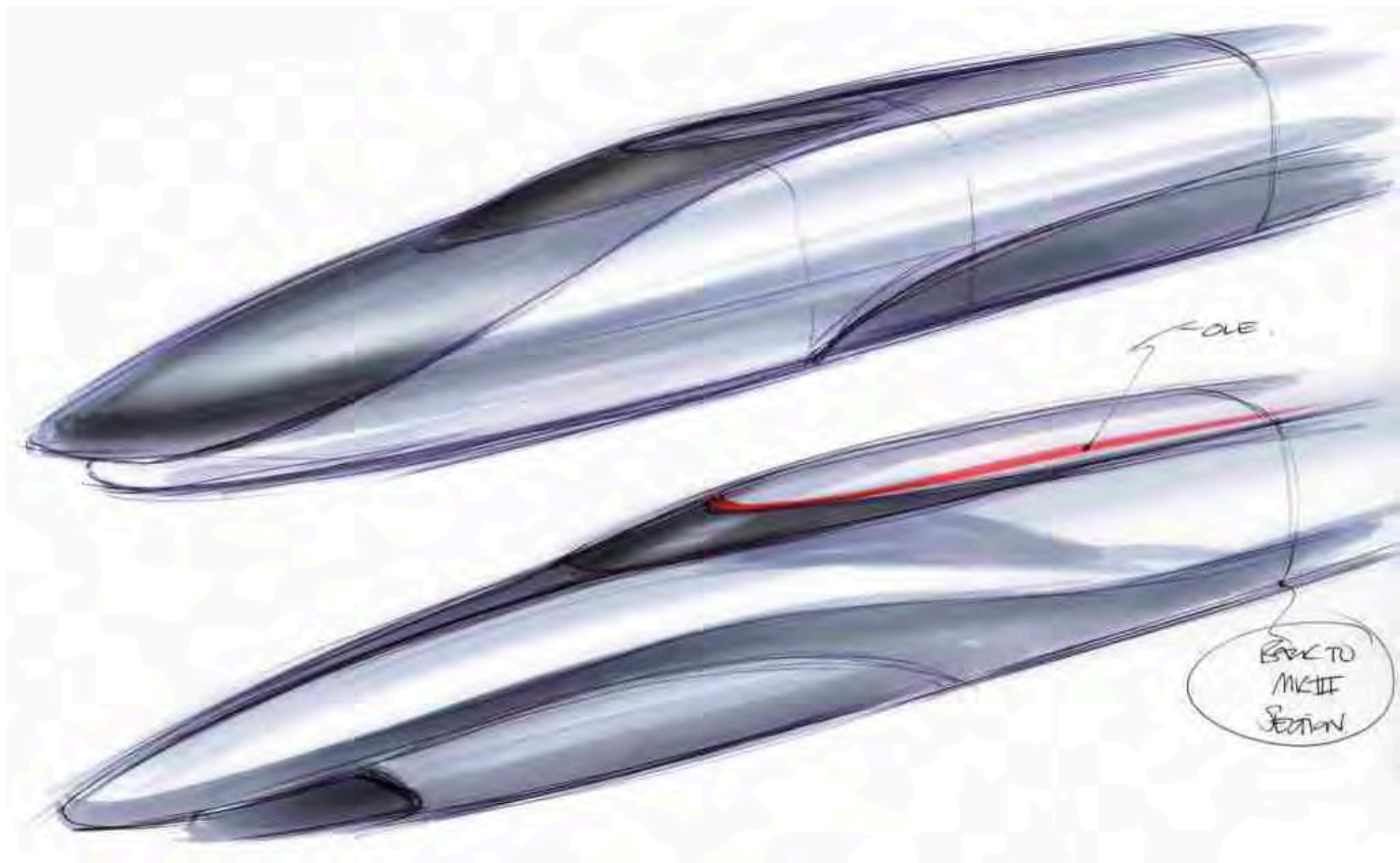


## Exterior ideas



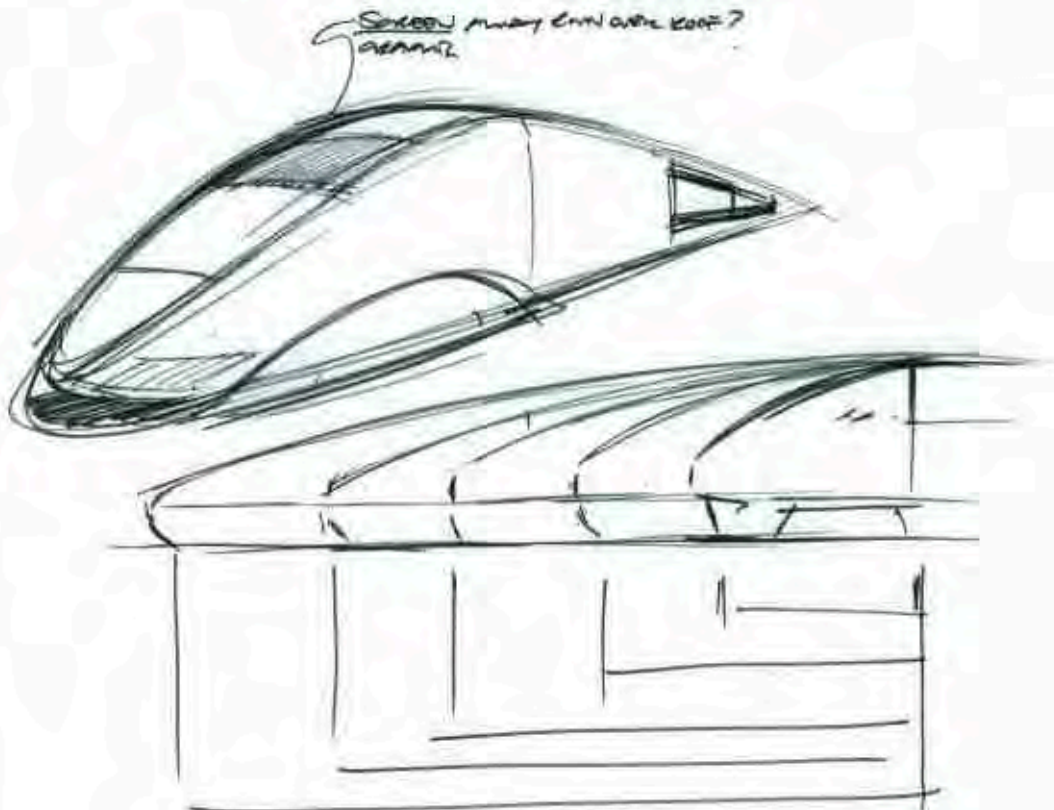
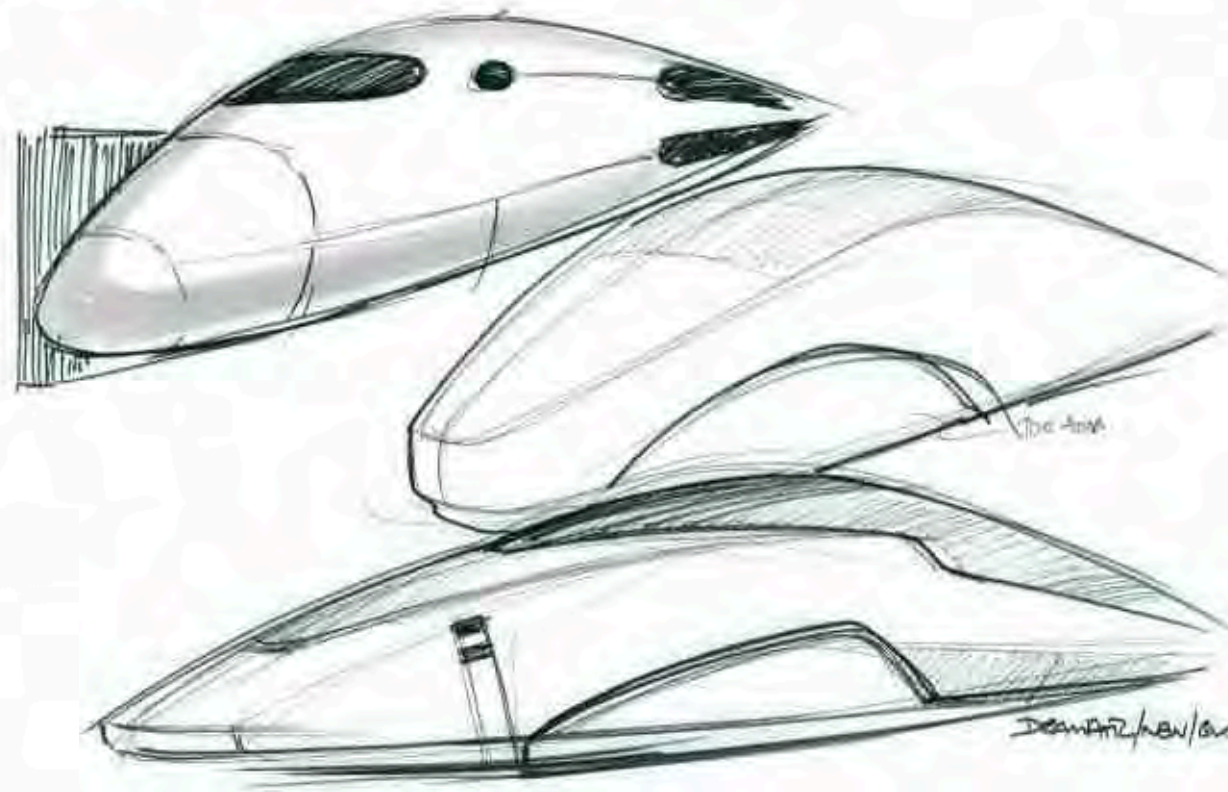
## Exterior ideas





## Exterior ideas

ALUMINUM



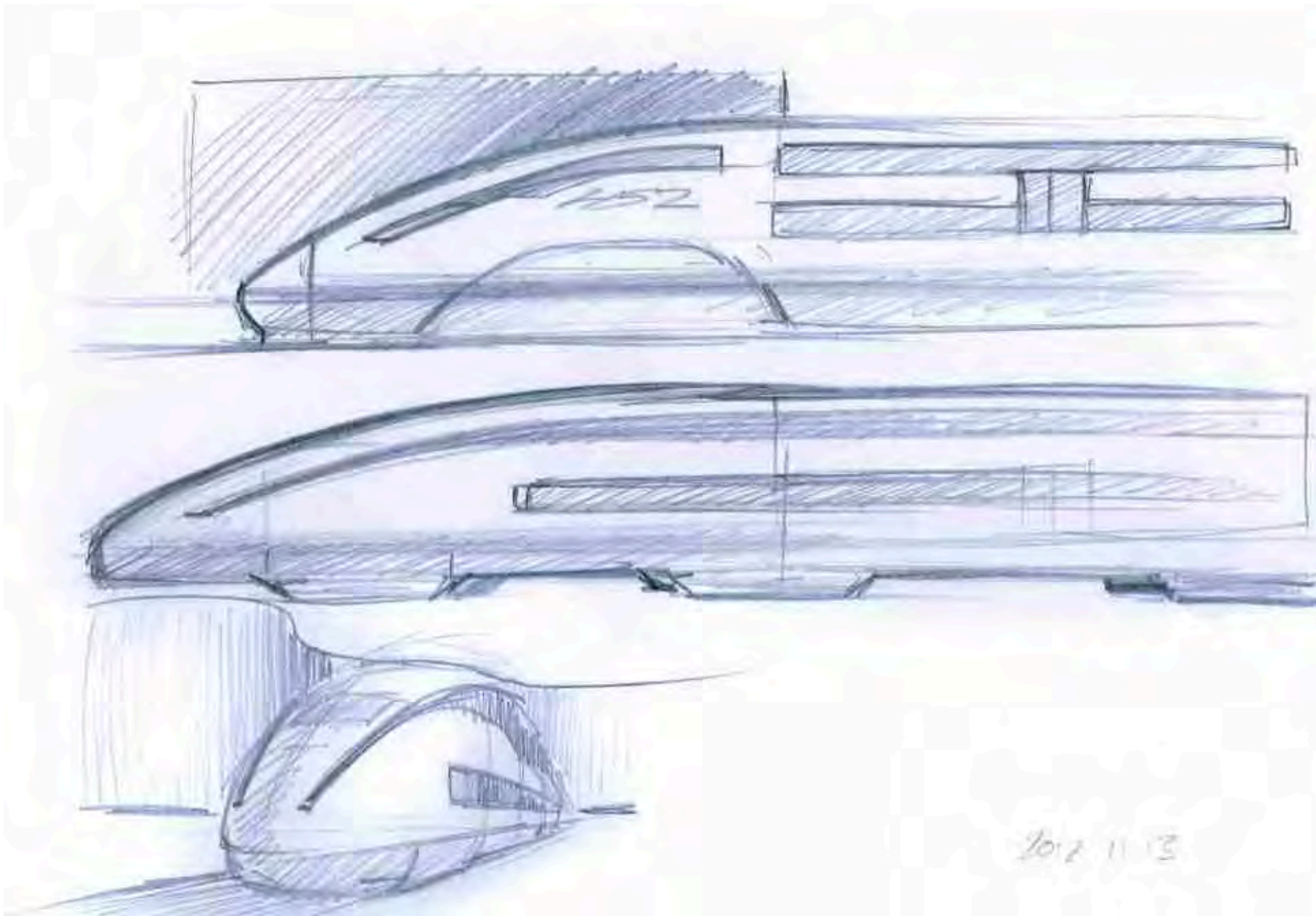
## Exterior ideas



french

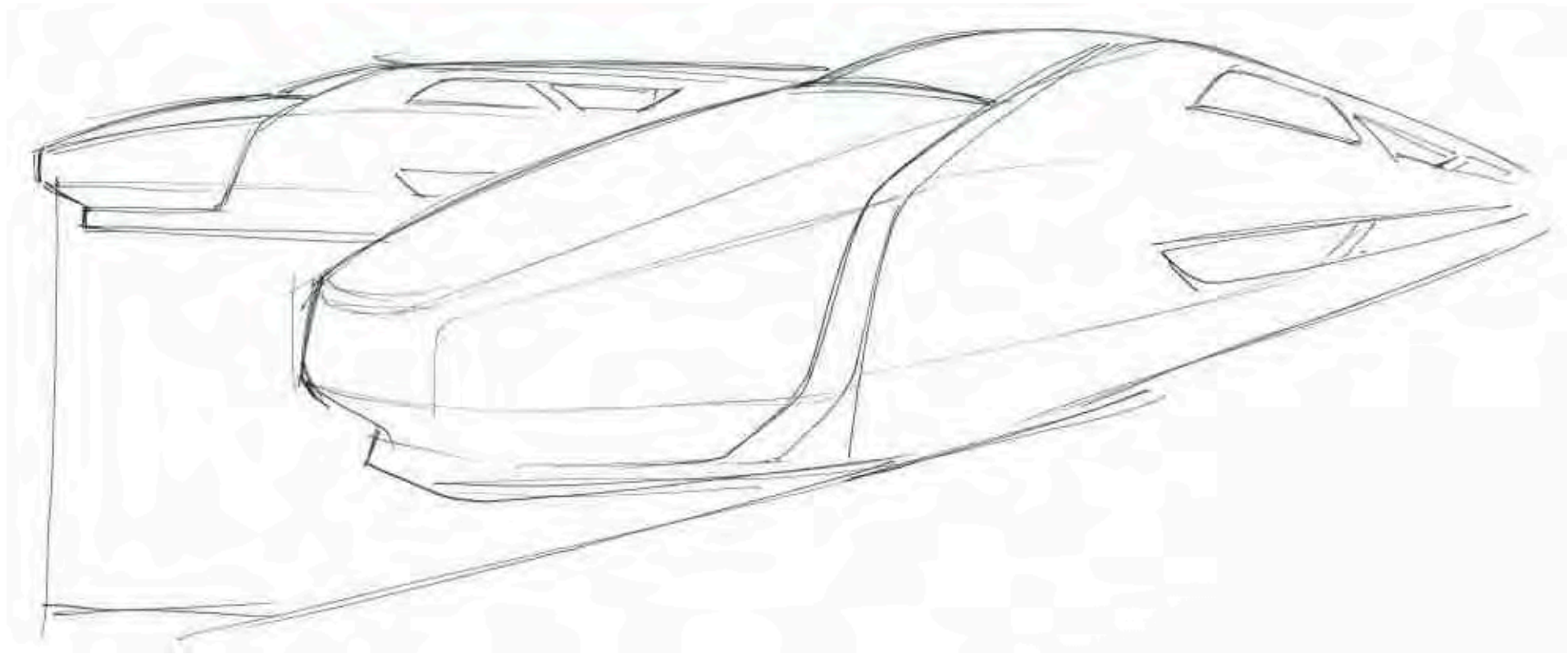
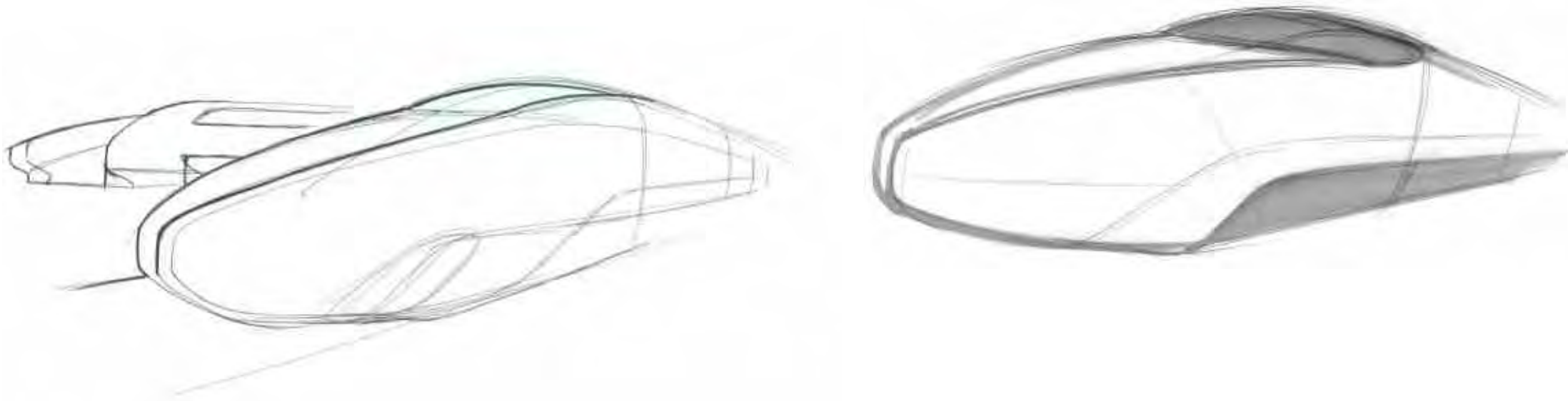
tgv

duplex

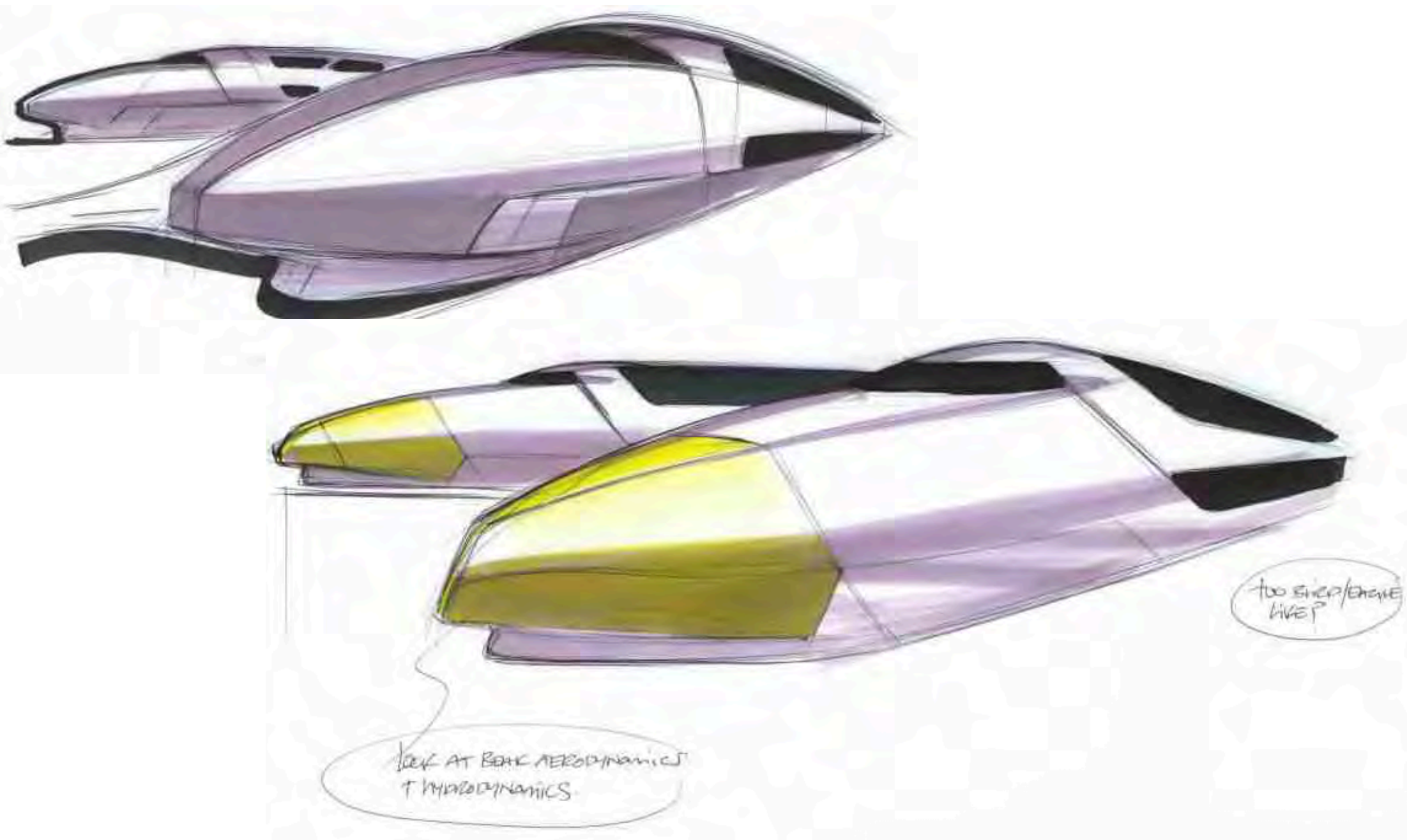


## Exterior ideas





## Exterior ideas



## Exterior ideas

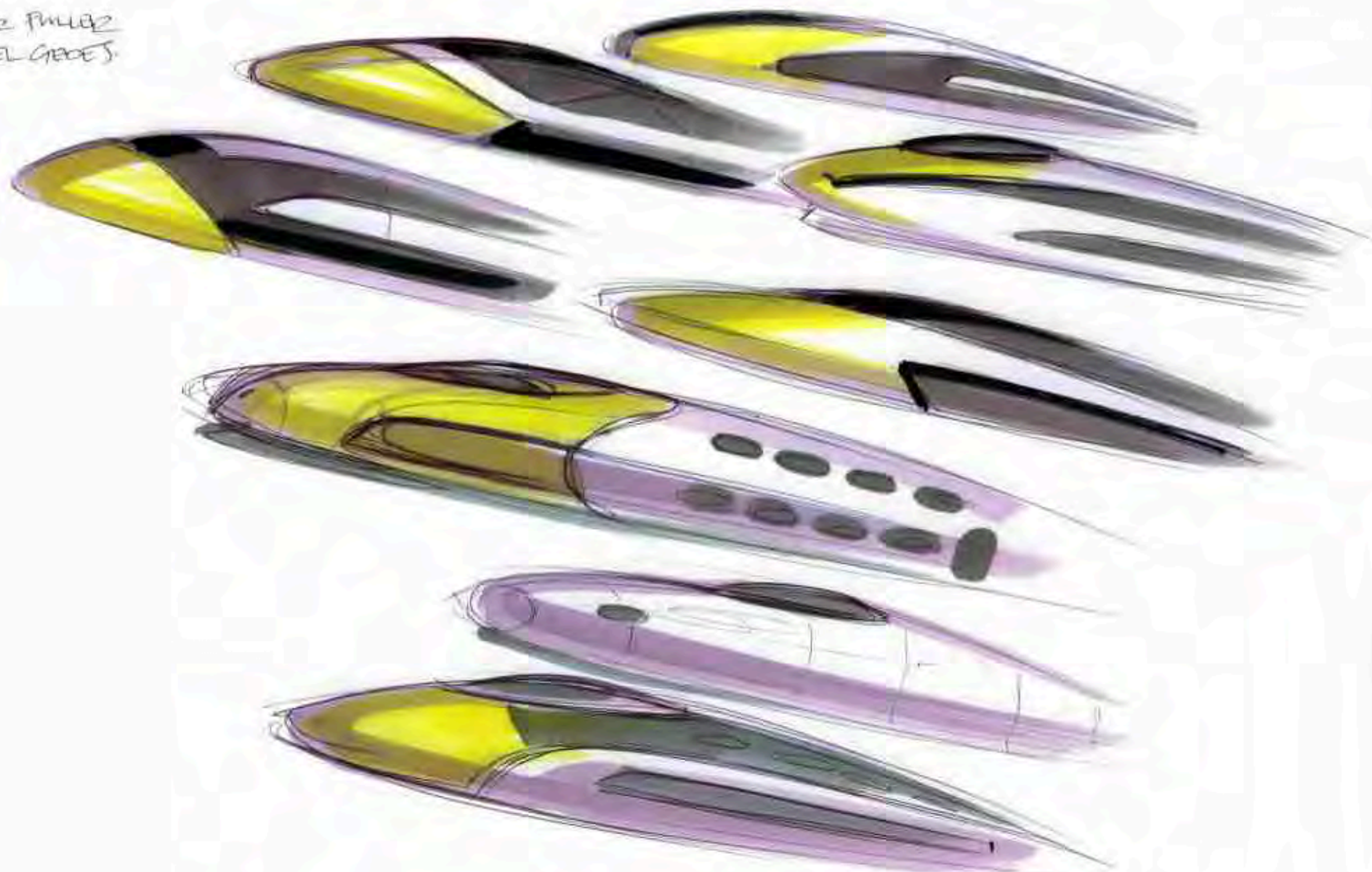




## Exterior ideas

*Exterior ideas*

*Bracknell Park  
- Norman Bell Greaves*



## Exterior ideas

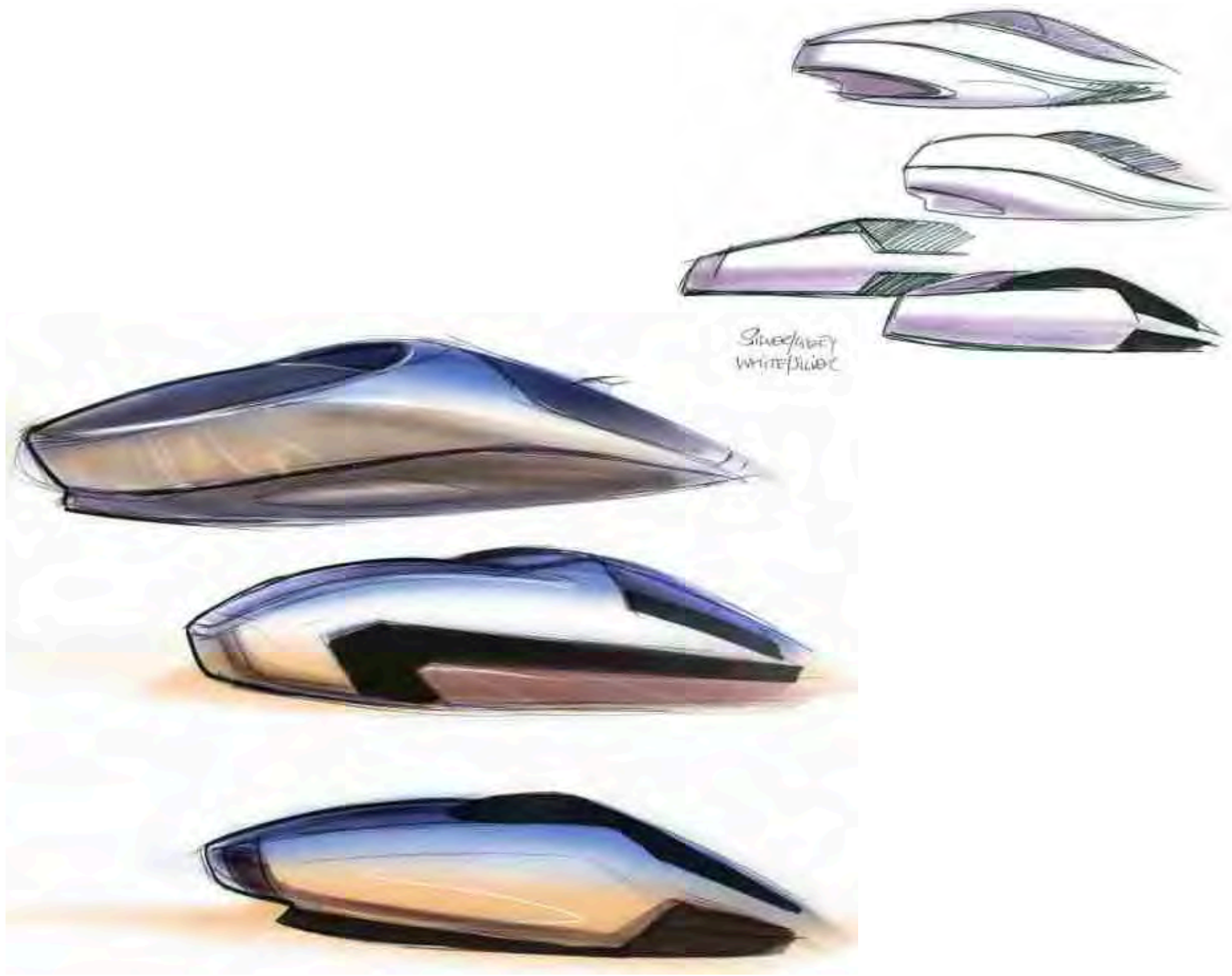
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# radical experimental research

