



# *The Future of Aircraft Interiors*

**OR**

*Robert Lange*

*A3XX Marketing Director*

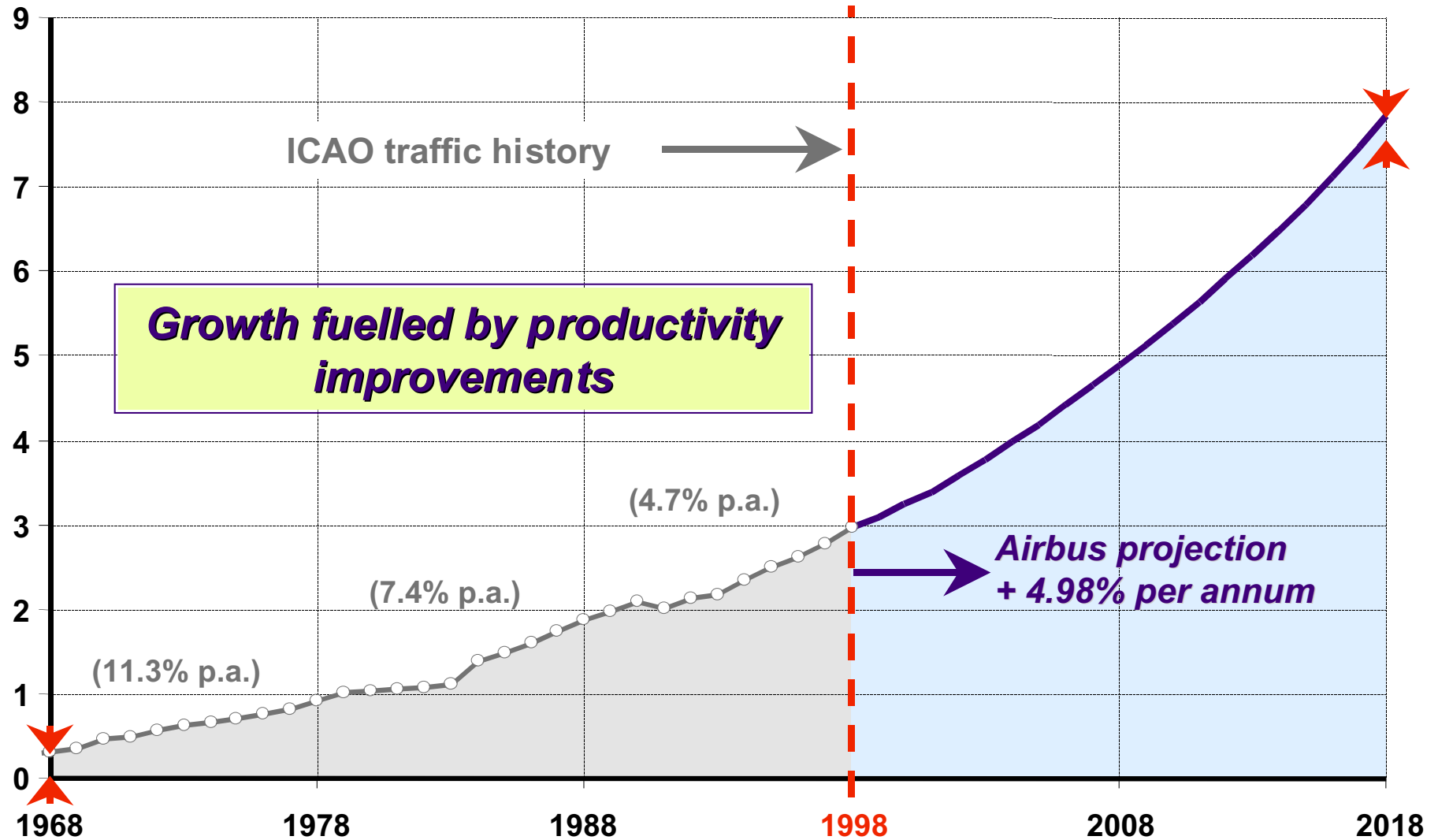
*Airbus Industrie*

**“Back  
to The Future!”**

*Aircraft Interiors Expo 2000*

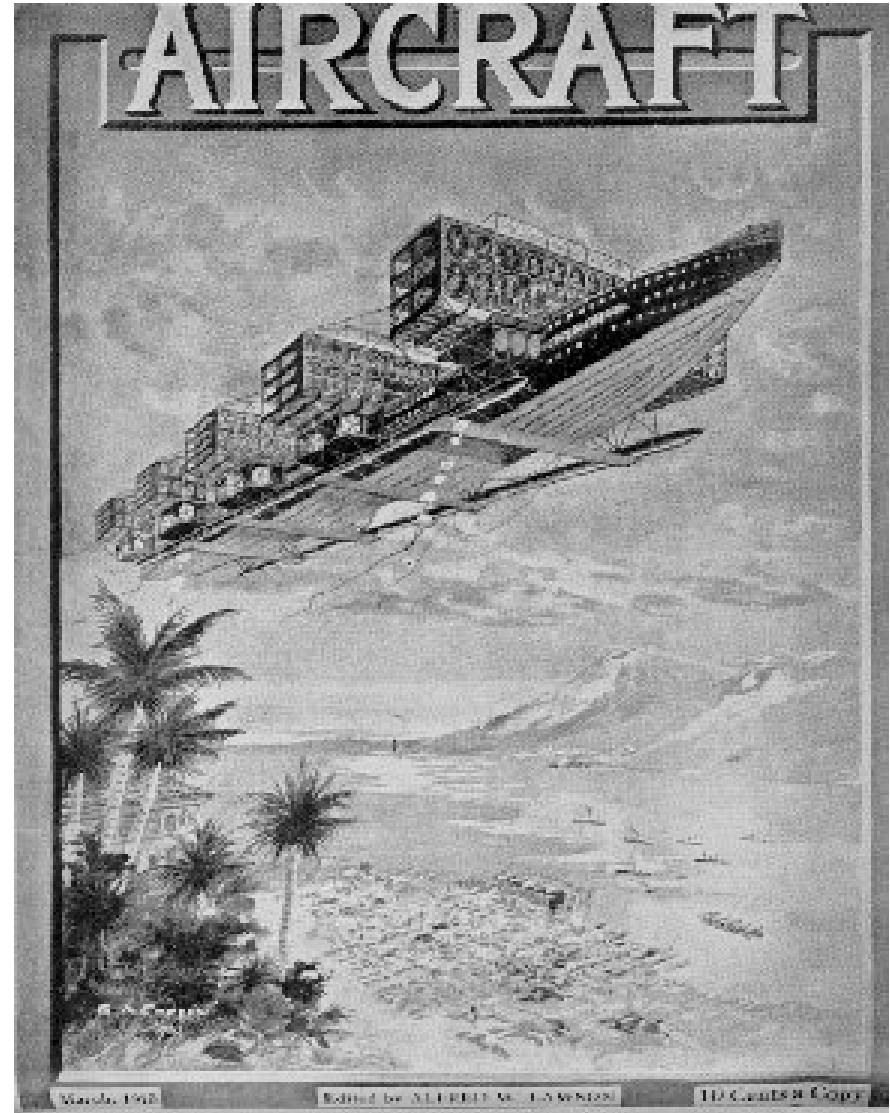
# ***Air travel will continue to grow strongly***

