Brazilian airport concessions: lessons learned and challenges

BNDES O banco nacional do desenvolvimento

Outline

1. Brazilian air transport sector

- The role of AEP/BNDES

- Supply and demand

- Air transport sector planning

2. Concessions of GRU, VCP and BSB

- Concession agreement

- Bidding rules and auction design

1. Brazilian air transport sector

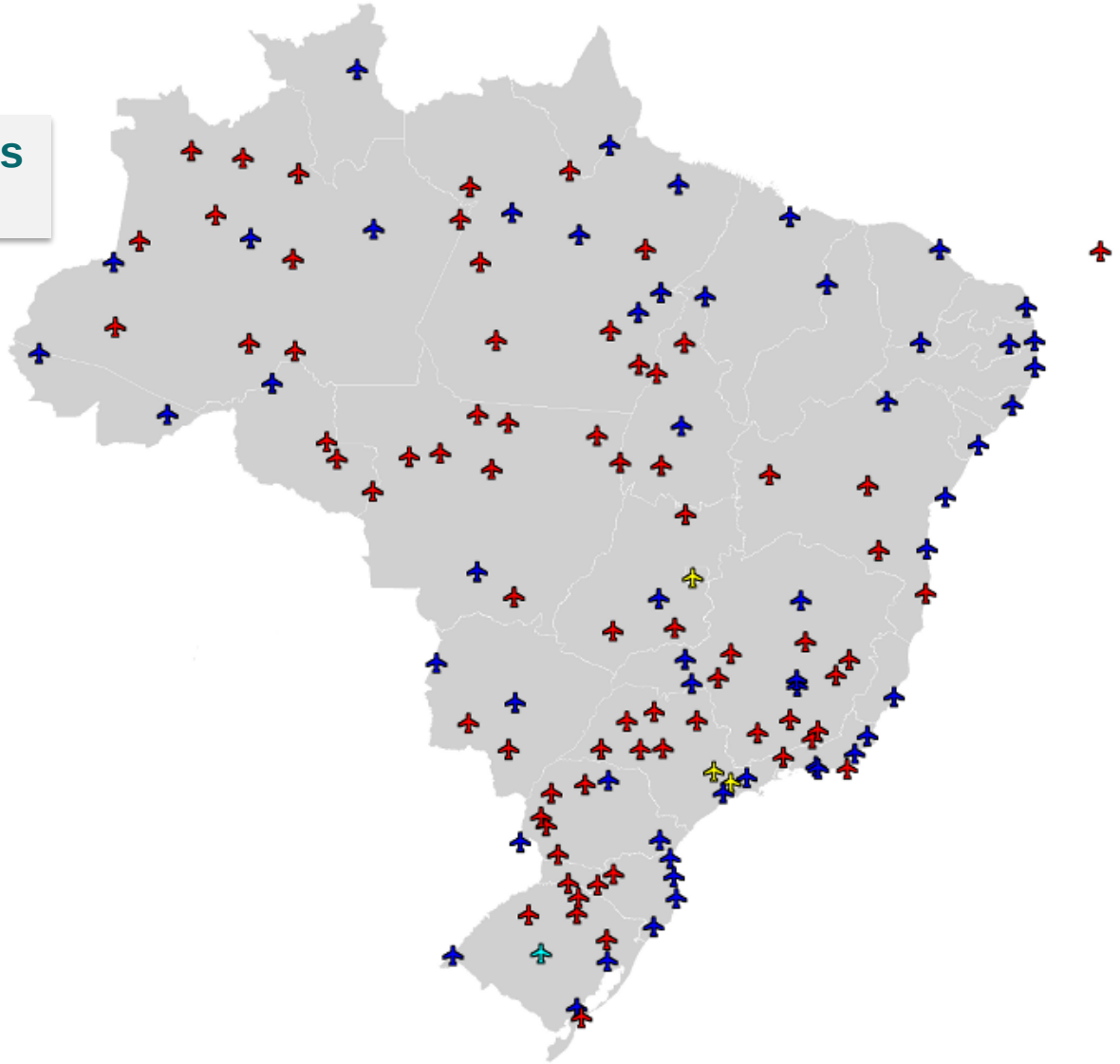
The role of AEP/BNDES

Study	Scope	Situation
1. Concession of S. Gonçalo do Amarante Airport (Natal) – ASGA	Bid package + Tender release + Concession agreement	Concession agreement signed in November 2011
2. Study of the air transport sector in Brazil	- Demand - Infrastructure - Governance - Air services	Completed and available at the BNDES website
3. Infraero Restructuring Study	- Diagnostic (Management, Legal and Accounting issues) - Alternative models - Strategic Plan	Completed
4. Airport Concession: Guarulhos, Viracopos and Brasília.	Bid package + Tender release + Concession agreement	Concession agreement signed in June 2012

Current air transport network

Current total* = 129 aerodromes with regular flights (127 cities)

