

Aircraft selection and specification – making the right decisions

42nd AFRAA AGA

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About the speaker Jurgen Hild

About Aviation Competence



Jurgen Hild MBA

- “ Managing Partner of Aviation Competence
- “ 33 years „Aviator“ by passion, thereof 23 years in top management positions

Experience:

- “ Aircraft Entry-Into-Service Management and Fleet Rollover, Lufthansa
- “ Parter Management, Lufthansa
- “ Process Re-design, Thomas Cook/Condor
- “ Operational Excellence Campaign, Lufthansa Regional
- “ Operations, Condor

Education:

- “ Executive MBA, University of Chicago Booth School of Business
- “ General Management Program, Cranfield University

Aviation Competence

Aviation Competence was founded in February 2010 with its base in Frankfurt/Germany.

We provide management support and consultancy in Airline Operations.

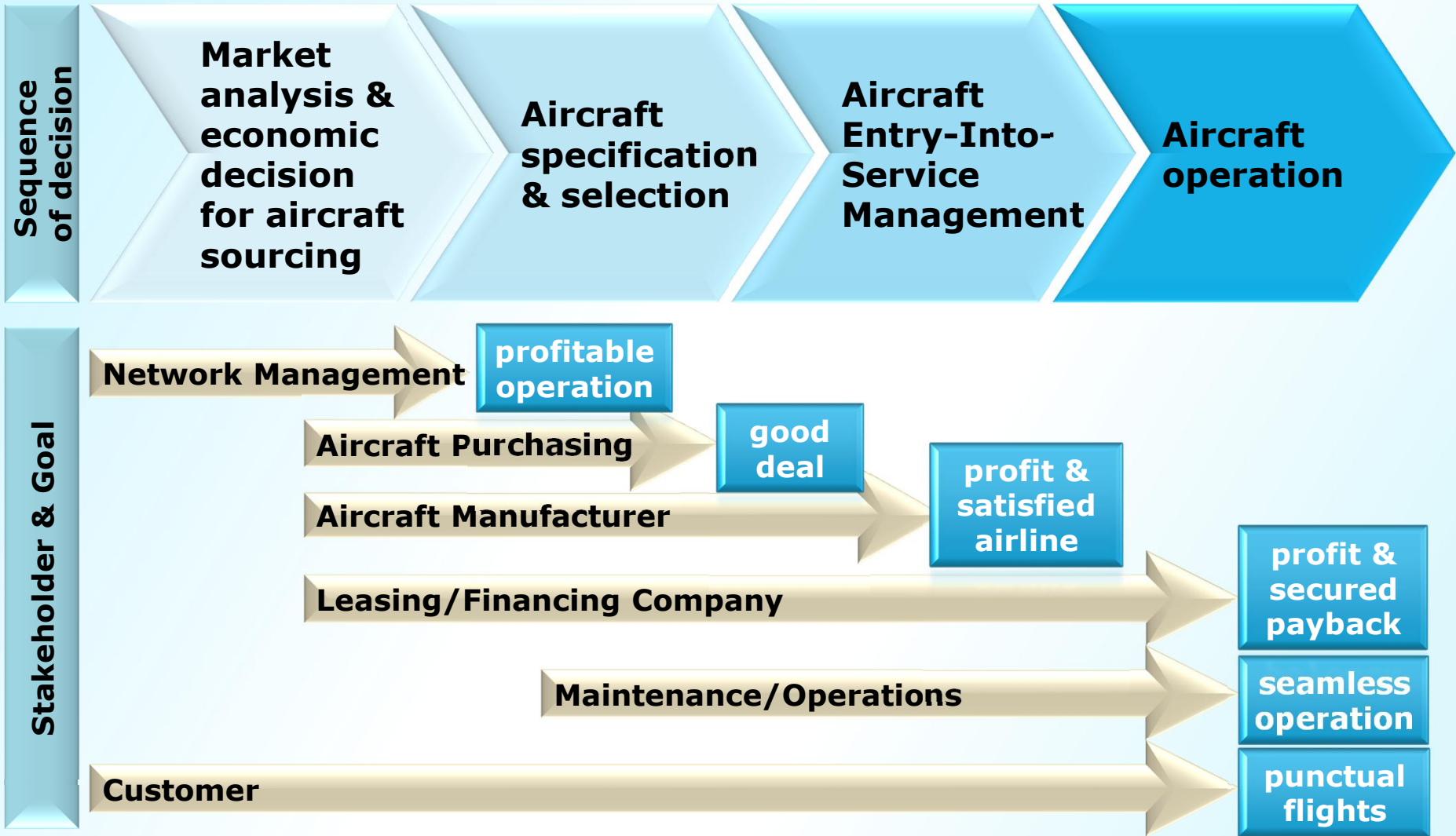
We are a team of aviation industry experts with decades of hands-on experience in top management positions at regional, low cost and legacy airlines.

