

# General presentation

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June 2019





# Summary

## Introduction

### Why doing it?

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- Premium market goes high-end
- Air freight sector is under pressure
- New solutions are emerging
- Airlines operate in a competitive environment
- The core market is developing

### How doing it?

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- The path to entry into service in 2024
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### What do we wait to do it?

- For operators
- For partners and investors
- Interested by flying together?



## Introduction

Because there is no other way to admire our planet than from the sky, we imagined EarthBay as being the best way to achieve the wish of many passengers.

EarthBay is a product replacing the cargo door: it is composed of large window sets and of a metallic framing structure. It will be a real marketing asset for Airlines and will enable them to increase their revenues.

We believe this will **unleash the potential of cargo bays**, by bringing natural light in a new space for passengers.

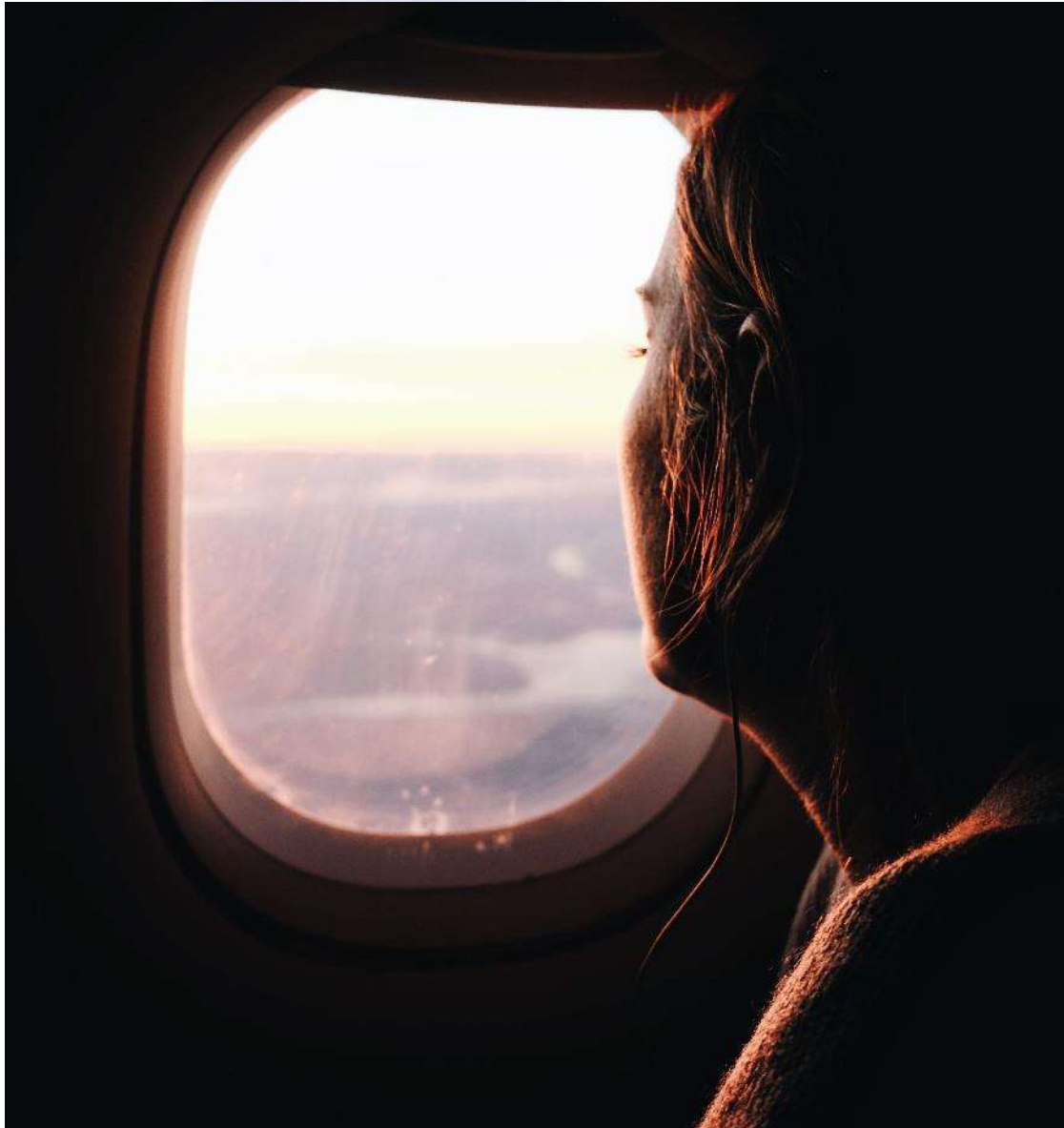




# WHY DOING IT ?



## Passengers prefer Windows



Looking outside during a flight is a real entertainment, **that only a plane can provide.**

Boeing and Embraer develop large window solutions for their business jet version, **proving that passengers with strong purchasing capacity look for genuine eye experience.**

Quite naturally, the size of windows are now significant selling arguments in the business jet market.