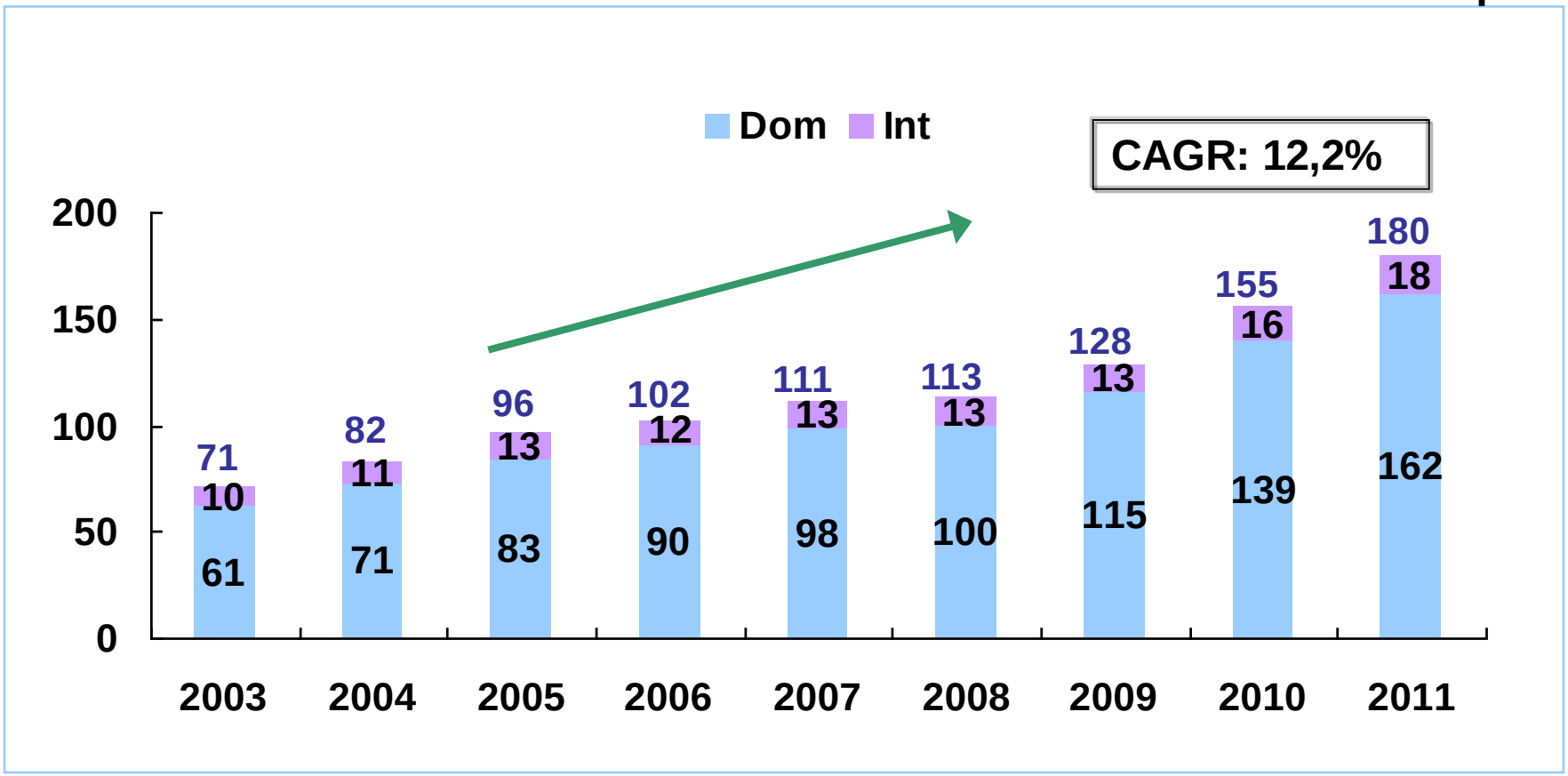
- **Main network: 31 aerodromes serve 30 cities (27 capitals + Guarulhos, Campinas e Confins)**
- **Regional network: 98 regional aerodromes serve 97 cities**