We deliver solutions!



www.aviationcompetence.com

Following the norms of fleet modernization achieves lowest costs and highest revenues



Following the norms of fleet modernization achieves lowest costs and highest revenues

Market analysis & economic decision for aircraft sourcing

The optimal fleet size is one of the most important company decisions in a capital intensive industry like aviation: The fleet determines the longterm cost base of an airline:

- “ depreciation/leasing cost for aircraft
- “ and the related build-up of technical staff and cockpit crews.

The optimal fleet size is a derivative from analysing the market potentials and pricing/route profitability models.

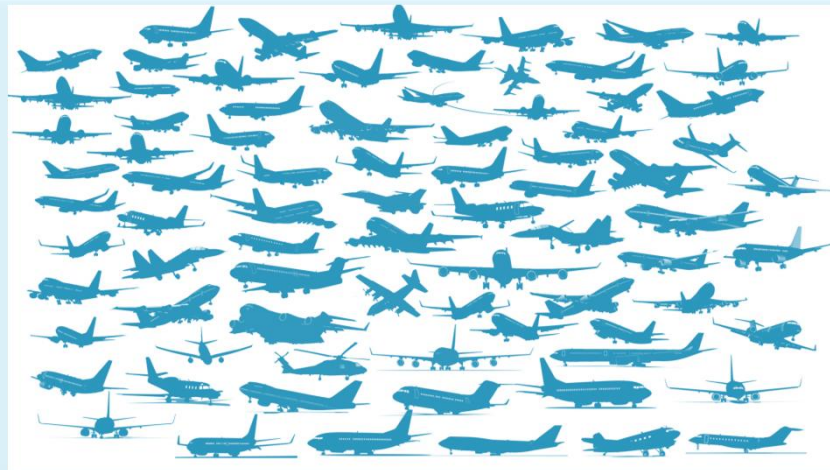
Following the norms of fleet modernization achieves lowest costs and highest revenues

**Aircraft
specification
& selection**

Considering the 20+ year life-cycle of an aircraft makes selection important



- How make the right aircraft choice?
- Can you afford to make a mistake?
- Why is there only one chance to choose the right aircraft with the right specification?
- Do Flight Operations and Maintenance have the know-how to assess the different aircraft types comprehensively?
- Are you bombarded with manufacturers' brochures and presentations? Is aircraft manufacturer's data unbiased? How to assess the information properly?



Aircraft selection requires thorough operating know-how: Example TOFL



Aircraft Manufacturer A

Take-off field length for aircraft type A1:

Website: 1,380m

Presentation: 1,344m

Manufacturer B
about A1:

1,429m

-6%

ISA, SL, max. pax., 400 nm leg

Aircraft Manufacturer B

Take-off field length for aircraft type B1:

Website: 1,918m

Presentation: 1,834m

Manufacturer A
about B1:

2,269m

-20%

ISA, SL, MTOW

Aircraft specification requires thorough operating know-how: Example range

Aircraft
specification
& selection



**Range of aircraft A
in manufacturer
basic version**

**Range of aircraft A
in specific airline
configuration**

Aircraft specification requires thorough operating know-how: Example HGS/HUD

Aircraft
specification
& selection

Head-up Guidance System/Head-up Display is widely seen as a low visibility tool. But it much more a **safety add-on** in all phases of flight!