***EarthBay will bring an outstanding flight experience.***





## Premium market goes high-end



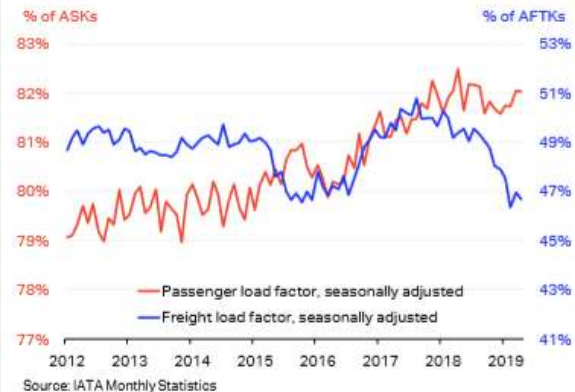
The premium market of traditional airlines is in **constant competition**. Innovation leads to new offers like suite concepts for their First Class and premium seats for their Economy Class.

*EarthBay will be a real differentiating asset for airlines.*

# Air freight sector is under pressure



Passenger load factors recovering to previous high



- The industry-wide passenger seasonally adjusted load factor for April stays high at 82.0%. Seasonally adjusted data point to airlines responding to the demand slowdown by reducing capacity growth sufficiently and boosting asset utilization.
- Freight load factor (FLF) for the industry is currently at 46.3%, which is 3.5 percentage points lower than the level of a year ago. Following a modest rise in March, seasonally adjusted FLF confirms the downward trend, which has been observed since mid-2017, remains in place.

Making profits is challenging for the air freight sector. Many long-haul flights are operated with cargo bays more than half empty, while air freight activity requires significant logistic costs and reliable and expensive software.

In addition, freight transportation is not part of the business model of many low cost or charter airlines.

Thus, refurbishing the forward cargo bay as a passenger cabin will have limited impact on the freight activity as the afterward cargo bay would be enough to carry it in many cases.

***EarthBay will add value to an underused space.***



# New solutions are emerging

**CNN Money** Markets Economy Companies Tech Autos India Video

**Biz + Lifestyle**

## New Airbus beds will let passengers sleep in the cargo hold

by Rishi Iyengar @IyengarRishi  
April 14, 2019, 4:00 PM ET

**Would you sleep in an Airbus cargo hold?**

Airbus has found a new way for passengers to stretch out -- as long as they're willing to sleep in the cargo hold.

The European airplane maker has partnered with France's Zodiac Aerospace to create cargo sleeper berths for Airbus A330 jets. They'll be available to airlines by 2020.

The mini-cabins -- or passenger modules, as Airbus (EADSF) and Zodiac (ZODFF) describe them -- will sit directly on the cargo floor and will not affect the loading of freight and luggage.

Airlines will be able to swap the sleeping modules in and out of planes in place of regular cargo containers, the companies said.

"We have already received very positive feedback from several airlines on our first mock-ups," Geoff Pinner, head of cabin and cargo operations at Airbus, said in a statement.

**Would you sleep in an Airbus cargo hold?**

The berths are being introduced on Airbus A330-300 aircraft.

**Investing**  
Earn for the National Average

Product	APR	AT TO OPEN
Hydrex High-Yield Savings Account	1.55%	AT TO OPEN
BankAmerica ClearChoice Money Market	1.40%	AT TO OPEN
Bank of America High-Yield Savings Account	1.55%	AT TO OPEN

**U.S. Money Spenders**

**Personal Finance**

Top Bank Announces 1.50% Savings Account, No Fees

Certificate of Deposit Rates

Earn More on Your Savings

Open a Money Market Account

**My Finance**

Two Savings Accounts That Pay 10 Times What Your Bank Pays

A Jaw-Dropping Card With a 0% APR Until May 2019

How to 10x Your Savings With These New Accounts

Pay No Balance Transfer Fees With This 0% APR Card

Manufacturers and major suppliers are investing to transform the cargo bay area in a high value space for airlines.

