

# Aviation and Environment Symposium

7th February 2013 – Pau, France



## LIFE Project

Lighter, Friendly and Eco-Efficient Aircraft Cabin

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Professor at FAUTL Lisbon

**I - ALMADESIGN**  
DESIGN DRIVEN INNOVATION

**II - CROSS POLINIZATION**  
ALMADESIGN'S PROJECTS

**III – LIFE PROJECT**  
AIRCRAFT CABIN

# I. ALMADESIGN

DESIGN DRIVEN INNOVATION



# WHY

Almadesign is a design company with core competencies in **product design and design management** focused on industrial innovation.

Our major assets are **the team of designers and engineers, our product development methodologies and all the products** launched in the market with our partners.



**RESEARCH**  
INVESTIGAÇÃO

**CONCEPT**  
CONCEITO

**DEVELOPMENT**  
DESENVOLVIMENTO

**PROTOTYPING**  
PROTOTIPAGEM

**COMMUNICATION**  
COMUNICAÇÃO

**MARKET FOLLOW UP**  
AVALIAÇÃO NO MERCADO



# HOW

Almadesign works together with customers and partners throughout **the whole product development process**, identifying and structuring requirements, conceptualising and developing solutions for production and marketing.

We identify and monitorize the **critical factors of the process** to achieve innovative solutions



# WHO

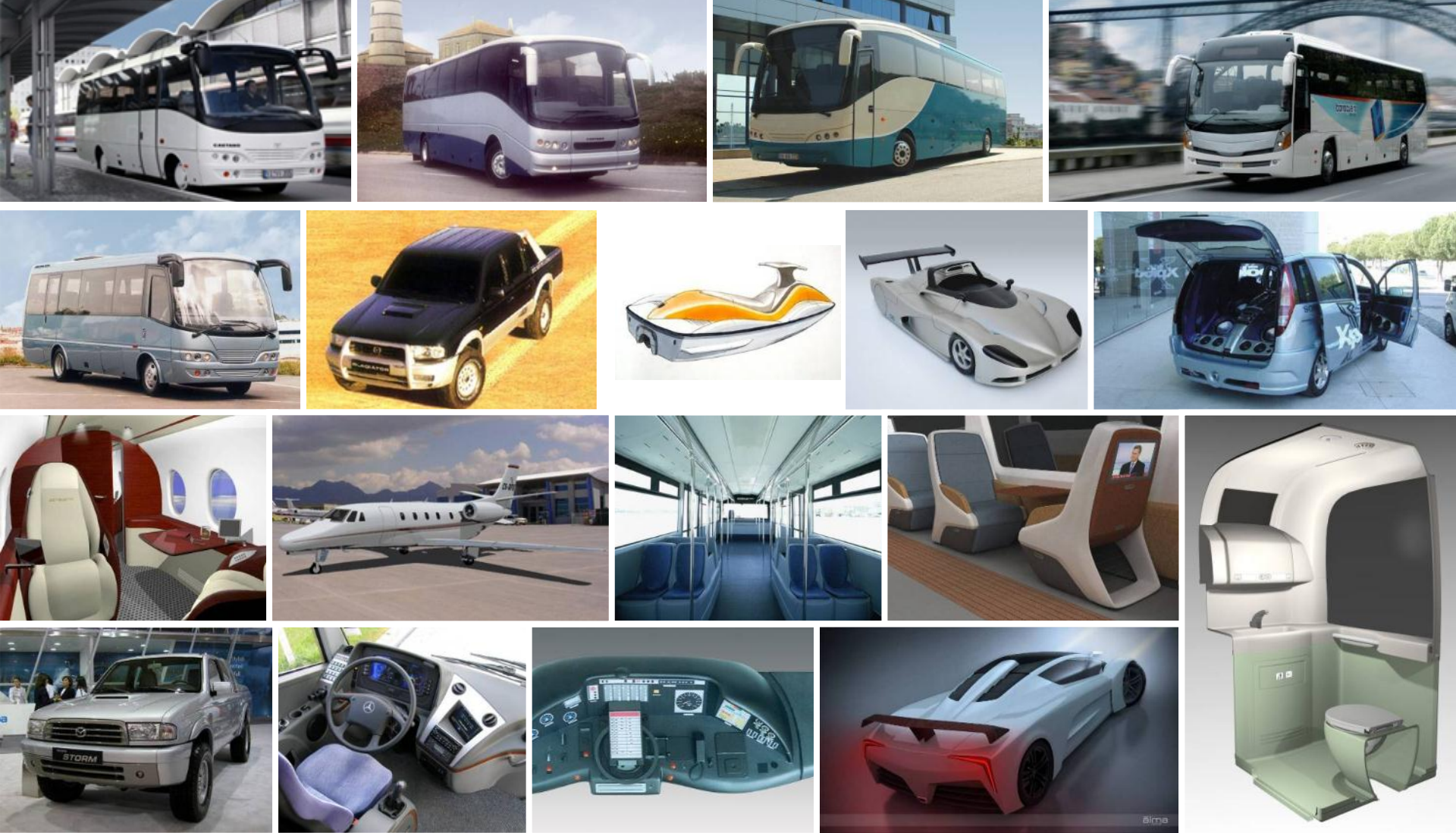
Almadesign's activity is based in three core values: creativity, excellence and trust. **They all come from people.**