World annual traffic - trillion RPK

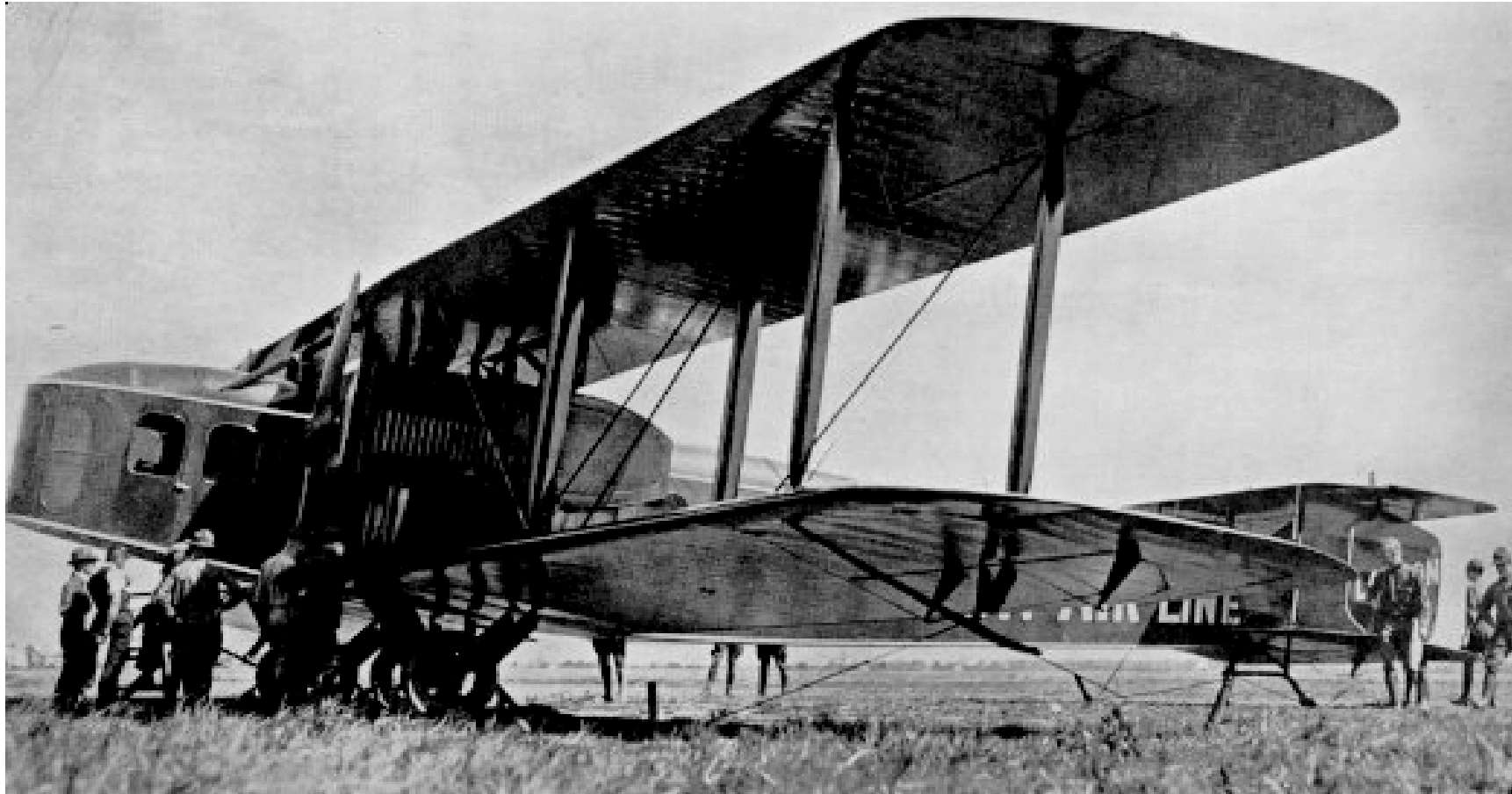


Source: 1999 Global Market Forecast

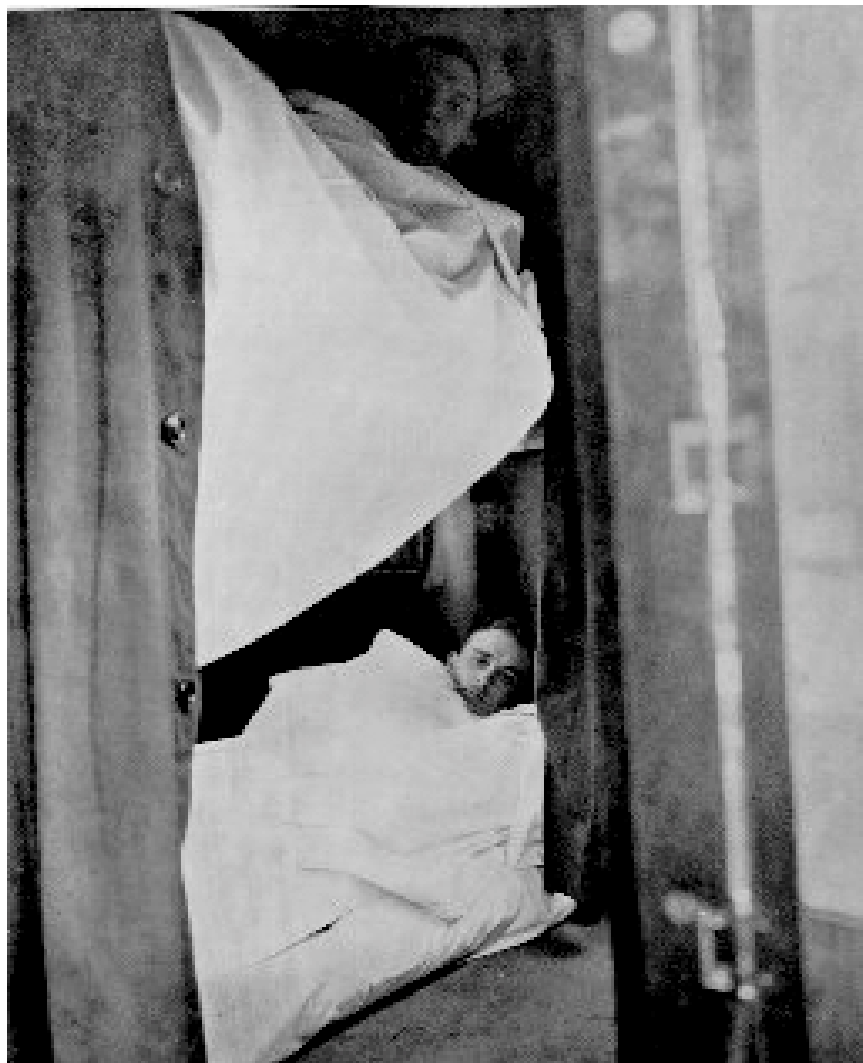
## **Alfred W. Lawson**



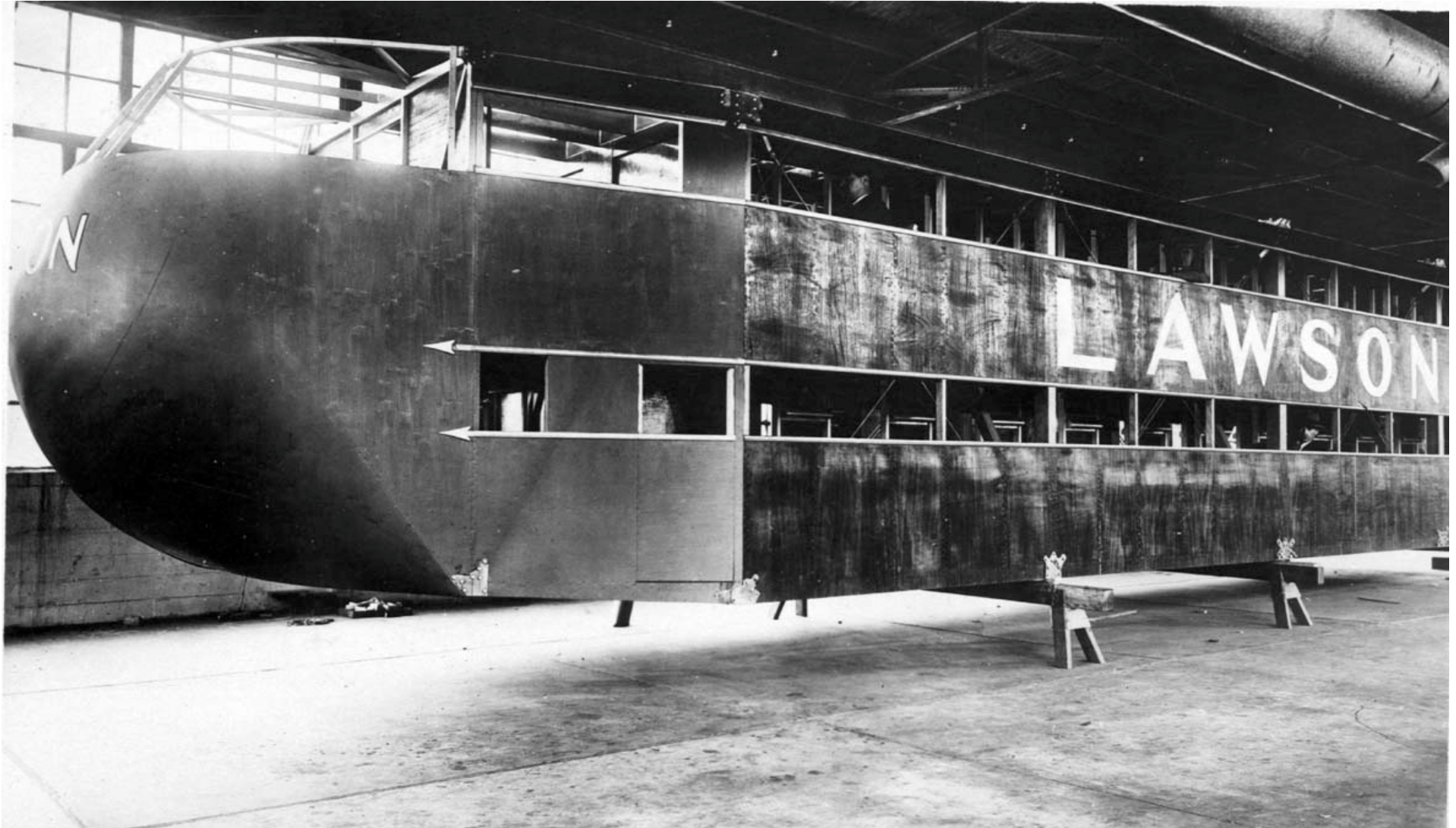
## ***Lawson C-2 Airliner (1919)***



## ***Lawson C-2 Airliner (1919)***



# ***Lawson “Super Airliner” (1927)***



# A snapshot from 1952



So far... and yet  
so near by B.O.

When you fly by B.O.A.C. to any of fifty-one continents you gain a new perspective of an immense network of world-wide air routes, you within easy reach of many people and many distant by any other means of transport. Comfortable hurry, secure in the knowledge of our 33-year-old tradition of experienced airmanship.

## First Class services to BOSTON or MONTREAL

FLY FIRST CLASS from London in double-decked *Stratocruiser* spaciousness. Enjoy a swift, sure flight. Relax in deep-seated comfort; enjoy complimentary meals and drinks. Meet congenial companions in the lower-deck lounge. Retire to the privacy of a foam-soft berth (nominal extra charge). Attentive night-long service—including breakfast in bed, if you wish!