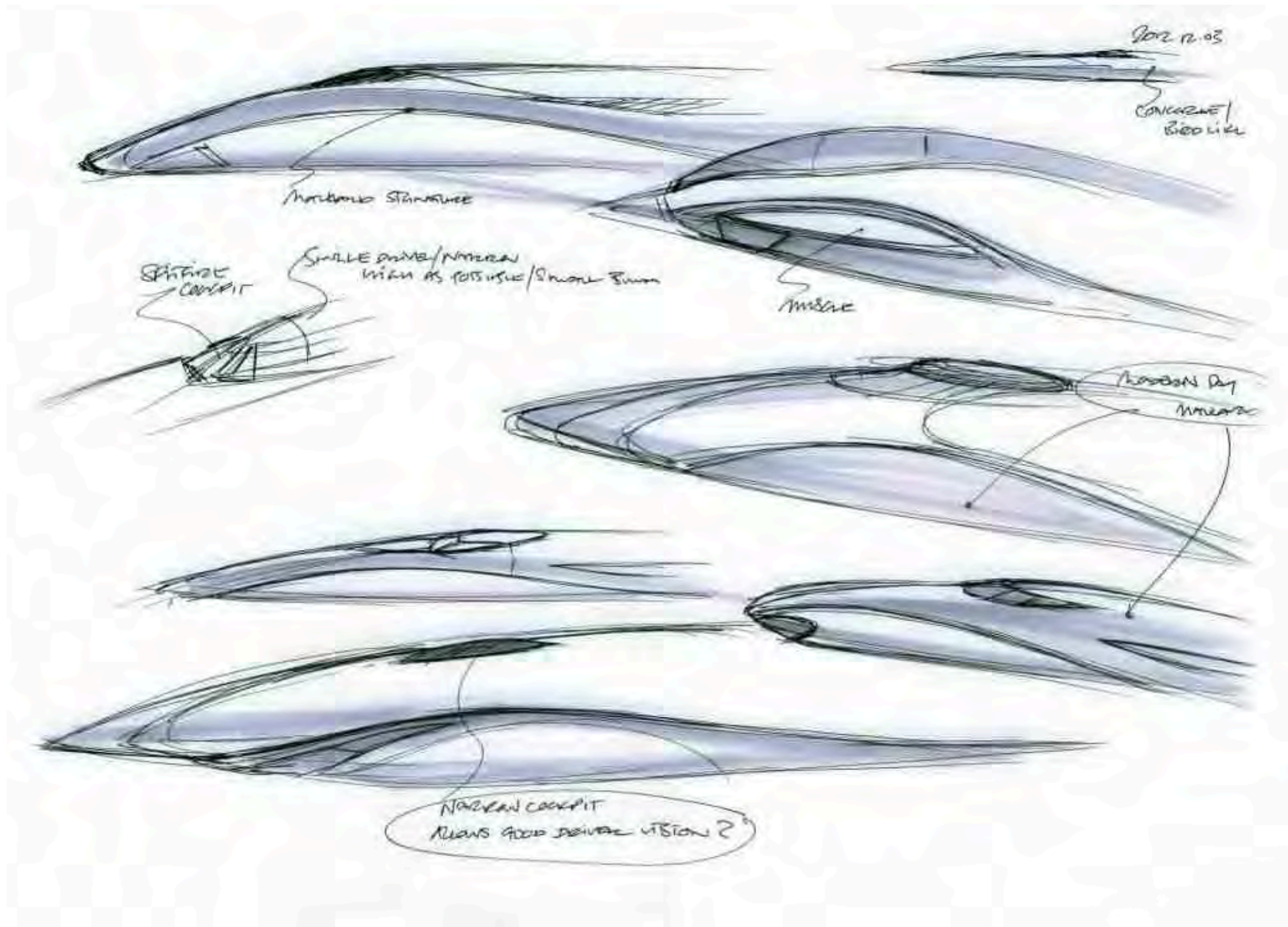


## Exterior ideas





Exterior ideas

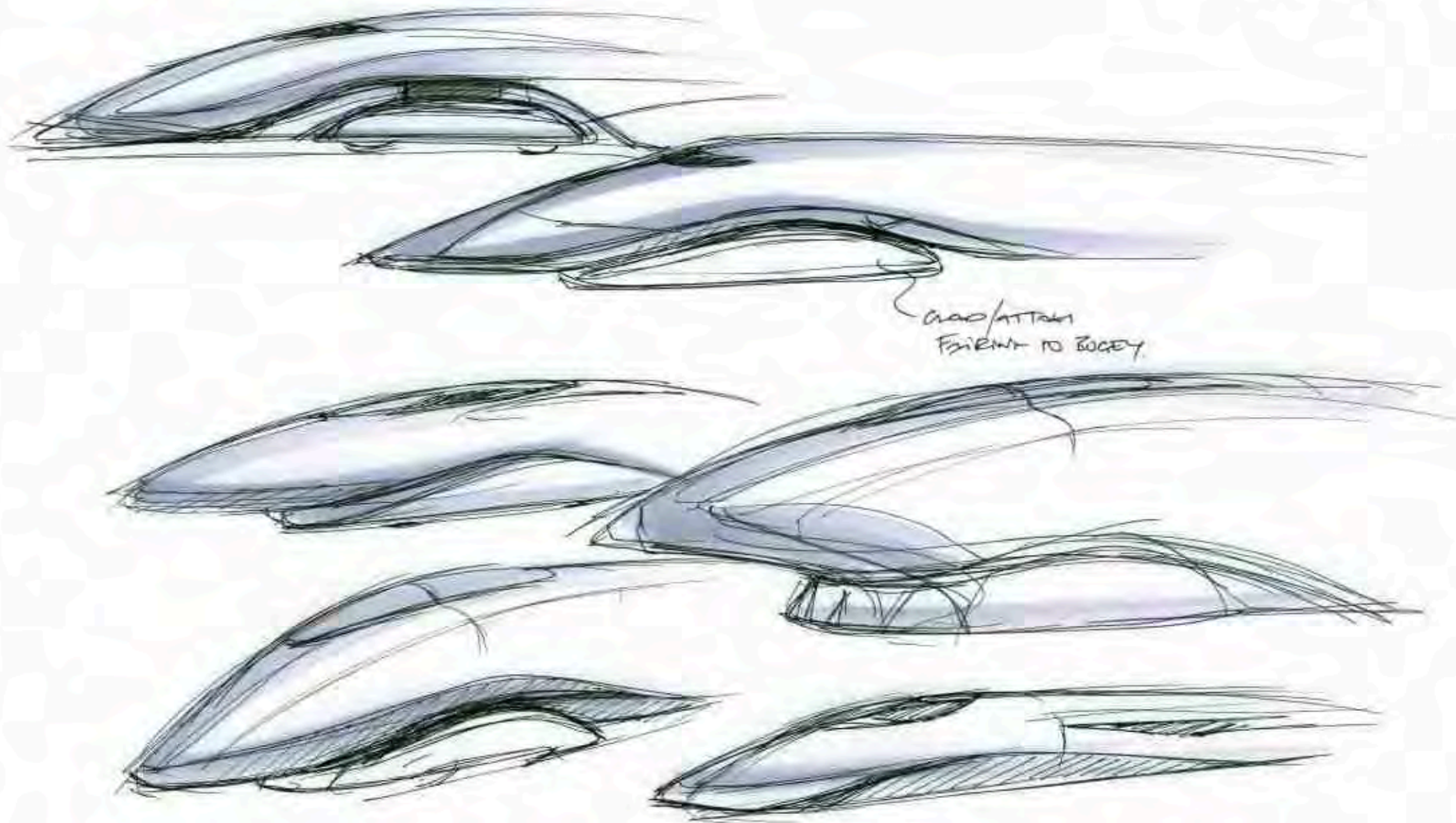






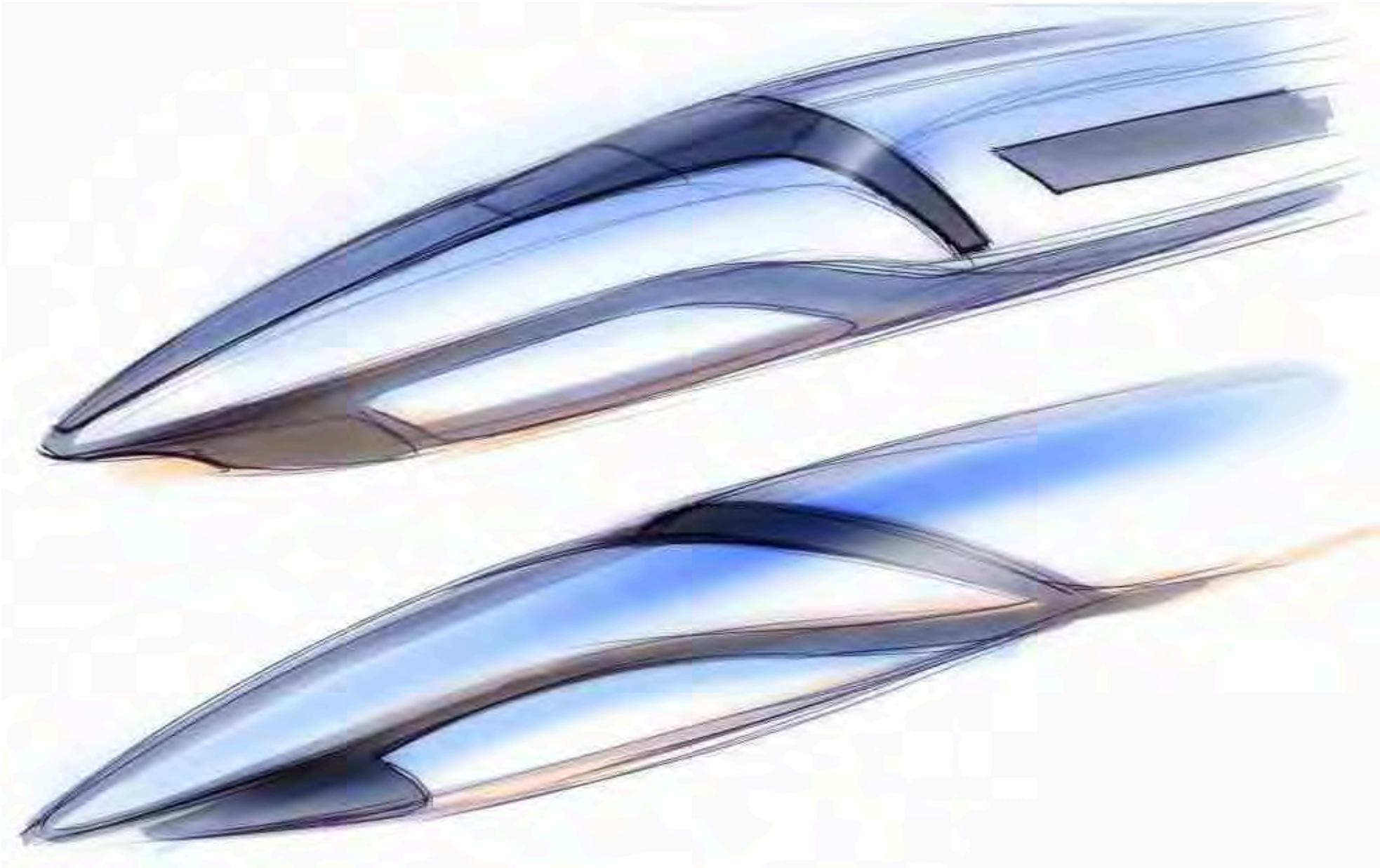
## Exterior ideas

2012.12.03

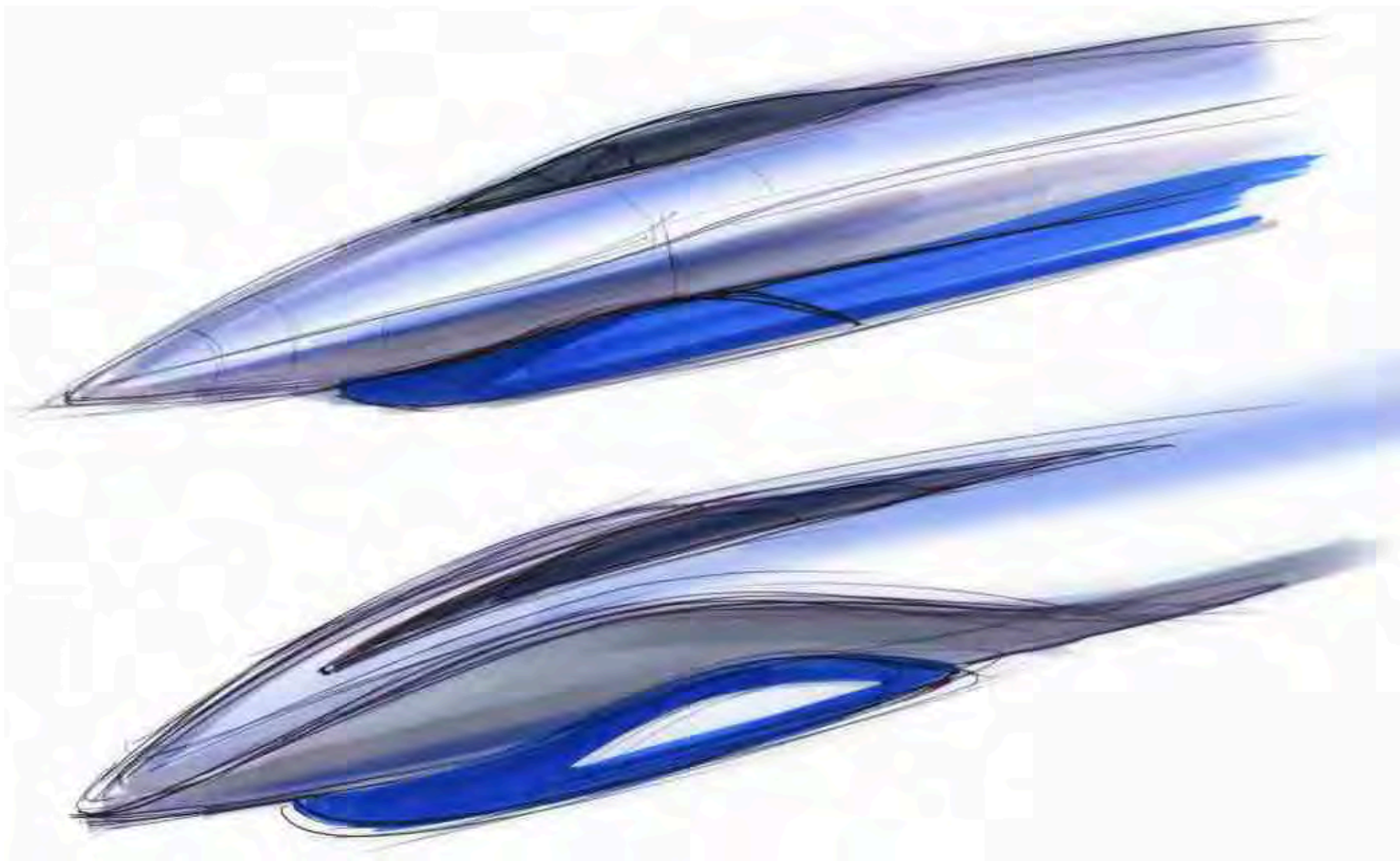


## Exterior ideas



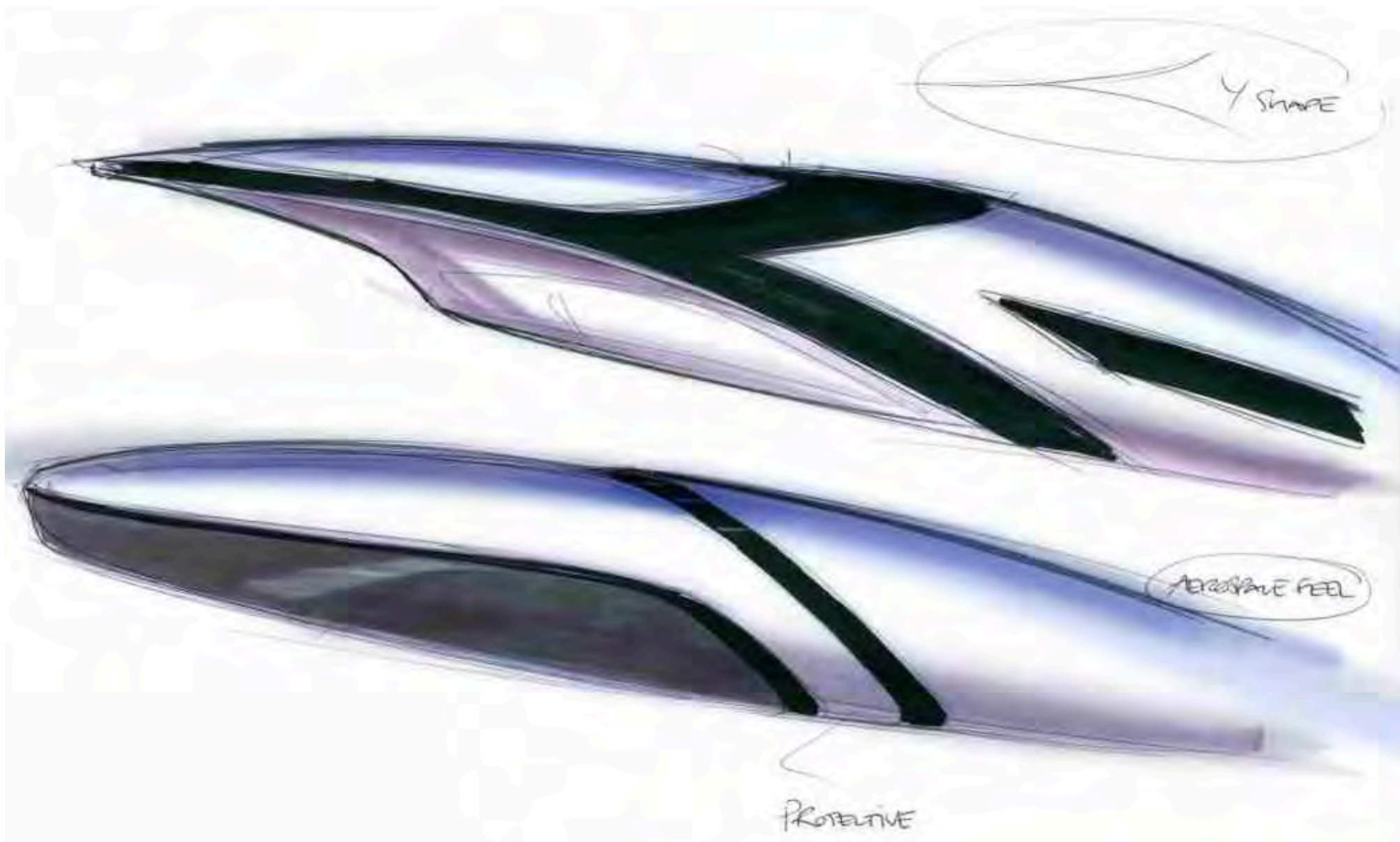


## Exterior ideas

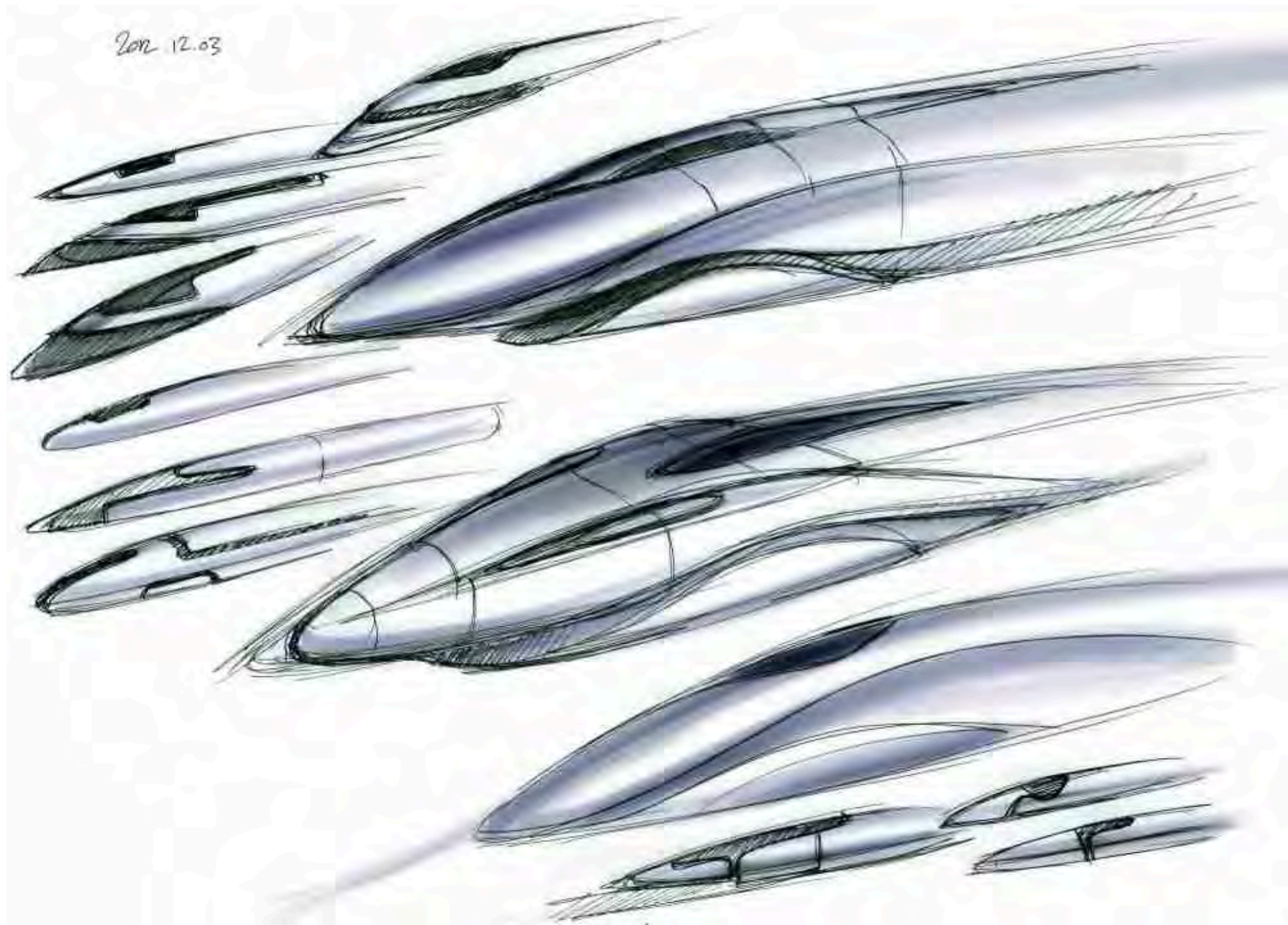


## Exterior ideas



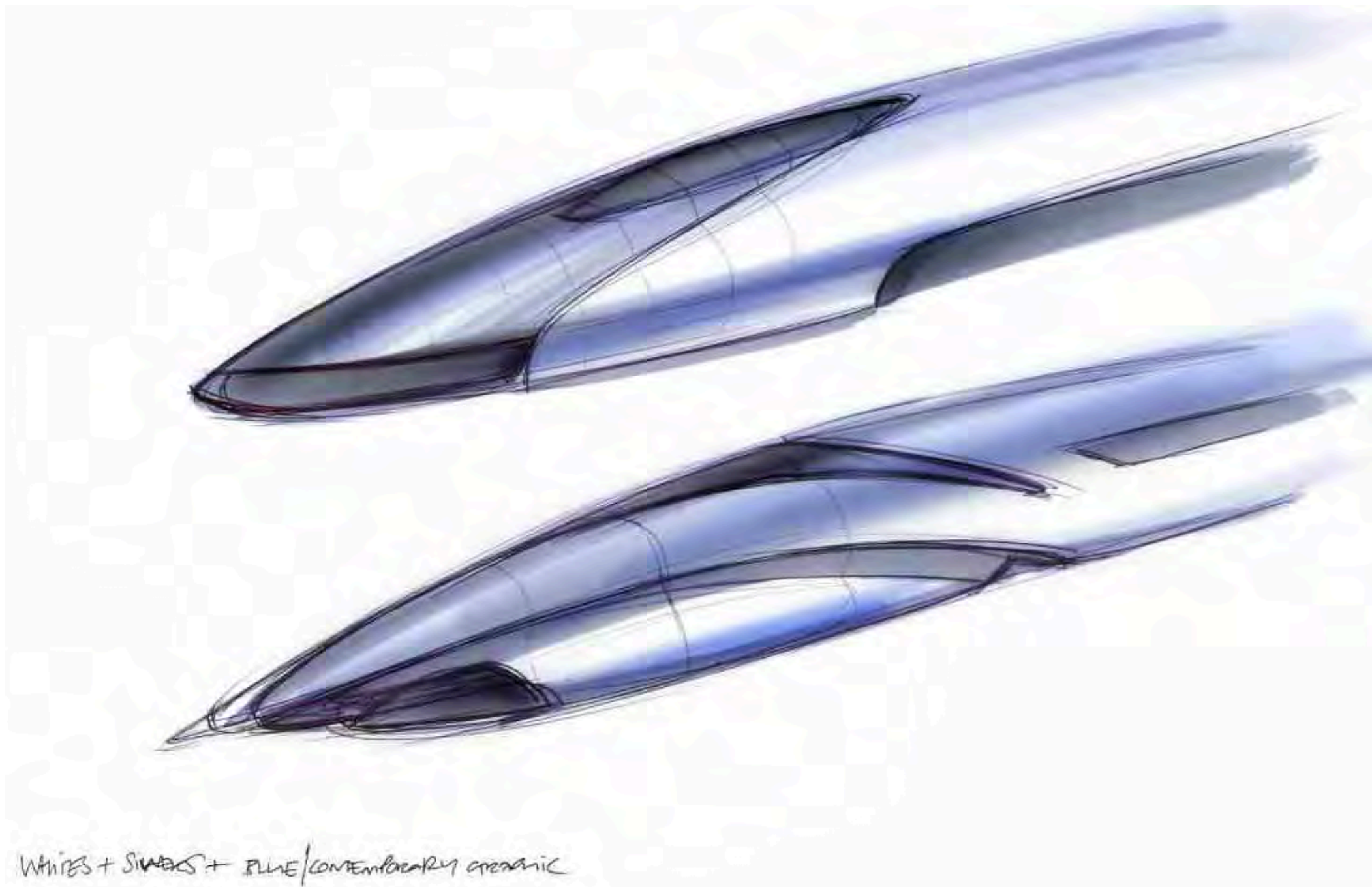


## Exterior ideas



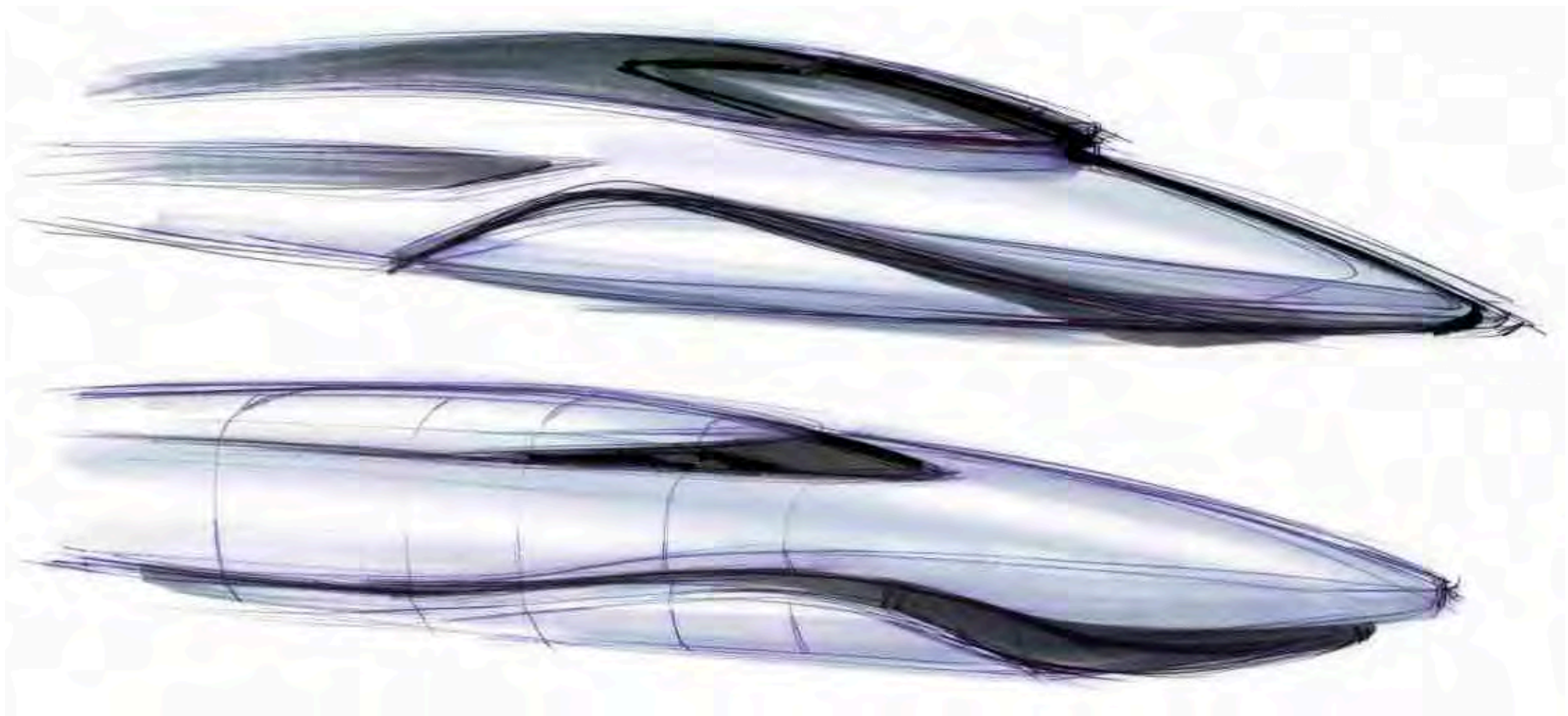
## Exterior ideas





Whites + Silvers + Blue / Contemporary organic

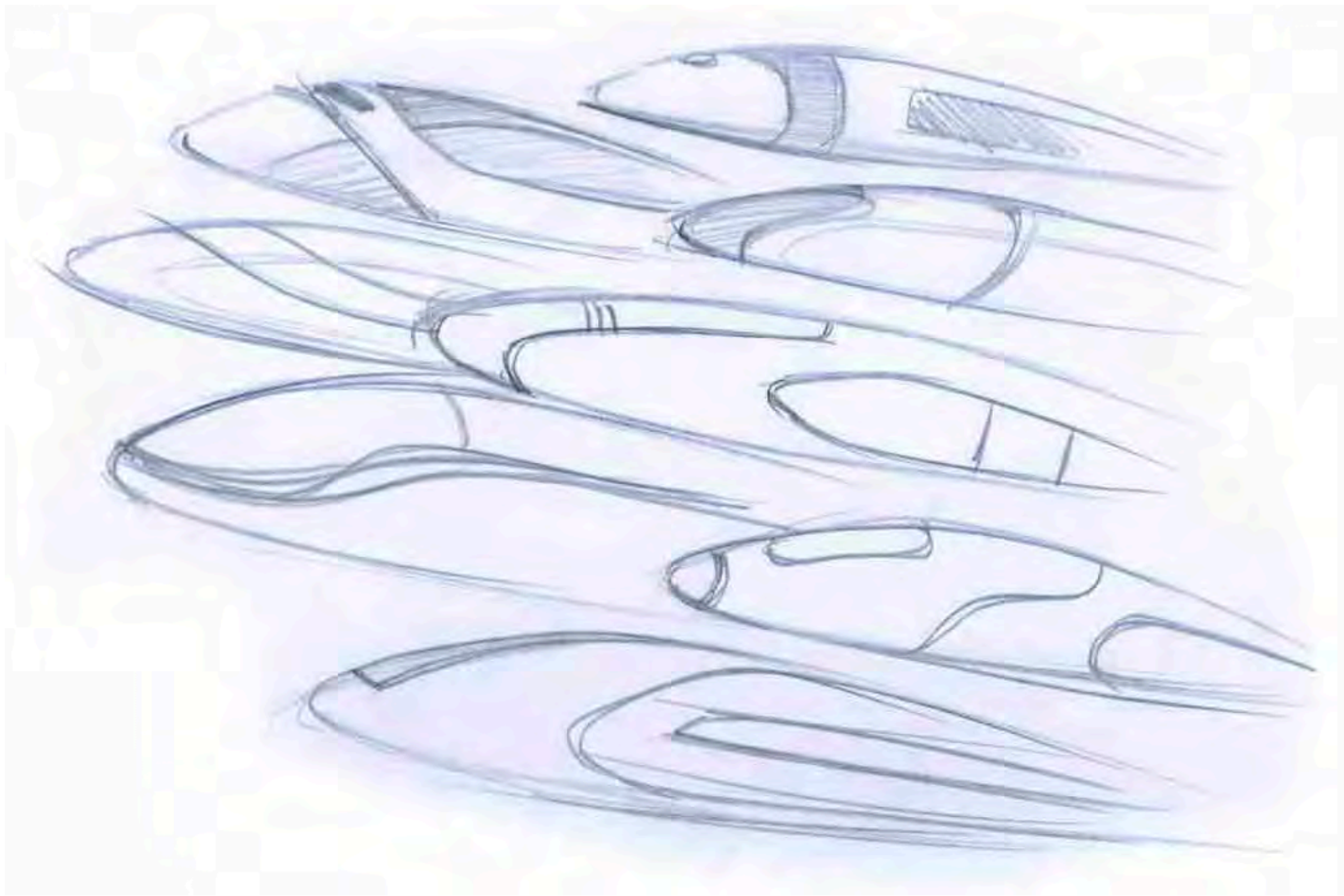
## Exterior ideas



## Exterior ideas

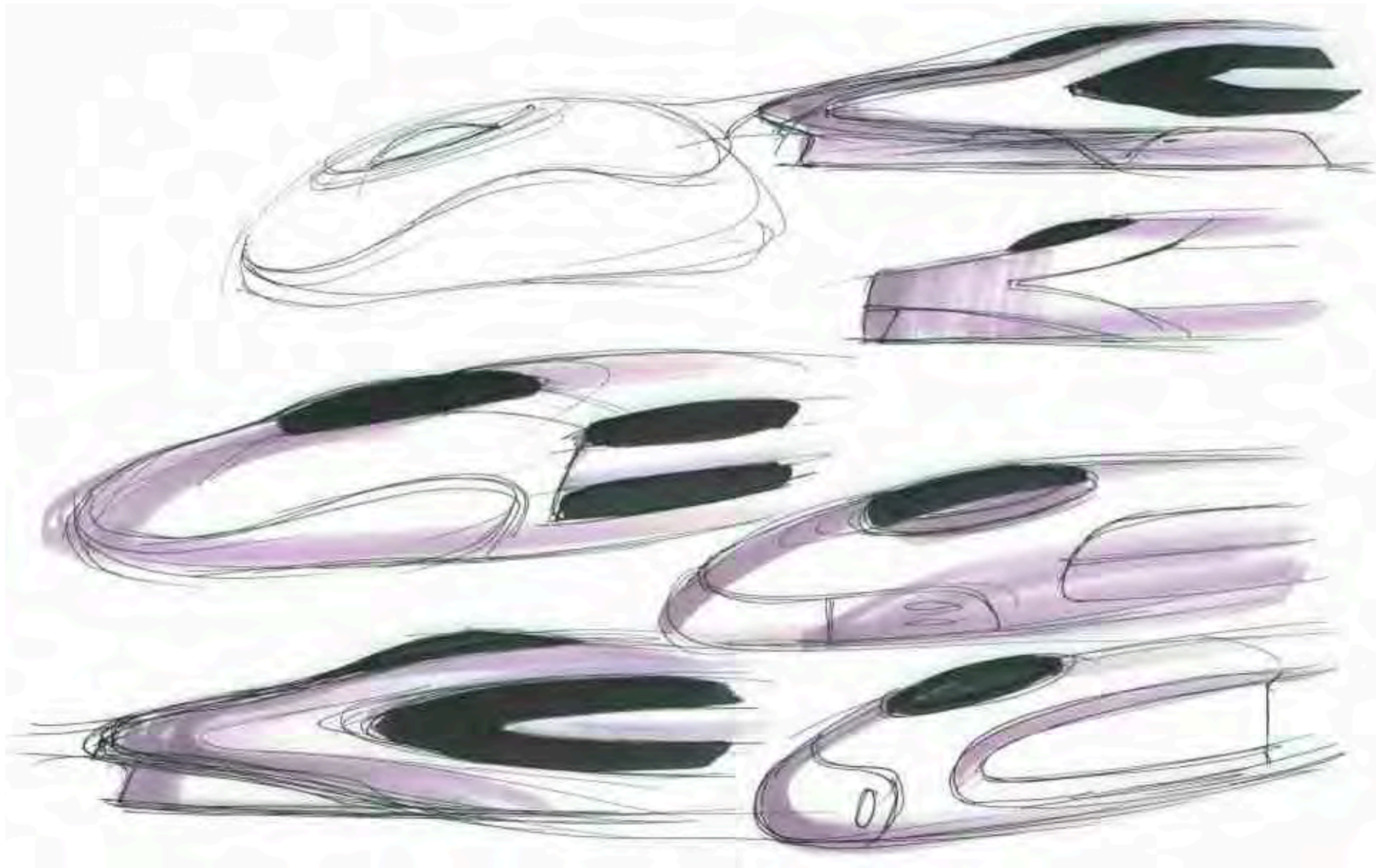


# industrial product graphic



## Exterior ideas





## Exterior ideas

slim  
contoured  
space saving





# headrests





## Seating ideas - misc



## Seating ideas - misc

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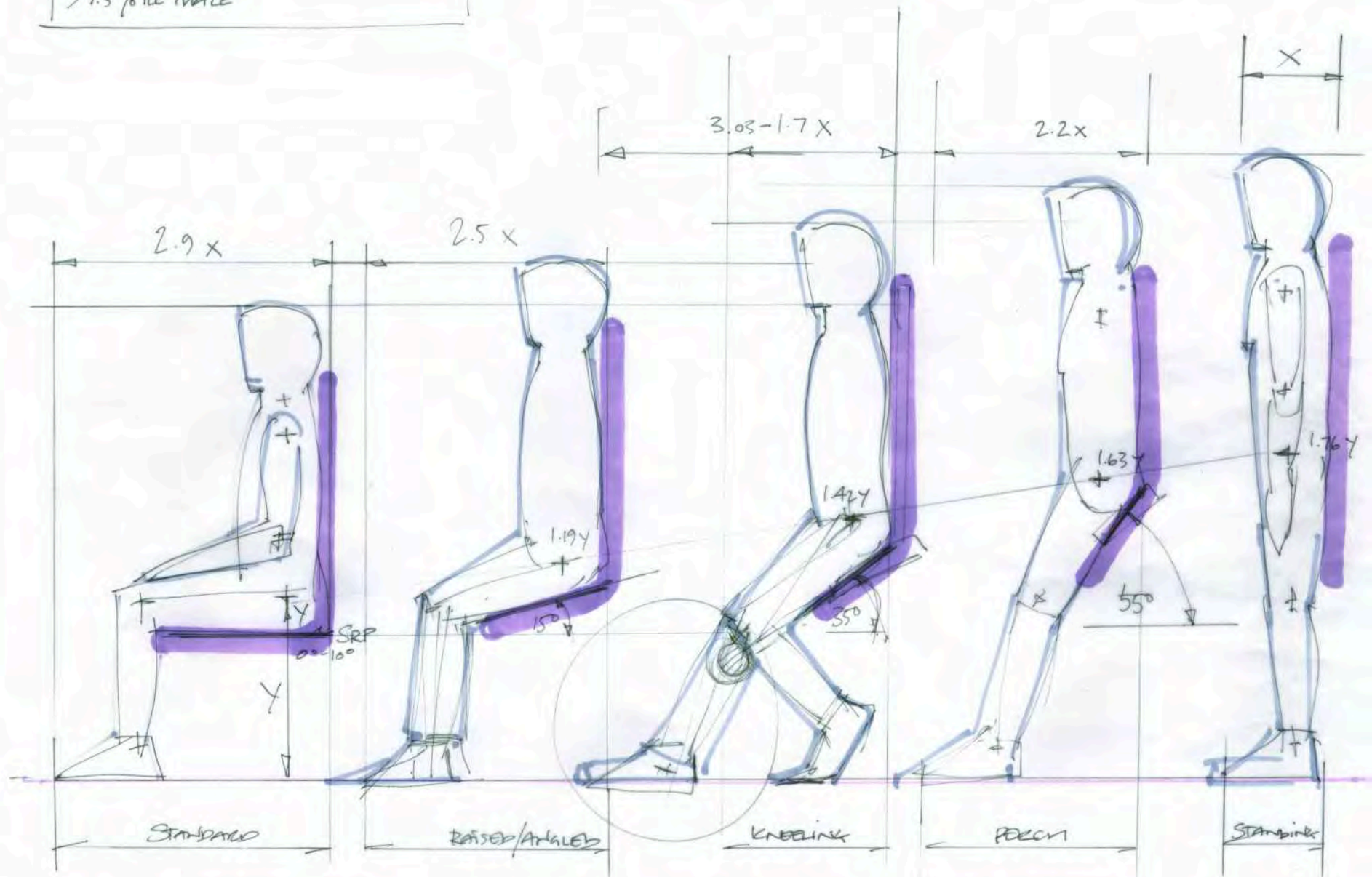
ref: 281DC004a\_SEATING\_IDEAS\_MISC.pdf 2012-12-18 p5/13  
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perch  
saddle  
posture