Our studio is actively engaged in several **cooperation networks** since their inception, such as Pemas (Aeronautic), Pria (Railway) and Cotec (Business innovation).



# II. CROSS POLINIZATION

ALMADESIGN'S PROJECTS

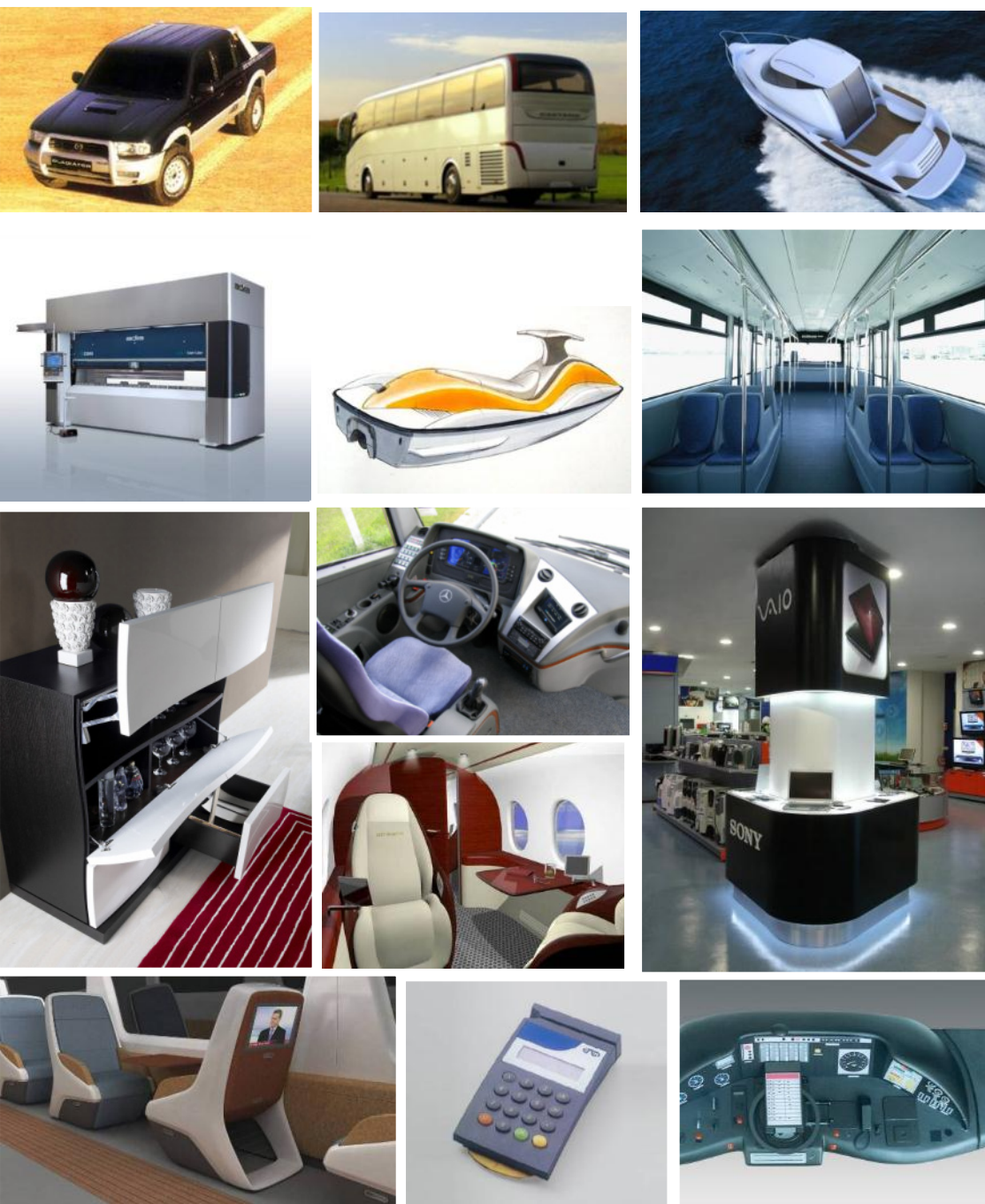




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**Product**  
Consumer Electronics | Furniture | Industrial Machinery





- **Composite materials applications** from buses to industrial machinery and urban furniture.
- **Lighting solutions** from retail design to transportation.
- **Wood and metal forming technologies** from home furniture to aircraft interiors
- **User interface solutions** from consumer electronics to transportation dashboards.
- Houseware **textiles and trimming solutions** to train interiors.
- Automotive **standards and human factors** to aircraft interiors.