OR FLY TOURIST CLASS fares on the popular "Mayflower" service to New York or Boston; "Beaver" service to Montreal. Fully pressurized 4-engined *Constellation* airliners. Moderate charge for meals.

Current "off-season" mean big savings.

Until 31st March, fly B.O.A.C. 1st Class or Tourist Class at the lowest-ever return fares. See your agent for details.

Consult your local B.O.A.C. Appointed Agent or B.O.A.C. Airways Travel Agents: Victoria, S.W.1 (Victoria 2323); 75 Regent Street, W.1 (MAYFLOWER); or offices in Glasgow, Manchester, Birmingham and Liverpool.

B.O.A.C. TAKES GOOD CARE OF YOU

# FLY BRITISH BY B.O.A.C.

BRITISH OVERSEAS AIRWAYS CORPORATION IN ASSOCIATION WITH THE COMMONWEALTH AIRWAYS CONFERENCE, THE EMPIRE AIRWAYS LIMITED AND TASMAN EMPIRE AIRWAYS LIMITED

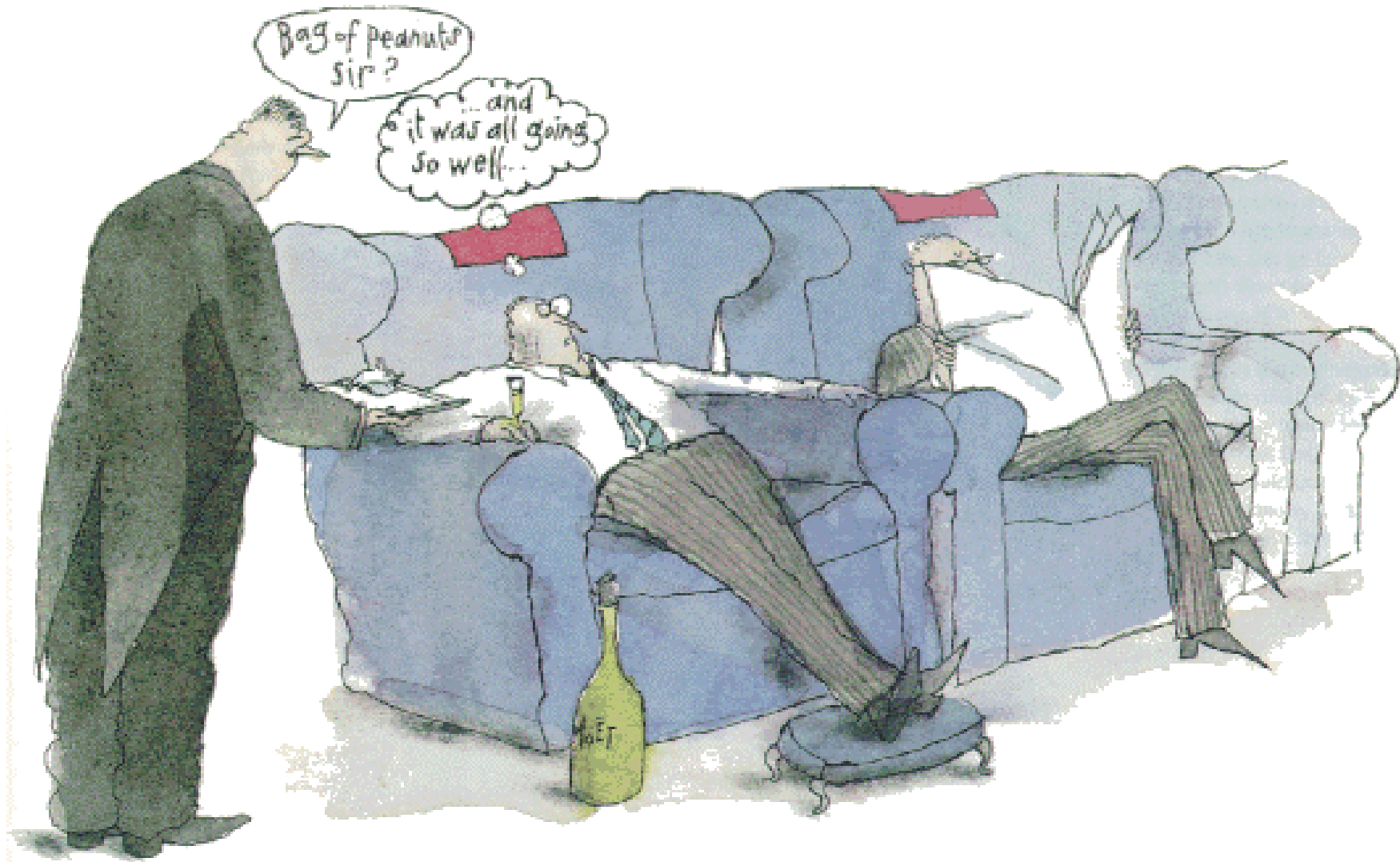
## First Class services to NEW YORK BOSTON or MONTREAL overnight

FLY FIRST CLASS from London in double-decked *Stratocruiser* spaciousness. Enjoy a swift, sure flight at fine-weather heights. Relax in deep-seated comfort; enjoy complimentary meals and mealtime drinks. Meet congenial companions in the lower-deck lounge. Retire to the privacy of a foam-soft berth (nominal extra charge). Attentive night-long service—including breakfast in bed, if you wish!