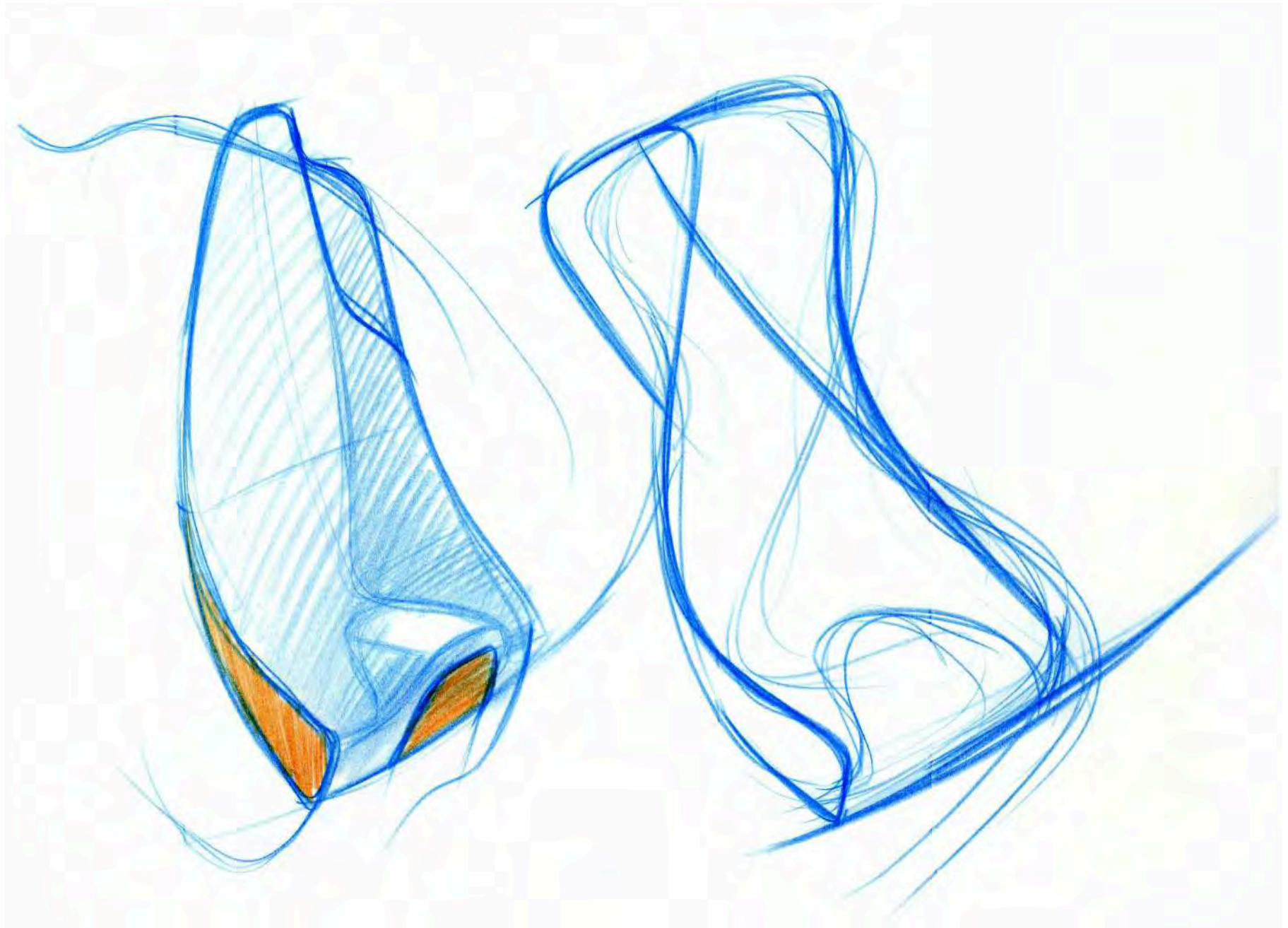
SEAT CAPACITY STUDY

97.5%ILE MALE



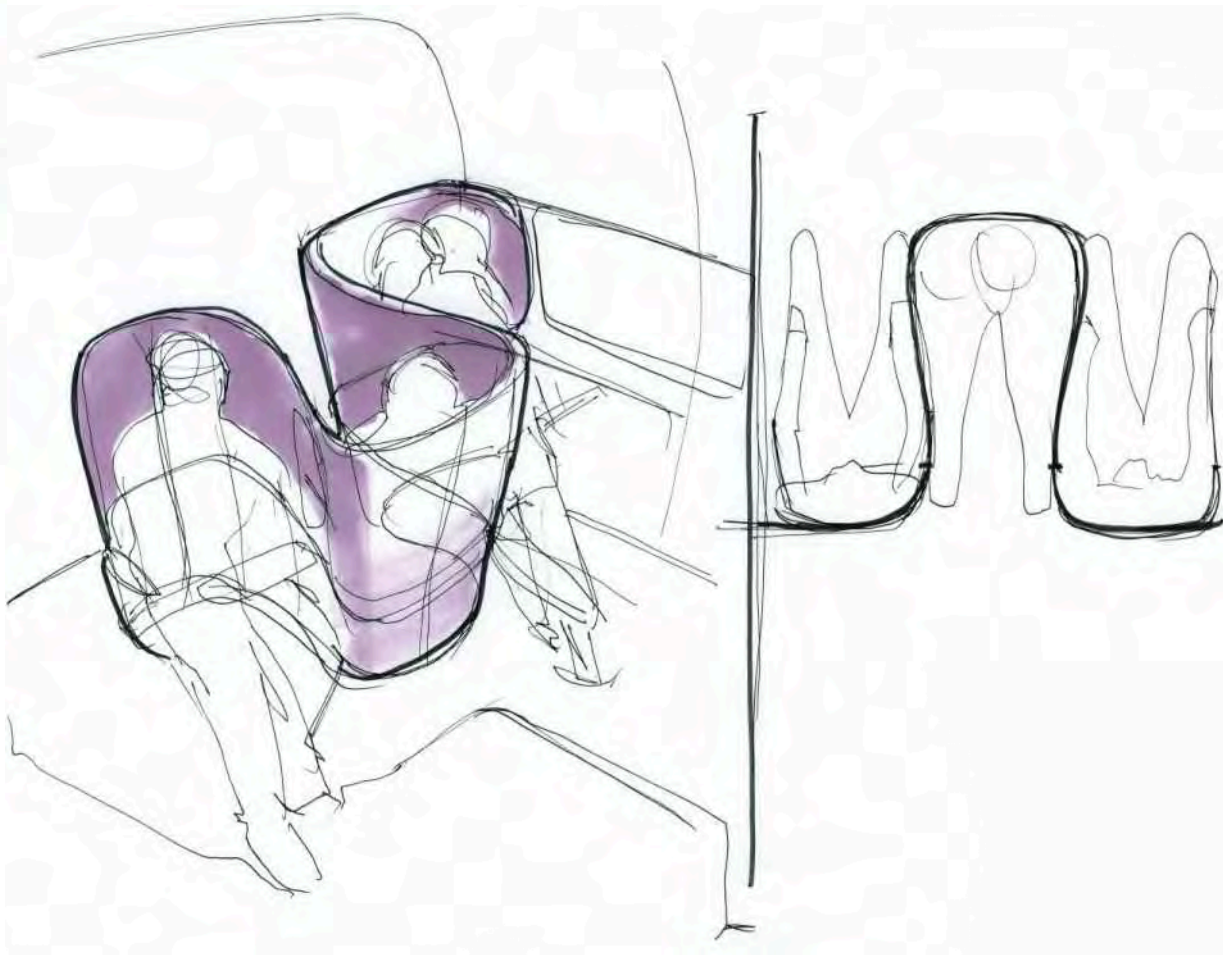
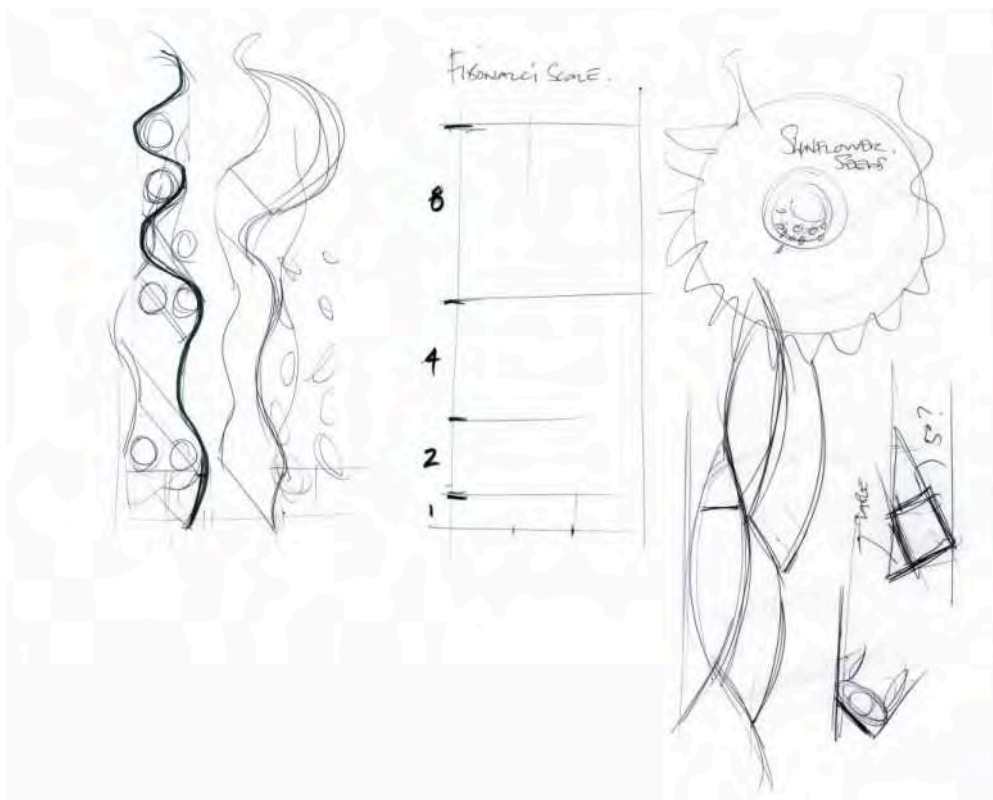






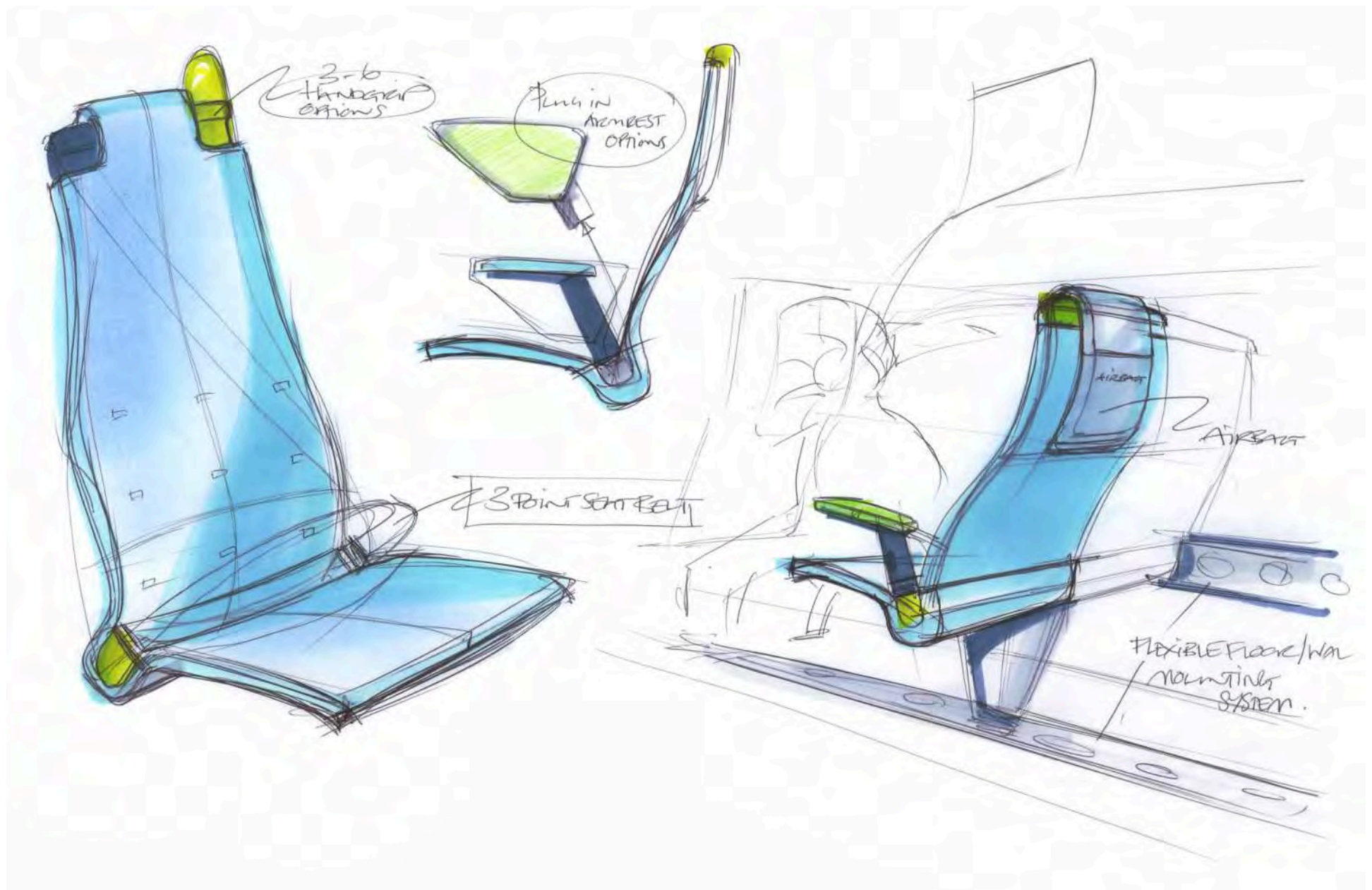


coracles  
fibonacci





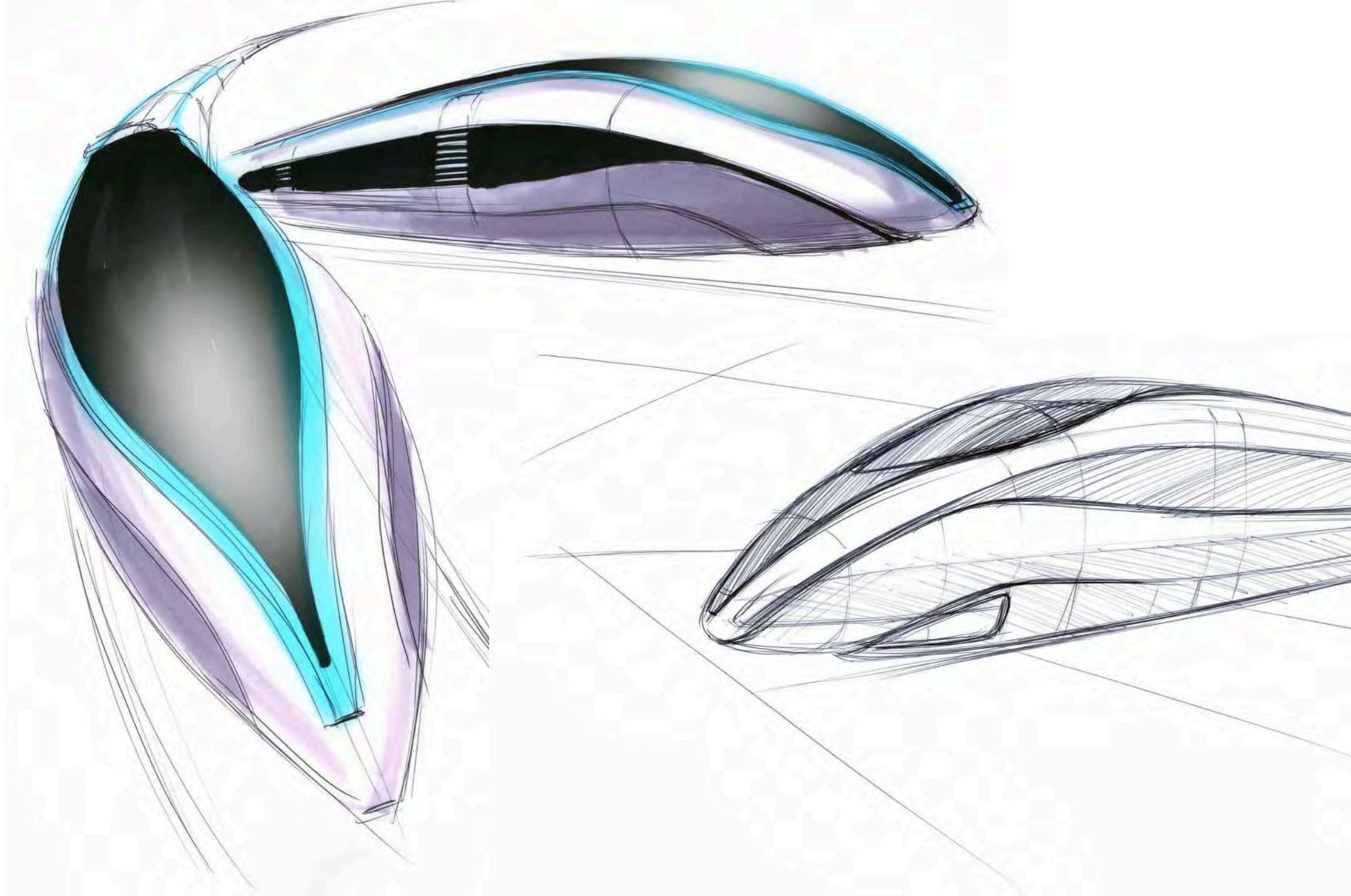
seat belts  
airbags  
modularity



HS2 - 'DESIGNED AROUND PEOPLE'

2012.11.28





## Concept development

**HS2 Ltd**  
Train Exterior  
Concept development



ref: 281DC007a\_EXTERIOR\_DEV.pdf 2013-01-09 p2/7  
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Concept development

**HS2 Ltd**  
Train Exterior  
Concept development



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Technical drawing of a high-speed train in profile, showing dimensions 22735, 5635, and 17100.

Technical drawing of a high-speed train in profile, showing dimensions. The total length is 25350. The front section is 4350, and the main body is 17000.

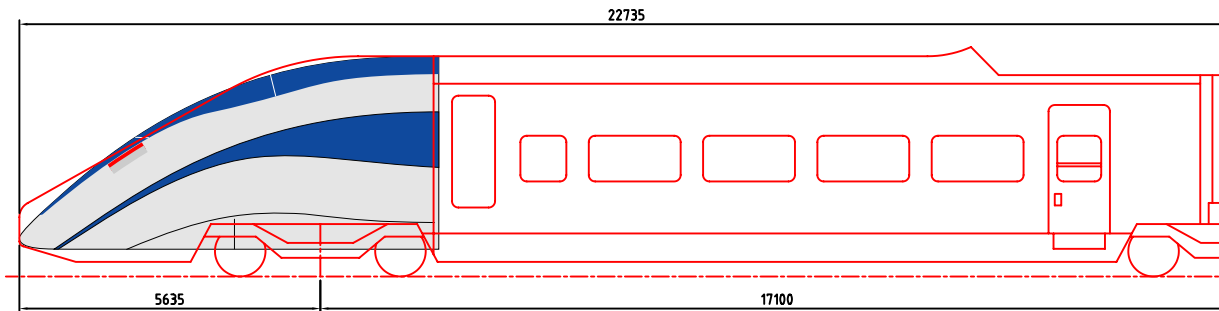
25700

4950

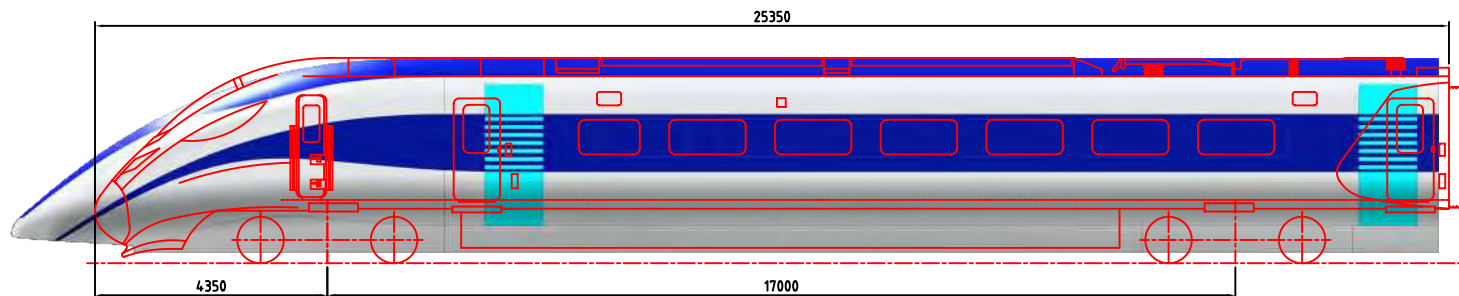
17336

**DRAFT**

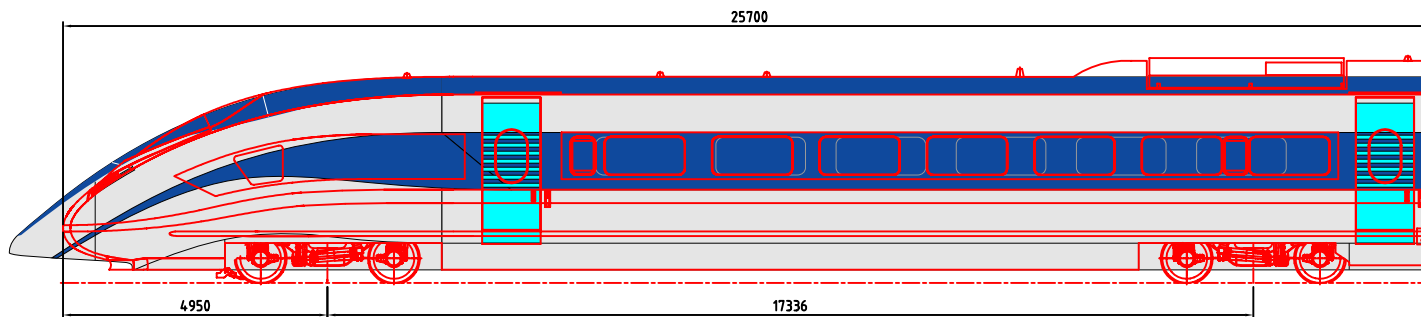
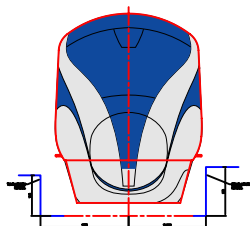




ALSTOM AGV



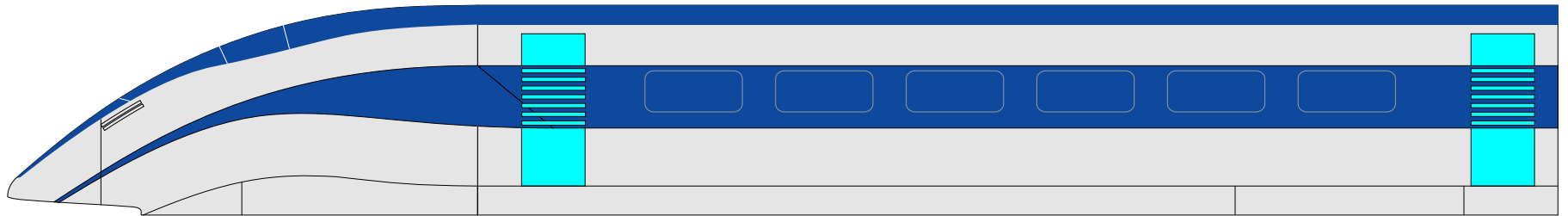
HITACHI IEP 2009



SIEMENS VELARO D

DRAFT

GENERAL TOLERANCES UNLESS OTHERWISE STATED									
0 - 5	±0.2								
5 - 25	±0.4								
25 - 100	±0.6								
100 - 250	±0.8								
250 - 1000	±1.0								
OVER 1000	±2.0								
ANGLES	±0.5								
REMOVE ALL SHARP EDGES									
© Copyright Design Triangle 2012									
		A	ORIGINAL ISSUE						
		ISS	DESCRIPTION				DRWN	DATE	CHKD APPD
		NOTE: -	MATERIAL: -				FINISH: -		
		HS2 LTD							
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				The Holdings, Burrell Cambridge, CB2 0UB, UK Tel: +44 (0)1638 743070 Fax: +44 (0)1638 743080 mail@designtriangle.co.uk					
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				SHEET 1 OF 1					
				ISSUE					



#### aims

iconic  
sexy  
modern  
british  
elegant  
fast  
abstract  
contemporary  
ultra clean

#### influences

concorde  
mallard  
bluebird

#### like

dart  
arrow  
quicksilver  
bullet

#### key features

Y cab screen graphic  
silver/white/neutral bodycolour  
blue coated glass & livery colour  
distinctive door markings  
forward sweeping  
fast flowing  
sinuous  
fluid  
slick

#### names

Ypsilon  
Y Train  
Yolante  
Yu  
YourTrain  
Y1  
Y-FLEX

## Concept development

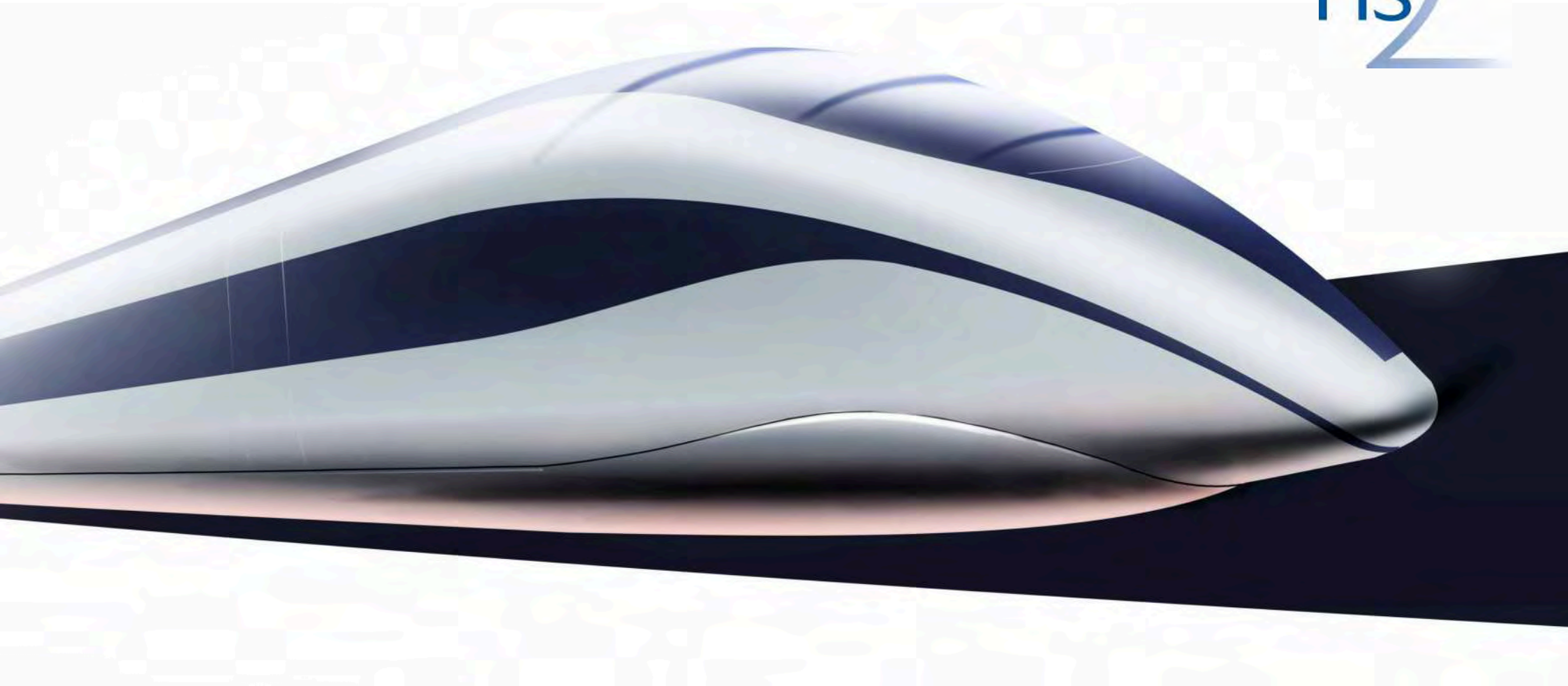
#### HS2 Ltd

Train Exterior  
Concept development



DESIGN TRIANGLE

ref: 281DC007a\_EXTERIOR\_DEV.pdf 2013-01-09 p6/7  
© Design Triangle



## Concept development





fast  
iconic  
desirable

**exterior**

# 1.1 Vehicle Spirit

People are passionate about High Speed trains. They symbolise the human spirit to explore and succeed.