**2 000 000 000**

**VIEWERS OF THE  
EURO 2004 OPENING**

ESPECTADORES DURANTE  
A ABERTURA DO EURO 2004

**496**

**DESIGN PROJECTS WITH DIRECT  
INFLUENCE IN YOUR LIFE**

PROJECTOS DE DESIGN COM  
INFLUÊNCIA DIRECTA NA SUA VIDA

**18**

**NATIONAL AND INTERNATIONAL  
AWARDS**

PRÉMIOS NACIONAIS E  
INTERNACIONAIS

**154**

**VISIONARY CONCEPTS TO  
SHAPE THE FUTURE**

CONCEITOS VISIONÁRIOS PARA  
PROJECTAR O FUTURO

**610 000**

**KM TRAVELED TO ENSURE  
DESIGN QUALITY**

KM PERCORRIDOS PARA ASSEGURAR  
A QUALIDADE DO DESIGN

**326**

**PRODUCTS IN THE  
MARKET**

PRODUTOS  
NO MERCADO

**152 000**

**HOURS OF DESIGN,  
EFFORT AND COMMITMENT**

HORAS DE DESIGN,  
ESFORÇO E EMPENHO

**136**

**SATISFIED  
CUSTOMERS**

CLIENTES  
SATISFEITOS

# I. LIFE PROJECT

AIRCRAFT CABIN



genesis

1



# Project team and companies

# OBJECTIVES

- A vision for a sustainable future for executive aviation
  - Presenting companies as Integrators and solution providers
  - Building competencies through collaboration
  - Building a demonstrator from combined competencies.
  - Vision focused on the passenger experience and on the use of natural materials
- 
- R&D project to challenge the present aircraft interiors industry:
    1. LIGHTER
    2. INTEGRATED
    3. FRIENDLY
    4. ECO-EFFICIENT



## process

2

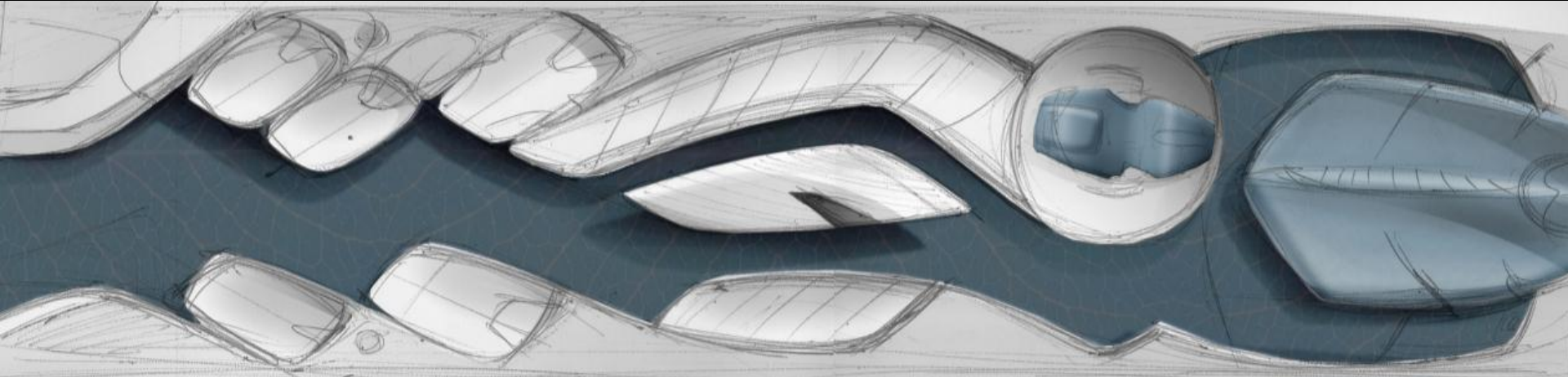
- research
- concept
- development
- prototyping