OR FLY TOURIST CLASS at substantially lower fares on the popular "Mayflower" service to New York or Boston; "Beaver" service to Montreal. Fully pressurized 4-engined *Constellation* airliners. Moderate charge for meals.



# — Today : A cynic's view



Reproduced by courtesy of High Life magazine

***The aircraft cabin ...***



*... is strongly influenced by its contents*



# **The passenger's environment**

## RELATIONSHIP

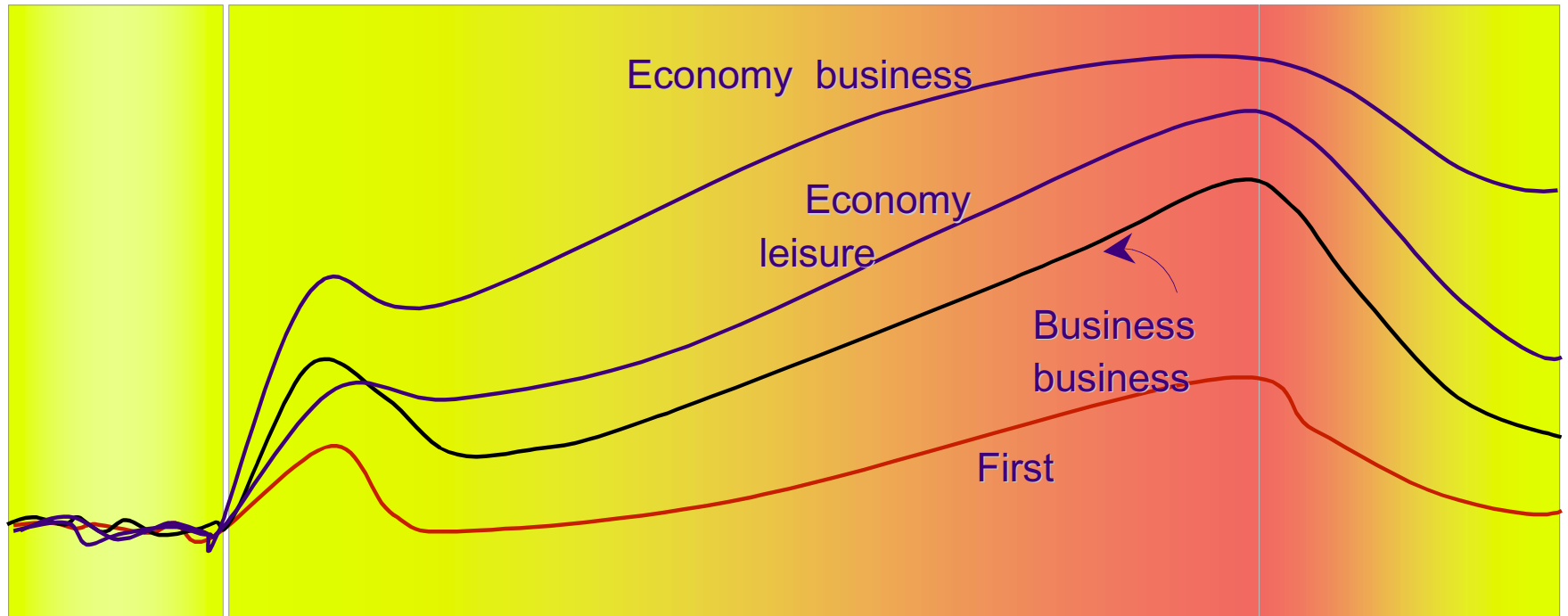
Adult / adult  
(rational)

Adult / parent

Child / parent

Child / adult or  
adult / adult

## RELATIVE STRESS LEVELS



## PHASE

BOOKING

AIRPORT

AIRCRAFT

Arrival/  
check-in

Duty free  
or lounge

Departure  
gate

Boarding

Take-off

# — *Stress levels reduce during the flight*

Child/adult



Adult/adult



**SEARCHING**

**NESTING**

**ESTABLISHING  
TERRITORY**

**SOCIALISING/  
EXTERNALISING**

Boarding  
Finding seat  
Stowing carry-ons

## **ISSUES**

Focus on getting  
there; eyes  
directed  
Competition

## **FACILITATORS**

Entrance way  
Lighting  
Cabin shape  
D cor  
Aisles  
Service/attention

# — *Stress levels reduce during the flight*

Child/adult



Adult/adult



**SEARCHING**

**NESTING**

**ESTABLISHING  
TERRITORY**

**SOCIALISING/  
EXTERNALISING**

**Setting into a seat**

**ISSUES**

Getting comfortable  
De-stressing

**FACILITATORS**

Seat comfort  
Seat provisions  
entertainment  
storage  
information

# — *Stress levels reduce during the flight*

Child/adult



Adult/adult



**SEARCHING**

**NESTING**

**ESTABLISHING  
TERRITORY**

**SOCIALISING/  
EXTERNALISING**

Placing items for  
in-flight use

**ISSUES**

Keeping out  
predators  
Personal flight  
planning  
Regaining control

**FACILITATORS**

Armrests  
Space vis a vis  
neighbour  
Window shape;  
view

# — *Stress levels reduce during the flight*

Child/adult



Adult/adult



**SEARCHING**

**NESTING**

**ESTABLISHING  
TERRITORY**

**SOCIALISING/  
EXTERNALISING**

Looking to the cabin  
beyond personal  
space

**ISSUES**

**FACILITATORS**

Views along  
aircraft; wider  
visuals

Locations of  
facilities; service  
areas

Emergency exits



## ***What do our customers expect?***

**A clean, attractive cabin in good repair**

**Fittings that fit, switches that switch, lights that illuminate**

**Space to stow their baggage**

**An atmosphere that neither stifles nor chills**

**An environment that reassures**

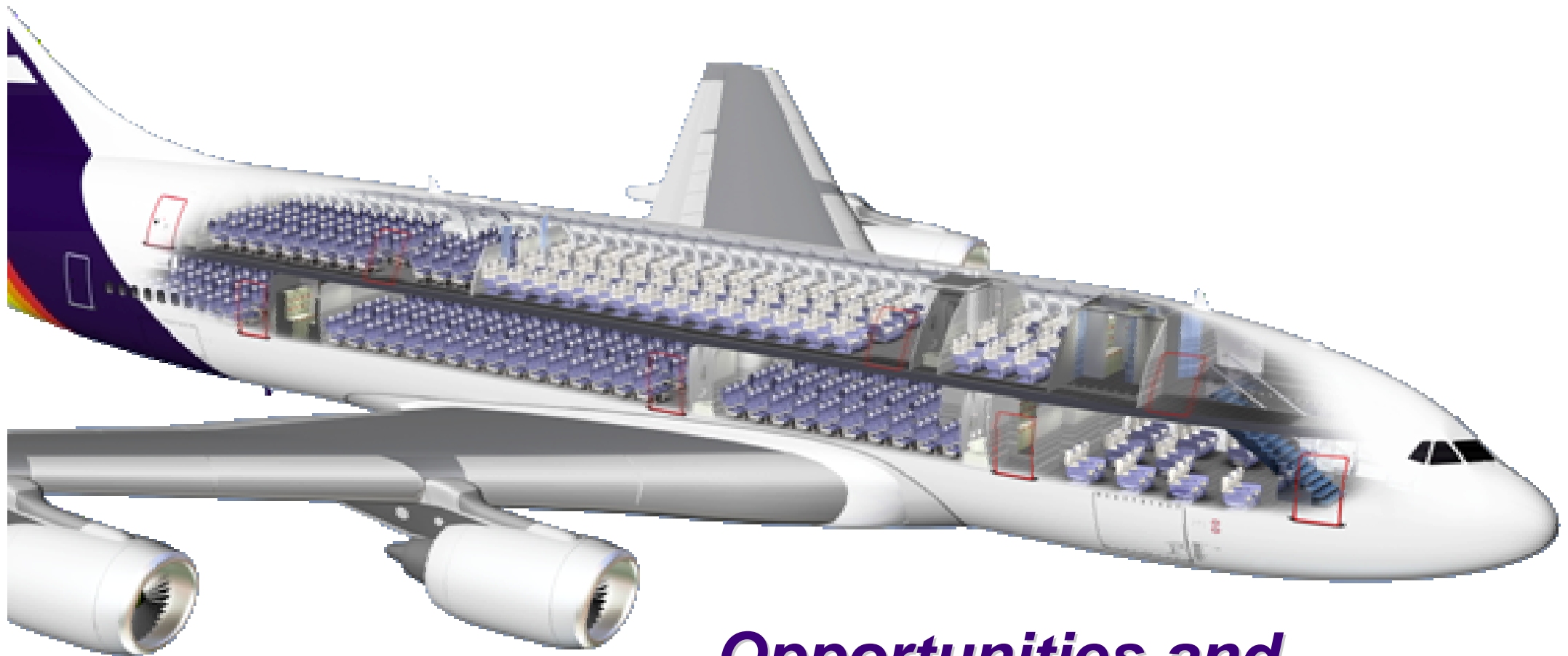
**A comfortable seat**

**IFE that works**

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## ***A3XX : tomorrow's aircraft***