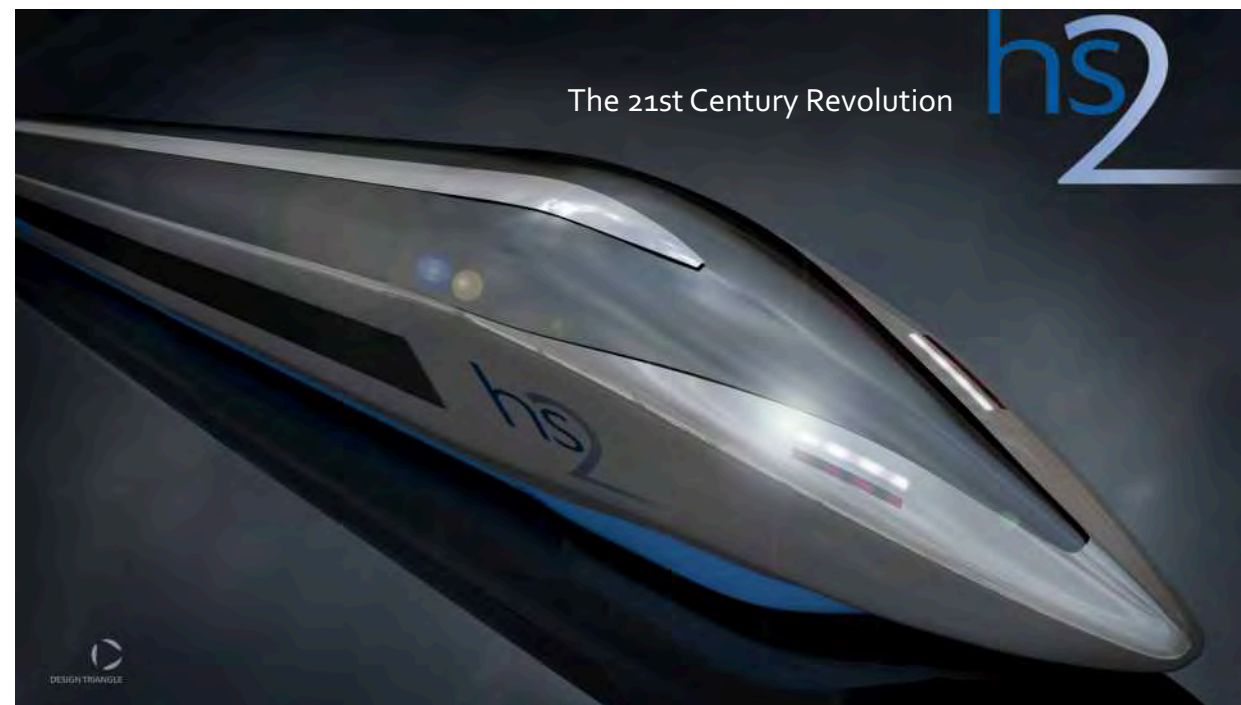
Whole nations are defined by the efficiency and character of their transportation systems and trains. Shinkansens are inextricably Japanese, the TGV is a potent national symbol of France and Germany has its super efficient ICE's. In the same way HS2 will become a potent symbol of progress for 21stC UK.

HS2 needs to reflect the aspirations of '21st Century Britain' and ensure it connects with people's emotions - clearly demonstrating the benefits and relevance to their lives and neighbourhoods.

Inspiring British icons from the past and present share one goal in common - to be the best:

Mallard  
Spitfire  
E-Type  
The Mini  
Bluebird  
Concorde  
Routemaster (old & new)

HS2 is the next chapter in the UK's historic rail heritage - inspiring future success for the nation.



## The Symbol of a Nation

**HS2 Ltd**  
Train Exterior  
Brand positioning of vehicle



ref: 281DC008a\_BRAND\_POSITIONING.pdf 2013-01-09 p1/  
© Design Triangle

## 1.2 Iconography & Experience



In recent years there has been a large increase in iconic architecture, public art and 'feel good' collective experiences such as the 2012 Olympics and The London Eye.

**hs2** should aim to be as memorable as the best of British Icons and experiences:



Modern British Icons

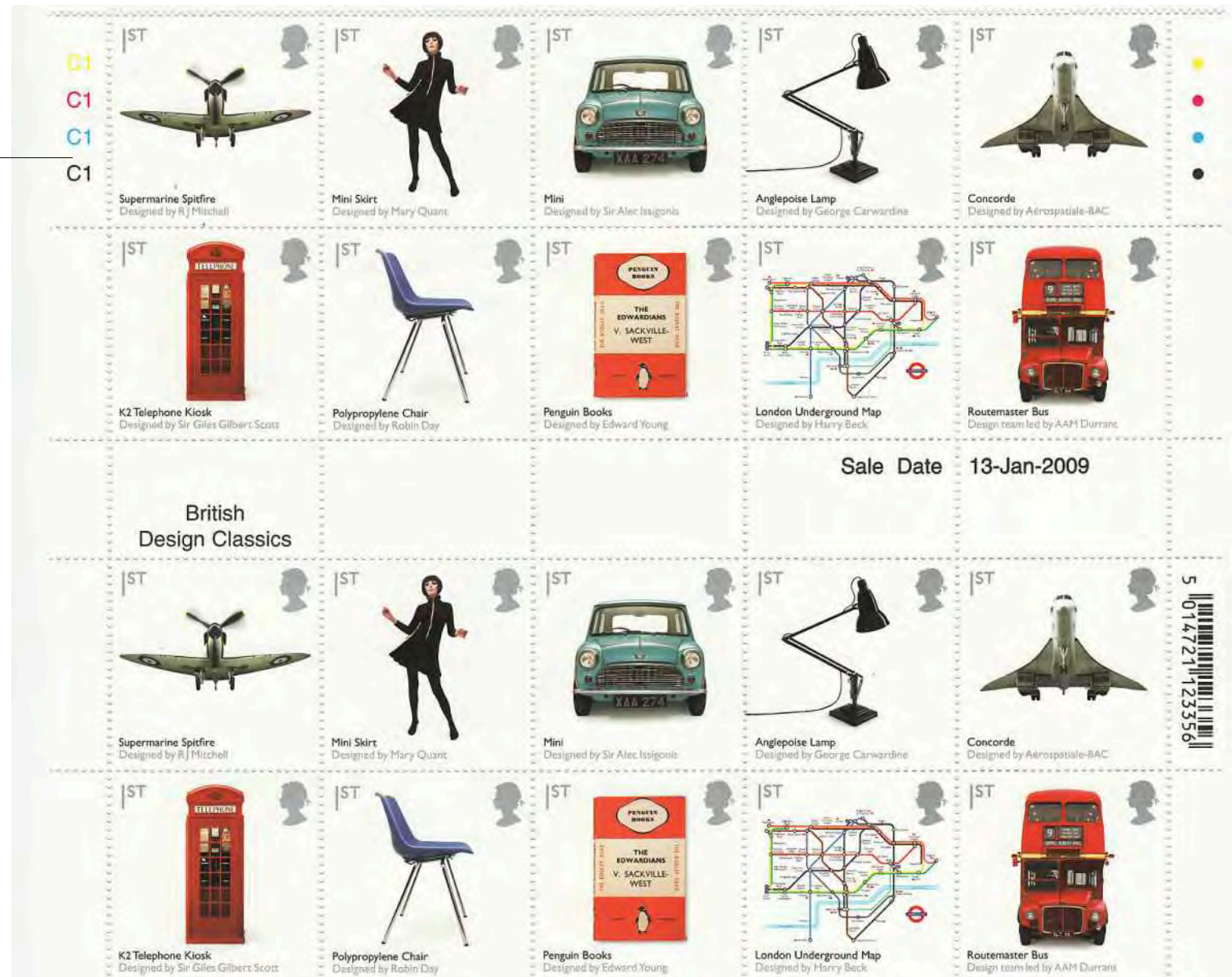


## 1.3 Britishness

Many attempts have been made to define Britishness and recognise what characteristics make a design Classic.

In product design it's about:

- responding to circumstances
- durability
- innovation and new technology
- efficiency
- individuality
- entrepreneurial spirit



British Design Classics

# 1.4 Colour Palette

neutrals



neutral  
modern  
timeless  
aerospace  
technology

silver  
white  
gunmetal  
black



red



positive  
strong  
aggressive  
LT  
LMS Coronation Scot



green



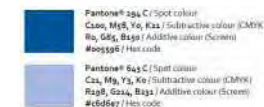
british racing green  
heritage  
GWR



blue



hs2 brand  
mallard  
heritage  
GNER  
Javelin



yellow



visibility  
compliance  
uk rail  
yellow and white is synonymous  
with Eurostar vehicles



## 1.5 So what Colour is HS2?

When someone buys a new car one of the first questions people ask is what colour it is?

Colour is an emotive subject and everyone responds differently. To appeal to the maximum number of people the HS2 livery colour will require careful consideration.

For many high speed train operators across the world white is a default colour, think China, Germany, Spain. It symbolises cleanliness and efficiency and provides a contrast with the landscape, window treatments and decal feature colours. However, in the UK lobbyists have suggested that HS2 is a 'white elephant', so it may be worth considering something different.

For example, British Racing Green was for many years the international racing colour of the UK, it has positive associations with racing heritage, blends in well with the landscape and is not currently used by any UK rail operators.

british racing green  
heritage  
GWR





## 1.6 What's in a Name?



The Spitfire was originally to be called the 'snipe' or 'shrew' - enough said.

Many factors effect the naming of a product or service. The HS2 train effectively already has a product name - so is there any reason to change?

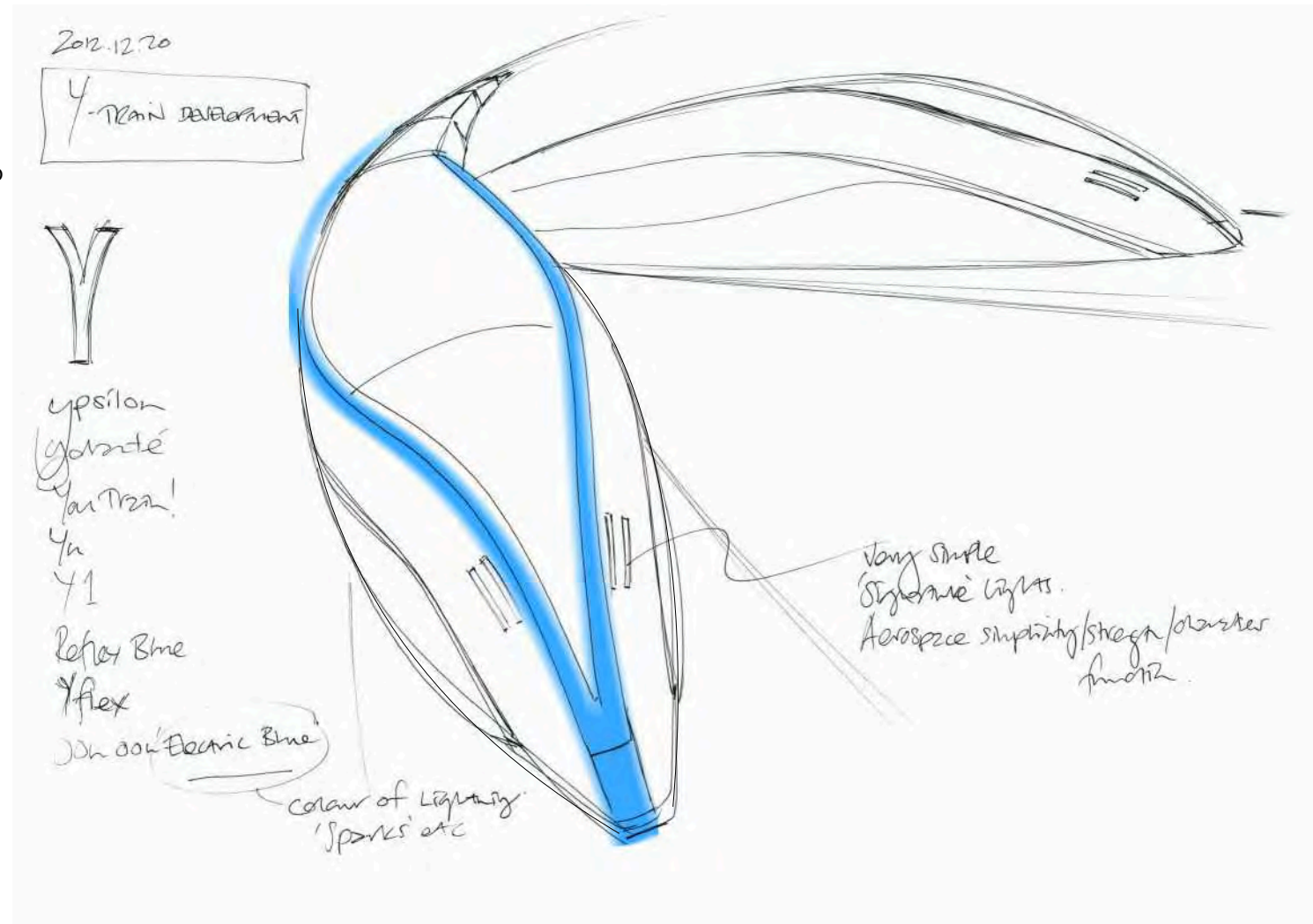
A product brand name should be:

- memorable
- support the positioning of the brand
- protectable
- describe it's function
- dynamic
- melodic
- meaningful
- distinctive

Some good examples are:

- Mini
- Range Rover
- iPod
- Coca Cola

A name such as 'Ypsilon' sounds dynamic and reinforces the narrative of the 'Y' shaped route, but as with many names it is already used by the car industry.



## 1.7 Exterior Experience

offer value with clear benefits to passengers at all levels:

- achieve good balance between cost and passenger experience
- functionality
- in touch with modern requirements

value



fast



Supercars comfortably exceed 200mph. They are all about performance, style and exclusivity.

A high performance train gets you there quicker, safer - and someone else does the driving.

HS2 is really a 21st Century Supertrain.

- muscular
- confident
- fast

HS2 aims to set new industry benchmarks:

- consistently show results superior to those achieved with other means
- used as a benchmark
- service offer not based on 'class'
- universally accepted
- reliability



benchmark

desirable

desirable products offer the right combination of great product and interface design, and a form that supports and enhances the brand strategy



ease of use

products that are too complex, unclear and difficult to use - fail.

- ergonomics
- access
- clear information
- help and customer service



iconic

- instantly recognisable and loved



In modern car design nothing is left to chance. While owned by BMW and VW, the Britishness of brands such as Bentley and Rolls Royce is where the value is, and it's used as a positive marketing tool.

- become an iconic national symbol
- encapsulate UK aspirations
- relevant product to the nation
- quality control across the board



britishness

## SINGLE DECK



Alstom AGV  
NTV iTalo



Bombardier ZEFIRO  
CRH A380



Siemens VELARO  
ICE

## DOUBLE DECK



TGV DUPLEX/DAYSE  
SNCF



JR SHINKANSEN E4  
19997-2003 now out of service



MERCURY CONCEPT  
Speculative design project

---

Starting Points - Exterior



# interior

The background of the entire image is a solid medium grey. On the right side, there are several large, fluid, swooshing lines. One prominent line is a vibrant blue, starting from the bottom left and curving upwards and to the right. It is surrounded by several lighter blue and grey lines that follow a similar path, creating a sense of motion and depth. The lines vary in opacity, with some being more solid and others more translucent.

space  
privacy  
flexibility

# 1.8 Interior Experience

## control

- direct control over personal lighting, heating and personal environment
- order food on smart-table menus

## flexibility

- build in flexibility to change and adapt layouts and facilities to provide different customer experiences
- seasonally
  - over lifetime of vehicle

## ambiance

- adjustable light levels
- areas with different character, mood, trim levels and finishes
- colour used for psychological/emotional well being rather than corporate
- design for all the senses

## facilities

- offer a range of new ground breaking facilities
- zones offering tailored journey experience
- luggage storage near you
- quality food on-board

## sociability

- log on to HS2 network, on-board social networking
- communal spaces
- shared experiences
- gig/lectureZONE

## space

hs2 is all not about capacity, it's also about providing a quality passenger experience. Creative design solutions will help create unique spaces:

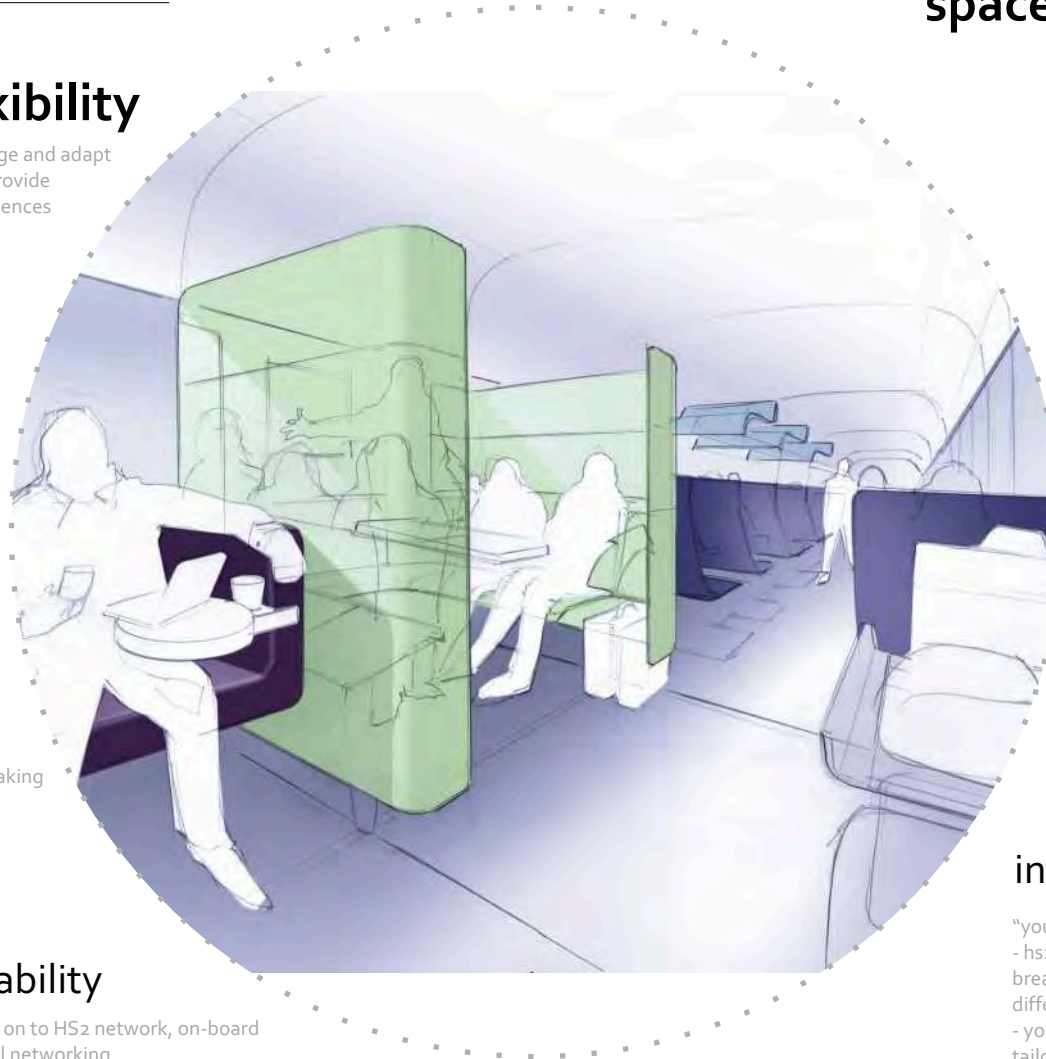
- enough space for me
- enough space for my luggage near me
- enough space for my group
- imaginative saloon layouts
- good utilisation of small spaces
- step improvements over standard solutions

## privacy

- areas for group and individual privacy
- screens
- compartments, meetingZONES etc
- seat pods
- acoustic treatments
- interactive smartglass room division

## individuality

- "you are an individual"
- hs2 offers a wide range of new ground breaking "zones" configured to suit different journey requirements
  - you choose a journey experience tailored for you



## 1.9 Space utilisation

privacy



flexibility

groups and individuals



modern  
simple  
non-uk aesthetic

use vertical space



intelligent use of space

innovative luggage/storage solutions

Interior mood





hs2



Exterior Hero Image - no anticlimber

**HS2 Ltd**  
Exterior Design  
Hero image DRAFT



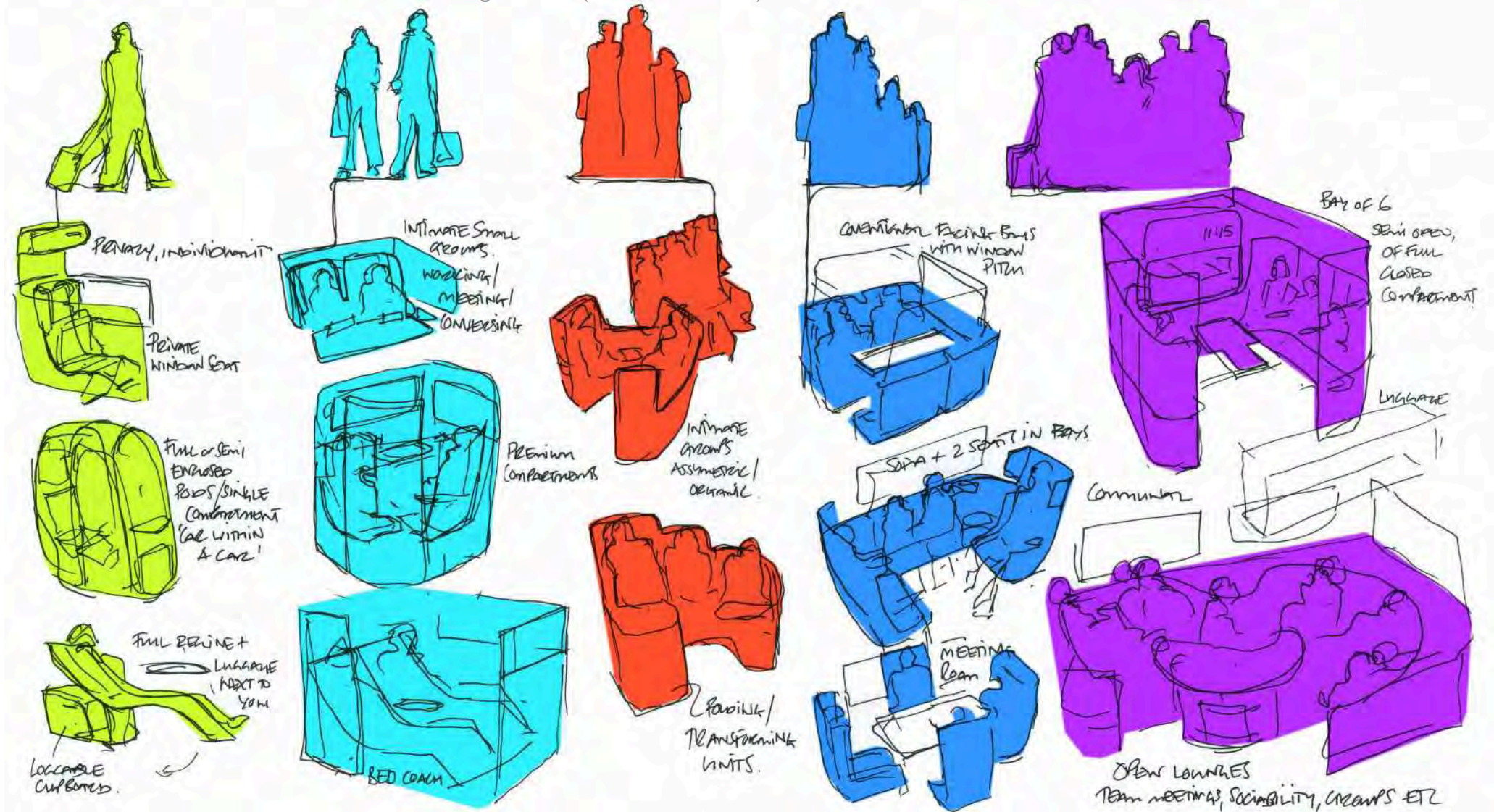
ref: 281DC012a\_EXTERIOR\_HERO.pdf 2013-03-04 p1/2  
© Design Triangle





## Interior Options - A Step Change

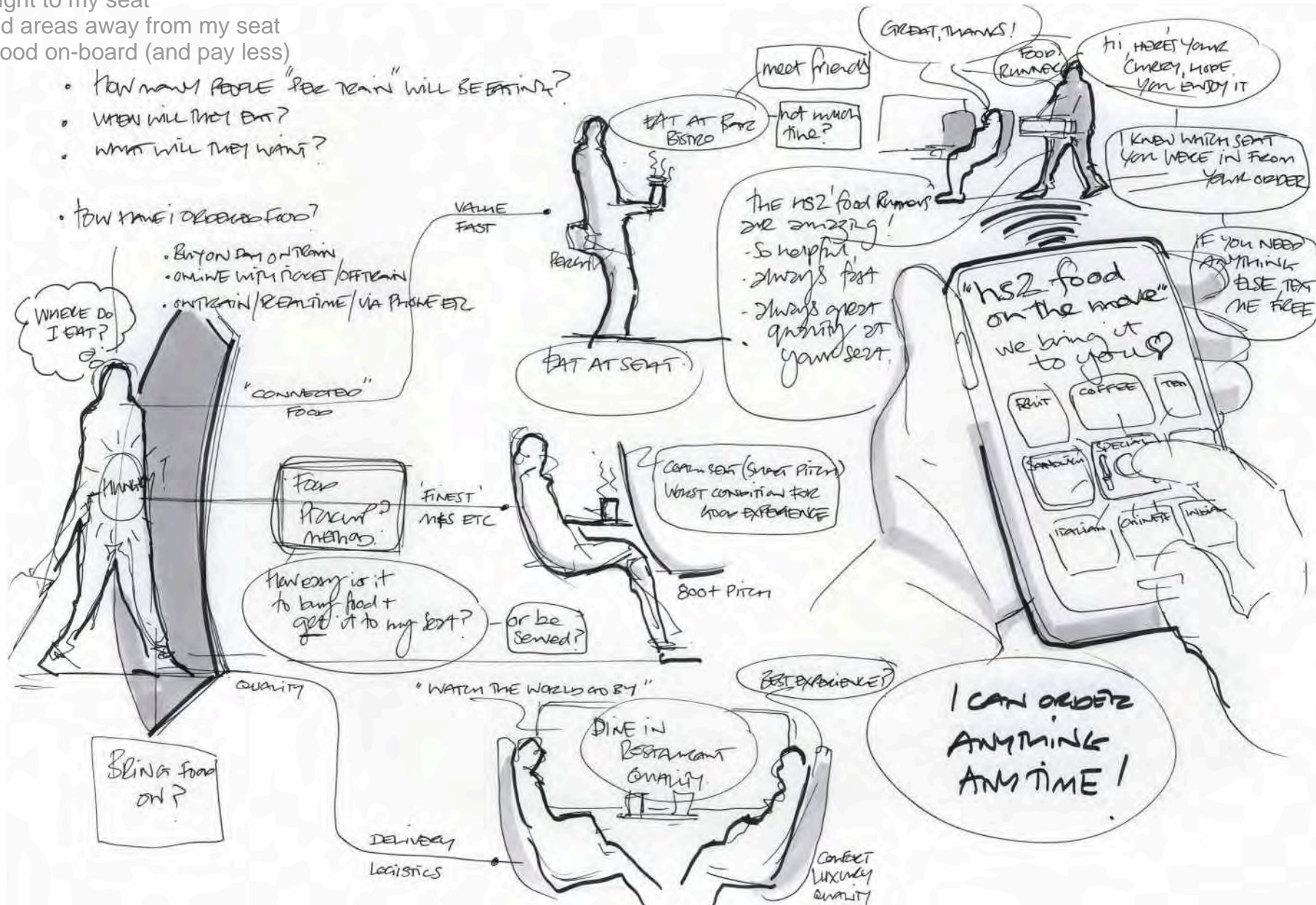
- HS2 offers a step change in the number of (pre-booked) interior options available to the passenger. Each option is tailored to specifically meet the different needs of groups and individual passengers ('you are an individual')
- different trim levels available for all configurations (frills and no-frills)





## Ideally - How would you like to eat on the move?

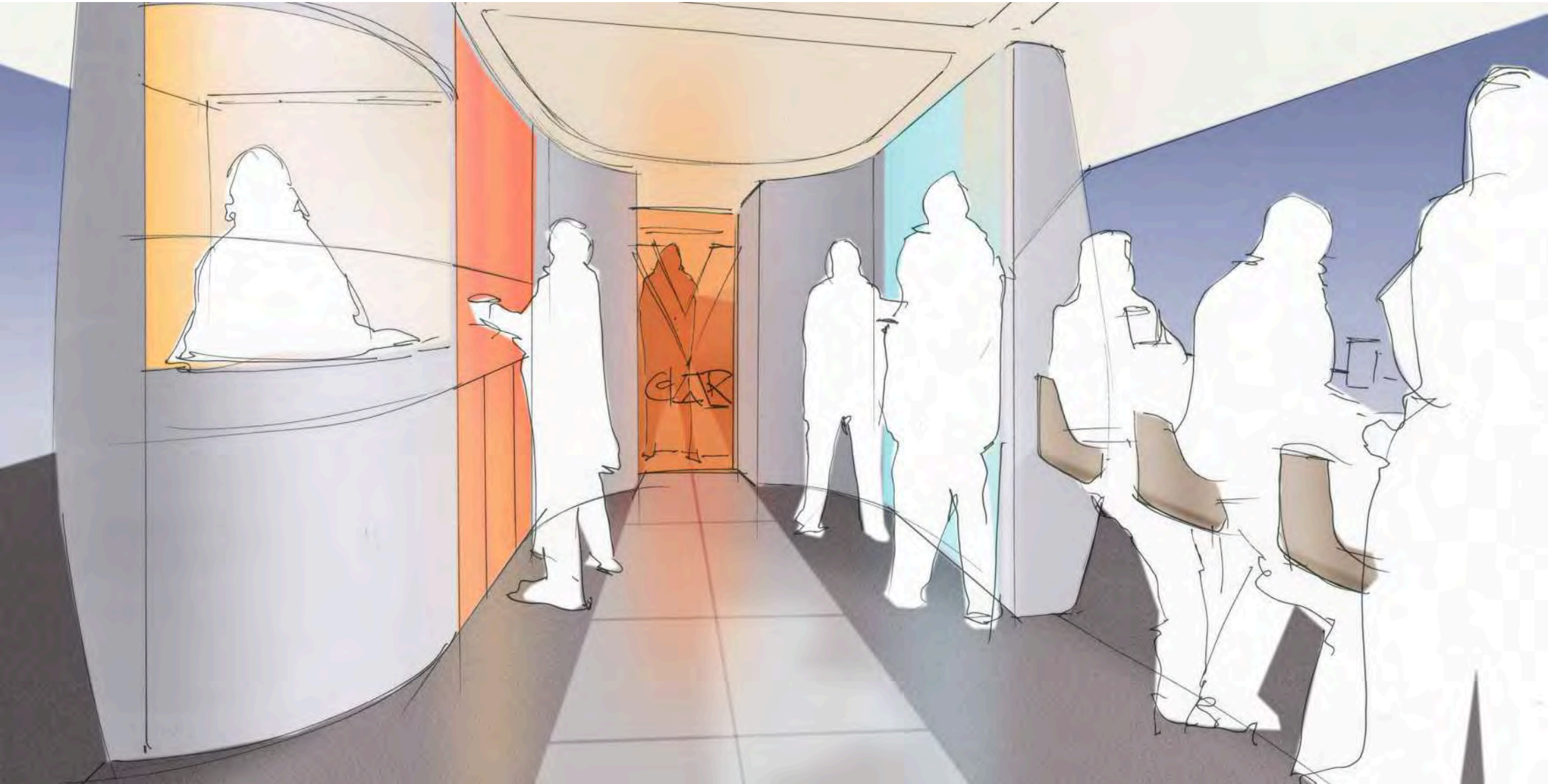
- order my food on demand via phone app 'anything-anytime' service
- have food brought to my seat
- eat at dedicated areas away from my seat
- bring my own food on-board (and pay less)



## Catering ideas

## Vending/café area at the end of the car

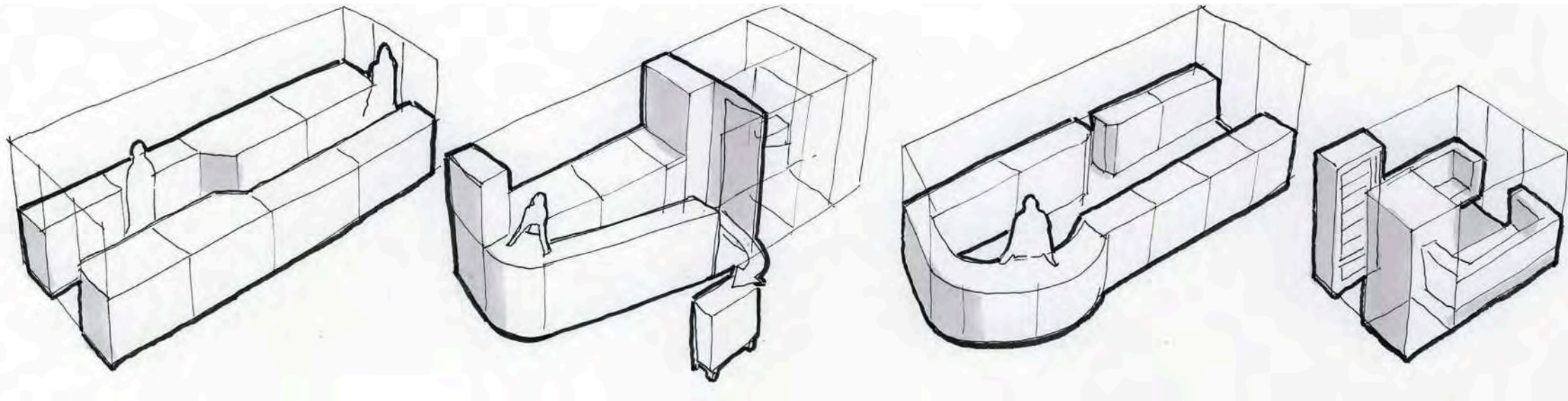
- LH side hot food and drinks and manned shop/kiosk
- RH side cold vending and bar stool/tables standing area





## Catering areas - typical solutions

- certain configurations have been proven to work
- these focus on either getting the 'food to the passenger' or getting the 'passenger to the food'