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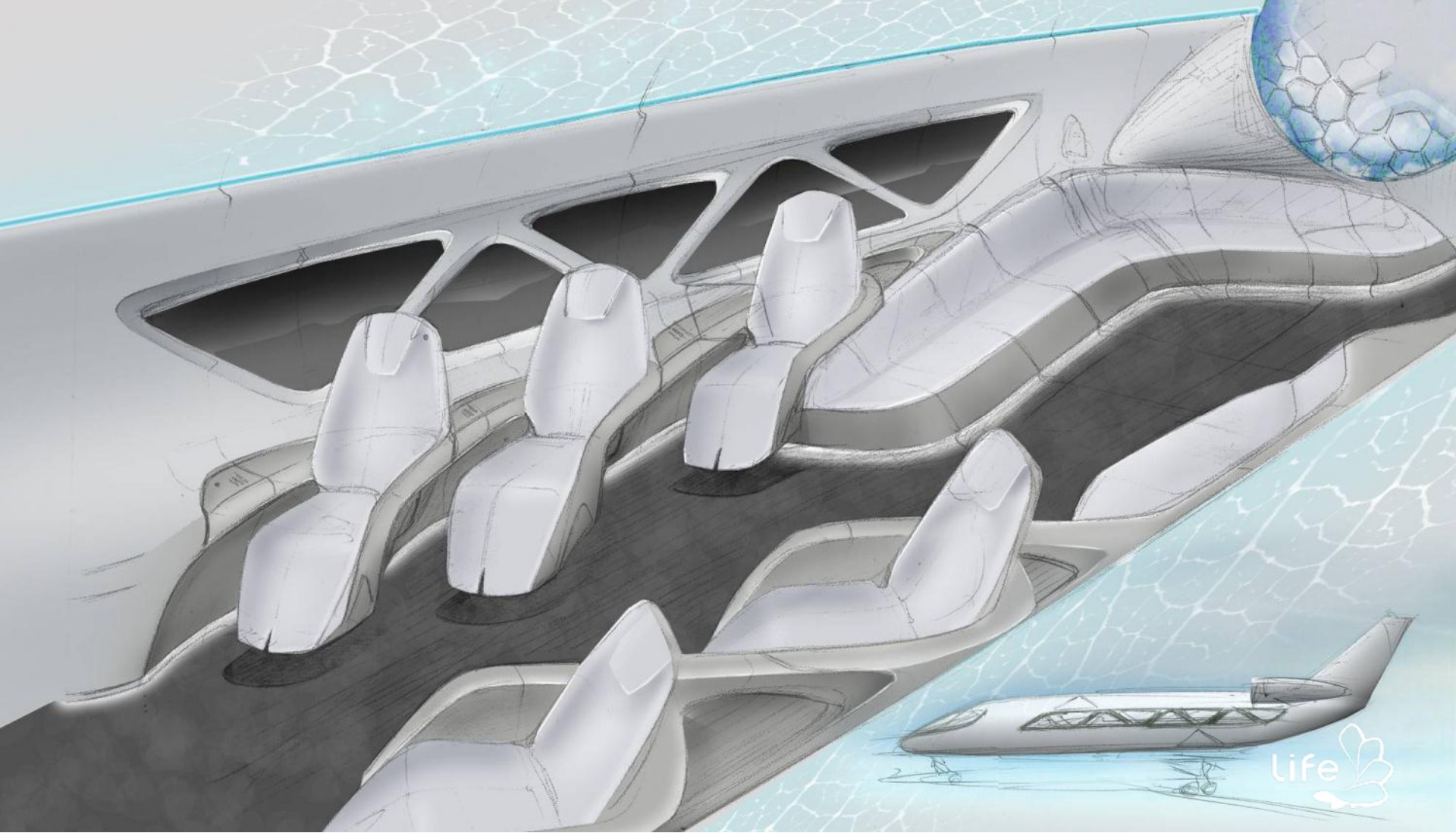
# Research

Inspiration, technology, trends



# Concept

Appeal to five senses: natural inspiration and organic layout



# Concept design

Involving integrators and their clientes from inception  
Creating a common vision for the project



# Development - 3d surface modeling

Ergonomic standards, composite technologies  
Materials, lighting and colors unite natural and artificial



# Development

3D Geometry validation at Embraer Virtual Reality Centre  
Stakeholders view on the project, refinement



# Prototyping

Building and testing the usability of user interfaces



**deliverables 3**



# Visionary concept

Use of natural finishes and sustainable materials  
Home feeling of comfort, simplicity and understated technology

Top view

executive area

living

interactive sphere

kitchen / storage

bathroom

bedroom

business

private



# Business or Private?

Enhanced productivity – executive area, living, office  
Privacy and leisure – bathroom, bedroom, infotainment