1. Brazilian air transport sector

Air passenger demand

m pax

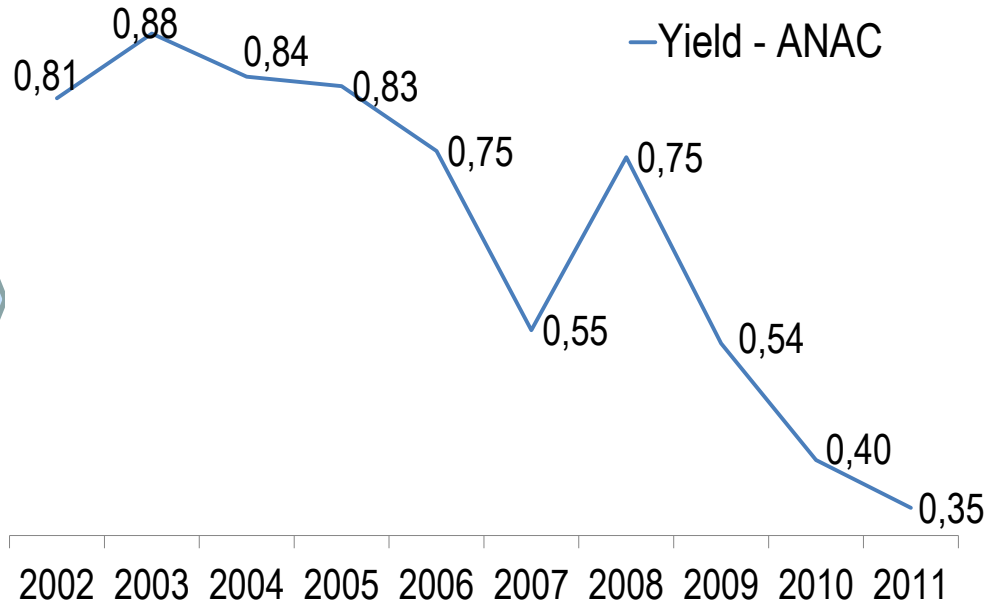


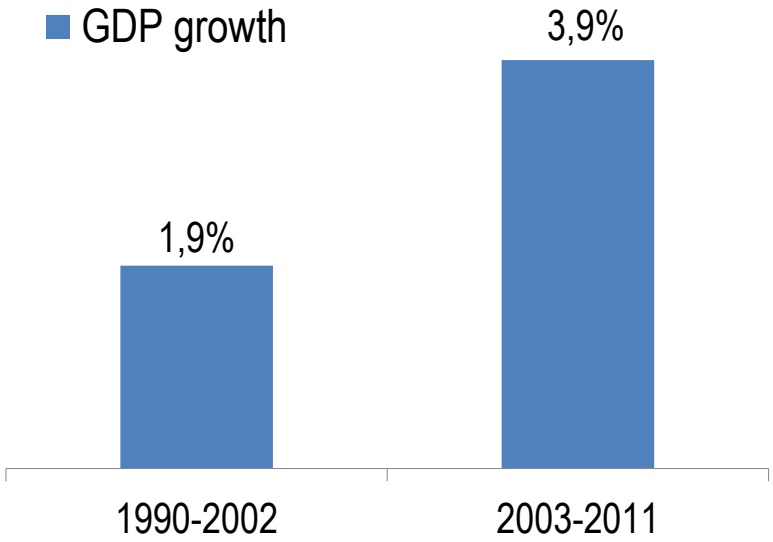
* World CAGR in 2003-2010 was 4,8%
* Domestic market has increased faster than international market

1. Brazilian air transport sector

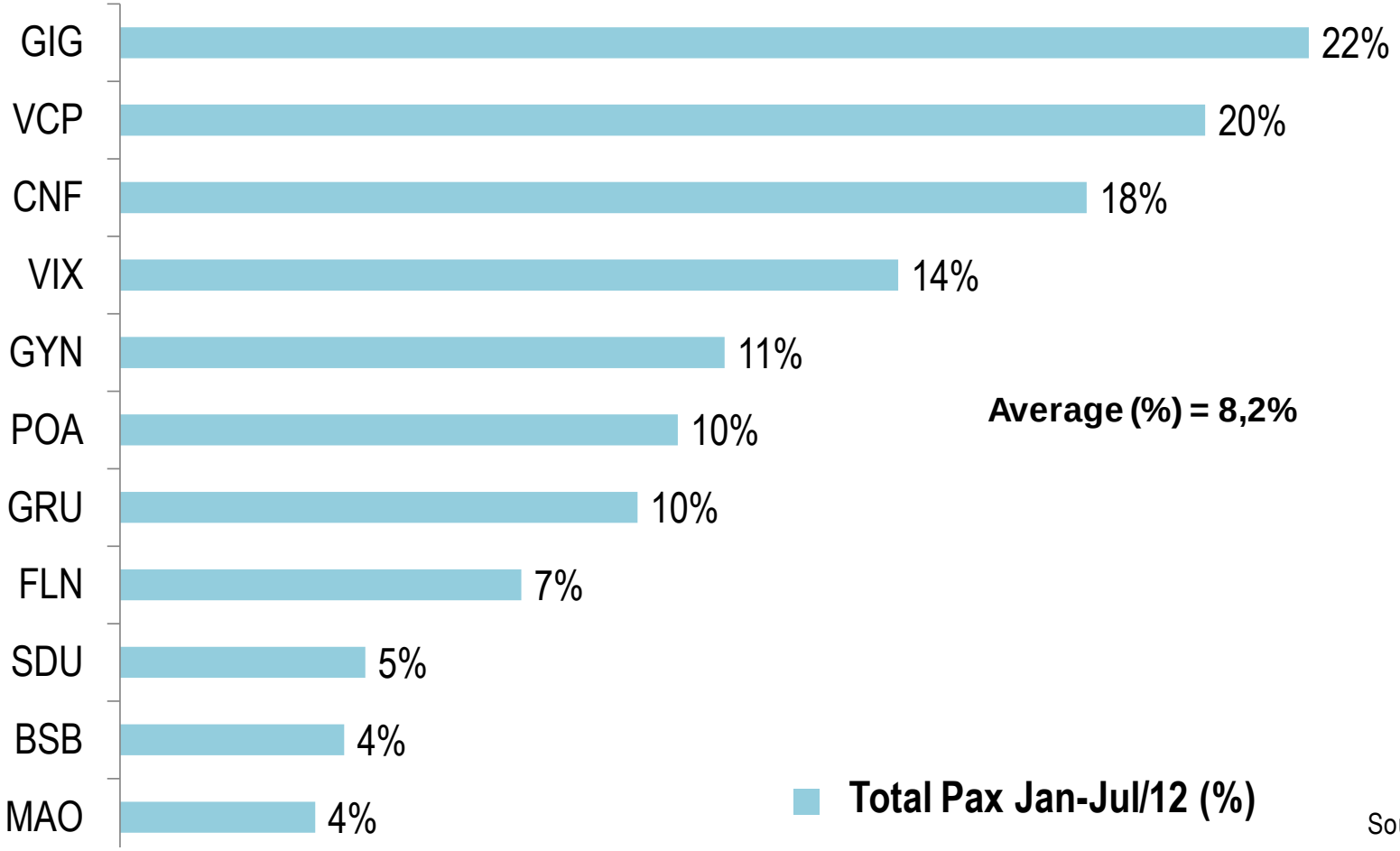
Demand for air transport grew **12,2% a year** (2003-2011)