Congratulations to the Airbus and Safran mixed teams who won the 2019 Crystal Cabin Award in the Cabin Concepts category during Aircraft Interiors Expo !

***EarthBay will unleash the potential for new concepts.***





# Airlines operate in a competitive environment



Outstanding passenger experience



A marketing asset  
in a competitive environment



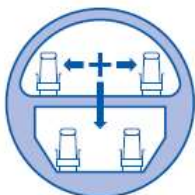
A new space for passengers  
accessible in flight, lowered floor  
possible for more comfort



Multiple possibilities:  
Suite, Business class seats, Lounge...



Currently an underused space:  
FLF\* <50% for the passenger fleet



Free up space on the main deck:  
increase capacity, increase income

\*FLF: Freight Load Factor

The possibility to transfer some galleys or lavatories will enable to free up very valuable space on the main deck (despite the surface required for stairs creation).

The forward lower deck redesign will create a new space for passengers accessible in flight (passengers remain on the main deck during taxi/take-off/landing). Dedicating this space to a category of passengers will generate up to 4M\$ per year per aircraft (see the details in the study cases).

The occupation rate will also be improved, thanks to an exclusive experience.

***EarthBay product will be a real marketing and commercial asset for Airlines.***



## The core market is developing

### Airbus products

models	In service	Unfilled orders
A330	1378	271
A350	288	605

### Boeing products

models	In service	Unfilled orders
B777	1290	678
B787	859	582

The core market is the wide-body aircrafts category due to the cargo bay dimensions.

Both Airbus and Boeing forecast an increase of this market segment from 4100 A/C today to 9100 in 2036 (+5000) requiring the delivery of 8200 new planes (replacement + growth).

As it is possible to install it during a retrofit campaign (while a heavy check), in service A/C are also eligible for an upgrade.

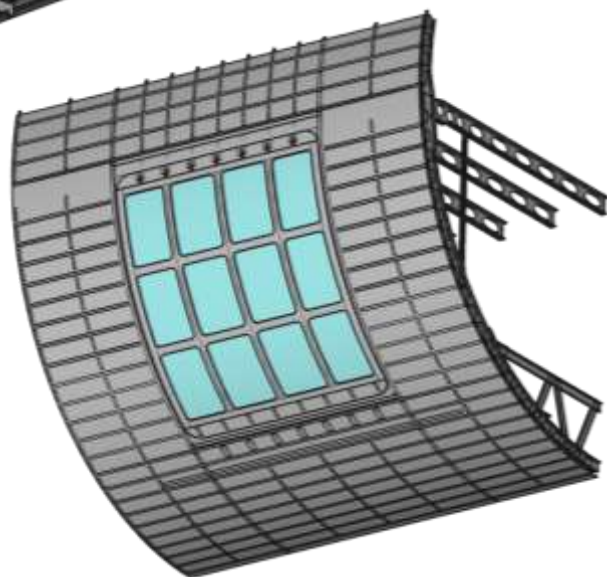
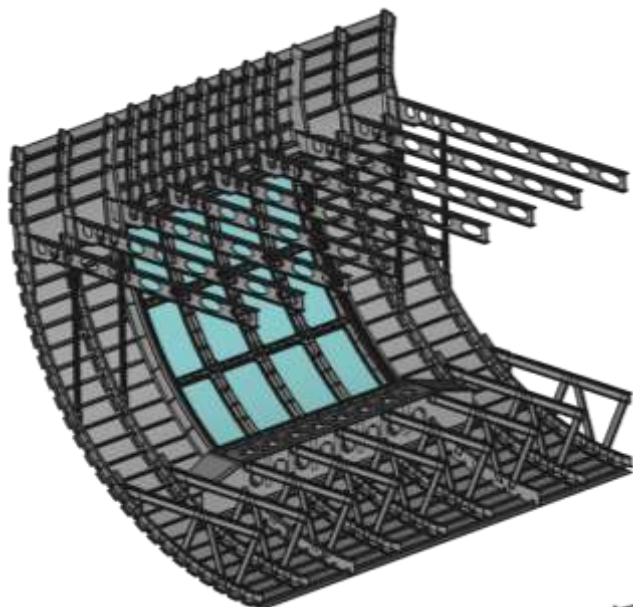
***EarthBay targets a developing market.***



# HOW DO<sub>ING</sub> IT?



# Genesis of the project



2017

- August
- October
- November

Starting investigation of the idea  
Starting partnership with ENAC for project  
Development of a first design