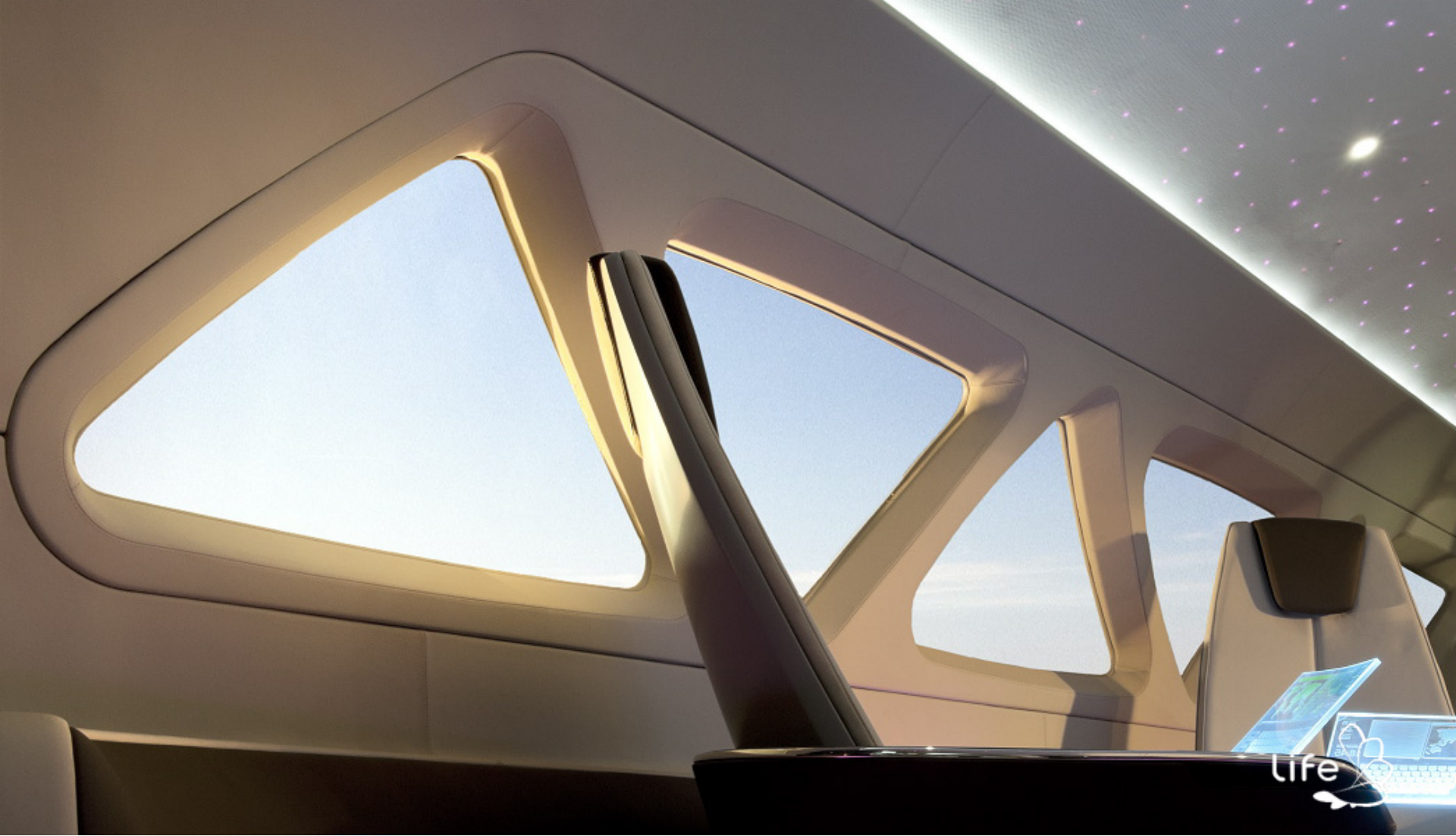
# Business area

Face to face meeting, office, connectivity



# Private area

Bathroom, bedroom, infotainment



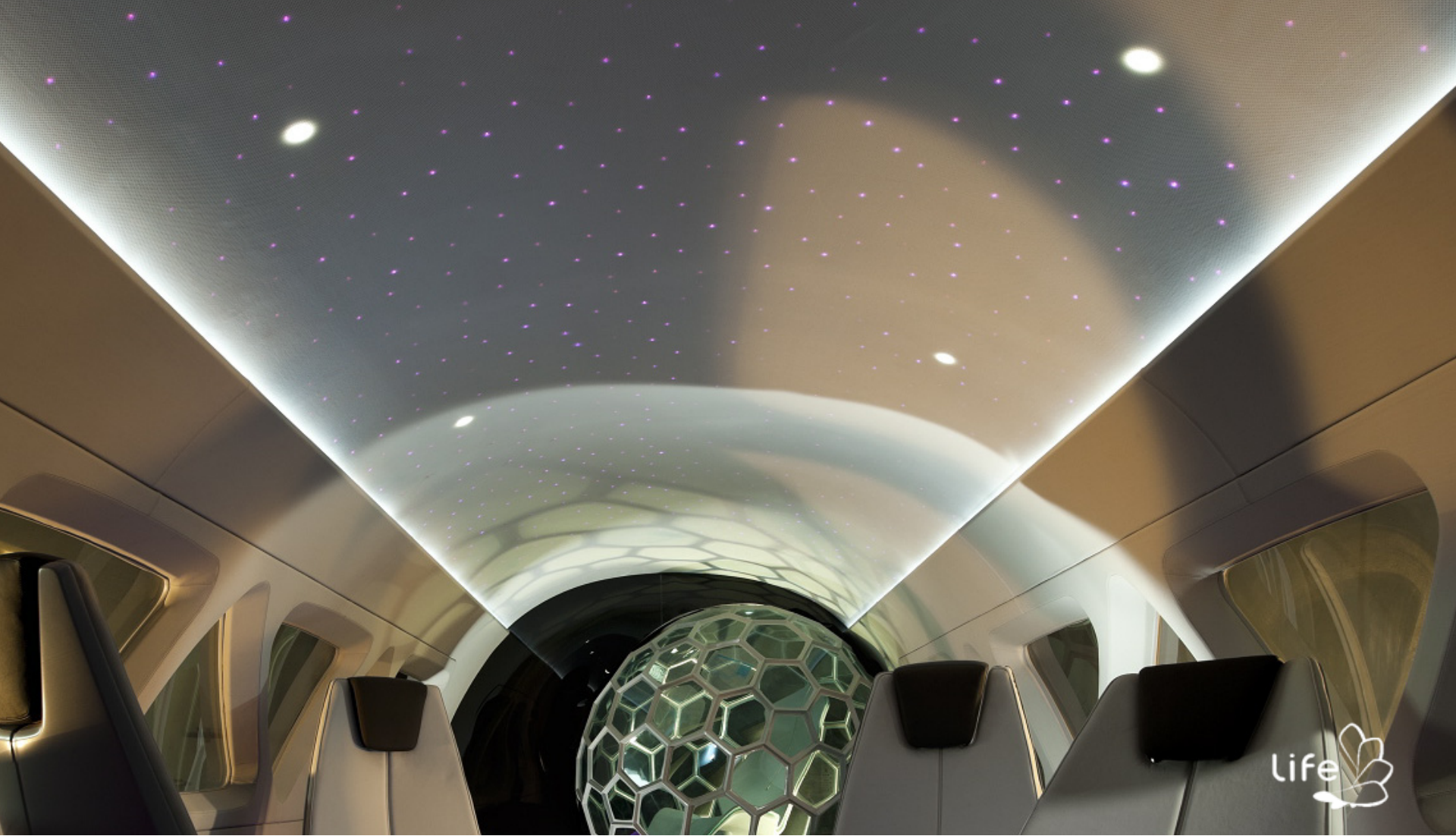
# Windows and light

Large triangular windows (composite structure)  
Greater flight experience and abundant natural light



## Natural materials

Home feeling: natural materials for trim and finishing  
“Airllys” natural leather and “Cork leather” (skin touches skin)



# SEED system

Interactive lighting system – customized ambient and reading light  
Optical fiber and LEDs embedded in CoreCork composite panels