- Reduction of air fares
- GDP growth



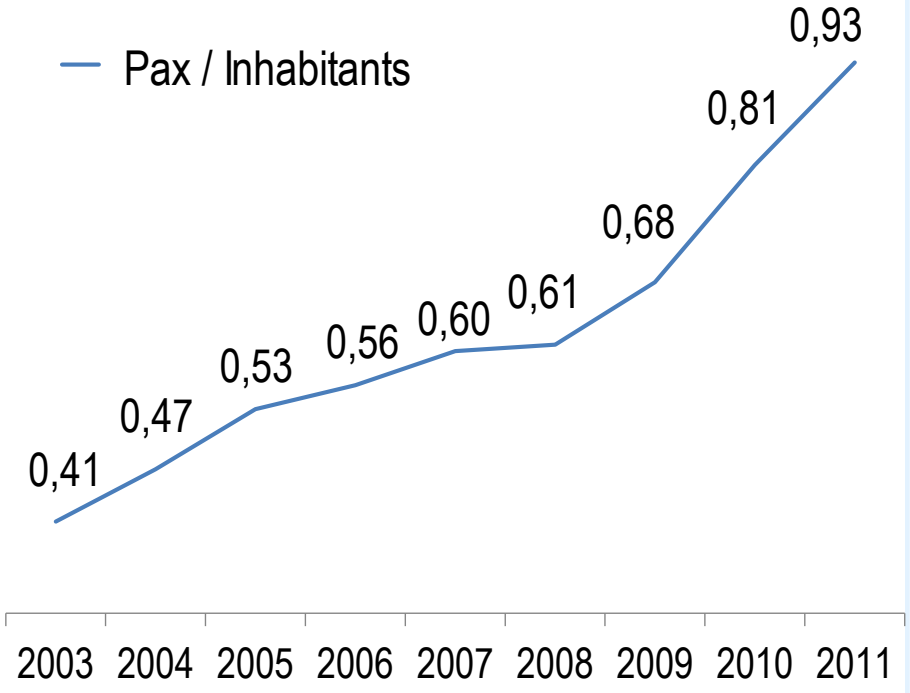


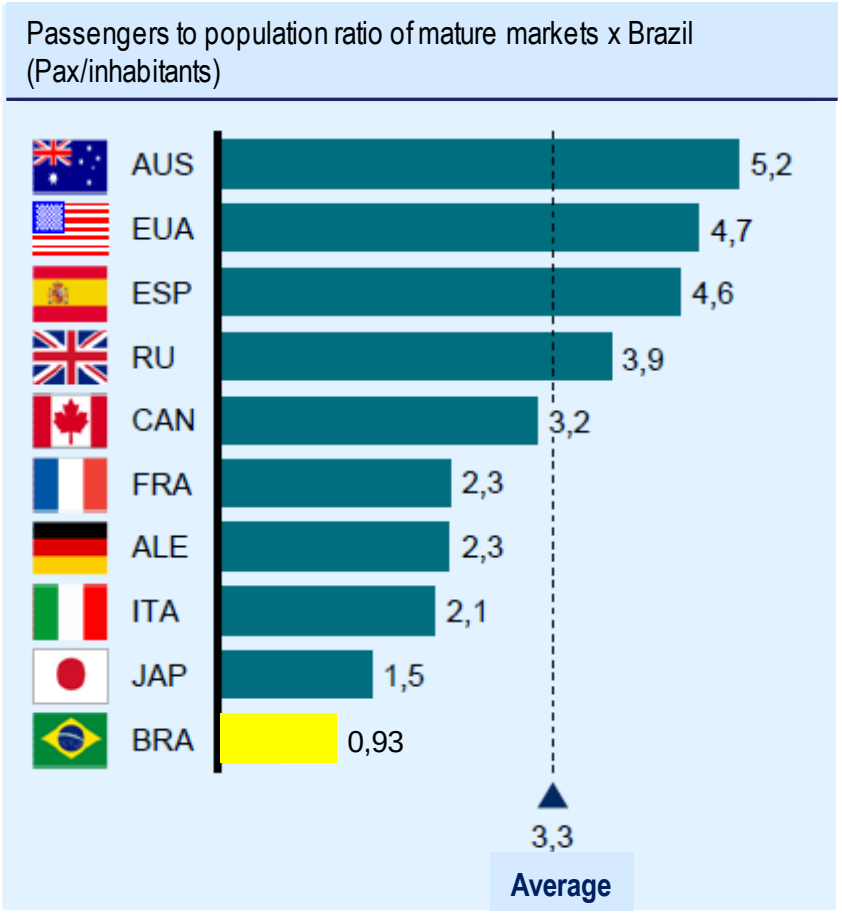
Demand growth from January to July 2012 compared to the same period in 2011



Source: INFRAERO

1. Brazilian air transport sector





The passenger to population ratio has more than doubled in less than a decade

However, the brazilian ratio is still less than a third of the ratio of mature markets

Source: INFRAERO, IBGE, Brazilian Air Transport Study (2009)

OBS: 2008 data for mature markets

1. Brazilian air transport sector

✓Overview of the Brazilian airport infrastructure constraints

		Airside		Landside
	Aeroporto	Runway DECEA	Apron	Terminal
SP	▪ Guarulhos	2030	Saturated	Saturated
	▪ Congonhas	Limited	Saturated	Saturated
	▪ Viracopos	2020	Saturated	Saturated
RJ	▪ Galeão			2030
	▪ Santos Dumont	2030	Saturated	2030
BH	▪ Confins		2020	Saturated
	▪ Pampulha	2030	2014	2014
Other regions	▪ Brasília	2030	Saturated	Saturated
	▪ Porto Alegre	2030	2030	Saturated
	▪ Curitiba		2030	2020
	▪ Recife	2030	2030	2020
	▪ Salvador	2020	Saturated	2014
	▪ Fortaleza		2030	Saturated
	▪ Manaus		2020	2030
	▪ Cuiabá	2030	Saturated	Saturated
	▪ Natal		Saturated	2014
	▪ Florianópolis		Saturated	Saturated
	▪ Vitória	2030	Saturated	Saturated
	▪ Belém		2014	2030
	▪ Goiânia	2030	Saturated	Saturated

Source: INFRAERO Restructuring Study (2010), Mckinsey & Co.

[1]The 20 airports analized account for 90% of passenger traffic

Air transport sector planning

Short run

1. **Introduce private market participation in strategic airports to increase capacity and efficiency**.