A study from renowned Flight Safety Foundation found that of the 983 accidents reviewed, HGS was "likely" or "highly likely" to have prevented 38% of them.

source: http://flightsafety.org/files/hgs_nov09.pdf



Head-up Guidance System or Head-up Display is an integrated electronic optical system that displays flight information in the pilot's forward field-of-view.

The flight data is projected over the landscape in-view through the windshield, eliminating the need for the pilot to repeatedly transition between the head-down instruments and the forward view through the windshield.

Today's short/mid-range narrow bodies

Aircraft specification & selection

	Seats	50	70	90	100
Bombardier CRJ-family					
		X	X	X	
BAe146/Avro RJ					
			X	X	X
Embraer ERJ145					
		X			
Bombardier Dash 8					
		X	X		
ATR42/72					
		X	X		

	Seats	70	90	110	130	150	190	210	250
Embraer E-Jets-family									
		X	X	X					
Superjet SSJ100-95									
			X						
AN148/158									
		X	X						
Airbus A320-family									
				X	X	X	X		
Boeing B737-family									
				X	X	X	X		
Boeing B757									
								X	X

New mid-range narrowbodies 2011-2020

Aircraft specification & selection

COMAC C919 (156-180)



UAC MS-21 (150-210)



C-Series CS100/400 (100/150)



Superjet SSJ100-75 (75)



CRJ1000 (100)



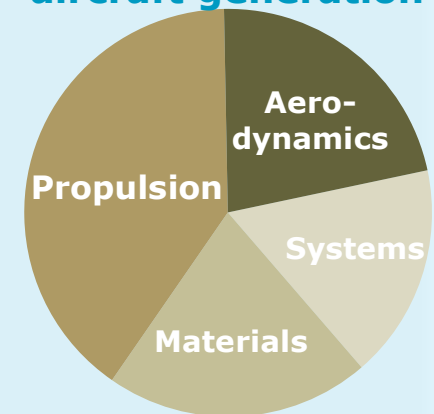
COMAC ARJ21 (70-100)



Mitsubishi RJ (72/92)



B737 successor?
A320 successor?
Challenges for new aircraft generation



Legend: (# seats)

Lease versus Purchase – Some Facts

Aircraft
specification
& selection

Leased	564	36%
Owned	998	64%
Total	1,562	100%

A/C Seat Category	Owned			Leased		
	Qty	Avg Age	% age	Qty	Avg Age	% age
20-50 seats	324	18	32%	181	17	32%
51-90 seats	132	14	13%	52	17	9%
91-120 seats	60	35	6%	30	31	5%
121-200 seats	362	22	36%	223	15	40%
201-250 seats	24	19	2%	19	17	3%
251-350 seats	21	20	2%	30	13	5%
351-450 seats	73	15	7%	27	11	5%
451+ seats	2	11	0%	2	15	0%
Grand Total	998	20	100%	564	16	100%

Source : ACAS, commercial aircraft in Africa, 20 seats and above, Western built aircraft, data as of Oct 2010

Lease versus Purchase - Basics

Aircraft
specification
& selection

Direct Purchase with Bank Financing

- Direct purchase of airplane from manufacturer
- Airplane is financed with secured loan or as a finance lease
- Fixed or floating interest rates
- Advance rate 75-95%
- Secured loan typically up to 12 years
- Purchaser gains equity in the airplane as it pays down the loan or lease