***Opportunities and  
Challenges***

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# **Maturing markets**



## ***Demand***

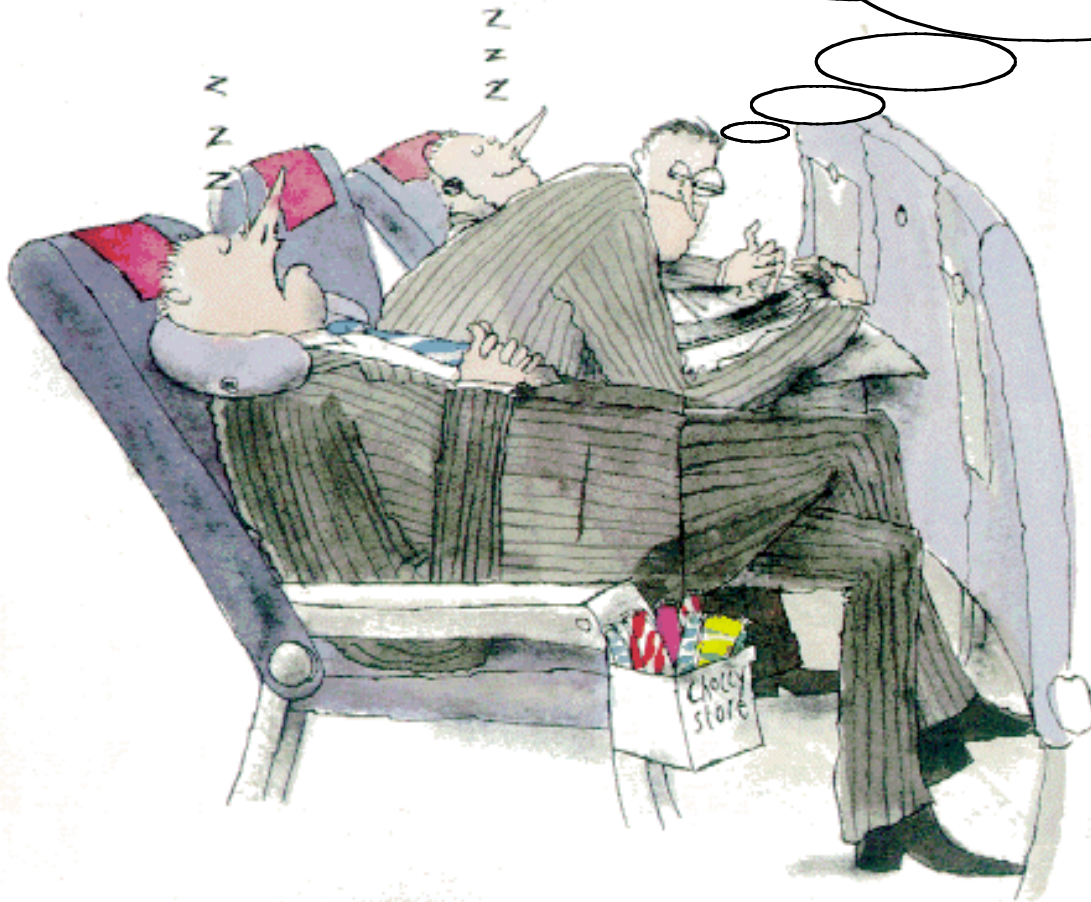
**First-time travellers**  
**More trips made on average**  
**Business vs. leisure**  
**Who pays ?**  
**Who chooses ?**