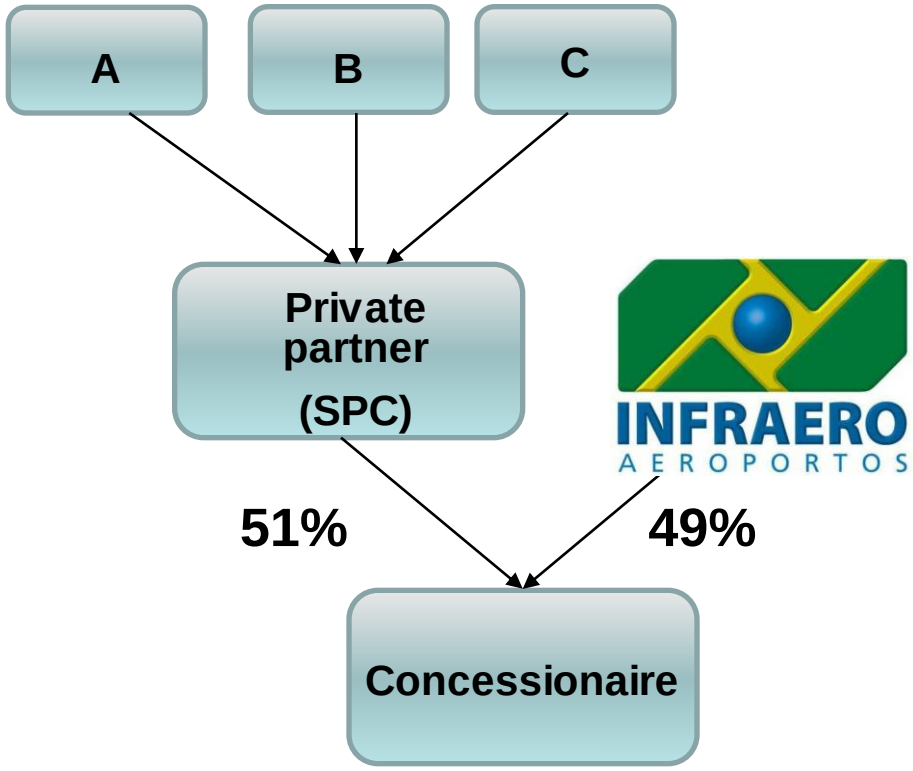
   - GRU, VCP and BSB

Long run

2. **Improve Infraero's operational and financial performance**

3. **Increase the regional aviation infrastructure network**.

Concessionaire capital structure



Rationale

- Support the sustainability of the other INFRAERO airports through a robust flow of dividends
- Improve INFRAERO's overall operation