Operating Lease

- Contract between lessor and lessee
- Lessor allows lessee to use equipment
 - for a period of time
 - for a rental payment (typically 1% of new aircraft cost per month)
- Market lease rates are determined by supply and demand
- Deposit typically equals to 2-3 months of lease payments
- Maintenance reserves are used for for scheduled maintenance
- Lessee returns airplane to lessor when lease ends or may use option to renew lease or purchase aircraft

Lease versus Purchase – Pro's and Con's

Aircraft
specification
& selection

Advantages Purchase

- Maximum control of aircraft specification
- Airline acquires equity in fleet (possible tax benefits)
- Possible benefits from aircraft's residual value
- No exposure to lease rate fluctuations
- No restrictions in respect to aircraft usage

Advantages Lease

- Capital investment requirements significantly reduced
- Lower impact to financial statement
- Payments fixed or floating
- Aircraft residual value risk remains with lessor
- Increased fleet plan flexibility
- Aircraft delivery/availability possibly earlier

Following the norms of fleet modernization achieves lowest costs and highest revenues

on



**Aircraft
Entry-Into-
Service
Management**

Aircraft Entry-Into-Service Management saves up to \$ 500,000 per aircraft



- You introduced aircraft in the past and it went all right, so why need EISM?
- Don't manufacturer offer EISM?
- Can you afford to miss the opportunity of saving costs by cutting the learning curve?
- What is EISM about exactly?

EISM tool-box

Typical manufacturer's
Entry-Into-Service
Master Plan
for the airline
(18 items)

Entry-Into-Service
Project Plan
(220 items)

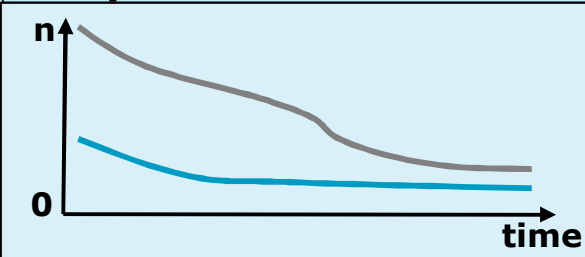
Samples of action items:

- 1.2 Gap analysis qualification
- 3.8 Staff selection/qualification
- 4.3 Training syllabi
- 6.1 Operational procedures
- 8.3 Material stock
- 8.8 MRO providers/processes
- 8.9 Construction supervision
- 10.1 Turn-around processes
- 11.0 Aircraft delivery acceptance

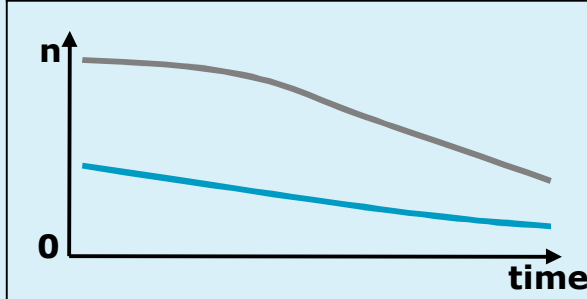
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Aircraft
Entry-Into-
Service
Management