## ***Supply***

**Segmentation**  
**Consolidation**  
**Variety of product offer  $f$**   
**(market size)**  
**Niche products**

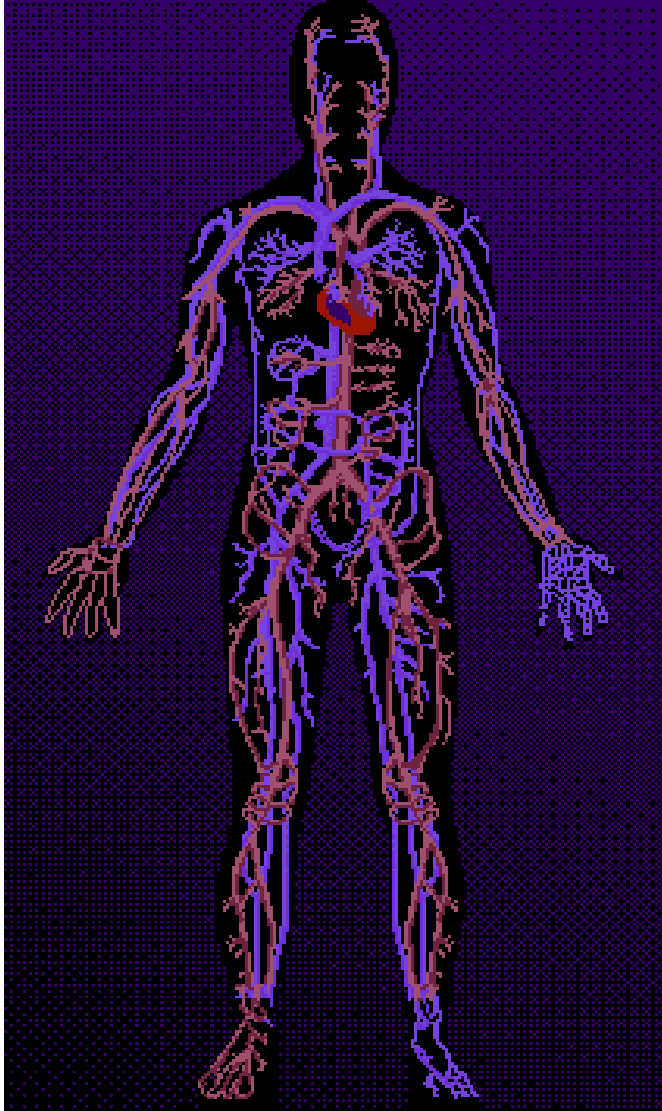
## — Tomorrow's customer

*and I KNOW WHAT I LIKE*



**Aged 50-plus**  
**Relatively good health**  
**More leisure time**  
**More disposable income**

## ***Physical considerations - cabin***



### ***Blood circulation***

**Remain seated or move around ?**

**Advance warning of turbulence**

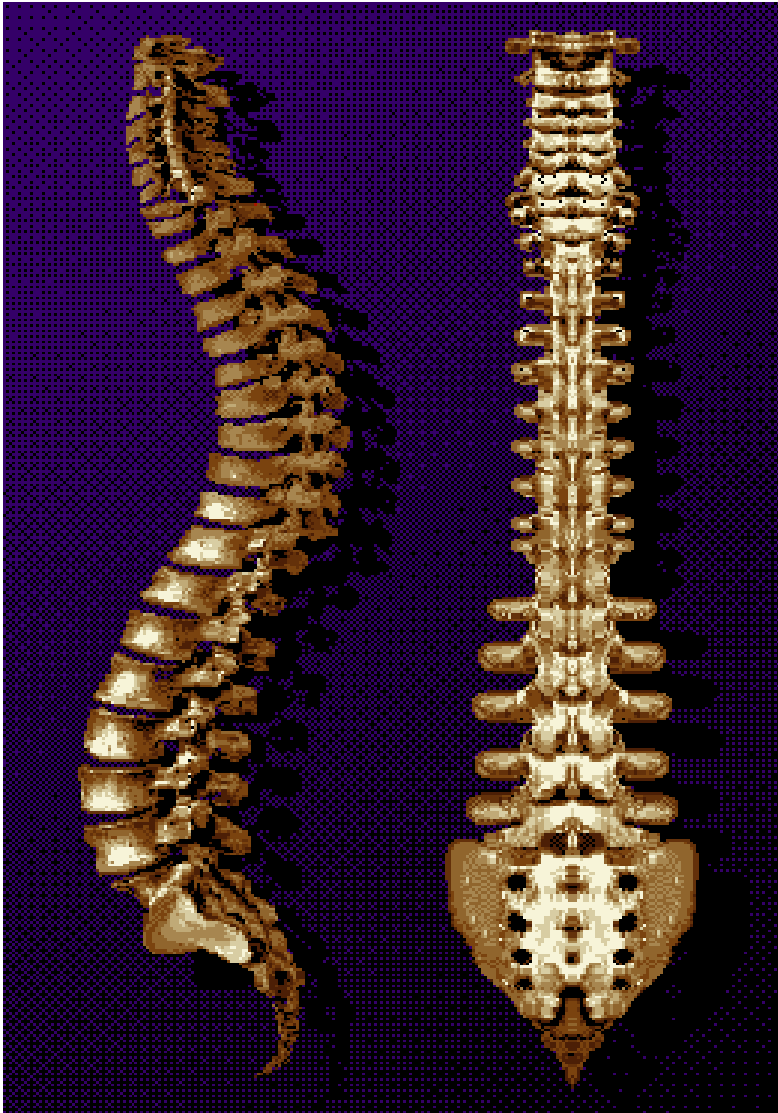
### ***Air quality***

**What is Fresh air ?**

**Humidity**

**Bacteria / viruses**

## ***Physical considerations - seat***



' BodyWor ks

### ***Today's premium seat***

**Armchair**

**Dining chair**

**Office chair**

**Lounger**

**Bed**

**plus ...**

### ***Constraints***

**16g test**

**Head Impact Criteria**

**Flammability**

**Electrical insulation**

**plus ...**

# **Baggage**

**Optimal stowage**

**Check in, or carry on**

**Trust**

**Active or Passive**

**Identification and reconciliation**

**Direct links to ground tracking systems**

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## ***Food service***

**Beef, fish or chicken ?**

**Short-haul vs. long-haul**

**Affordable choice**

**Matching delivery to expectation**

**Maintaining the cold chain**



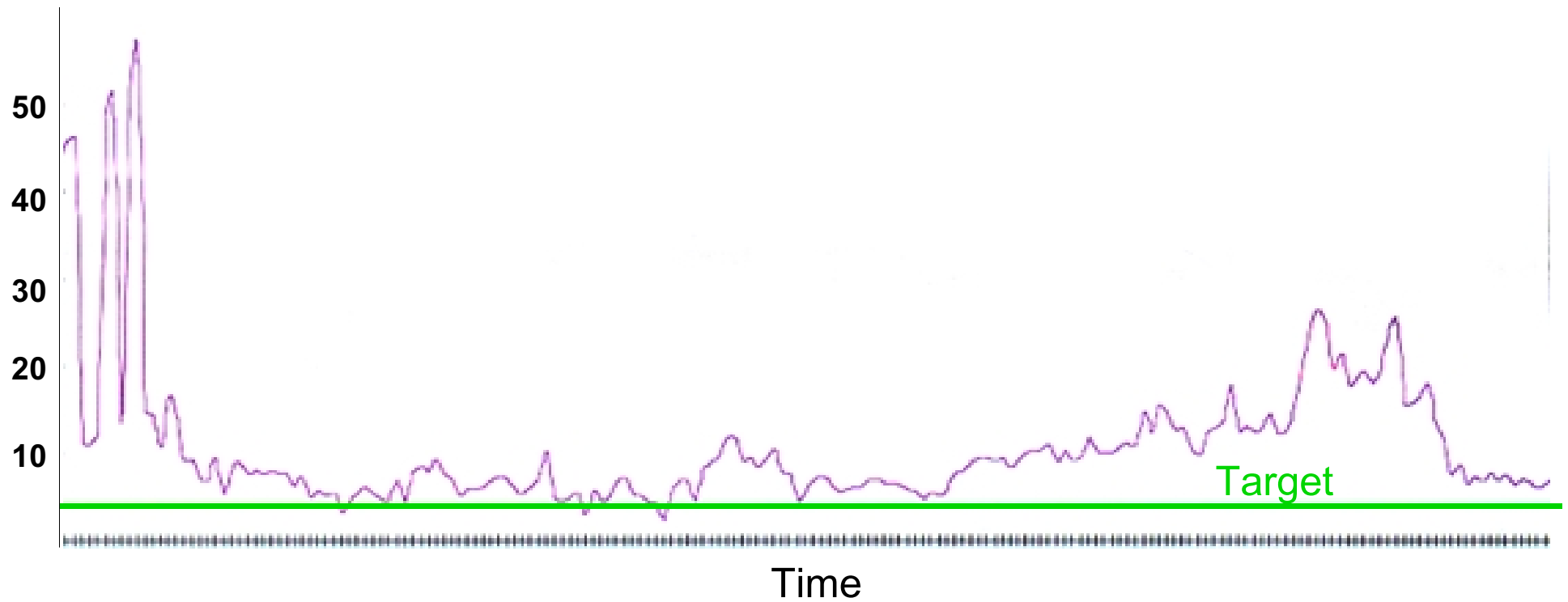


# *In-Flight Entertainment*



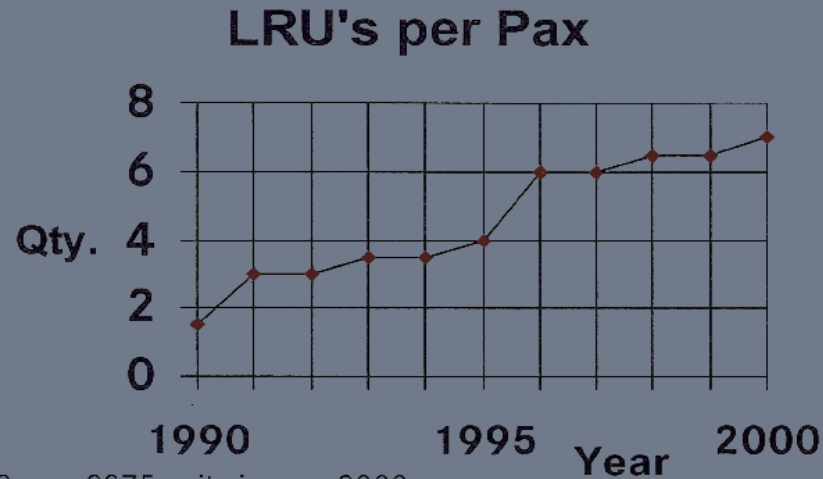
# ***IFE reliability after introduction***