1. Brazilian air transport sector

Contribution to the airport system

CONCESSIONAIRES

Inframerica

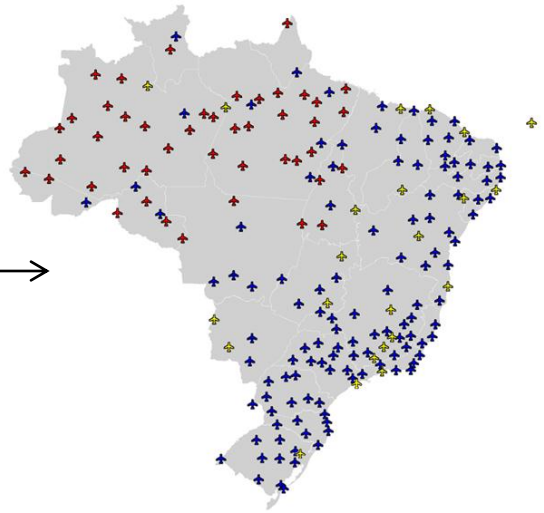
Aeroportos Brasil Viracopos

invepar

ACSA
Airports Company South Africa

FNAC

Investment and maintenance of other airports

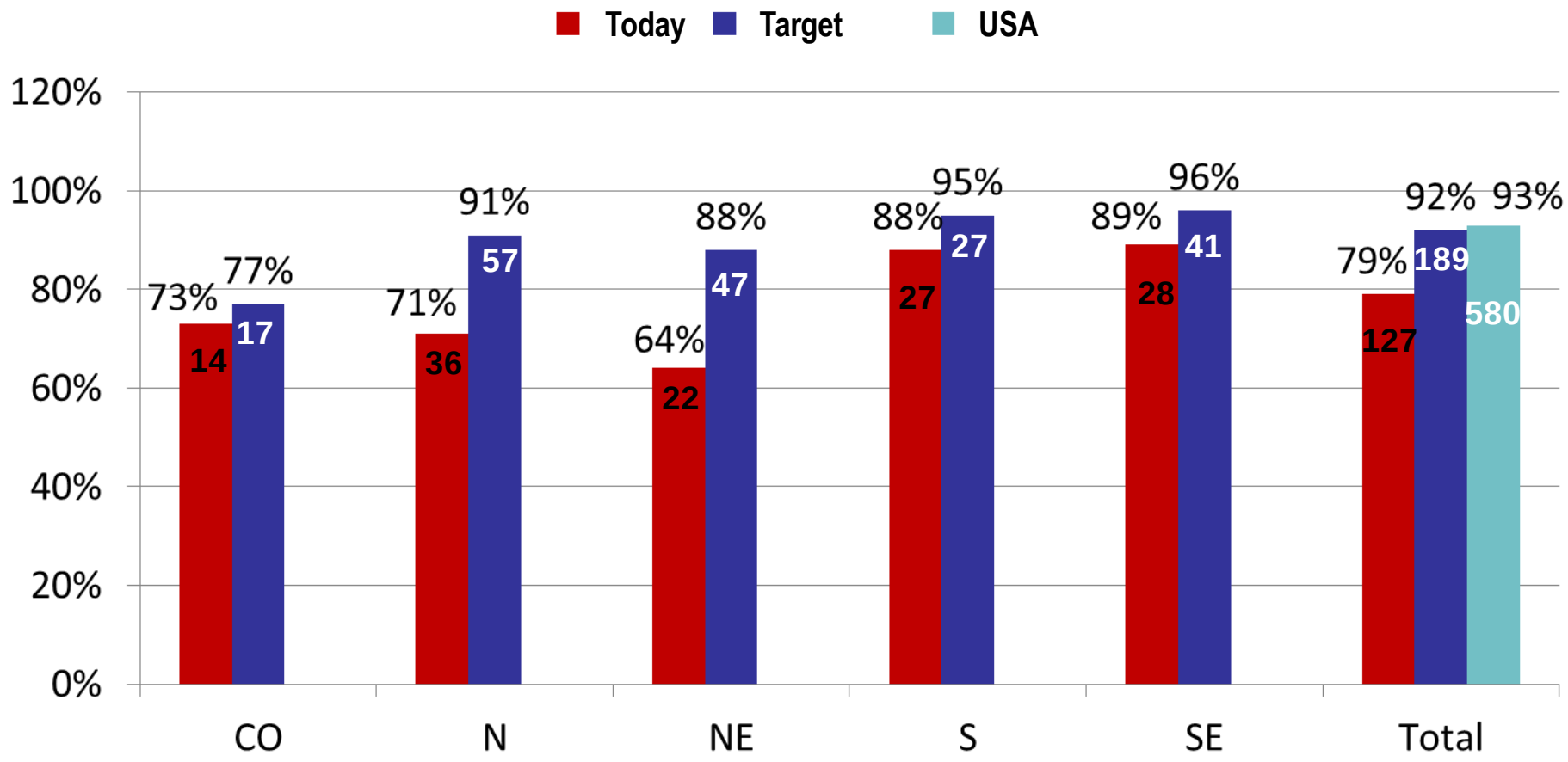


FNAC GOALS:

- Support the airport network
- Improve quality of service
- Foster regional aviation

1. Brazilian air transport sector

Regional Aviation Expansion target



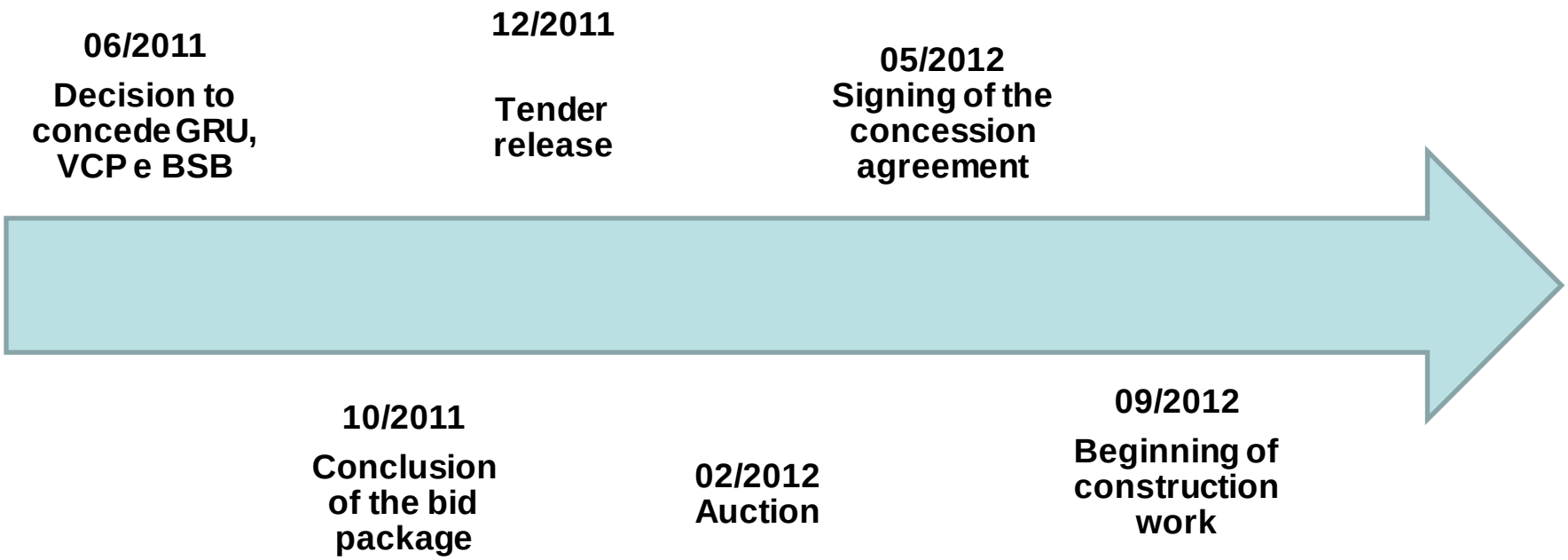
Population served today (100 km radius) → roughly 151 million

Population served under the new plan (100 km radius) → roughly 174,8 million

Populations served in the USA (70 mi = 112 km radius) → roughly 287 million

2. Concessions of GRU, VCP and BSB

Timeline



2. Concessions of GRU, VCP and BSB

The choice of GRU, VCP and BSB

Macro conditions

- Strong demand growth;
- Difficulty in increasing capacity.

} *Infrastructure bottlenecks*

Micro conditions

- Strategic assets;
- World Cup timing.