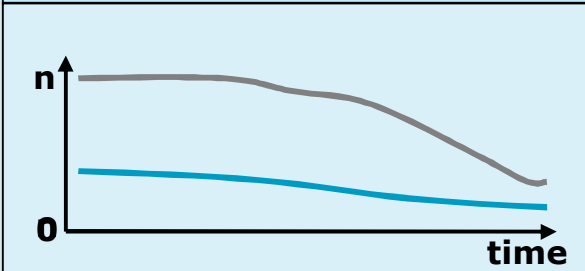
Technical Cancellations & Delays



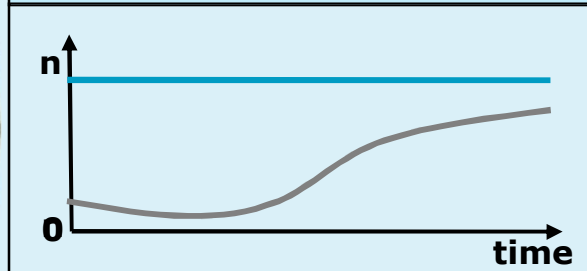
Cash Operating Cost



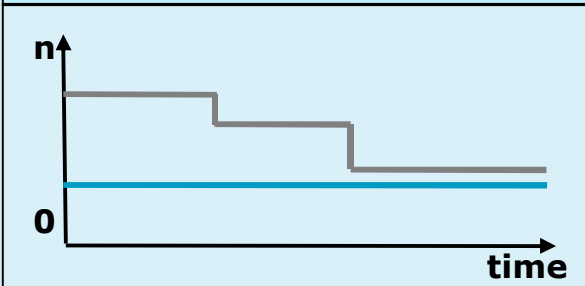
Maintenance Material Stock



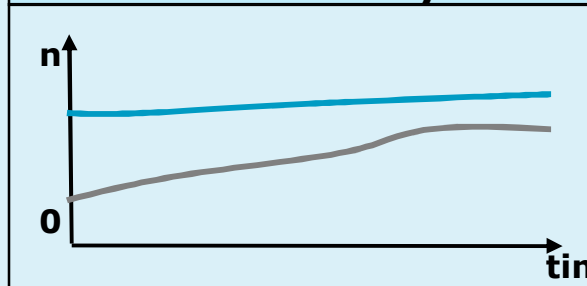
Customer Satisfaction



Turn-around Time



Aircraft Productivity



— typical learning curve introducing a new aircraft type into fleet

— learning curve with professional entry-into-service management



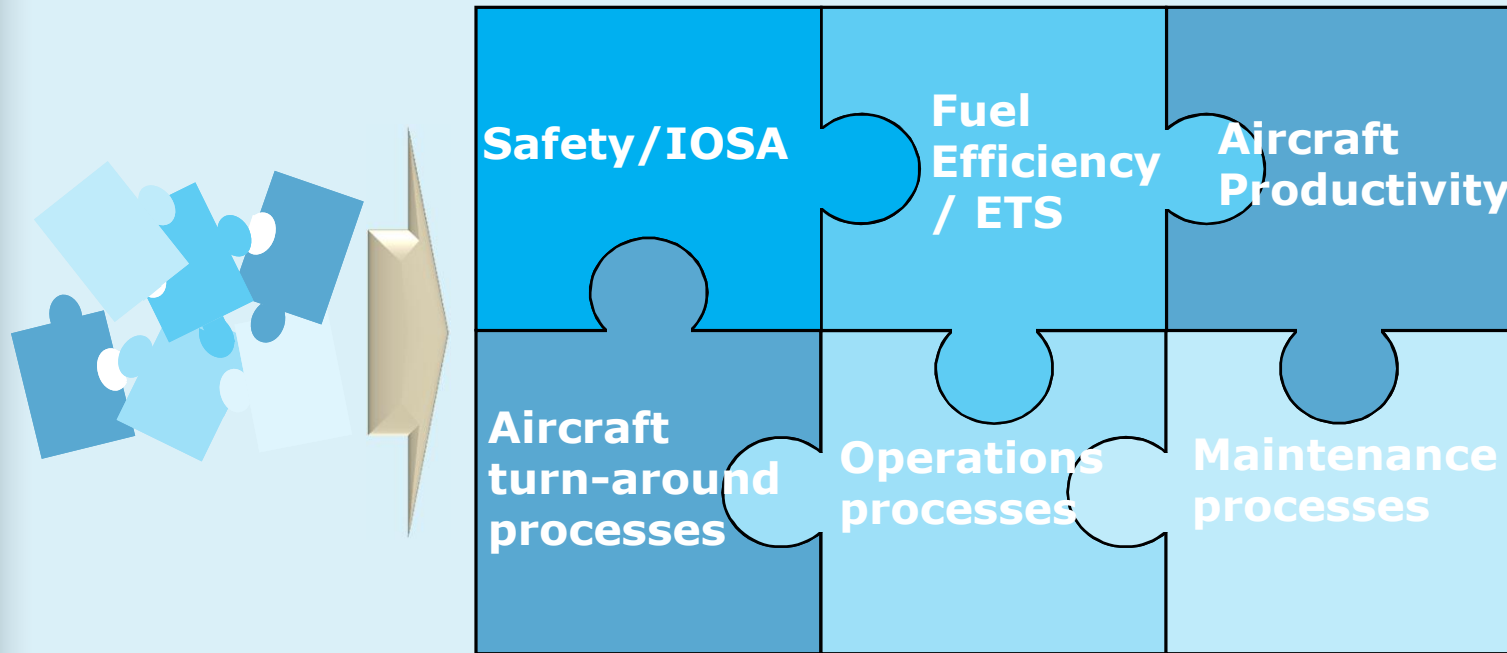
Aircraft Entry-Into-Service Management saves your company up to \$ 500,000 per aircraft