No. of seats affected

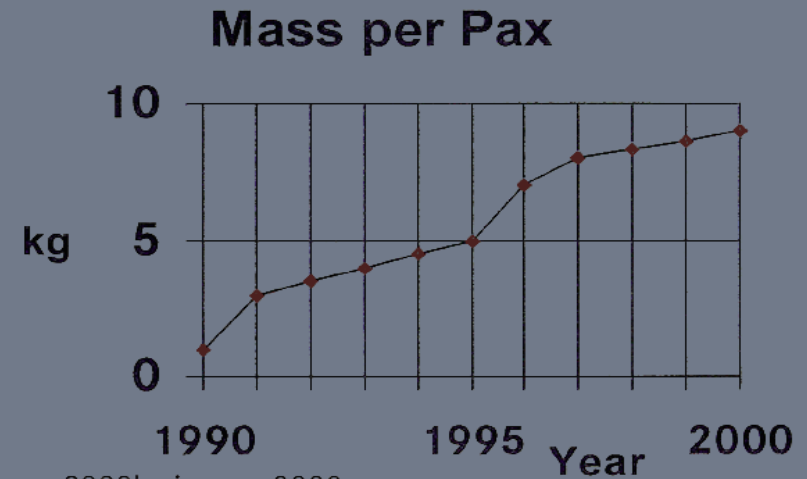


Undisclosed airline source

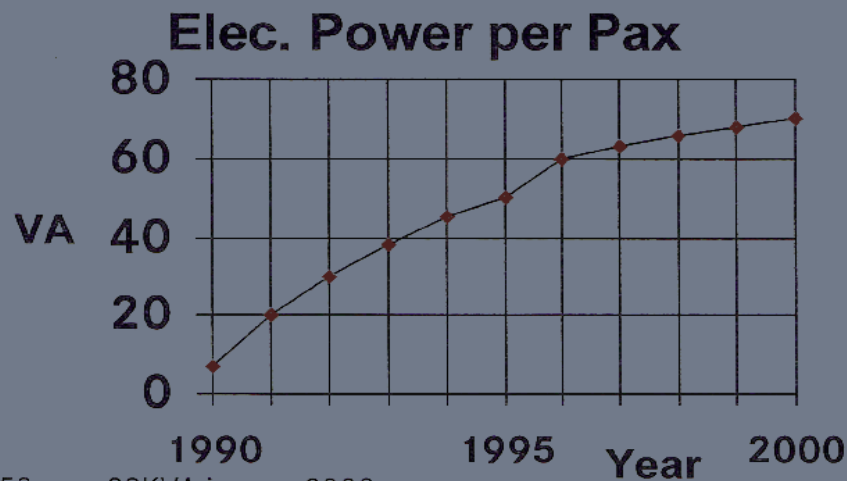
# Trends that must be reversed



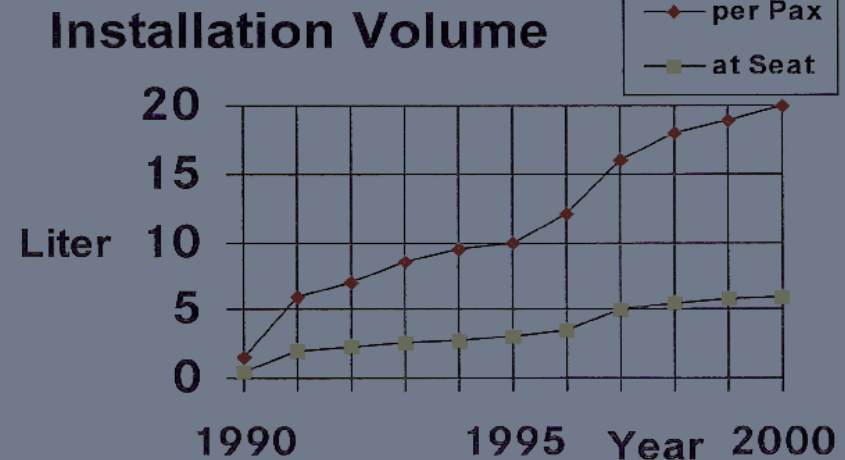
350 pax: 2275 units in year 2000



350 pax: 2800kg in year 2000

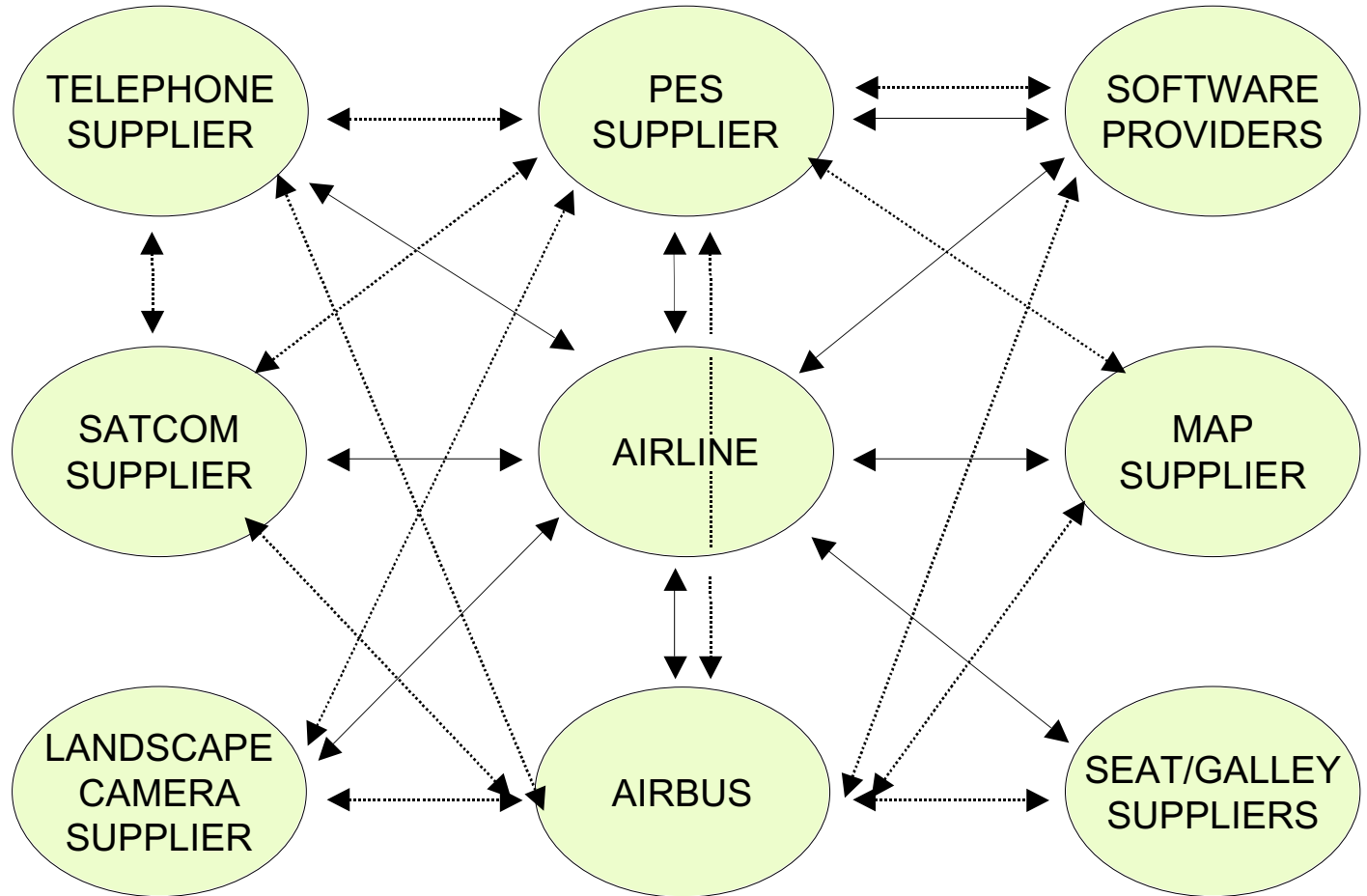


350 pax: 22KVA in year 2000



350 seats: 6,3m<sup>3</sup> 350 pax: 2m<sup>3</sup> in year 2000

# **BFE relationships for IFE**



..... BUSINESS/TECHNICAL RELATION  
—— CONTRACTUAL RELATION

TYPICAL NUMBER OF INTERFACES 20

# ***Information management***

***Ground    Airport    Aircraft    Airport    Ground***

## **Customer Service**

**Sharing - Preserving - Enhancing  
the Customer Relationship throughout**

## **Technical Support**

- Configuration control
- Troubleshooting

## **Regulatory control**

- Customs and immigration
  - Security
-

**Reliability**



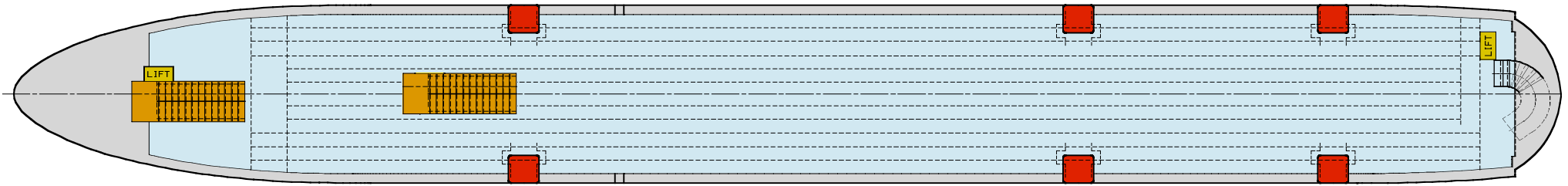
# *New technology development*



Photo: Megaliner Passenger Systems

# **Cabin flexibility**

**Hardware changes : attachment, movement, modularity**

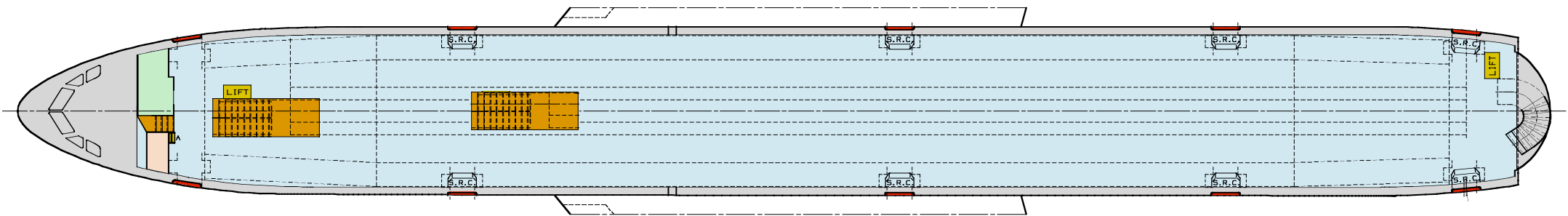


53-0001 up

53-0001 up

**Maintenance concerns : access, wear-resistance**

**Software re-configuration**



53-0001 main

53-0001 main

***Planned changes will be made easier in practice***



# **Standardisation**

## **Standard specification = a flyable/certifiable aircraft**

- Addresses common customer requests
- Latest design standards and beyond
- Design commonality

## **Standard spec. enriched and some BFE becomes SFE**

### **“Free of charge” first customised layout**

- within flexible zones
- quantities within definition of standard specification

### **“Package” included in standard spec. airframe price**

- 15-25 % cost reduction in Airbus modifications
- 30 % price reduction on BFE into SFE