2018

- April
- August
- December

Idea registered at the IP bureau (INPI)  
Development of a second design  
Patent pending # FR-18-73106

2019

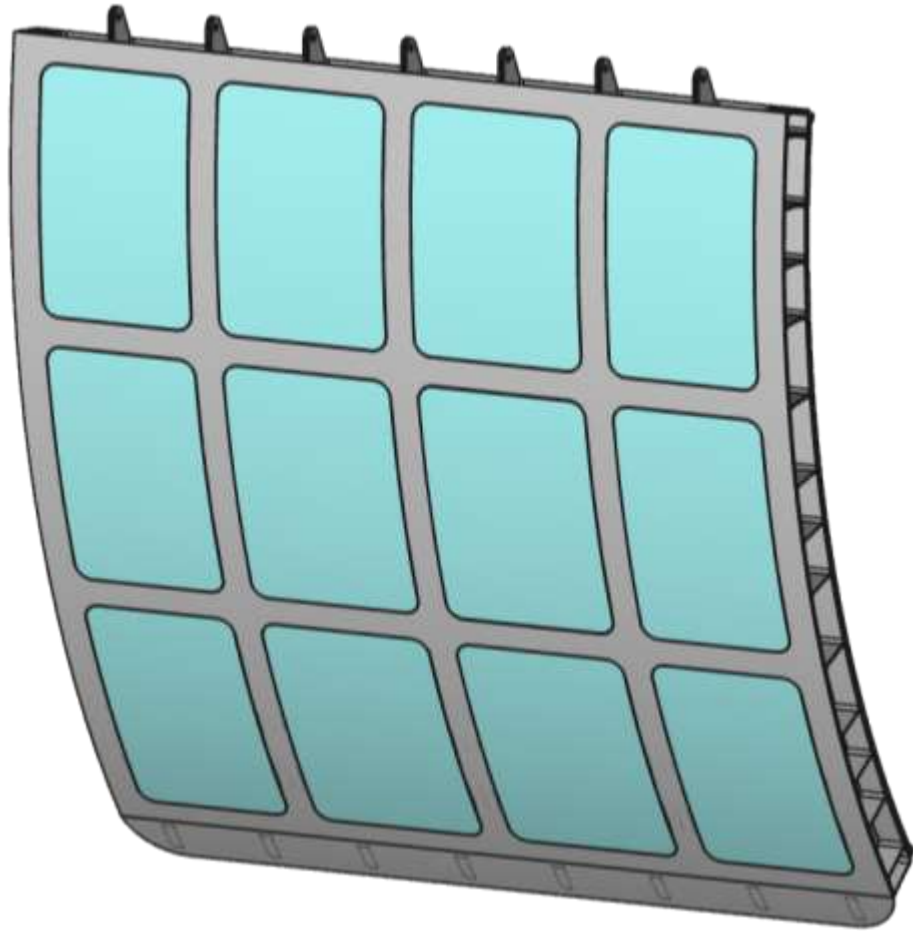
- March
- June
- September

Decision to launch EarthBay  
Starting contacting operators and potential partners  
Participation to Aircraft Interiors Expo





## The main features 1 / 2



### ➤ **Fixed structure**

The EarthBay is designed to fit to the existing interfaces on the fuselage side. But the opening and locking functions of the cargo door are removed.