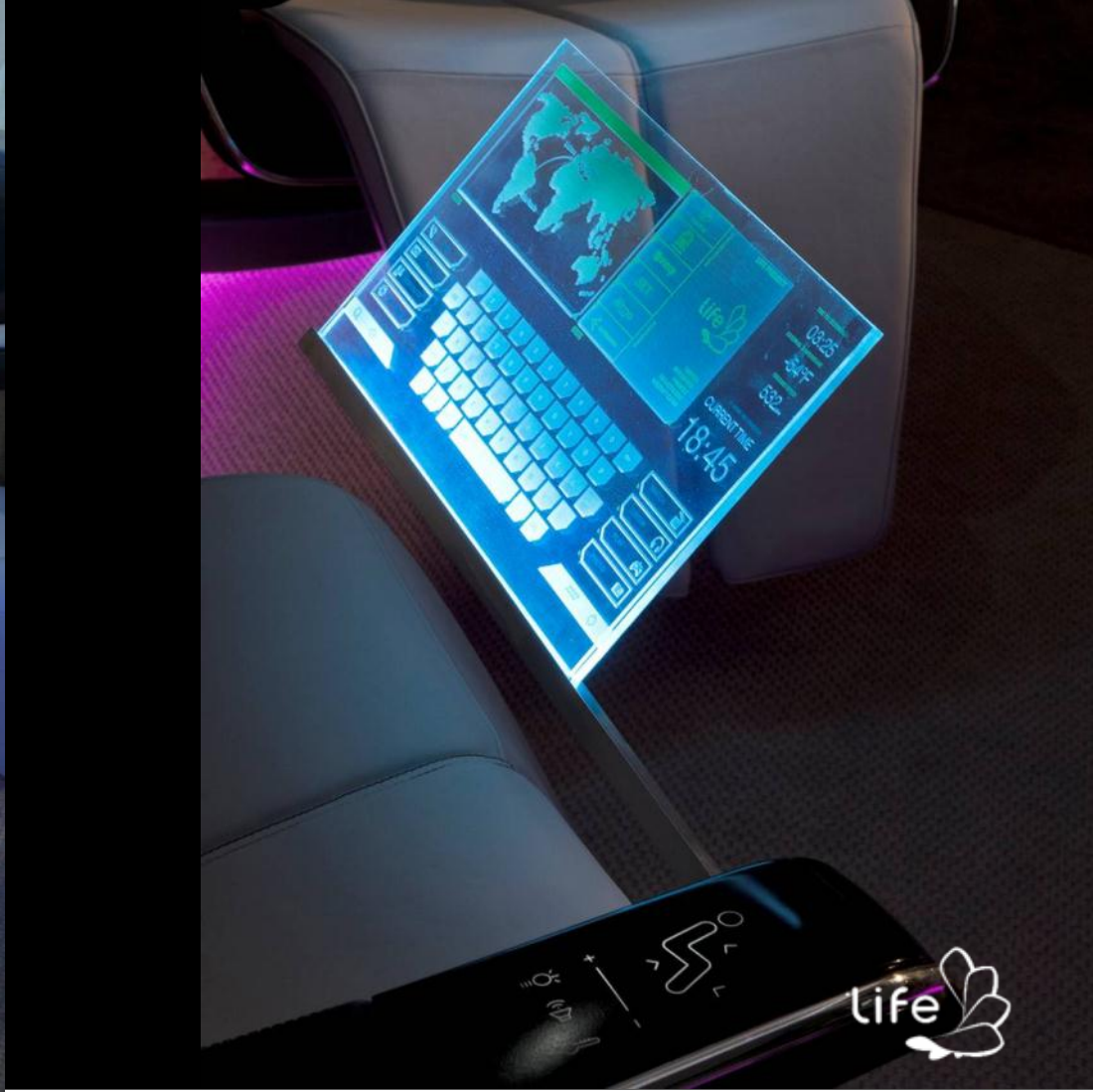
# Floating seats concept

Cantilevered arms built from composite materials

Reduced vibration and maximum movement for better comfort

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Life 



# Connectivity and Ergonomy

Touchscreens for permanent connectivity  
Can a seat adapt to each body using biometric sensors?



# Interactive Sphere

Office of the future: immersive infotainment system  
Virtual reality for business or fun!

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# Comfortable and sustainable