***1% - 1.5 % reduction in airframe price  
Incentive not to request airline specific changes***

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# *Opportunities*

## ***BEFORE Airbus Standard Airplane***

**Customisation equaled 6% of airplane price**

## ***AFTER Airbus Standard Airplane***

**Customisation equals 3% of airplane price**

at reduced airframe mod cost

with SFE into BFE price reduction

with catalogue flexibility at reduced prices

## **Cabin customisation represents**

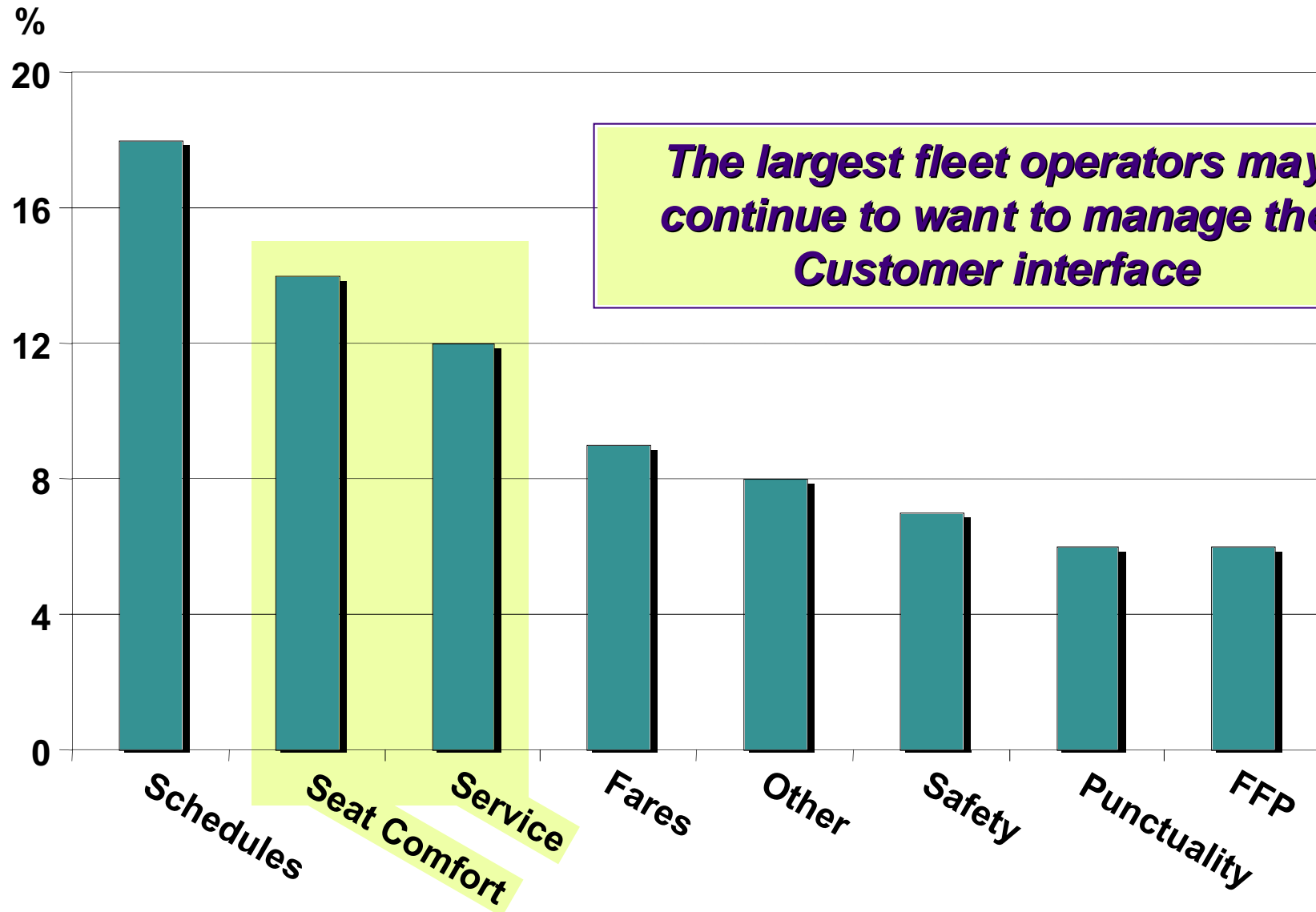
60 % of total customisation costs for A320 family

70 % of total customisation costs for A330/A340 family

**IFE represents 50 % of cabin customization**

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# Drivers for choice of airline



## ***New materials***

### **Regulatory changes**

- Life beyond TSO-C127
- Heat release

### **Qualification procedures**

### **Low-maintenance**

***Someone, somewhere will develop a  
lightweight, zero heat release, transparent material !***

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A large, light green model of an Airbus A3XX aircraft is displayed in a spacious, modern museum or exhibition hall. The aircraft is positioned horizontally, facing left. The hall features a high ceiling with a complex network of white metal trusses and several recessed spotlights. A yellow and red horizontal bar is visible at the top left of the image. The floor is a light-colored, polished surface.

***A3XX : tomorrow's aircraft***

***Entry-Into-Service : 4th quarter 2005***

A futuristic, dimly lit corridor with a purple sign that says "To be continued!". The corridor has a dark blue floor and walls, with several bright lights on the ceiling. The sign is a purple, irregular shape with white text. The overall atmosphere is mysterious and sci-fi.

***To be continued !***

*Thank You !*