### ➤ **Large windows**

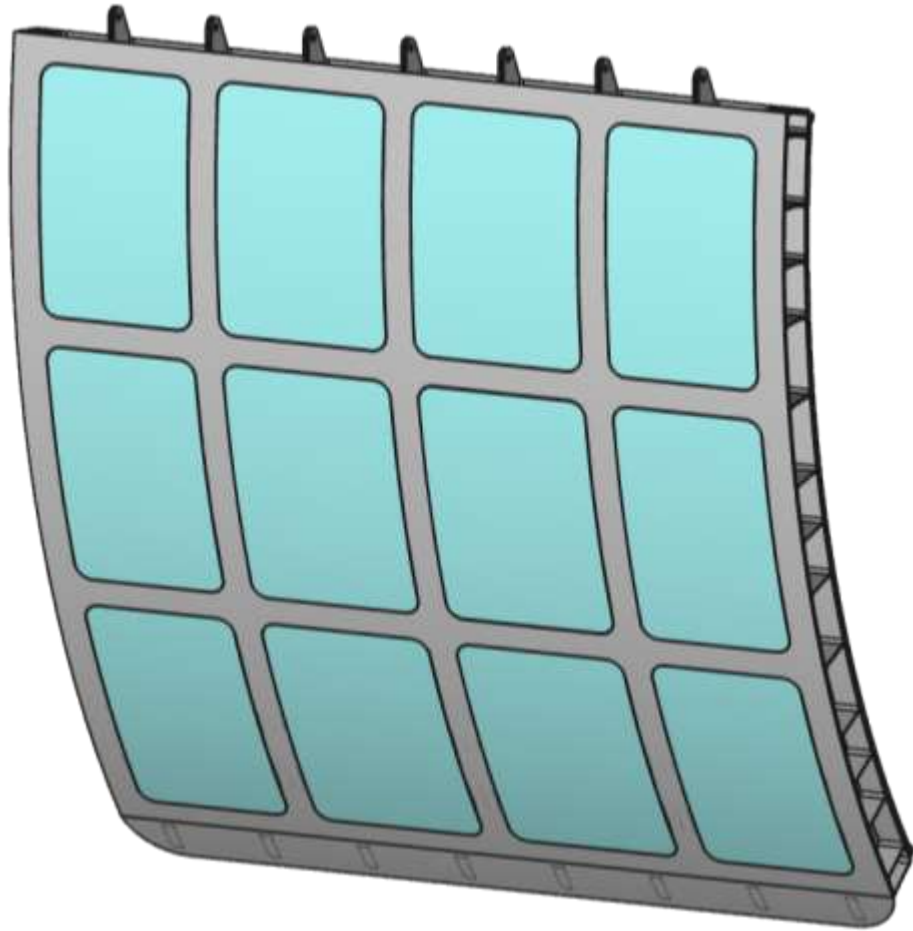
Each set of windows is composed of several layers of transparent material, each one with a specific function (impact protection, pressure sealing, redundancy). Replacement of the sets is integrated in the design specifications.

### ➤ **Stiffening structure**

The windows are tightly assembled on a framing structure composed of aluminum and titanium materials. This structure is then fixed to the fuselage.



## The main features 2/2



### ➤ **Retrofit solution**

Airlines can take advantage of this solution with a heavy maintenance campaign, which is also the opportunity to renovate the cabin. Even if the cost to convert the cargo hold may be significant, the increase of revenues will allow an interesting return on investment.

### ➤ **Operation limitations**

The converted cargo hold will be accessible once in cruise conditions. During the taxiing, the take-off and the landing, the passengers will remain on their seats on the main deck for security reasons. Cargo would be loaded in the remaining bay which is sufficient in many cases.

### ➤ **Certification**

The product is committed to comply with all regulatory requirements in order to obtain the necessary supplemental type certificate.



# The path to entry into service in 2024

## Prototyping

- Operator's needs
- CS25 certification plan
- Digital mock-up
- Prototype realization

## Certification

- Testing limit & ultimate loads
- Stress analyses
- Collaboration with EASA & FAA