Interior trimming using natural materials

Recyclable, natural materials for comfort, sound and thermal insulation





# Production and integration

Unifying Design language: to prove a vision and to test solutions

Promote the use of sustainable materials





# LIFE project outcome

Crystal Cabin Award Winner | 2012



**Future?**

**4**

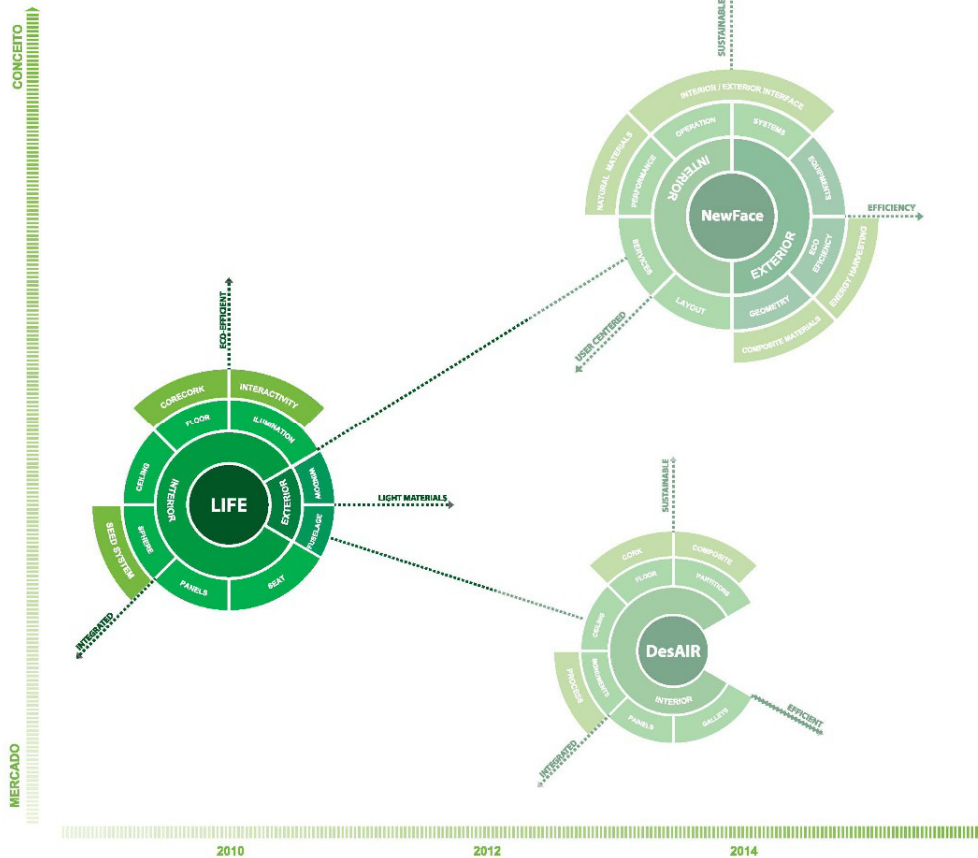
## **Technical challenges:**

- Economy and legislation constraints act as an enabler for new technology and solutions.
- Significant leaps in new materials, nanotechnologies and production processes (such as deposition technologies) and infotainment systems.

## **Professional skills:**

- The Designer is by definition an innovation booster, and a key factor for project management and multidisciplinary convergence. We expect design to make the most out of new inputs to create user-centered, sustainable cabin interiors.





## Spin-offs:

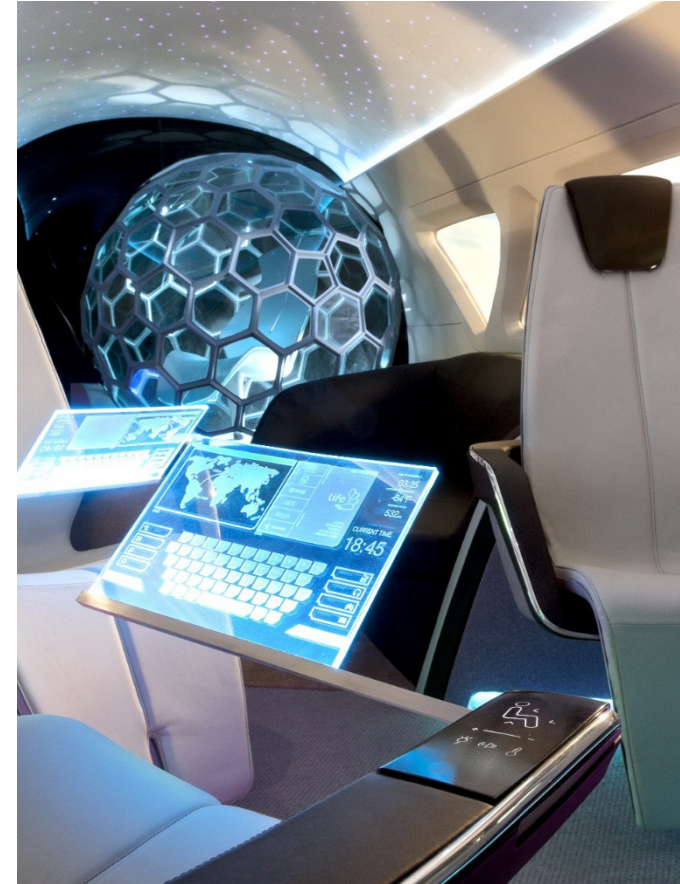
- LIFE solutions can be more easily tested and integrated in high-end products such as business jets, but the team's long term expectation is to bring these ideas into commercial aviation.

## Short Term and Long Term:

- We are pursuing different projects that go from market-ready tested solutions to conceptual approaches for the next 10 to 15 years

## LIFE Design Process:

- Vision for the future of executive interiors
- Focus on the passenger experience
- Use of natural materials
- Promoted new competencies for the companies
- Enabled knowledge transfer between different areas
- Test-bench for future products and spin-offs
- Future vision through collaboration.



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# THANK YOU!

**André Lopes de Castro - Almadesign**

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