### IEP

- full galley/kitchen
- at seat service
- staff access only

### ZEFIRO V300

- servery
- staff facilities

### TALGO T350

- servery
- food preparation
- trolley storage

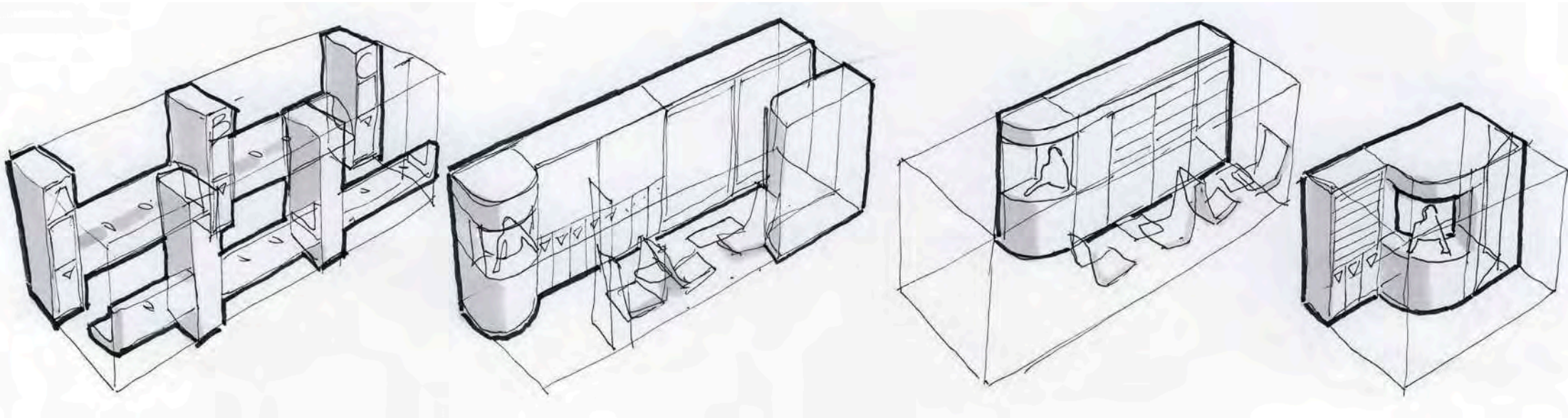
### AGV/NTV BREAK

- self service vending
- bin
- sofa



## Catering areas - alternative ideas

- a range of solutions has been considered



1

- 'themed' vending columns
- longitudinal sofas

2

- shop/kiosk
- vending
- trolley storage
- cafe seating

3

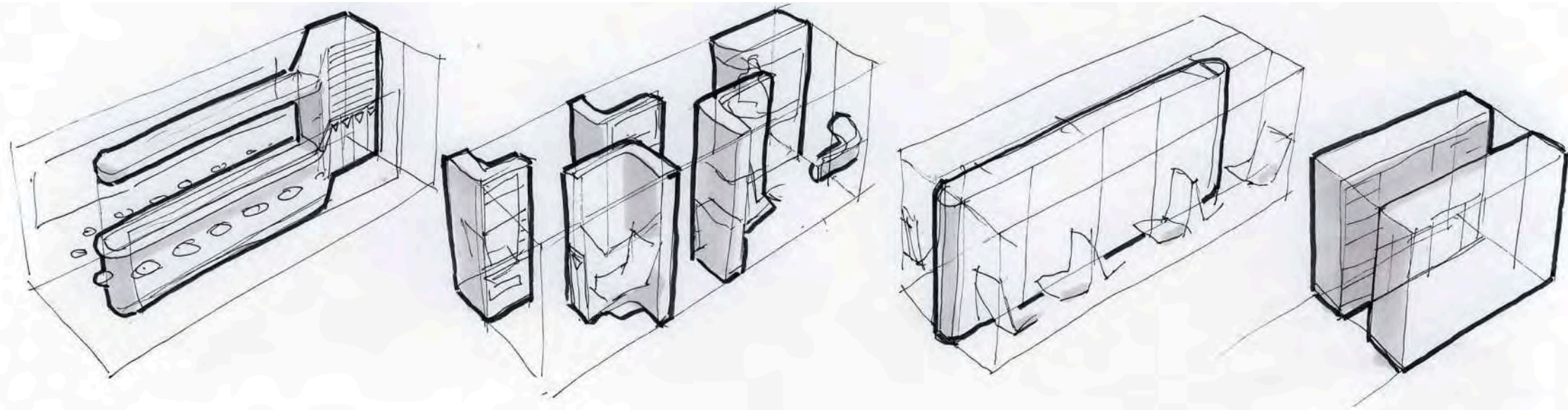
- shop/kiosk
- vending
- cafe seating

4

- shop/kiosk
- vending

## Catering areas - alternative ideas

- a range of solutions has been considered



5

- sushi style delivery
- vending
- trolley storage

6

- 'themed' vending built around seats
- 'corner shop' and perch seating

7

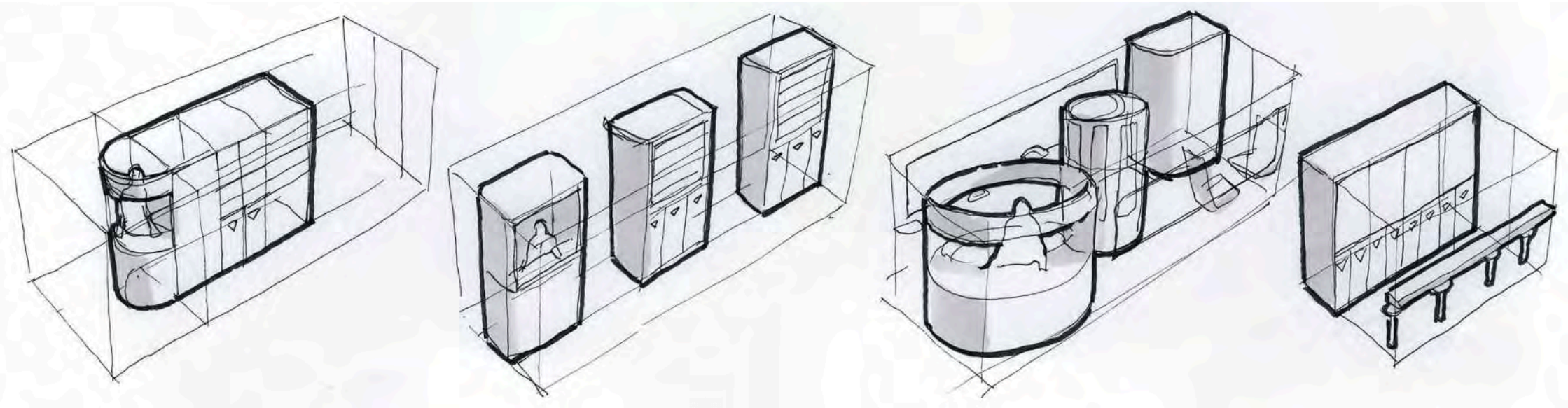
- central core of self service vending
- single seat bays along the sides

8

- banks of vending machines

## Catering areas - alternative ideas

- a range of solutions has been considered



9

- central island shop
- vending
- trolley storage
- perch seats against sidewalls

10

- central kiosks and vending
- perch seats against sidewalls

11

- central shop/buffet/drinks
- hot and cold vending
- café seating
- perch seating

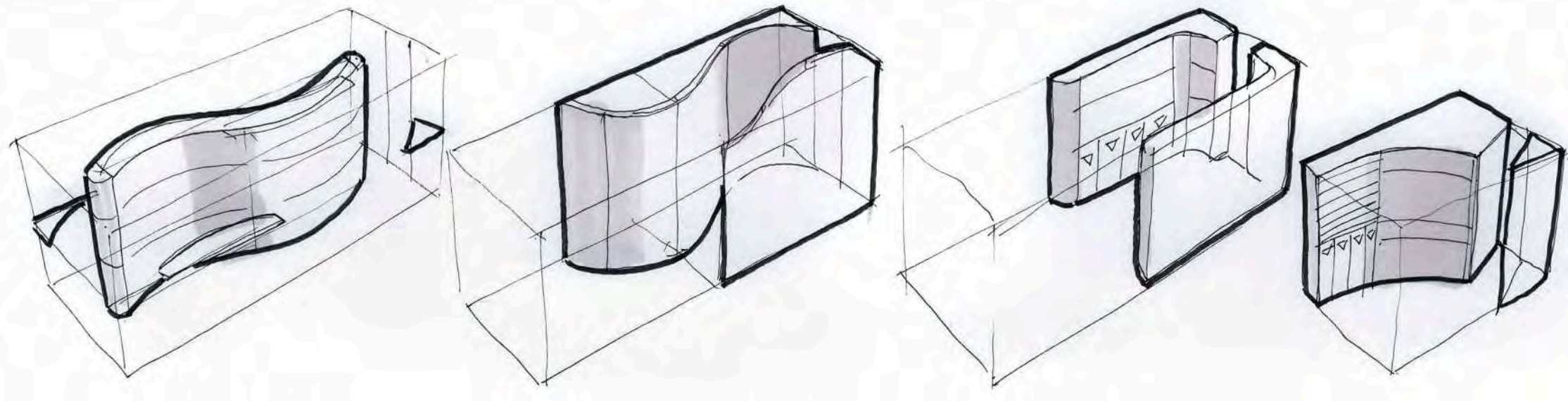
12

- bank of vending machines
- perch seating



## Catering areas - alternative ideas

- a range of solutions has been considered



13

- curved central island
- vending
- touch screen ordering
- perch seats and tables

14

- curved vending walls
- shopping mall experience

15

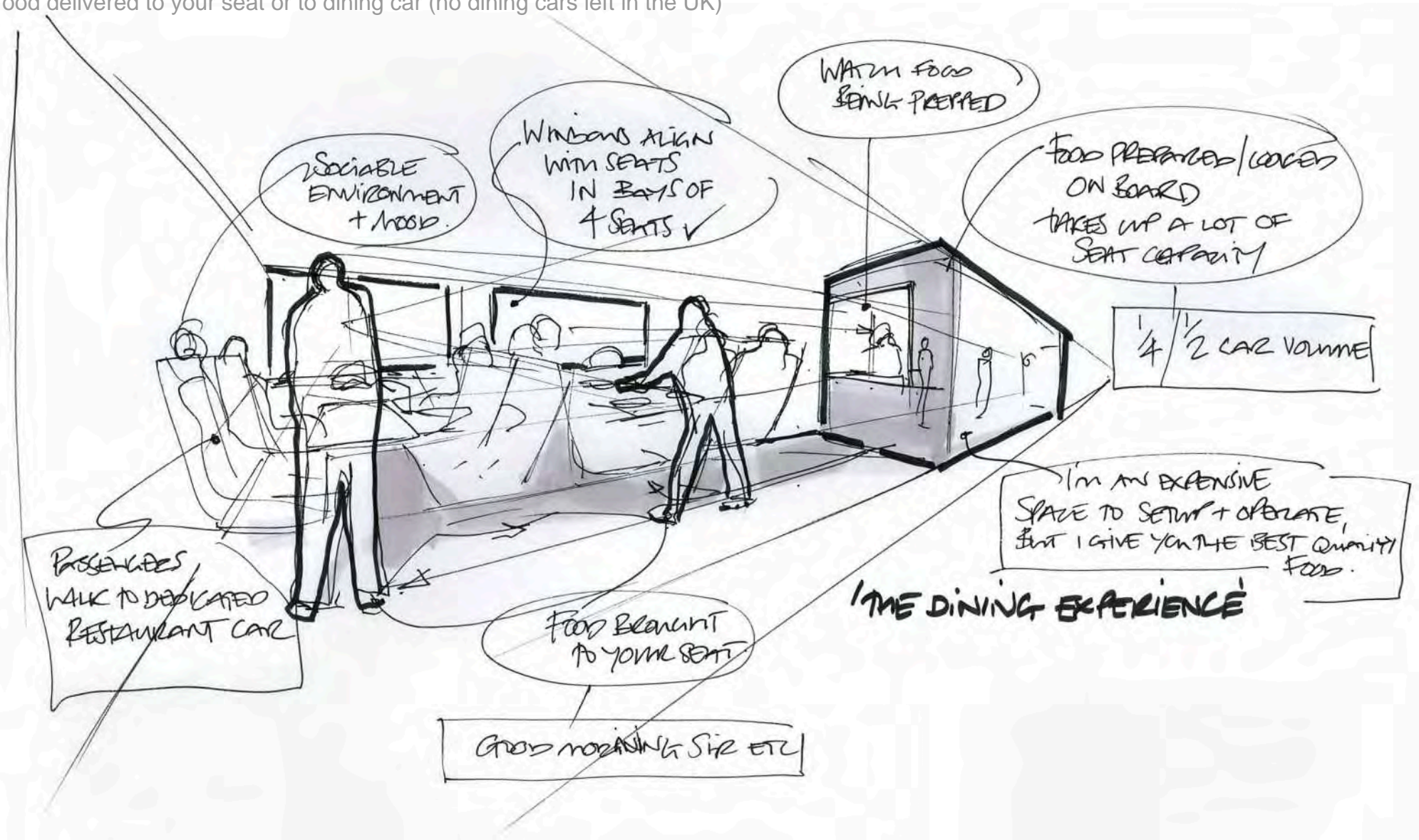
- banks of vending machines at the end of the car (symmetrical)
- trolley storage

16

- banks of vending machines at the end of the car
- (asymmetrical)

## Delivery Methods

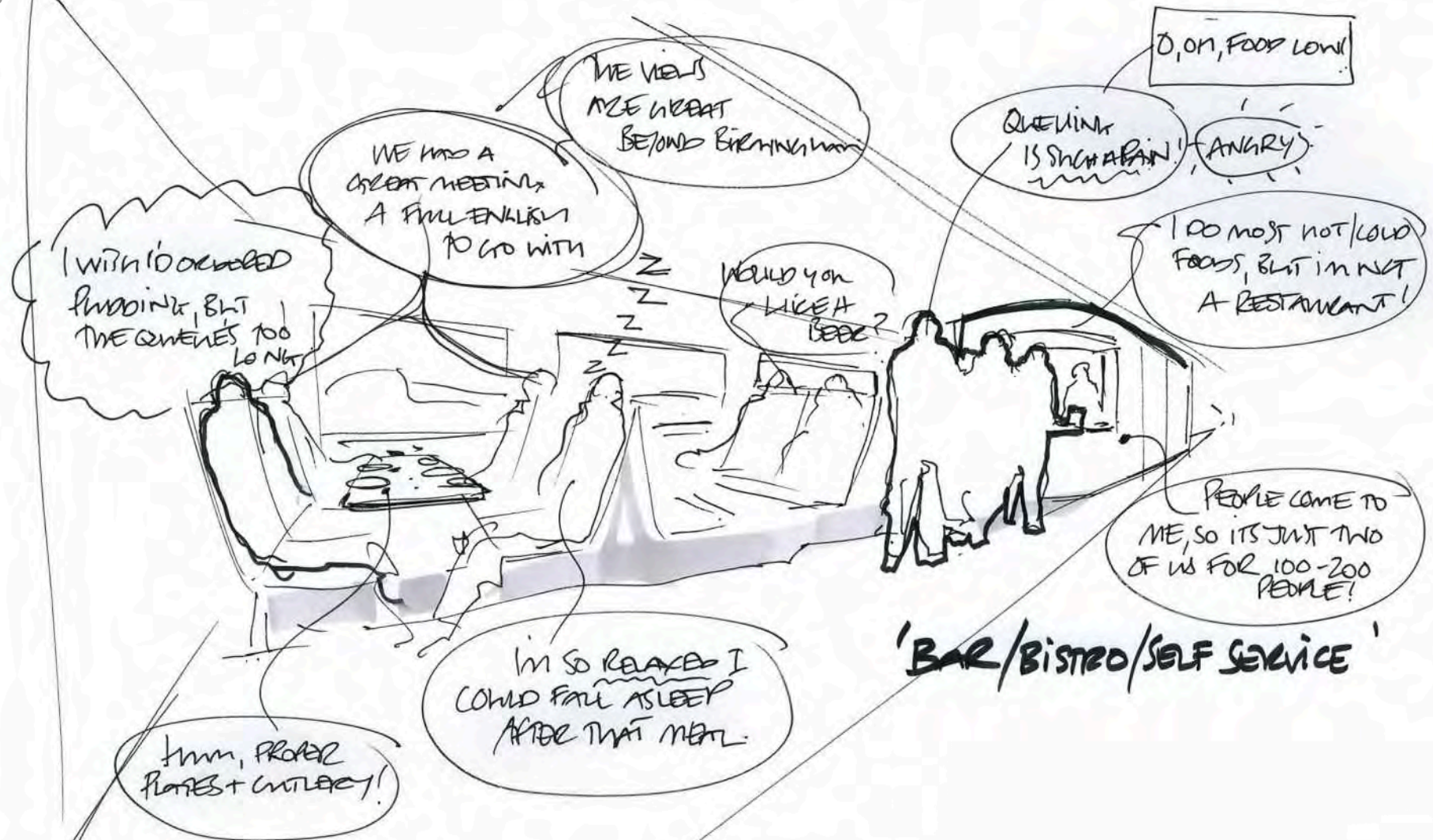
- food prepared and cooked on-board in dedicated galley/kitchen (staff only)
- large menu choice
- food delivered to your seat or to dining car (no dining cars left in the UK)





## Delivery Methods

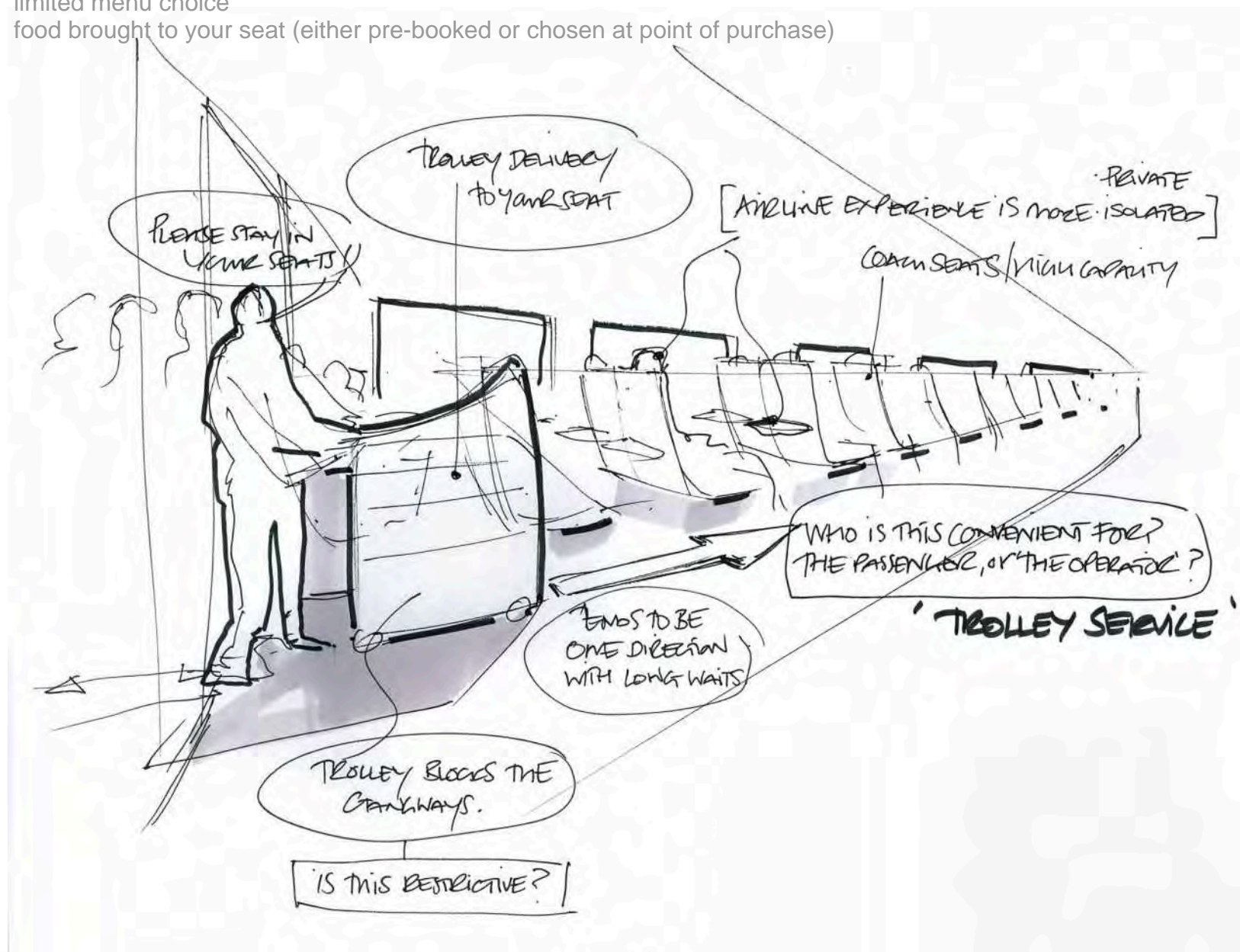
- traditional buffet car/server
- good menu choice





## Delivery Methods

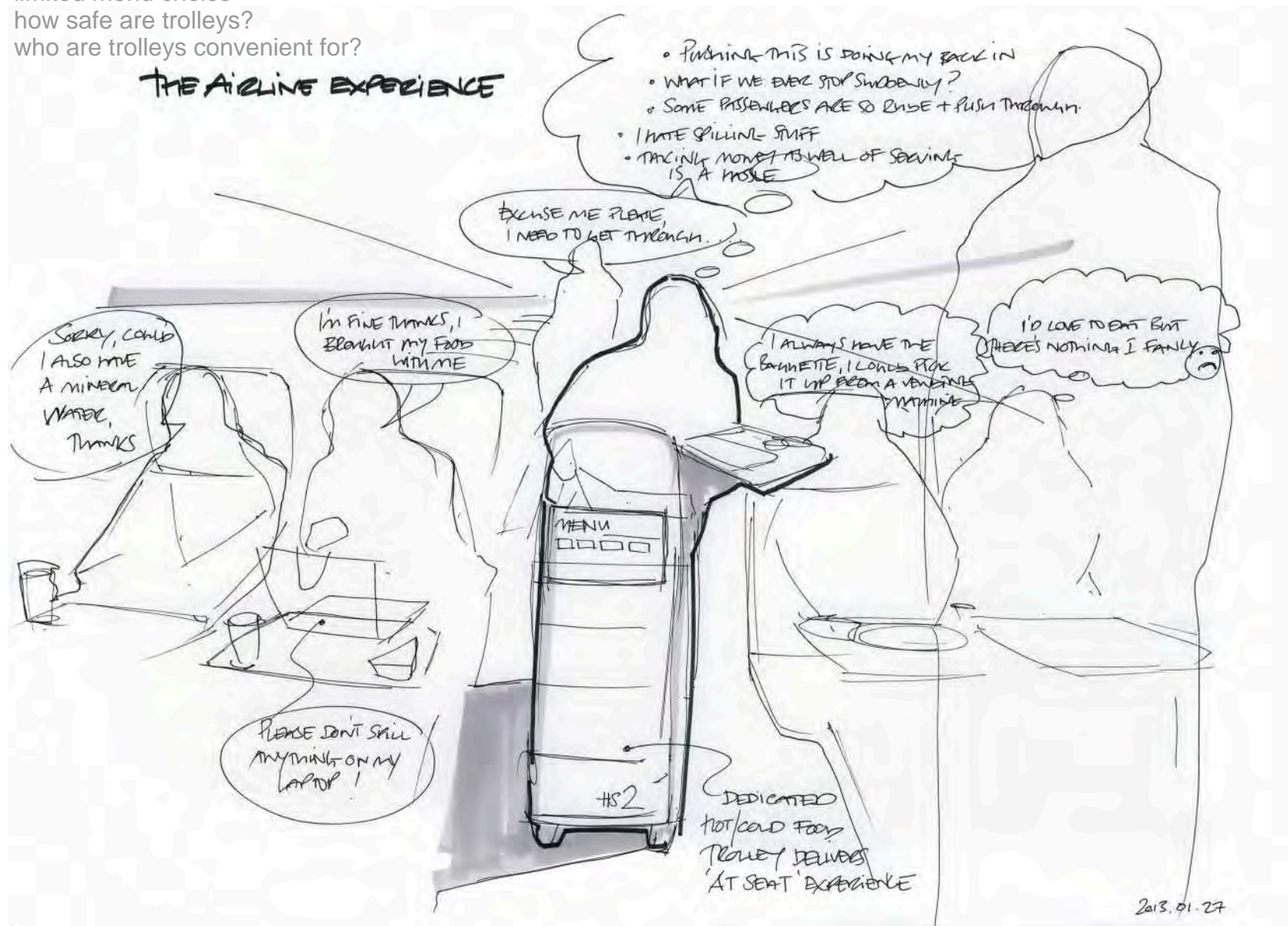
- trolley service
- limited menu choice
- food brought to your seat (either pre-booked or chosen at point of purchase)



# Trolleys

- airline style trolley service
- most people like the food to be brought to them?
- limited menu choice
- how safe are trolleys?
- who are trolleys convenient for?

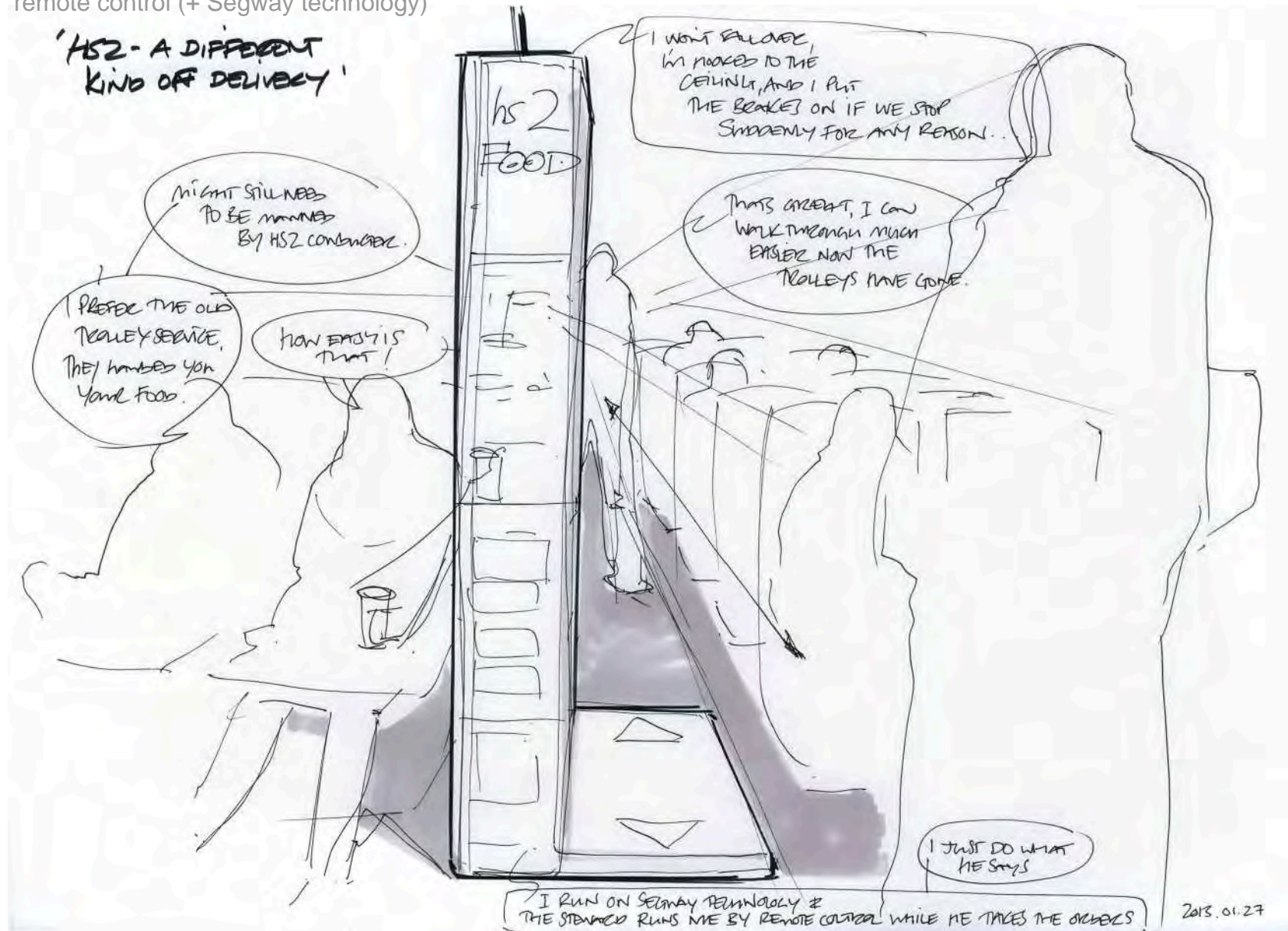
## THE AIRLINE EXPERIENCE





## Trolleys as 'Moving Shops'

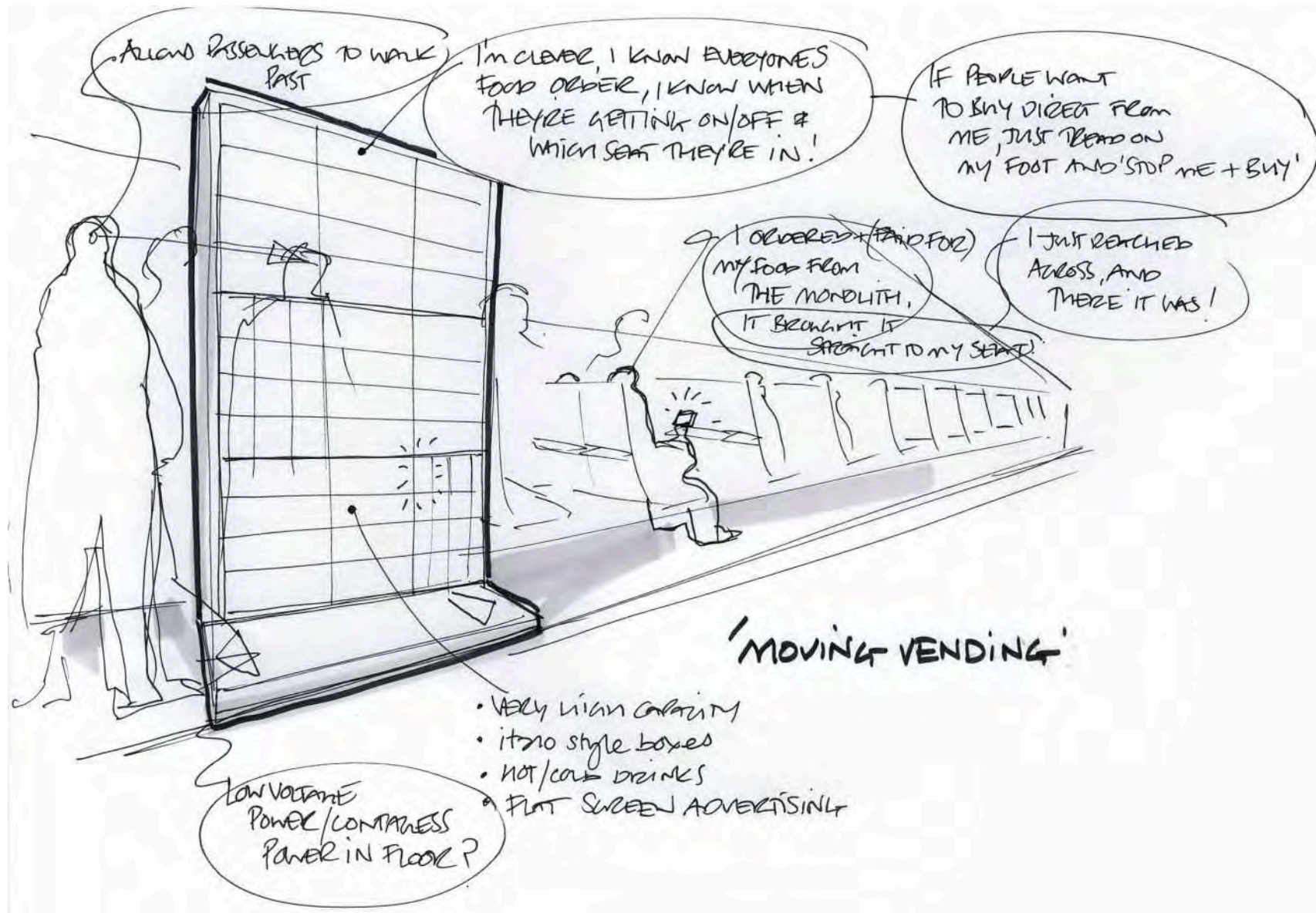
- how do you deliver food and not block the aisle?
- larger menu choice (moving shop concept)
- remote control (+ Segway technology)





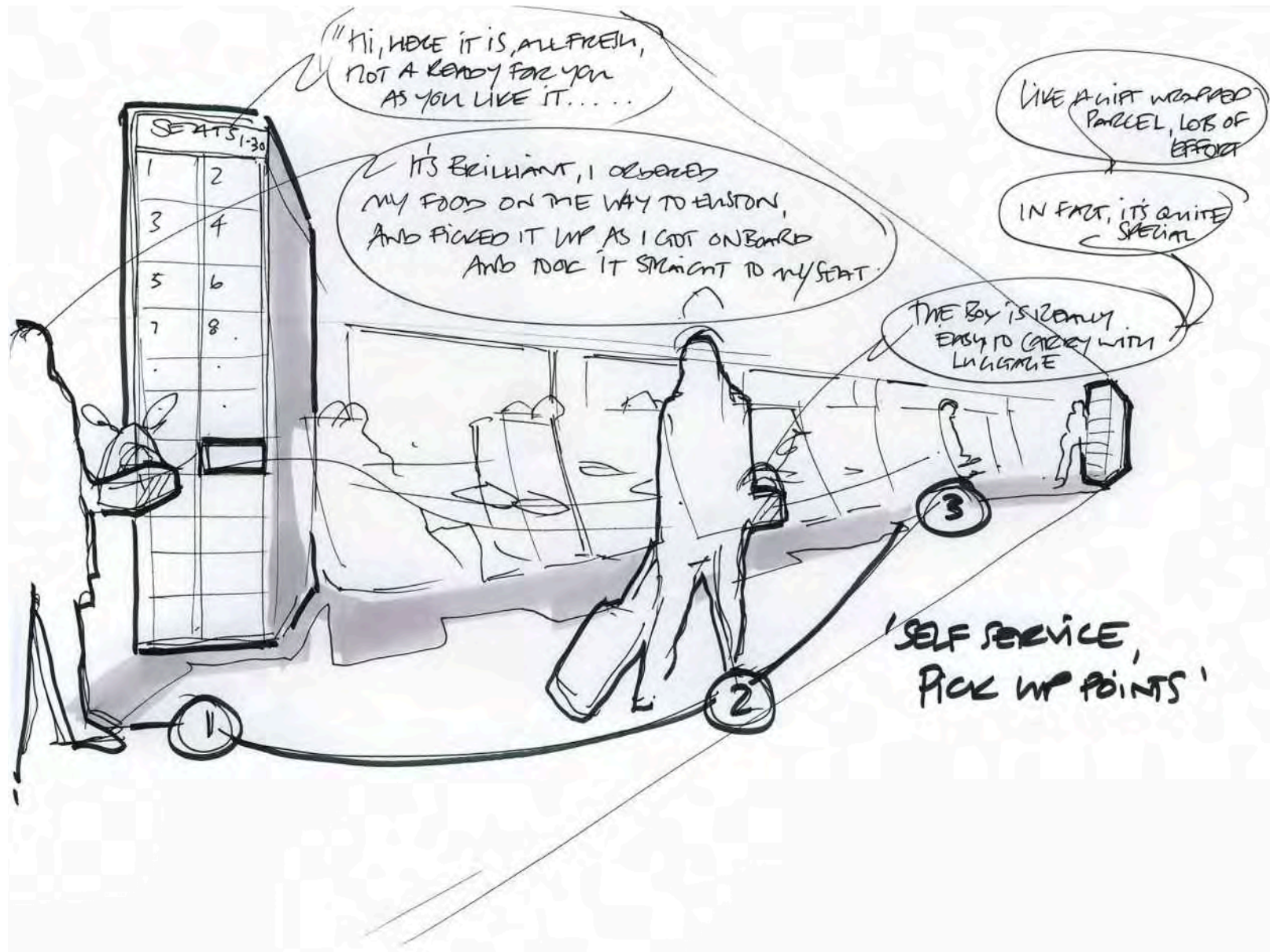
## Trolley Dimensions

- how do you deliver food and not block the aisle?
- moving walls of vending machines arrive at your seat on demand
- how large could these be?