Following the norms of fleet modernization achieves lowest costs and highest revenues



**Aircraft
operation**

Fleet renewal without efficient aircraft operations is only half way there (I)



Fleet renewal without efficient aircraft operations is only half way there (II)



IOSA

The IATA-Operational-Safety-Audit (IOSA) nowadays is the benchmark for safety management in airlines. As such, it is a prerequisite for IATA membership or code-sharing with many airlines.

IOSA certification is also a distinctive statement of an airline's operational integrity and thus a trademark for renowned airlines.



Fuel efficiency / ETS

According to IATA, on average fuel represents 32 percent of an airline's operating cost. Thus improving fuel efficiency will provide for huge cost savings.

Typical fuel efficiency campaigns save 3-7% fuel, i.e. for a single B737-500 save USD 100,000 annually.

Less fuel = Less emissions = Less cost.



Fleet renewal without efficient aircraft operations is only half way there (III)



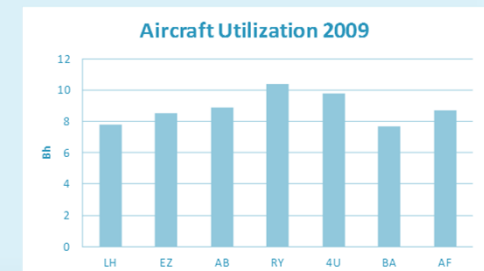
Aircraft productivity

More than 50% of an airline's cost are fixed cost, so Microeconomics teaches first priority is filling this fixed-base capacity. Thus revenue from every additional flight is adding contribution margin.

Best-in-class airlines operate short/medium range aircraft during 9-10 block hours a day.

Aircraft productivity comparison between two aircraft types

06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00
XYZ-ABC	XYZ-ABC														
737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05	737 1:05
= 10 legs															
XYZ-ABC	XYZ-ABC														
204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15	204 1:15
= 9 legs															