## Production

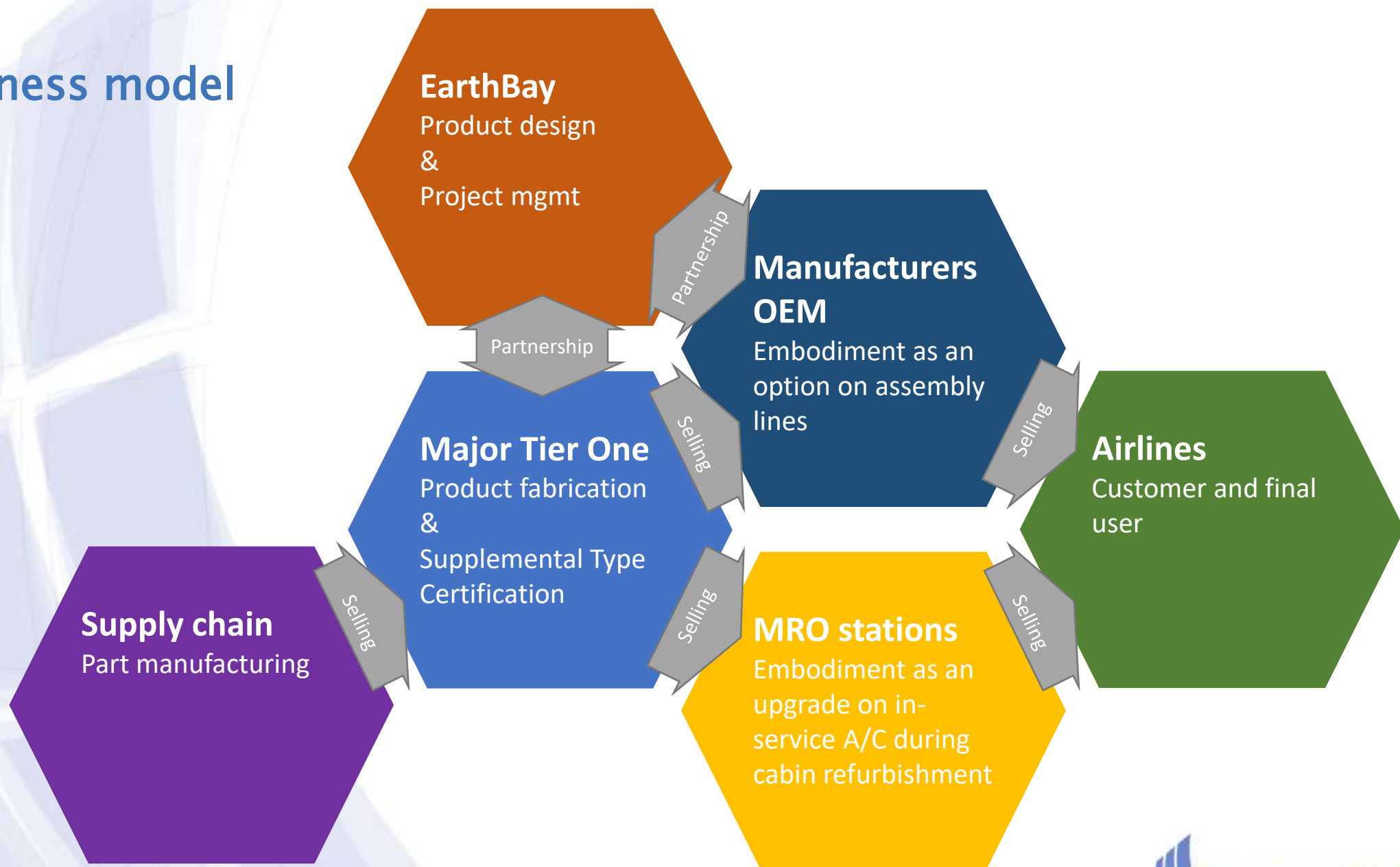
- Focus on 1 A/C model
- Control of the ramp-up
- Extension to other A/C models step by step

## Entry into service

- Customer support
- Maintenance & repair documentation (ICA)
- Spares stock



# The business model







## The project holder



### **Passionate and Professional**

My name is Florian Barjot, I am an aeronautical engineer for more than a dozen years. I started my career as an airframe design engineer and worked on metallic and composite structures. Then I shifted to maintenance engineering and customer service.

My proactive attitude, my sense of thoroughness and my capacity to manage led me several times to be promoted as team leader.

Should I mention my creativity?



<https://www.linkedin.com/in/florian-barjot-575438a9/>



### **I am not alone.**

Even though I imagined and designed the concept first, I confronted the concept to experienced professionals, gathering their advice and feedback. The subject was studied by ENAC students as well as in the frame of their technical projects.

I am happy of the enthusiasm it generated and to have some experts motivated to join the team in case the project finds its funding.

A stylized graphic of a globe, composed of overlapping, semi-transparent blue and white curved segments, creating a grid-like pattern. It is positioned on the left side of the slide, partially cut off by the edge.

WHAT DO WE WAIT TO

**DO IT.** ?



## For operators

- Optimize space and add capacity
- Keep a sufficient cargo capacity (when FLF\* are less than 40%)
- Raise the revenues up to 4M\$ per year per aircraft
- Improve the occupation rate.
- Improves the marketing strategy to conquer high-end segment
- Can be implemented on new aircrafts or on the existing fleet while cabin refurbishment campaigns.
- Interesting return on investment.

\*FLF: Freight Load Factor



## For partners and investors

- Be the unique supplier worldwide to propose this solution
- Benefit of the dynamic market of the wide-body segment, with thousands of existing, or to be delivered, aircrafts. Either Airbus or Boeing.
- Participate to an innovative project, with high visibility.
- Be the unique spares provider and repair shop.





## Interested by flying together?



Join the EarthBay Community!

This project needs support and funds to make it fly by 2024!

Contact us if you are an:

- Airline looking to propose a unique flight experience, and to increase revenues.
- Industrial partner interested to supply this concept worldwide.
- Investor believing that the air travel market remains full of opportunities.
- Entrepreneurship minded talent in engineering, certification or project management.



Thank you



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