## 'Pre-Booked' and 'Point of Sale' vending by doorways

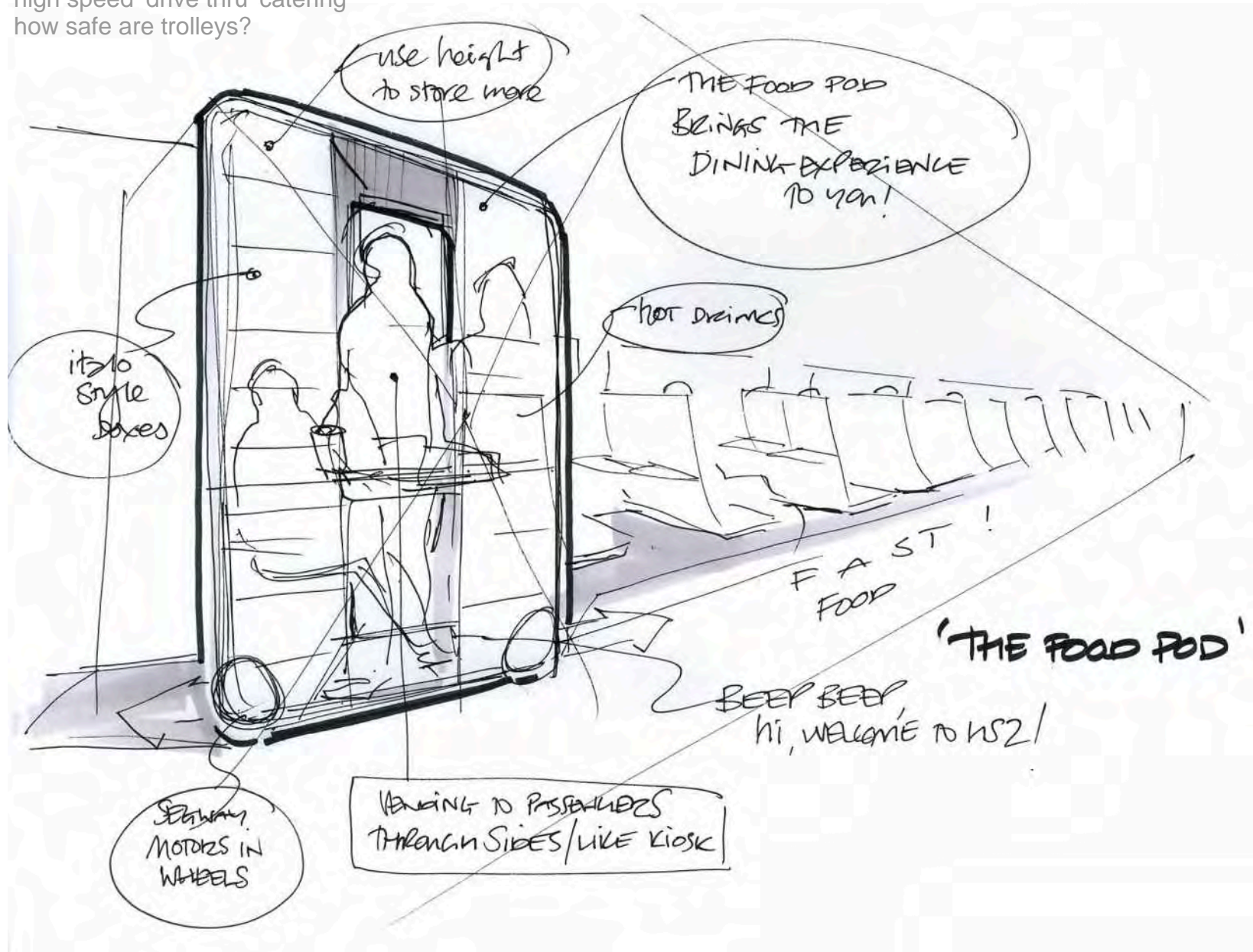
- pickup pre-ordered food from stacks by doorways
- each vending column has different cuisine, like a 'culinary centre'





## Beyond Trolleys

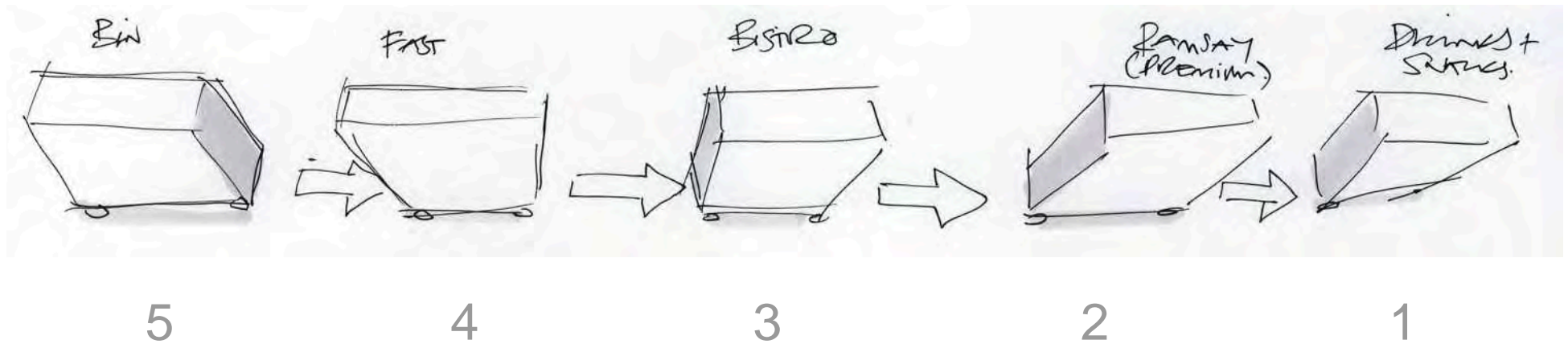
- how can we speed up trolley food delivery?
- high speed 'drive thru' catering
- how safe are trolleys?



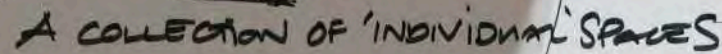


## 'Themed' Trolley Fleet

- a fleet of 'themed' trolleys running through the train in a set order
- trolley #1 - Drinks and Snacks & free kids bags
- trolley #2 - Gordon Ramsay Premium food
- trolley #3 - Bistro/quality budget food
- trolley #4 - Fast food, pasties, burgers etc
- trolley #5 - Bin



- dining
- chilling
- working
- sleeping



2013.02.04

**HS2 Ltd**  
Interior  
Ideas achieving Zoning and Privacy

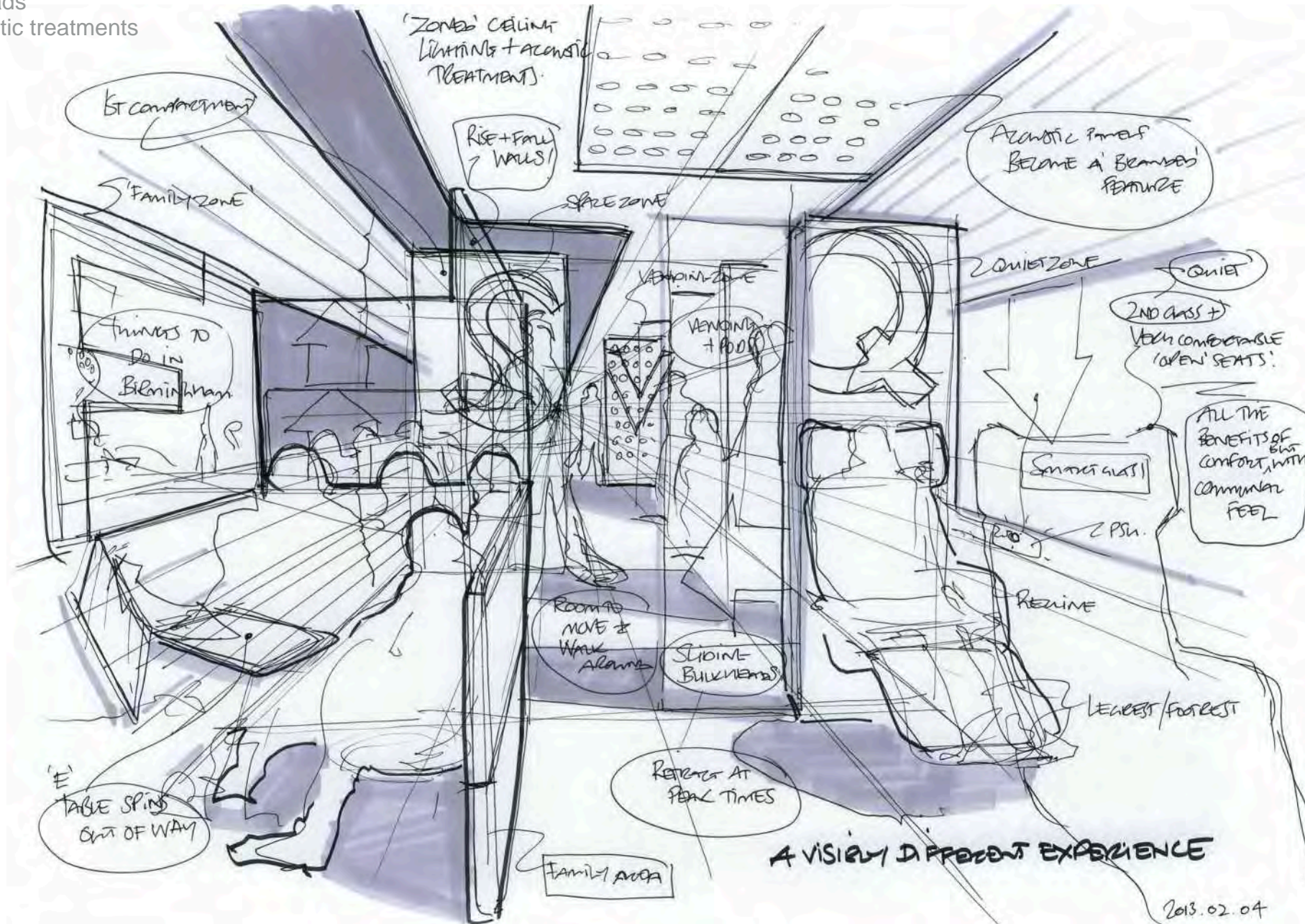


ref: 281DC019a\_ZONES.pdf 2013-03-07 p1/8  
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## Zones (individual spaces) with different characters

- sliding bulkheads
- different acoustic treatments



2013.02.04

## Zones

HS2 Ltd

Interior  
Ideas achieving Zoning and Privacy

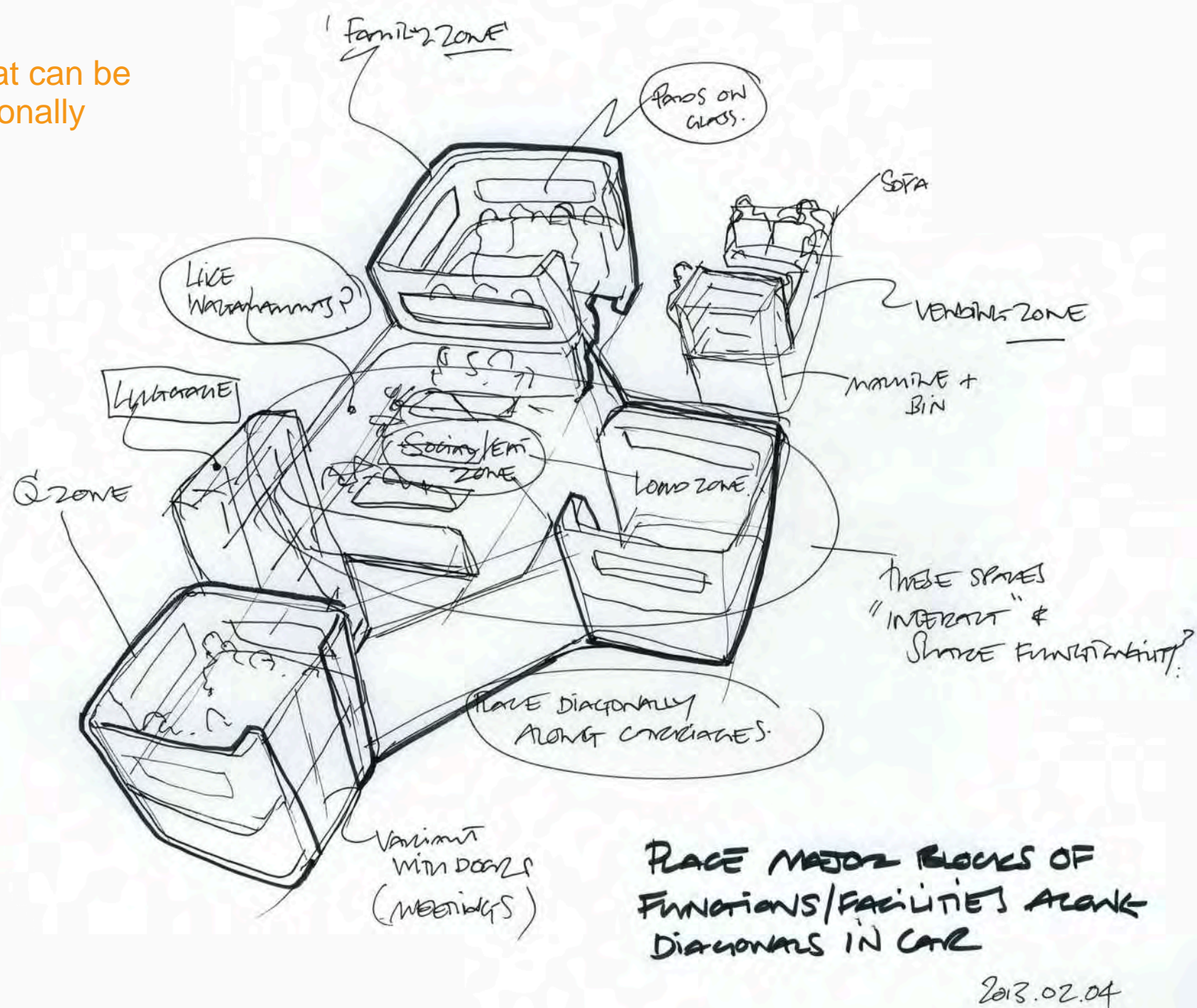


ref: 281DC019a\_ZONES.pdf 2013-03-07 p2/8  
© Design Triangle



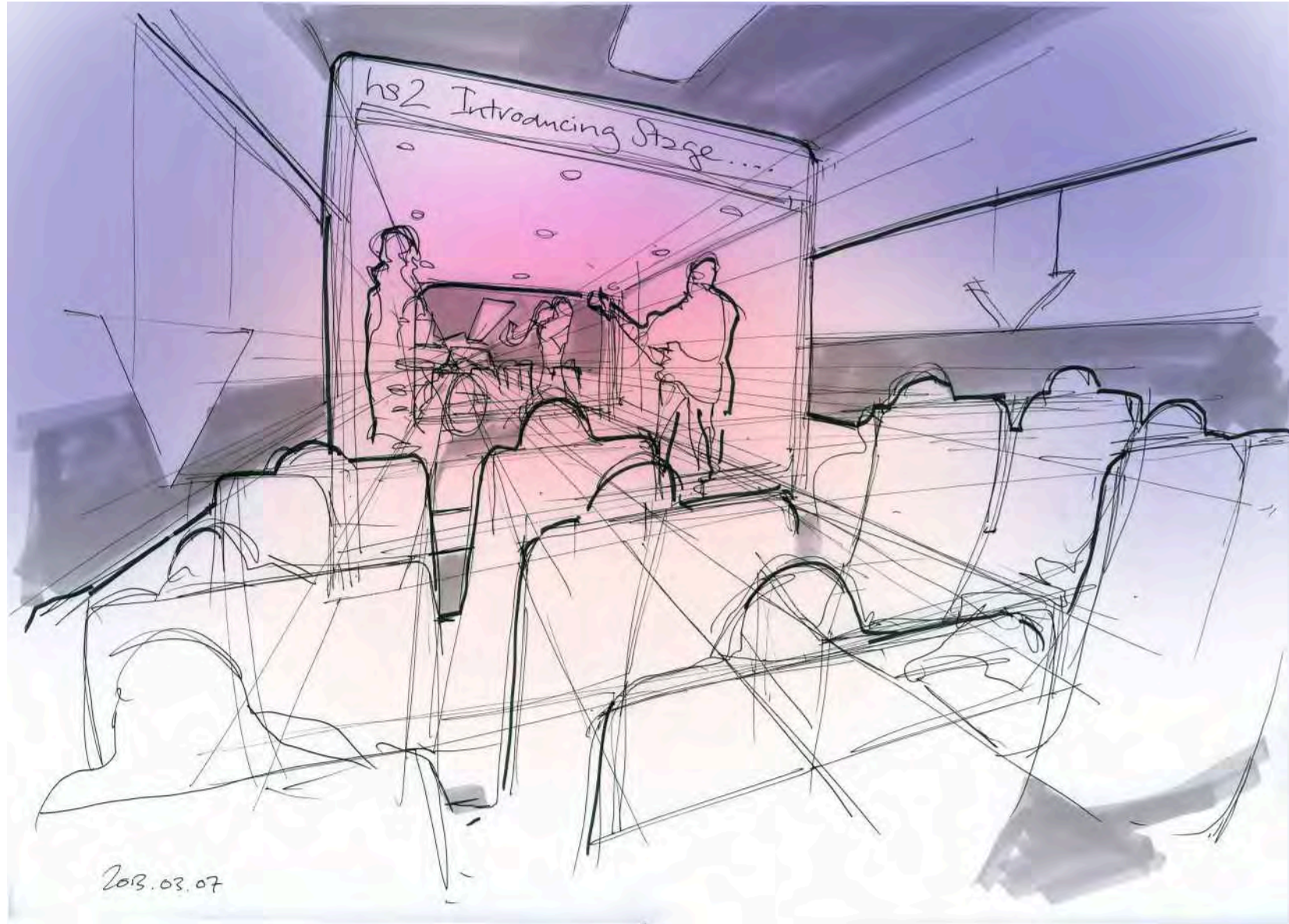
## Modular Zones that can be reconfigured seasonally

- groups
- vending
- sponsored retail shops
- karaoke
- corporate boxes



## PerformanceZONE

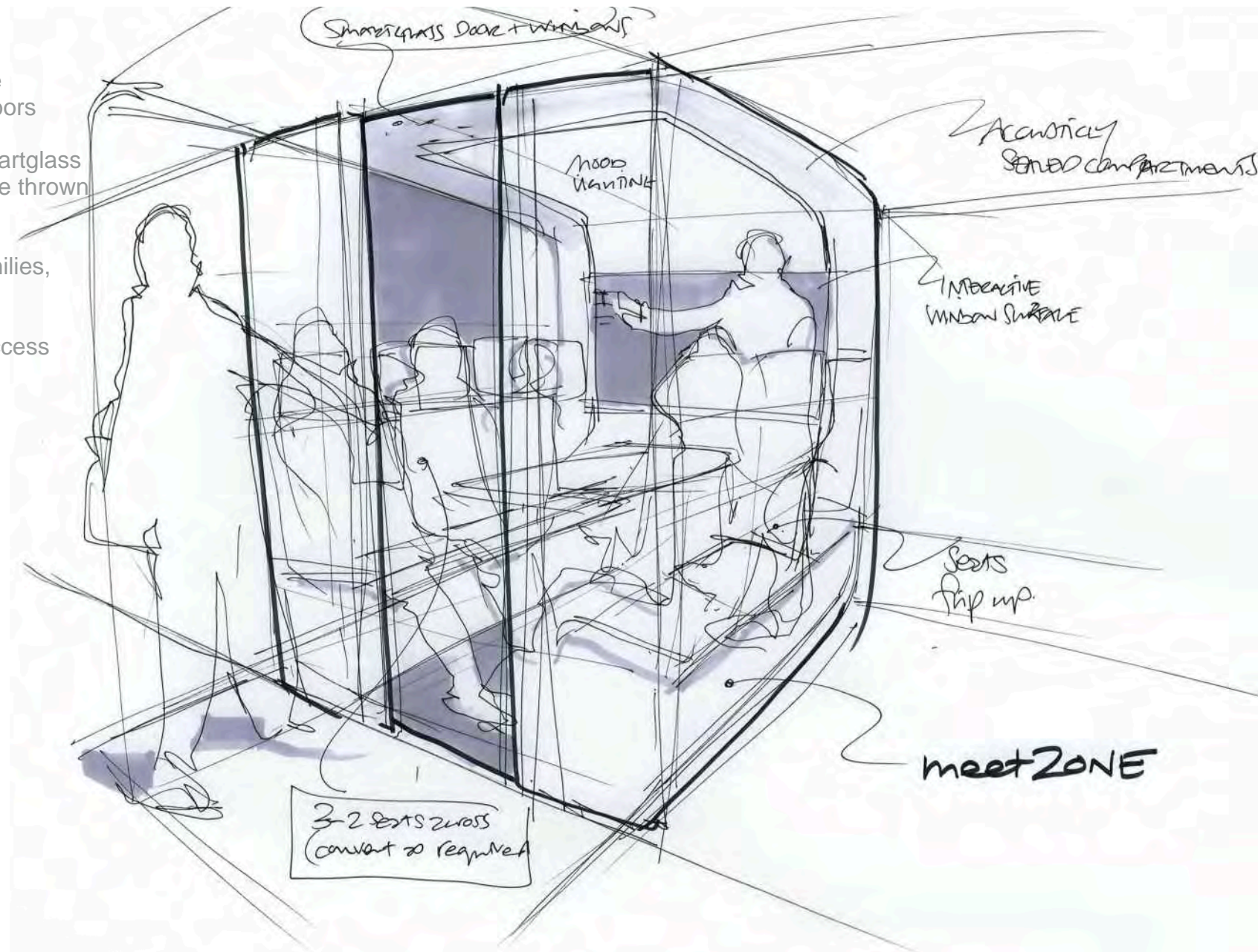
- 3m long central stage
- 2 banks of coach seat
- music gigs
- lectures
- parties
- demonstrations
- radio/tv broadcasts
- debates etc





## Compartments

- modular construction
- expands to 2, 4, 6 people
- smartglass windows & doors control privacy levels
- connected interactive smartglass exterior window, work can be thrown on from ipad, presentations, powerpoint etc
- booked for meetings, families, parties etc
- smart table
- seat cushion tip-up for access
- acoustically sealed



## Zones

**HS2 Ltd**

Interior  
Ideas achieving Zoning and Privacy

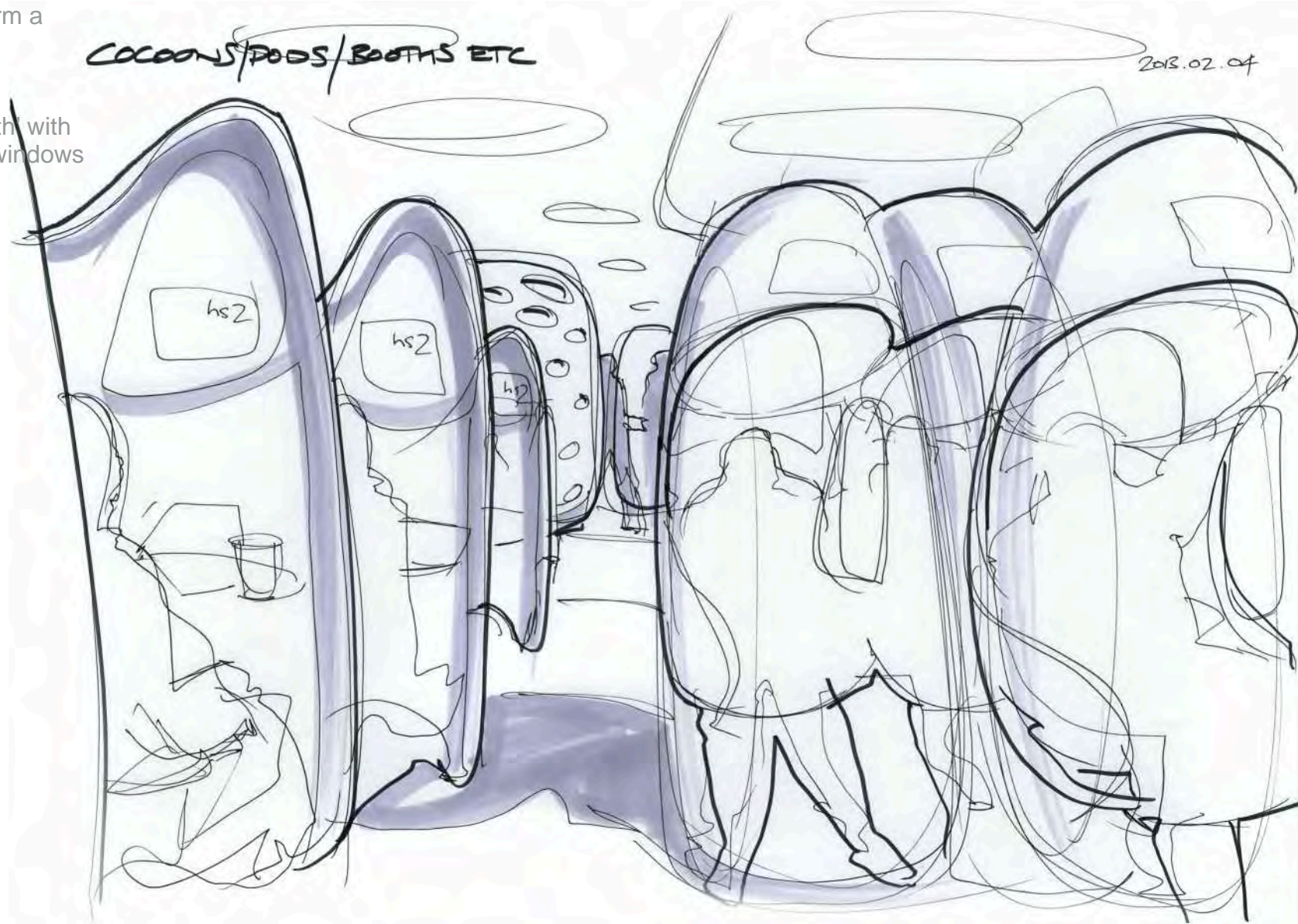


ref: 281DC019a\_ZONES.pdf 2013-03-07 p5/8  
© Design Triangle



## Pods

- seat structure forms a cocoon
- seat backs sculpted to form a private workspace
- fully controlled personal environments
- fully enclosed 'group booth' with random pattern of porthole windows

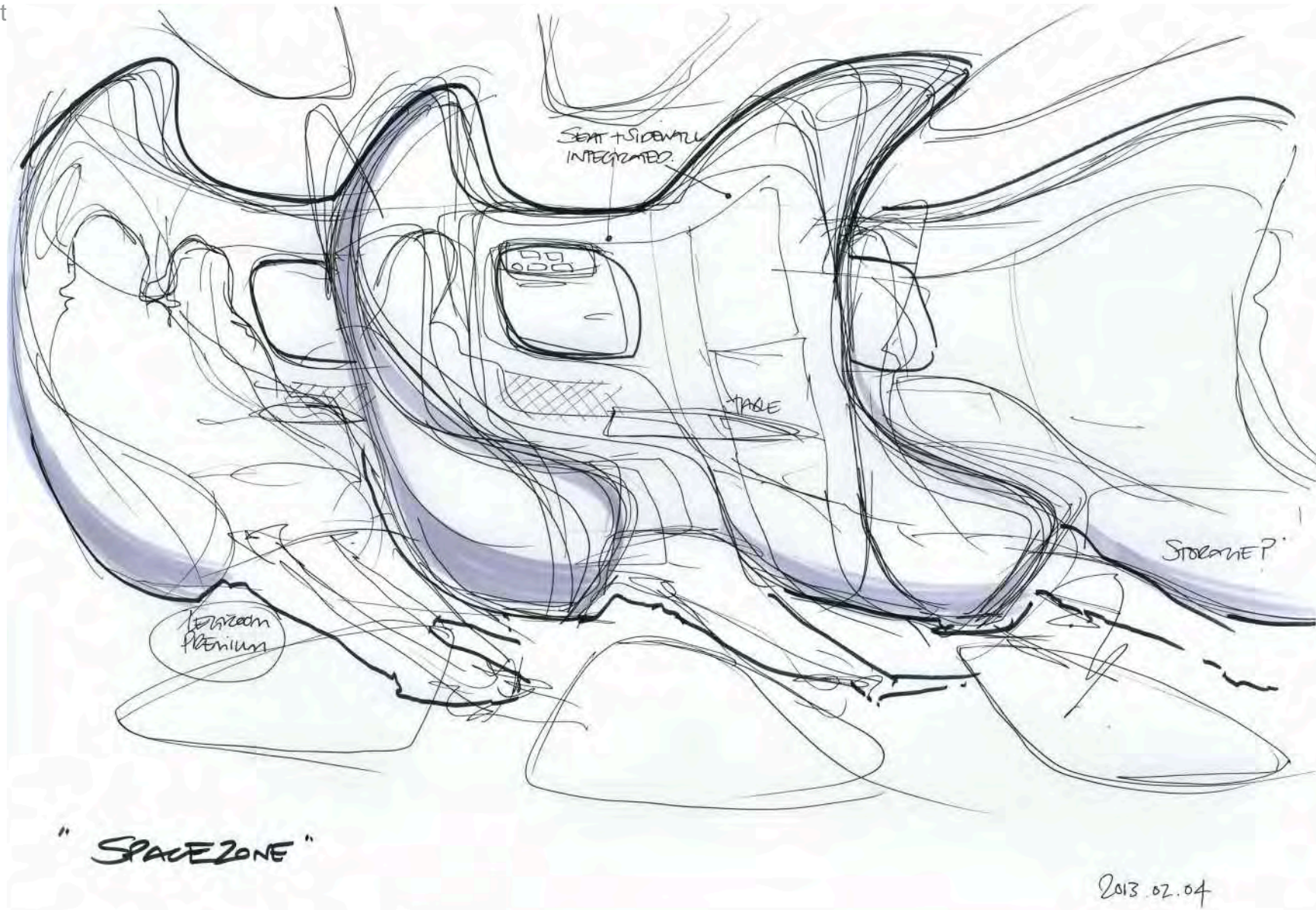


## Zones



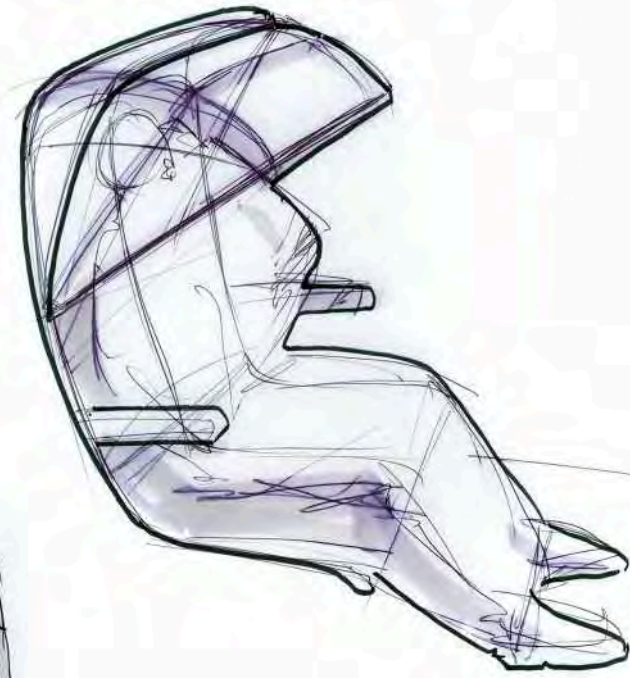
## Seats moulded into sidewall

- private jet feel
- sophisticated indirect lighting
- direct control over personal environment
- porthole windows
- lots of legroom