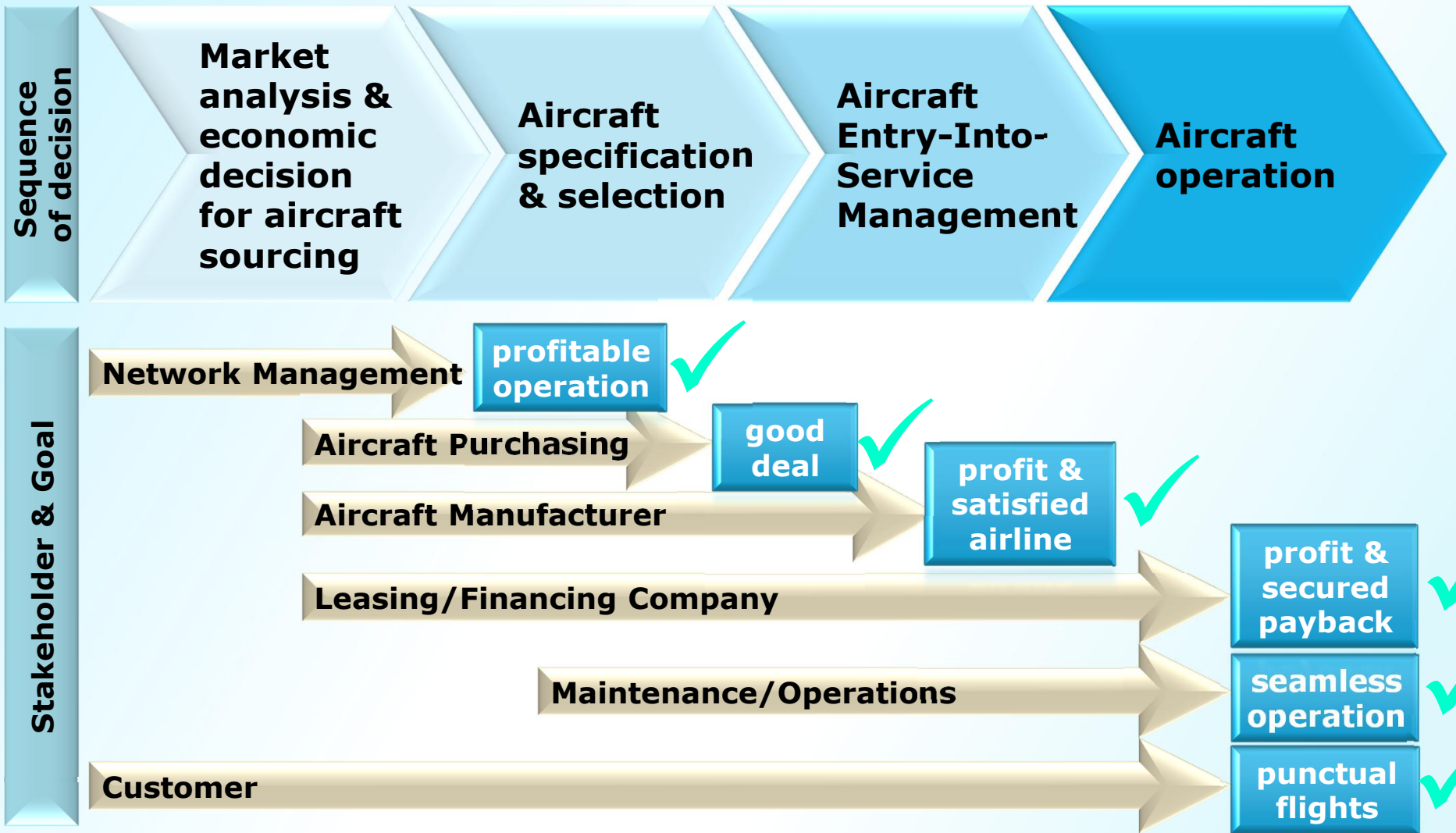
Aircraft turn-around

Minimum Ground Time (MinGT) calculation is the key to shortest turn-around times: 35 minutes for B737 or A320 are achievable.

How? A combination of hard and soft items (e.g. staff awareness, communication flows, "count-down-lists", crew rotation planning, gate processes, etc.)



Following the norms of fleet modernization achieves lowest costs and highest revenues



Why invest in airline operations improvement projects?

Successful airlines regularly perform cost reduction programs to harvest savings from process improvements. Empirically such campaigns provide proven savings in the range 1-5 per cent of the company's turnover.

A campaign/project will identify shortcomings that could not be identified and managed in routine work.

Will you win the race with cost savings? No

Will you loose the race without cost savings? Yes

The quick wins alone often easily cover the cost of investment of such projects.

**He who has ceased to
improve
has ceased to be
good.**

Philip Rosenthal, Entrepreneur, 1917

**Thank You very much.
Merci beaucoup.**