## Individual seat environments, personal zones and increased privacy

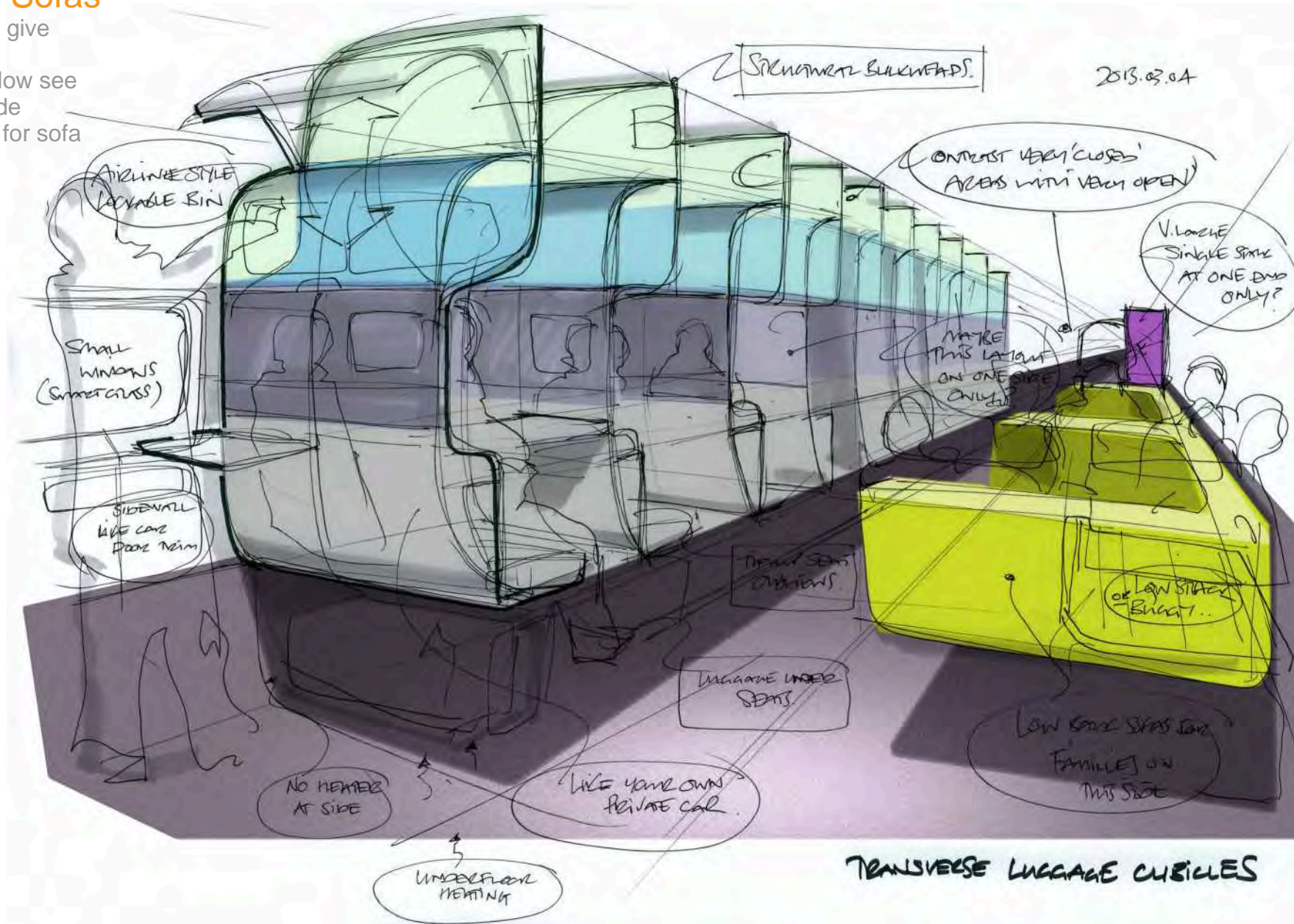
- sleep/privacy hoods
- division screens
- interlocking seat layouts





## Transverse Luggage seating Pods & Sofas

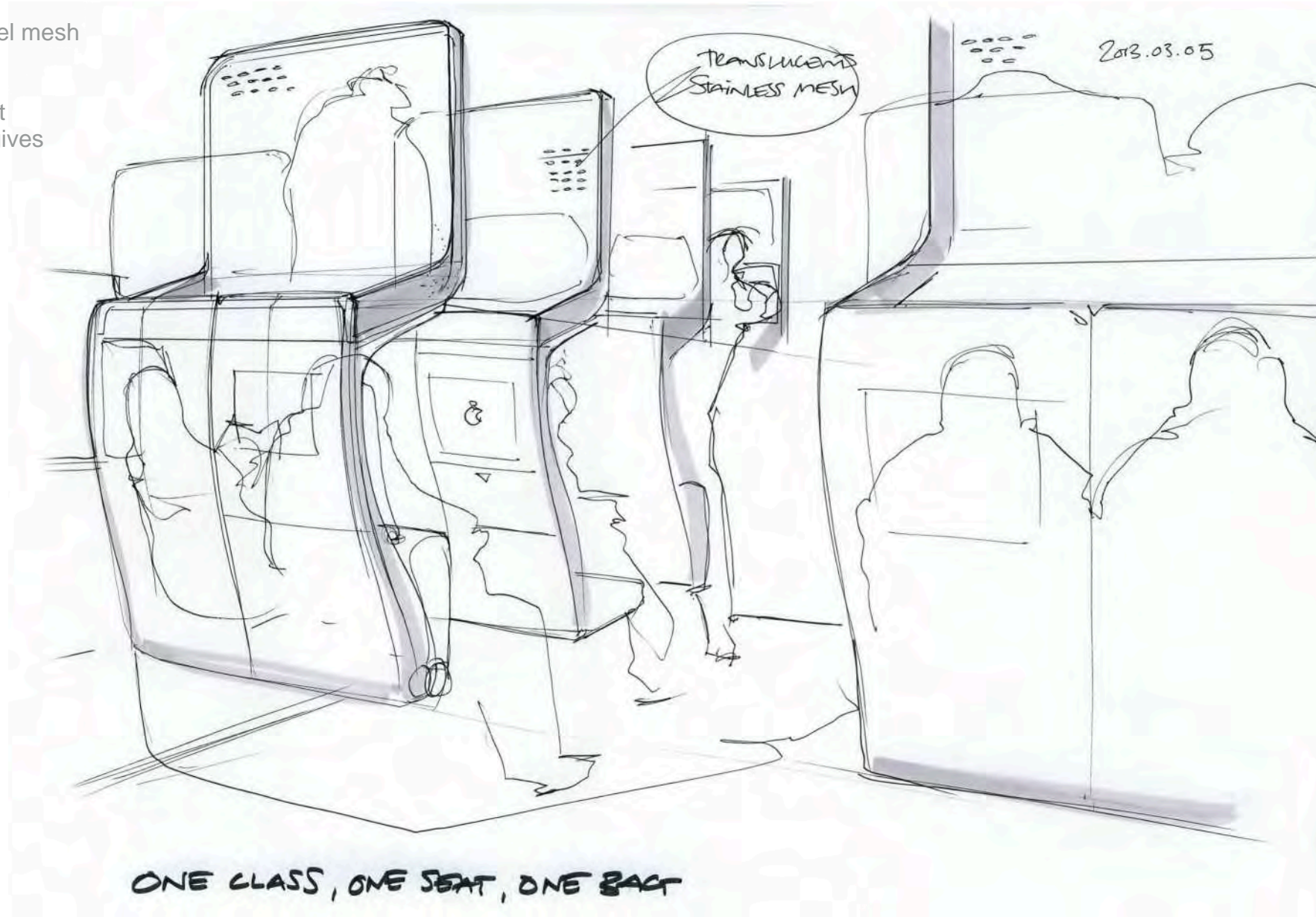
- semi enclosed pods give private car feel
- low backed sofas allow see through on opposite side
- large luggage stack for sofa passengers





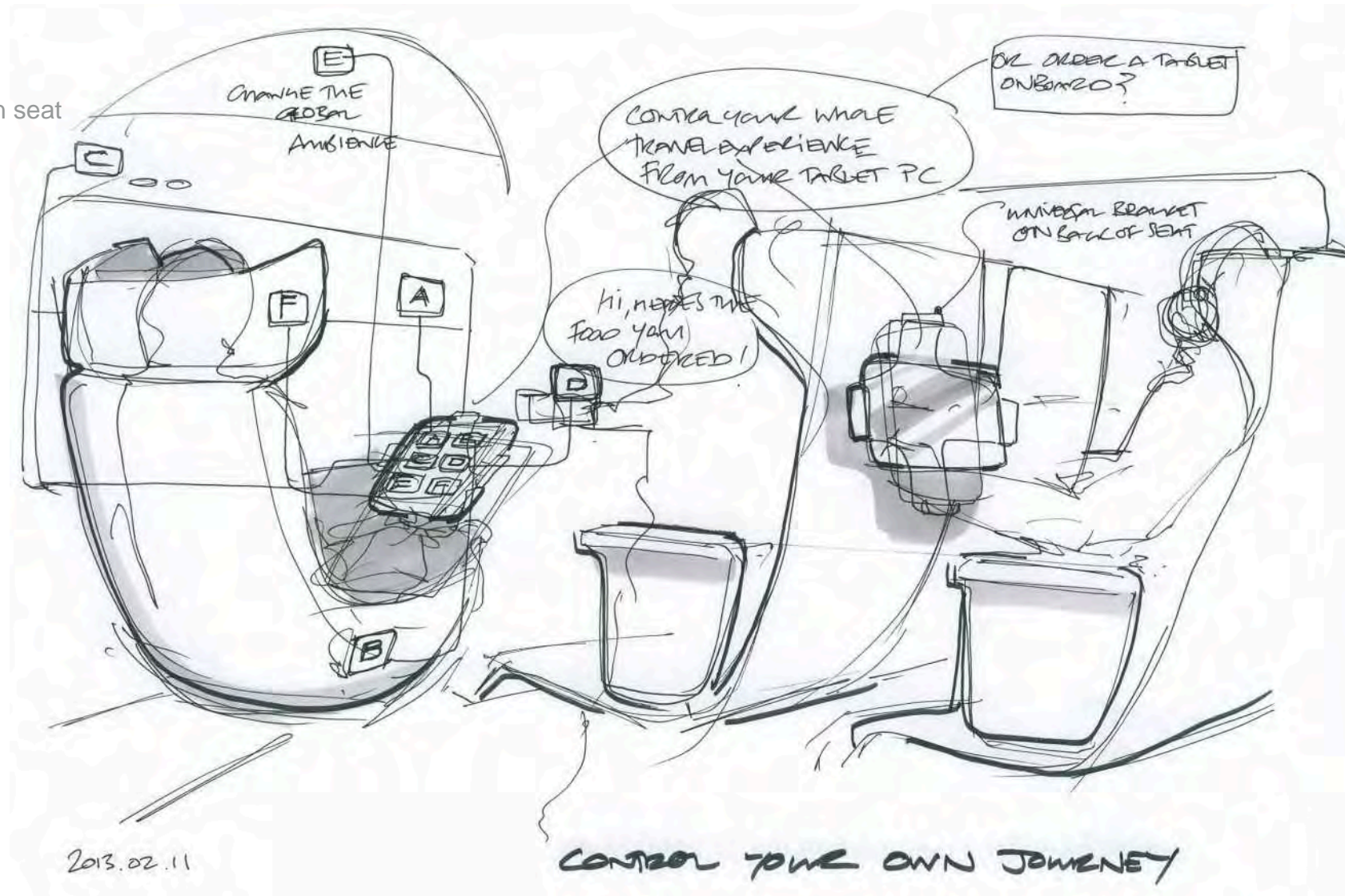
## Transverse Luggage racks

- woven stainless steel mesh construction
- all seats the same
- luggage at your seat
- no luggage stacks gives greater capacity



## Control your journey from your seat

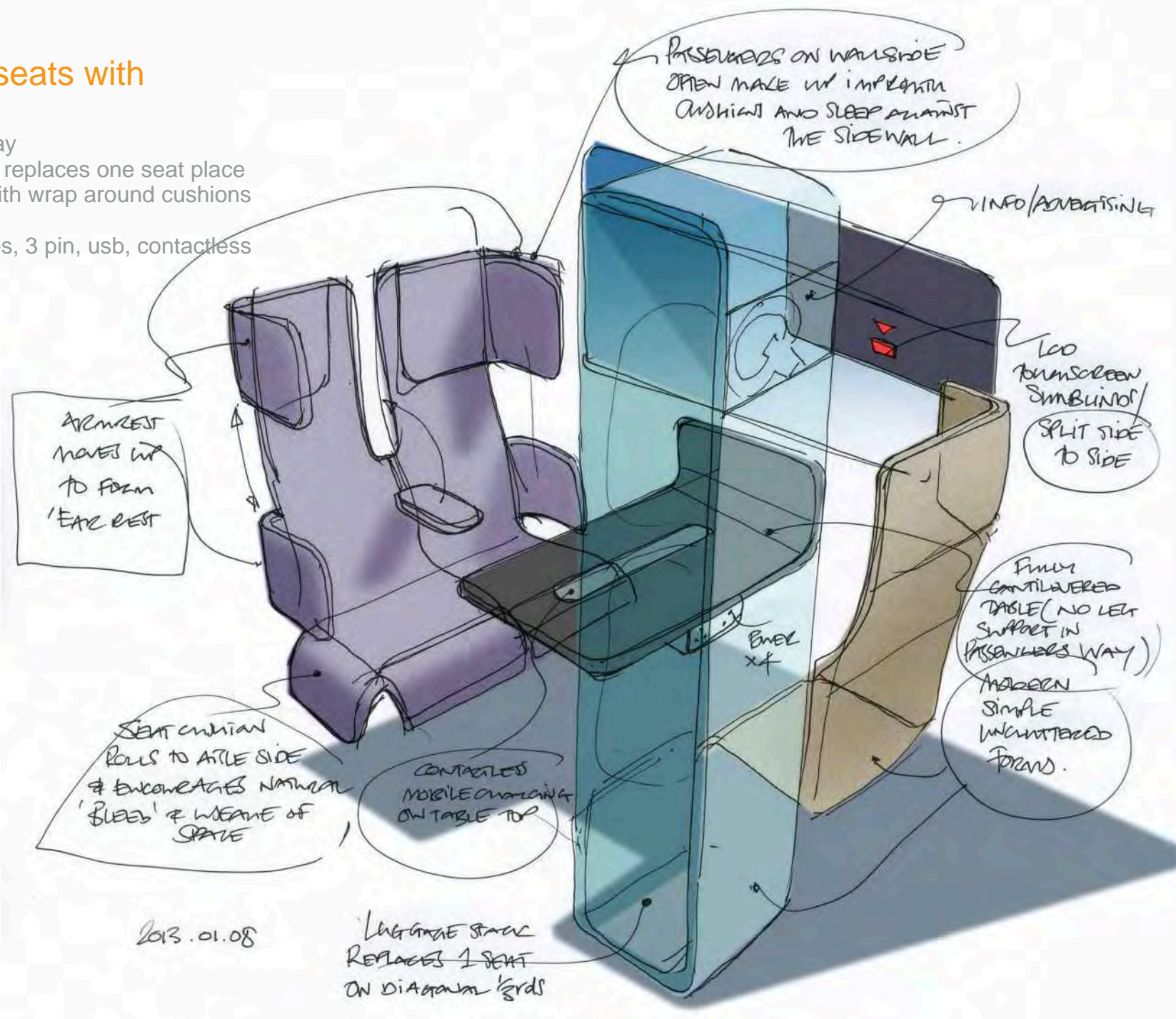
- ipad/tablet/smartphone control of all passenger interfaces via ticket number
- ambience control
- food ordering
- seat control
- universal ipad bracket on seat





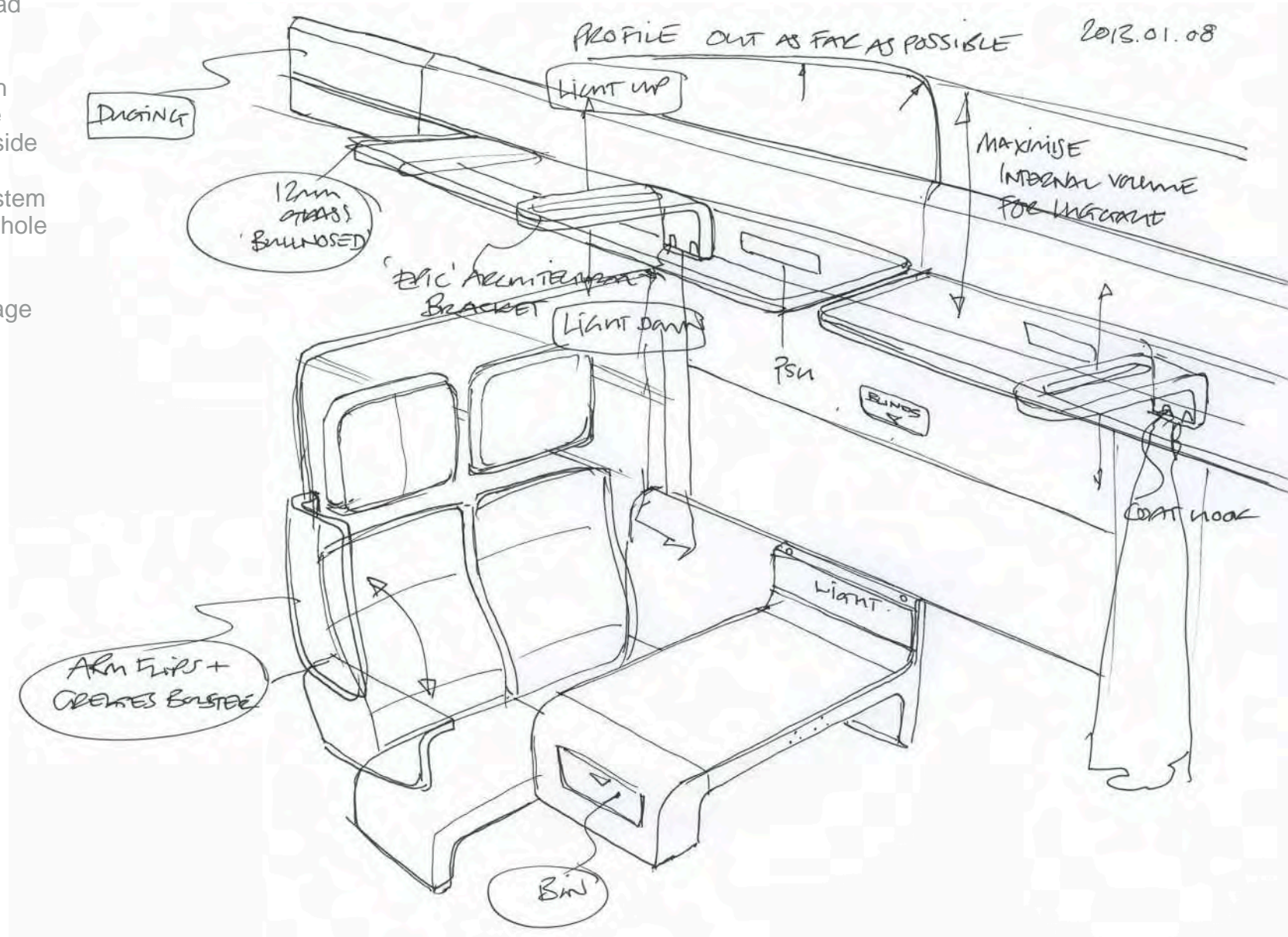
## Exclusive bay of 3 seats with storage stack

- could be used as family bay
- transparent luggage stack replaces one seat place
- asymmetric seat design with wrap around cushions
- led sunblinds
- table with charging facilities, 3 pin, usb, contactless etc



## Seat details

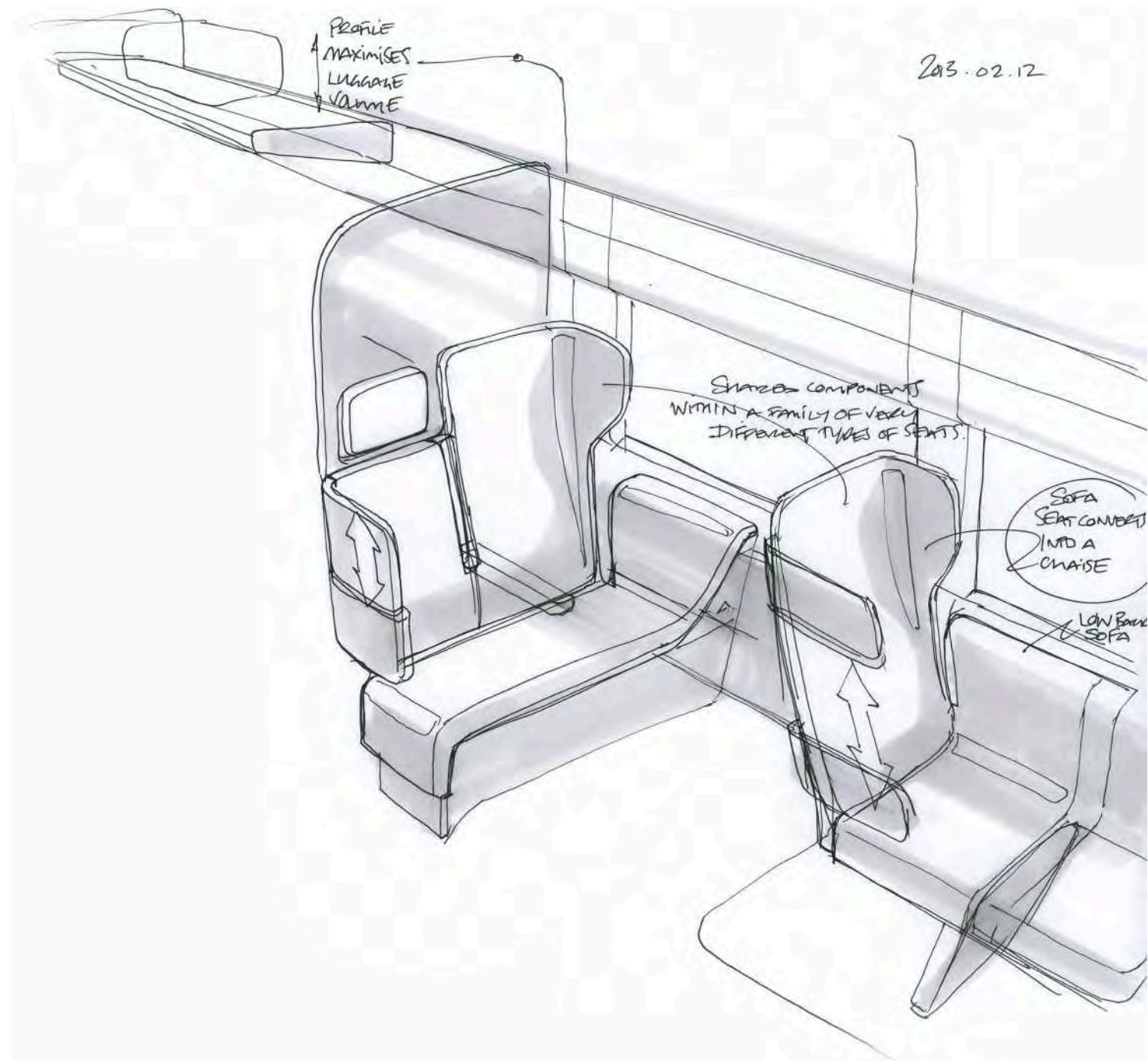
- headrest pads on bulkhead glass give comfort and see-through
- glass overhead racks with up/down lighters in structure
- armss flip to create seat side bolster
- luggage rack modular system has ducting running along whole car
- coat hooks
- maximise overhead luggage volumes
- integral bin in table





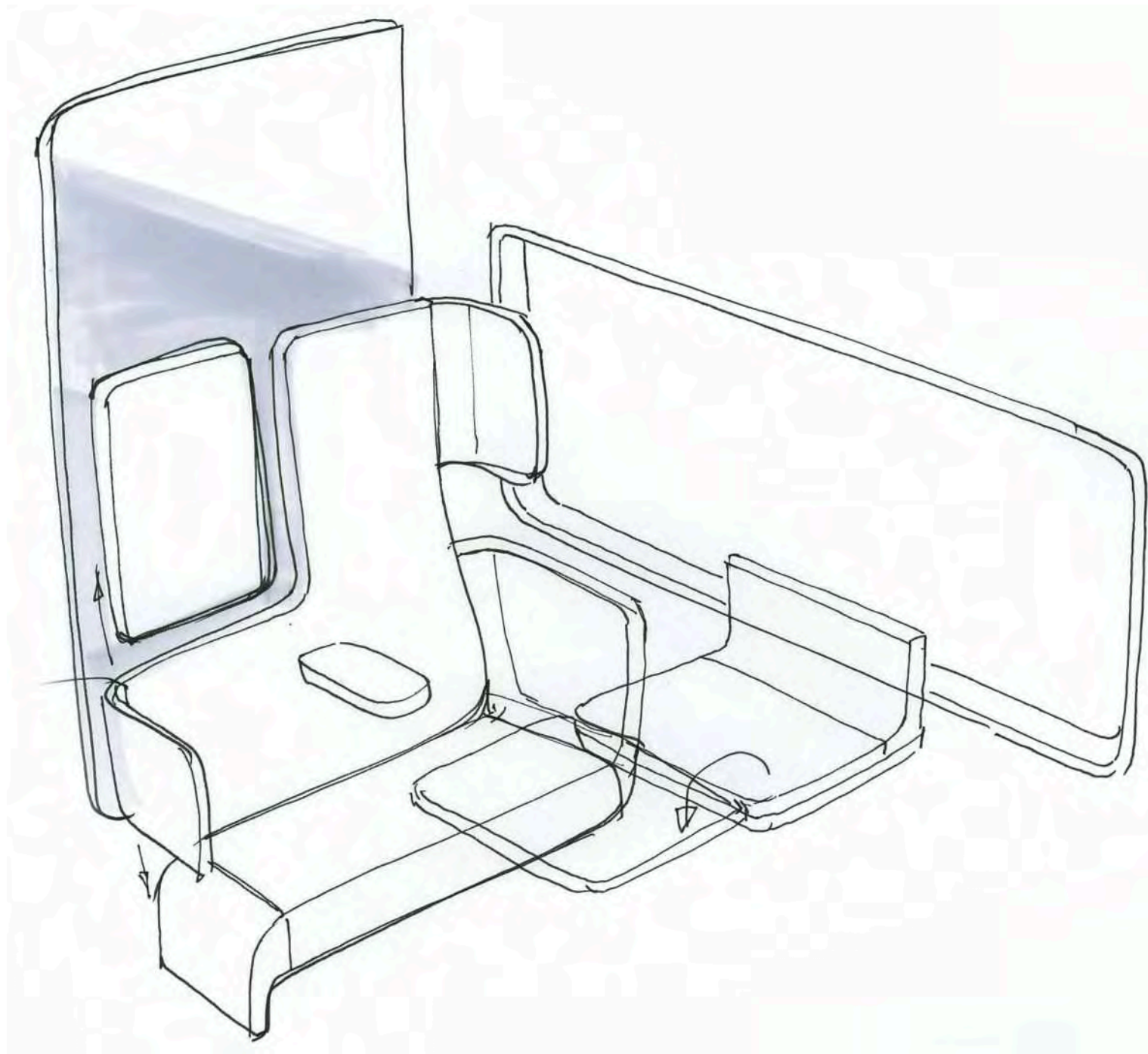
## Seat details

- family of seat components create a range of distinctive seat options, wraparound variants, chaise, low backed sofas etc



## Seat detail

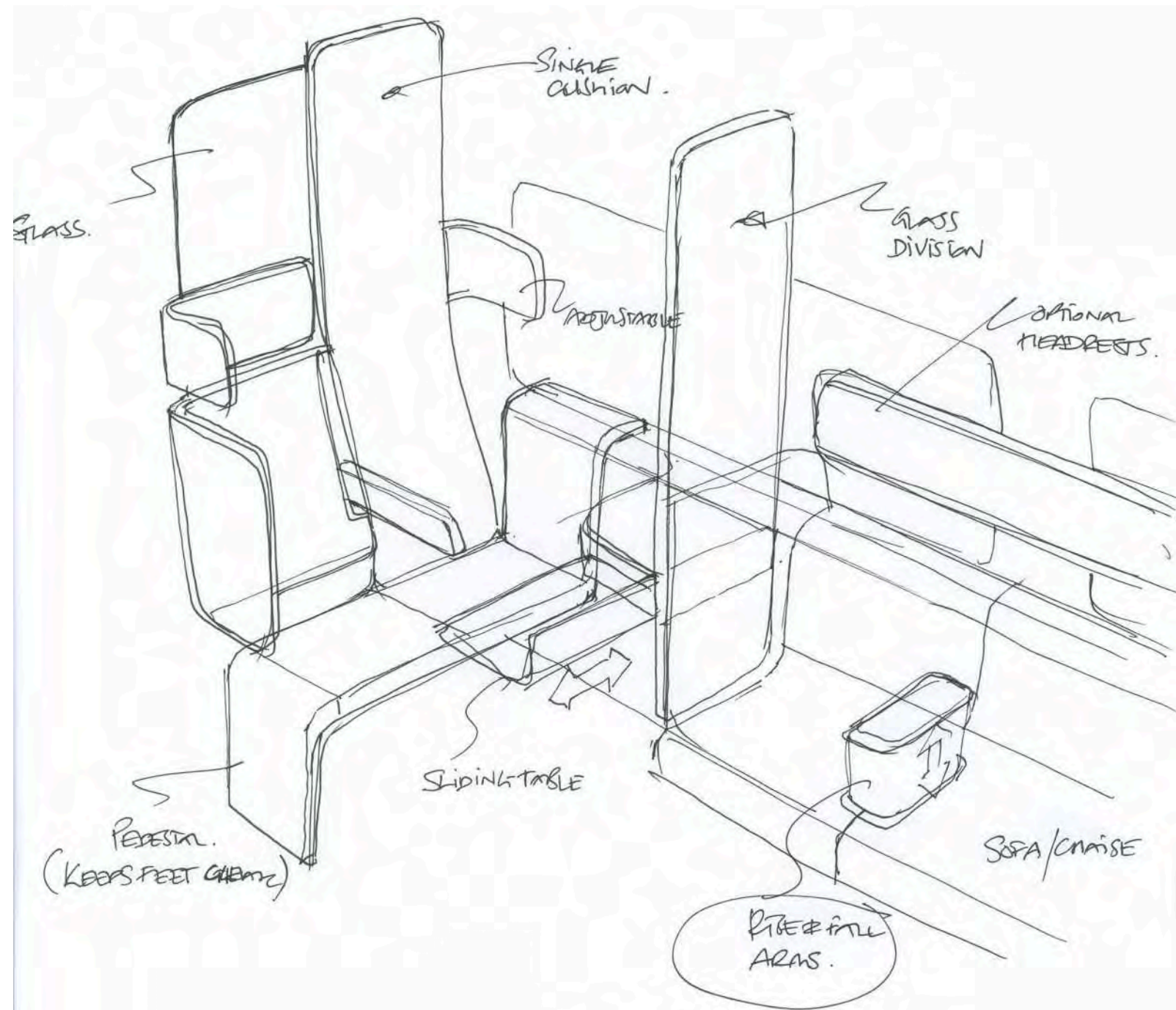
- seat designed as wraparound 2 seater sofa
- head pad on glass creates more open feel on aisle side
- single table folds or slides to create double table





## Seat details

- family of seat components create a range of distinctive seat options, wraparound variants, chaise, low backed sofas etc



## Seats Misc

HS2 Ltd

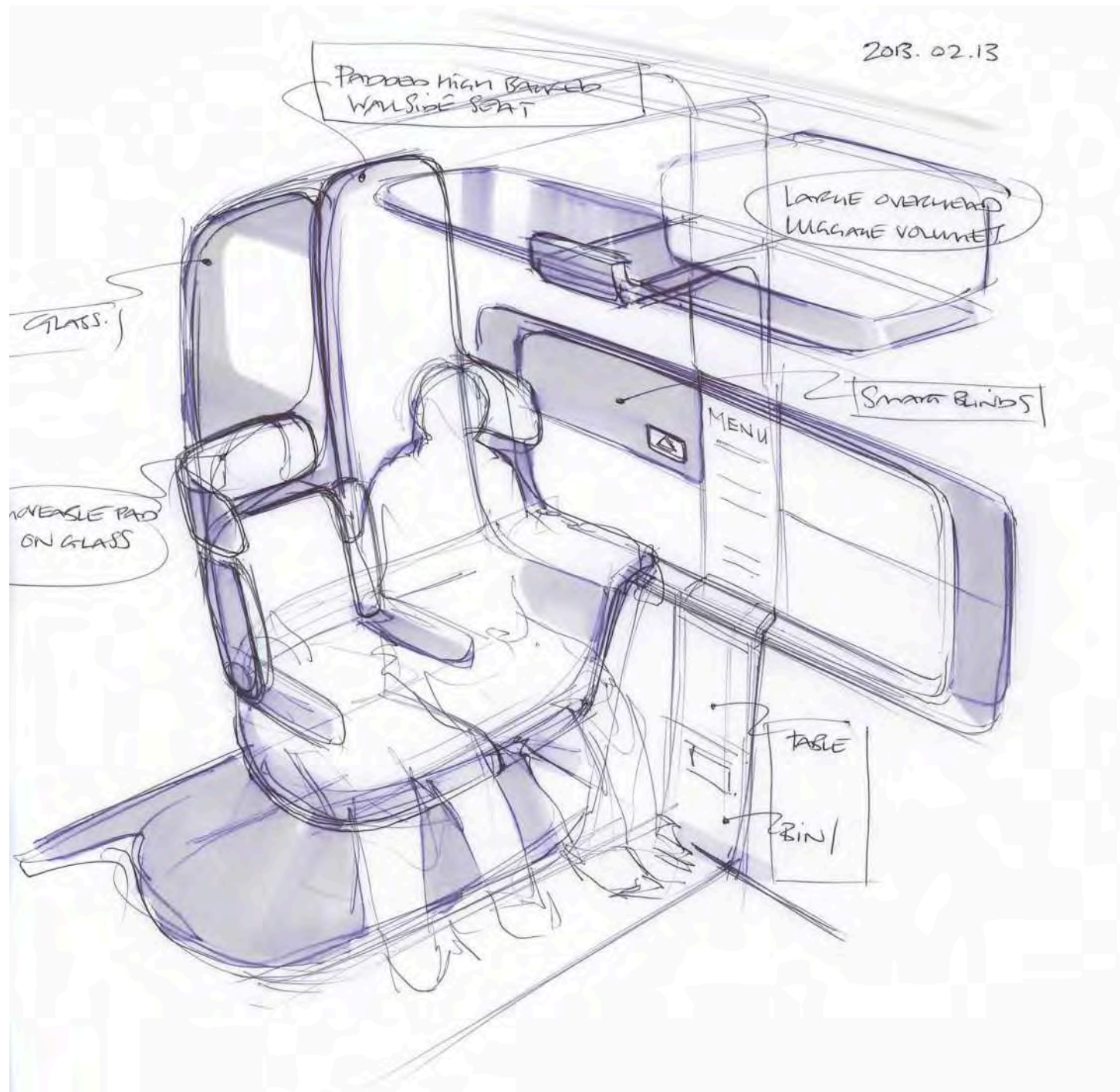
Interior  
Seat Miscellaneous sketch ideas



ref: 281DC020a\_SEAT\_MISC.pdf 2013-03-19 p8/22  
© Design Triangle

## Seat details

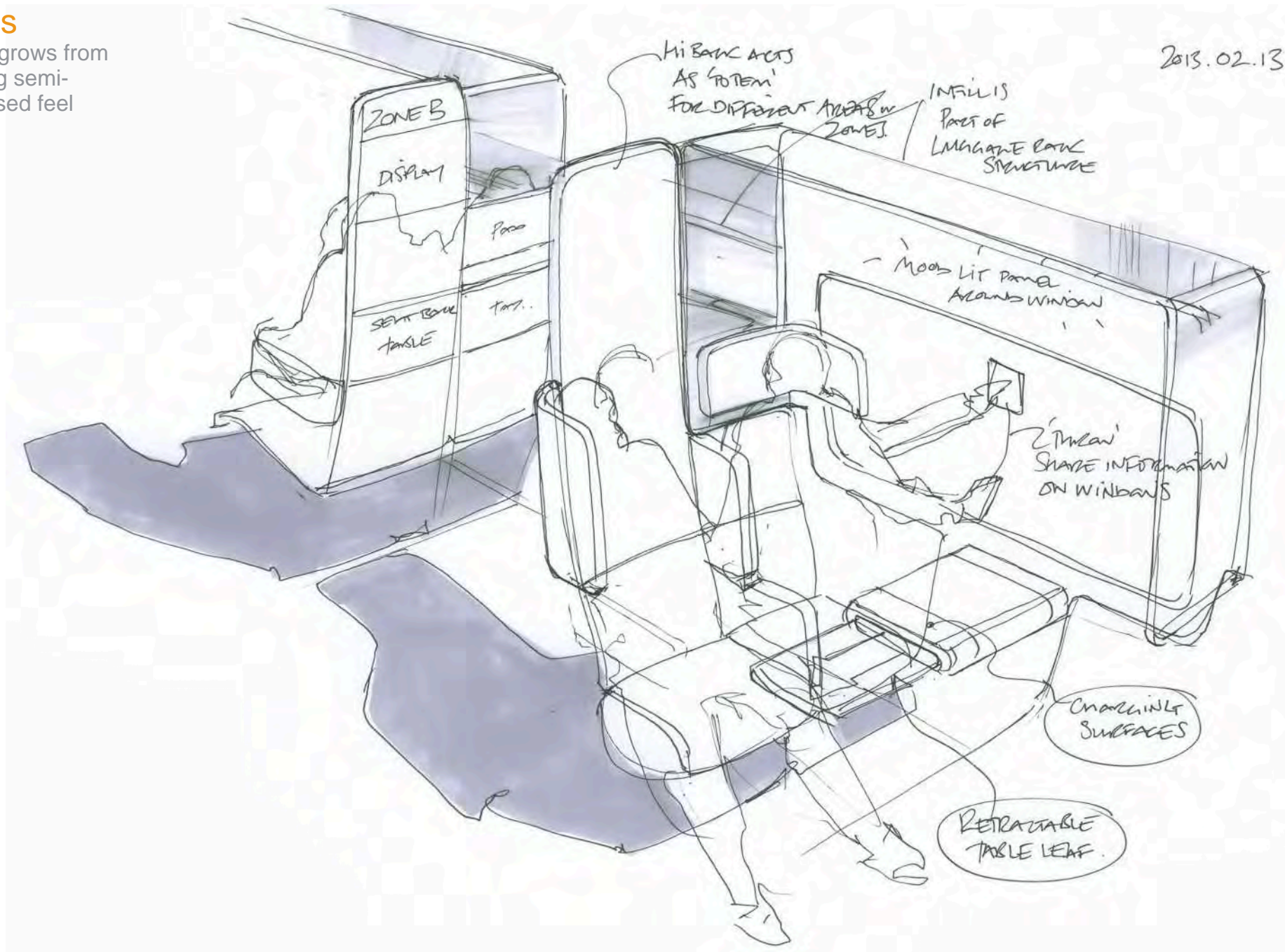
- seat visually grows from sidewall creating semi-compartmentalised feel throughout car





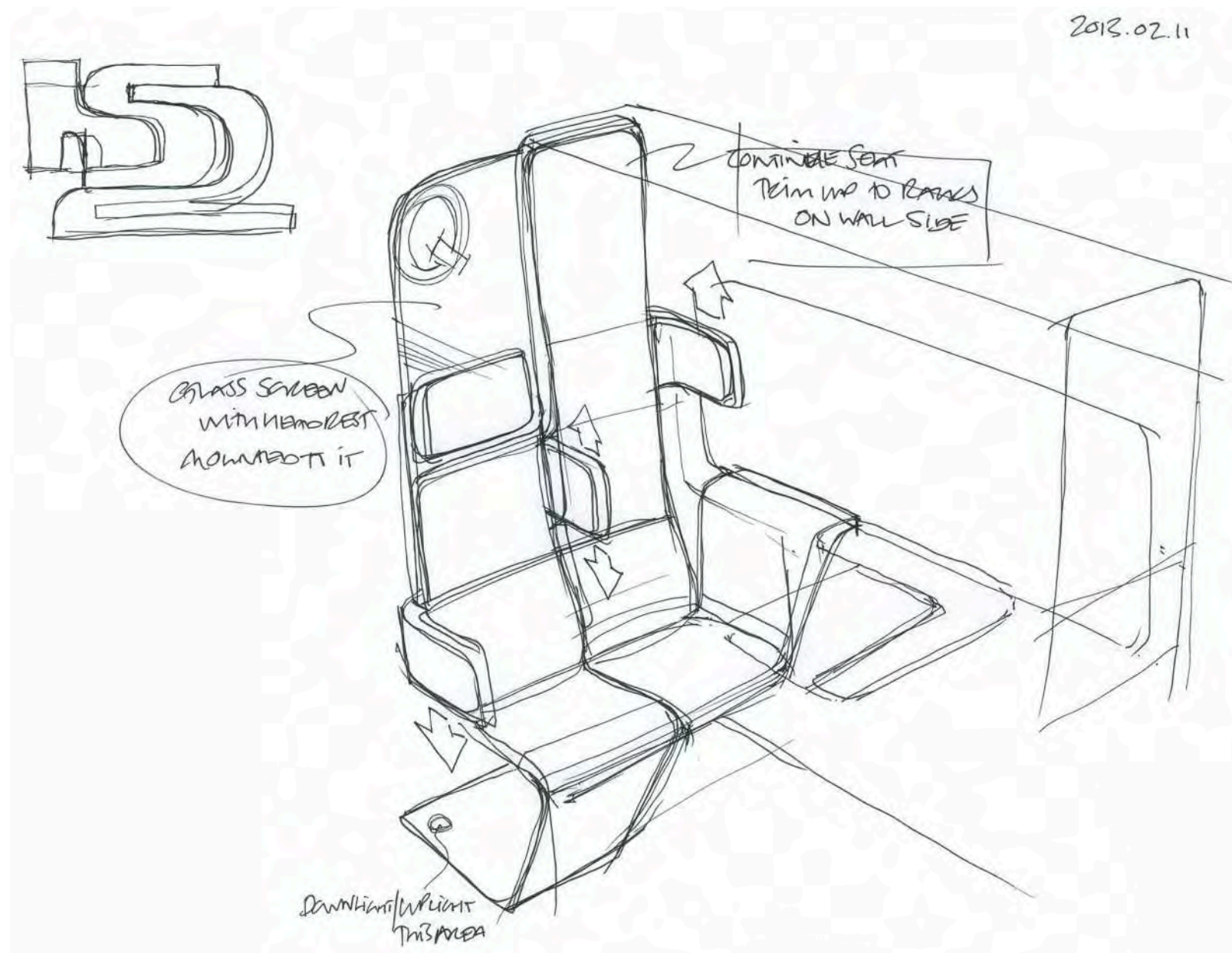
## Seat details

- seat visually grows from sidewall creating semi-compartmentalised feel throughout car



## Seat details

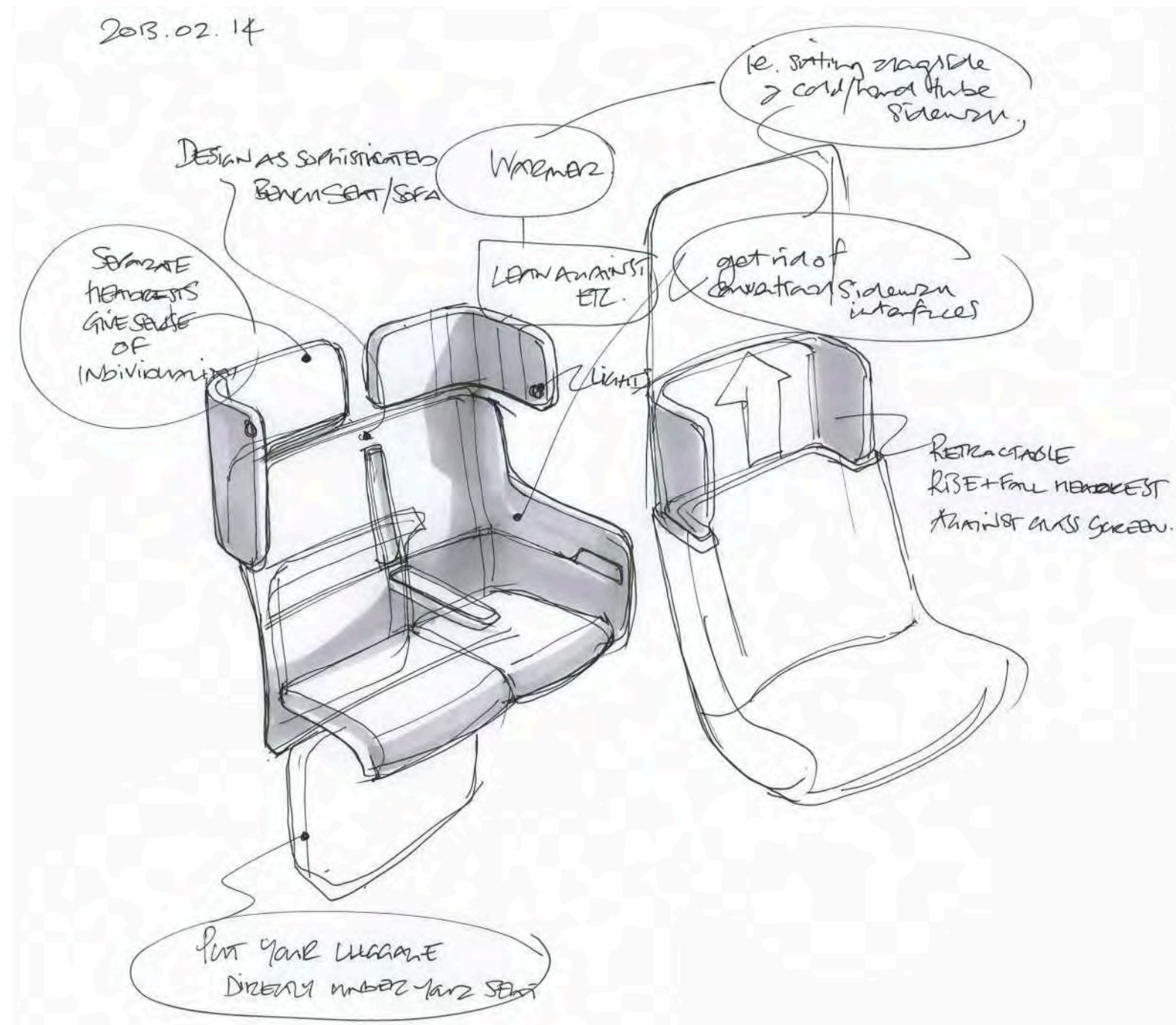
- seat visually grows from sidewall creating semi-compartmentalised feel throughout car





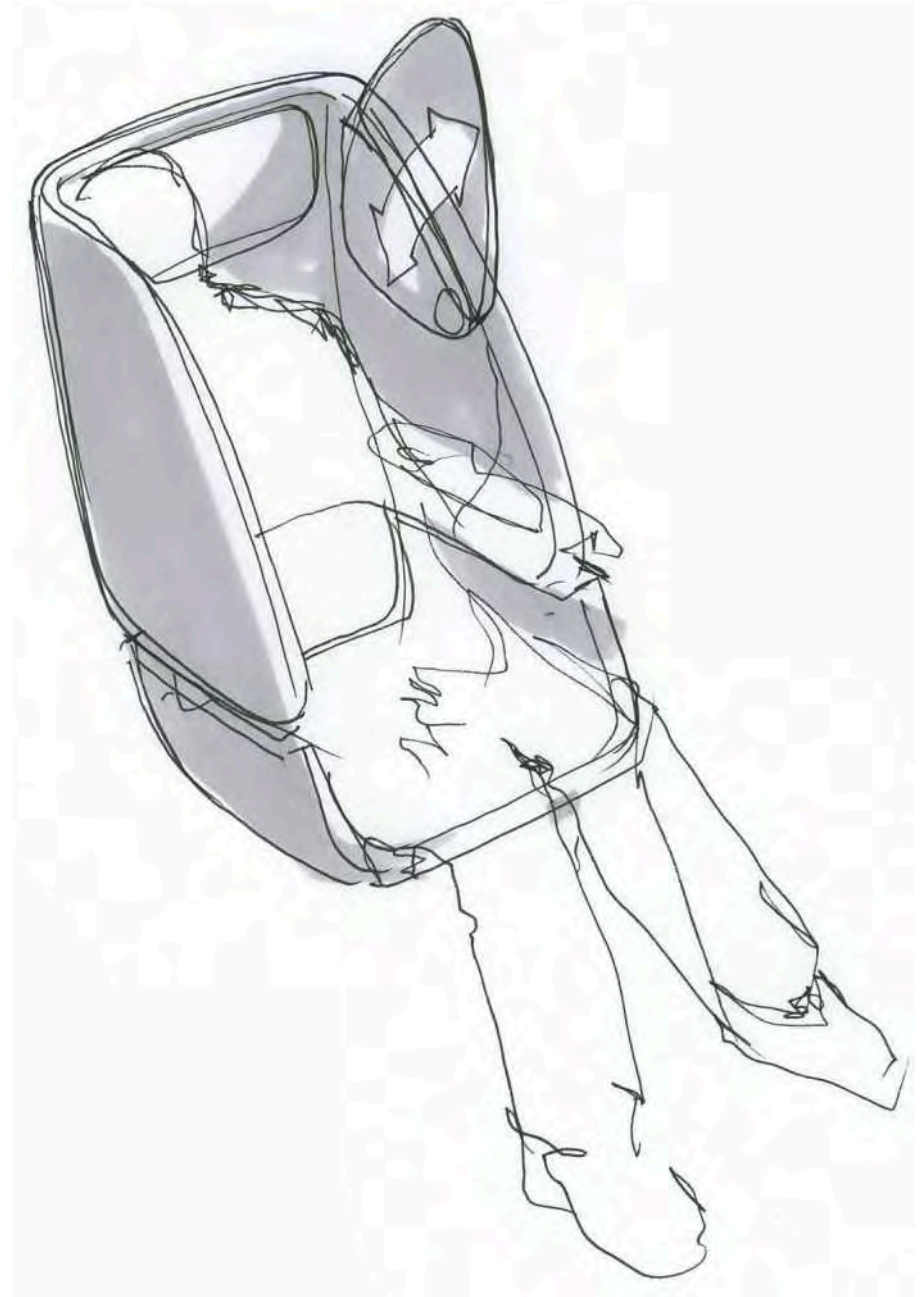
## Seat details

- sophisticated bench seat converts into sofa off-peak
- individual headrest
- retractable headrests (or height adjustable)



## Seat details

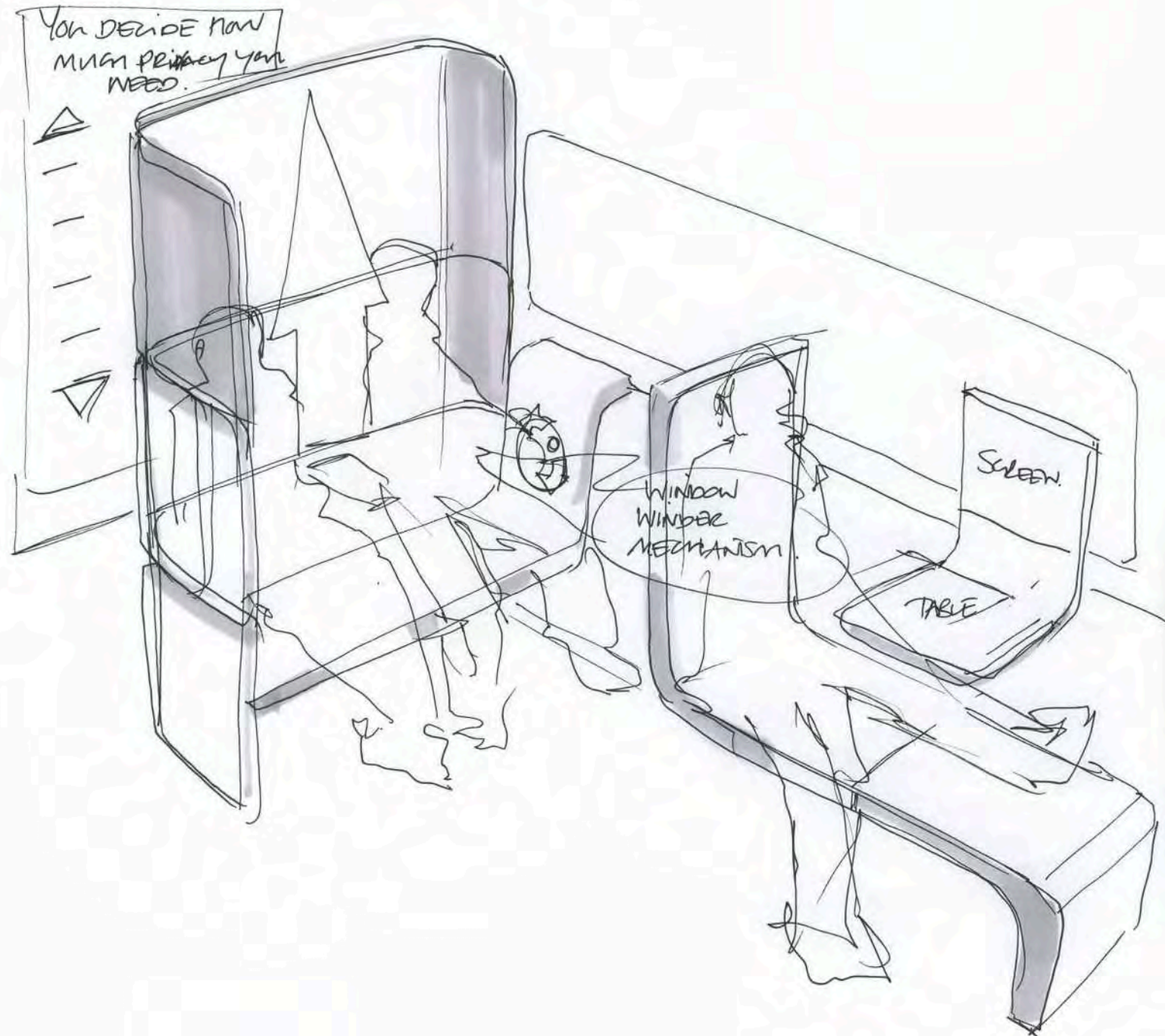
- simple monocoque seat tub with moveable earests and recline within shell





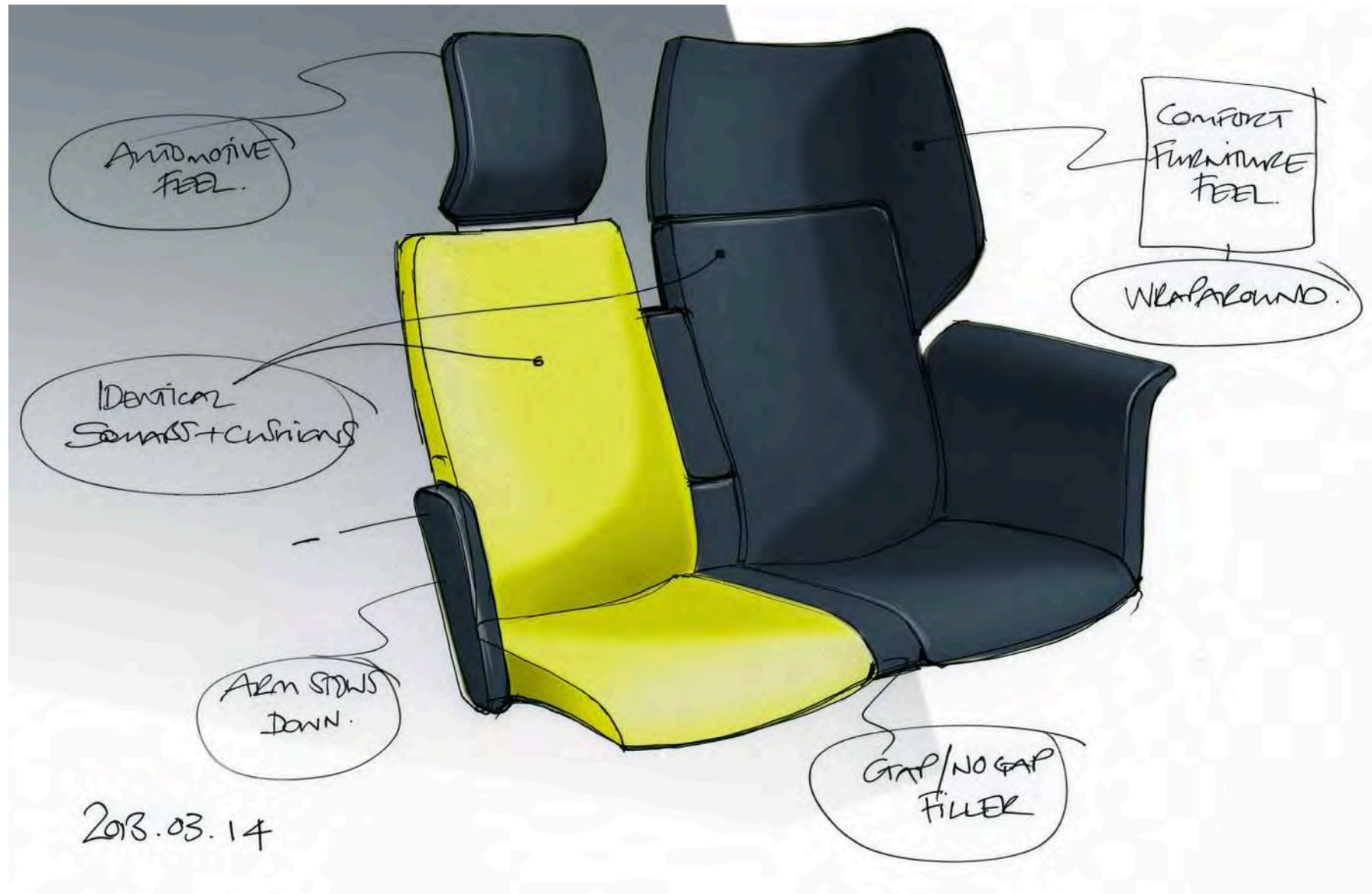
## Seat details

- rise and fall privacy screens controlled directly by passengers
- seat converts to chaise with a fold-up table



## Seat System with Mixed Character

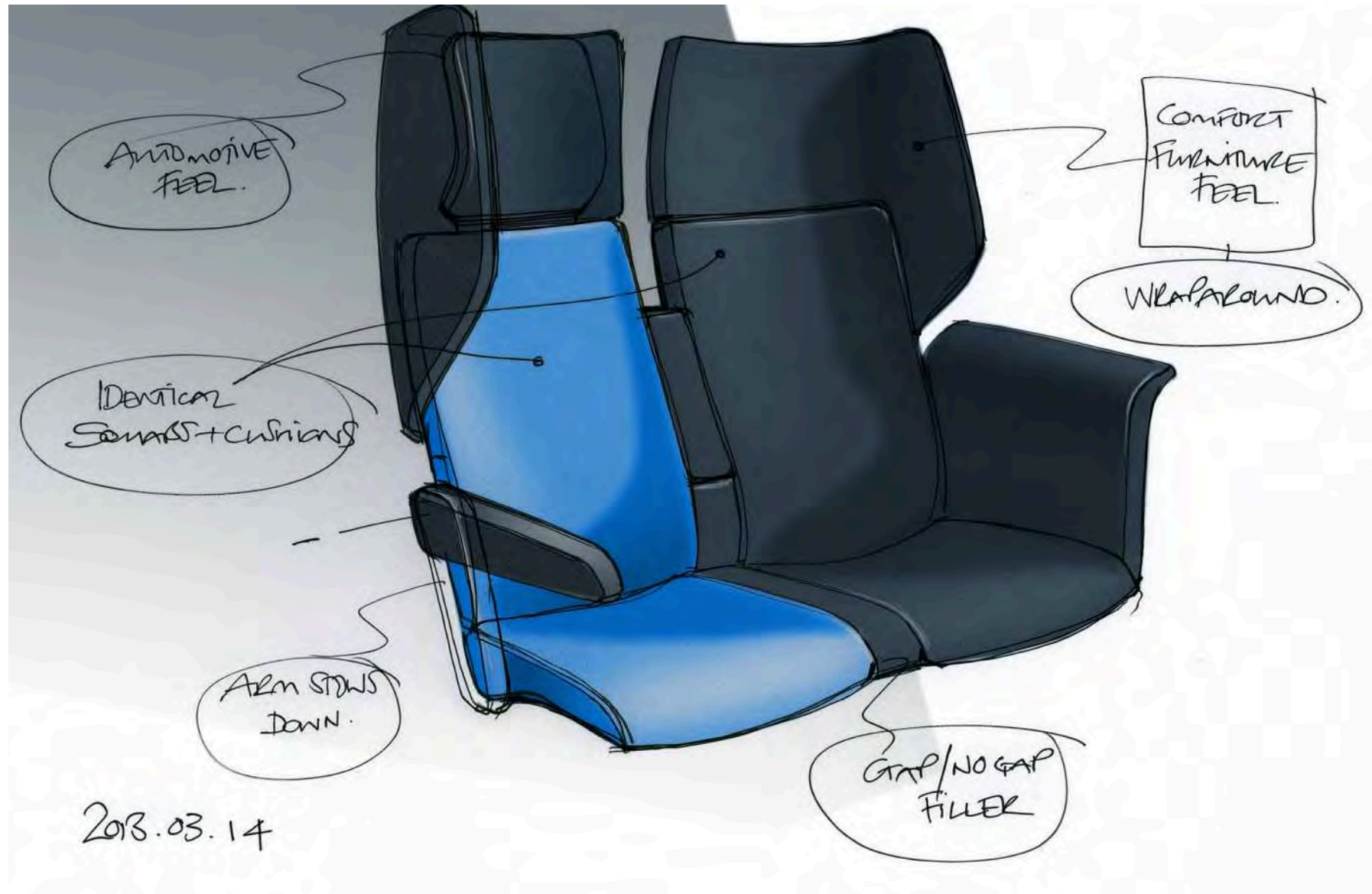
- core of shared components
- selection of different character headrests and armrests
- colour and material contrasts to accentuate individual passengers tastes





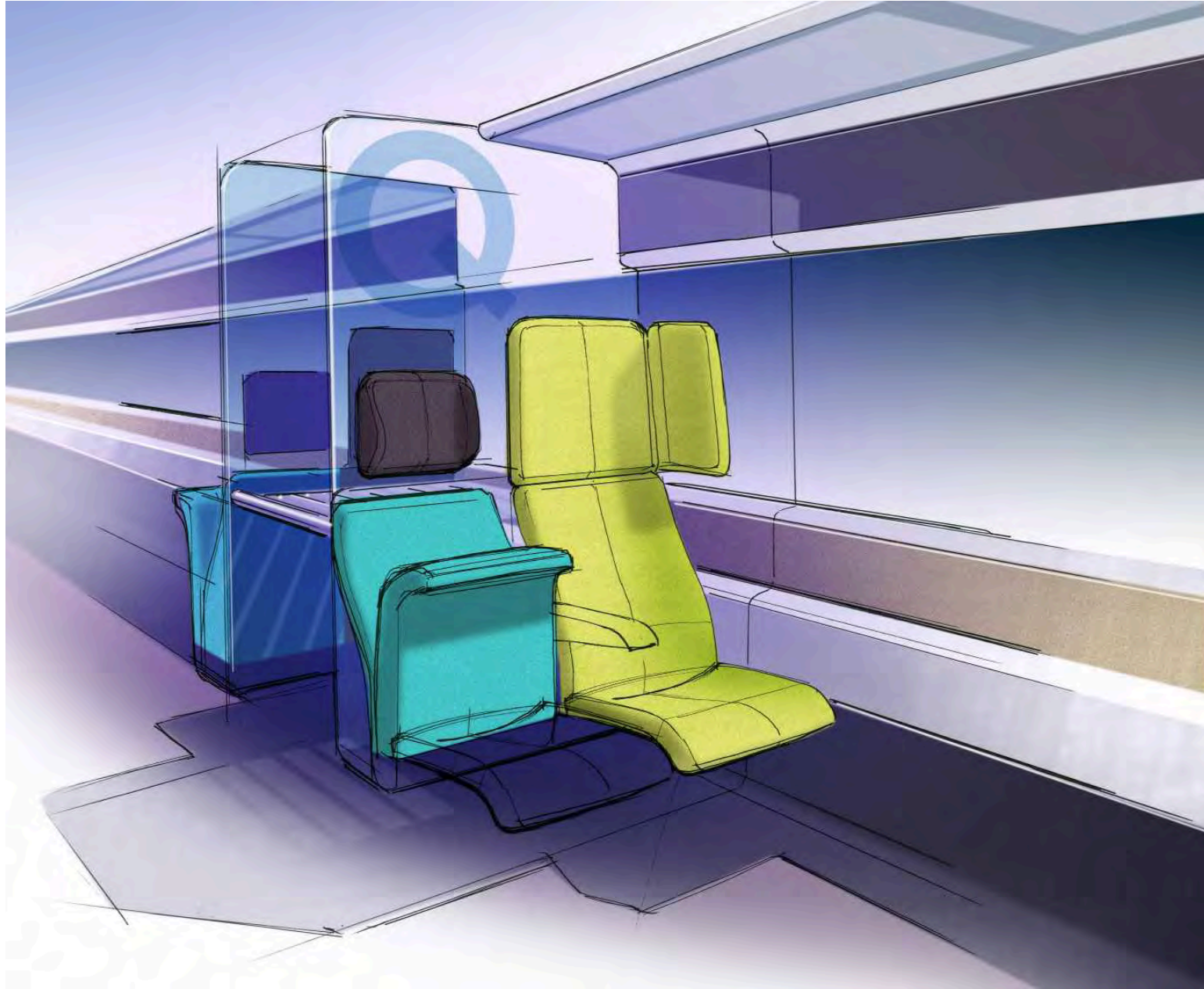
## Seat System with Mixed Character

- core of shared components
- selection of different character headrests and armrests
- colour and material contrasts to accentuate individual passengers tastes



## Storage between seats

- glass luggage stack units act as room dividers
- 'smartglass' surface changes character throughout journey
- tip-up seat cushion allows luggage to be stored next to you at off-peak times





## Slim, Elegant, Ergonomic Seating

- core of shared components
- handed headrest/earrest upper cushions
- aisle side cushion with 'rollover edge'



## Slim, Elegant, Ergonomic Seating

- asymmetric trim panels give feeling of individuality





## Slim, Elegant, Ergonomic Seating

- asymmetric trim panels give feeling of individuality
- lighter tones on upper part of seat create feeling of spaciousness, and visually reduce the height of the seat
- darker tones on lower part of seat are more practical for cleaning



## Slim, Elegant, Ergonomic Seating

- styling variations
- armrest folds up to create side bolster





## Slim, Elegant, Ergonomic Seating

- styling variations