2. Concessions of GRU, VCP and BSB

Guarulhos International Airport

Airport Characteristics

- ✓ The busiest airport in Latin America
- ✓ GRU will still be the primary Brazilian international gateway with a substantial international service
- ✓ Traffic in 2011: 29,9 m pax
  - 11,3 m – International Passengers (38%)
  - 18,6 m – Domestic Passengers (62%)
  - Passenger traffic increased 7,1% per year in the last 20 years
  - Passenger traffic increased 11% in 2011
  - Estimated traffic by 2031: 54 m pax
- ✓ Period of concession: 20 years
- ✓ Estimated investment: US$ 3,1 bn

2. Concessions of GRU, VCP and BSB

Viracopos Airport

Airport Characteristics

- ✓ VCP will be the largest cargo airport in Brazil
- ✓ Passenger overflow from GRU to VCP to begin in 2015
- ✓ Strong growth for the next 30 years – potential to become the largest airport in terms of passengers
- ✓ Traffic in 2011: 7,5 m pax
  - 112 m – International Passengers
  - 7,4 m – Domestic Passengers
  - Passenger traffic increased 35% per year in the last 8 years
  - Passenger traffic increased 38% in 2011
  - Estimated traffic by 2041: 90 m pax
- ✓ Period of concession: 30 years
- ✓ Estimated investment: US$ 5,1 bn

Brasília International Airport

Airport Characteristics

- ✓ Already an important hub for domestic flights (40% of domestic passengers are connecting passengers) and potential to become a hub for international flights as well
- ✓ Traffic in 2011: 15,3 m pax
  - 15 m – Domestic Passengers
  - 0,3 – International Passengers
  - Passenger traffic increased 10,6% per year in the last 8 years
  - Passenger traffic increased 6,9% in 2011
  - Estimated traffic by 2037: 50 m pax
- ✓ Period of concession: 25 years
- ✓ Estimated investment: US$ 1,8 bn

2. Concessions of GRU, VCP and BSB

Concessions overview

- Concession for expansion, maintenance and operation of the Airports
- Air traffic services (ATS) are not part of the concession
- There are 3 distinct objects:
  - Guarulhos International Airport (GRU)
  - Campinas International Airport (VCP)
  - Brasília International Airport (BSB)
- INFRAERO: the government owned company holds 49% of the SPC´s capital;

2. Concessions of GRU, VCP and BSB

Airports: Two-sided Platforms

Natural Monopoly

Infrastructure: runway, apron, terminal

Aero Side: Public Service, regulated, airlines

Infrastructure: ATS, security, communication and baggage handling systems

Non-aero side: shopping mall, unregulated, passengers

Competition: airline market

2. Concessions of GRU, VCP and BSB

Concession agreement: regulatory famework

Economic regulation

- *Price Cap* (RPI-X-Q)
- Risk allocation
- Financial rebalance of the contract

Monitoring

- Periodic review of the capex program
- Investment triggers

Quality of service

- Quality of service plan
- Quality of service index and Q factor

Concession agreement update

- Review of the concession parameters

Economic regulation

Tariff adjustment: $Tariff_{year1} = Tariff_{year0} \times (1 + RPI - X - Q)$

- ✓ Price cap: protection against natural monopoly
- ✓ Sharing of productivity gains
- ✓ Adequate quality of service

Revenues

Aero revenues

- Price caps: (i) boarding, (ii) connection, (iii) landing and parking, (iv) cargo
- The Concessionaire will be able to give tariff discounts on a transparent and non-discriminatory basis

Non-aero revenues

- Commercial revenues from restaurants, duty free, car parking, internet, etc
- Rents are freely negotiated

Revenues

Revenue from ancillary activities

- Areas and activities essential to air transport
- e.g.: fuel supplying, aircraft maintenance, telecommunications, meteorology etc.
- The payment for the usage of Operational Areas and Activities will be freely negotiated between the concessionaire and the contracting parties.
- In case of unfair or discriminatory practices ANAC can establish price regulation for the use of the Essential Areas and Activities

2.1 Economic Regulation

Risk allocation

Public risks	Private risks
▪ Tax changes	▪ Demand
▪ Operational restrictions due to public agency	▪ Revenue
	▪ Costs
▪ Infraero's liabilities	▪ Operational
▪ Changes to the project due to grantor determination	▪ Design and Construction
	▪ Technological
	▪ Financial and exchange rate

Financial rebalance of the contract

- **Extraordinary revision**:
  - ✓ Aimed at recovery of the financial balance of the contract;
  - ✓ Request by ANAC/Concessionaire;
  - ✓ Modification of charges, term, obligations;

- **Procedure**: in accordance with Marginal Cash Flow Annexure;

Marginal Cash Flow:

✓ Contains the procedure for the financial rebalance of the contract that will be applicable for each event;

✓ The discount rate used will be determined through the review of the Concession Parameters and it will be preceded by public hearing.

2.2 Quality of Service

- **Based on International Air Transport Association (IATA) level C**

Level of service	Flow	Delay	Comfort	Examples
A	Free	Not existent	Excelent	• New Doha • Incheon • Narita T2 • Taipei T2 • Singapore T3
B	Stable	Very few	High	
C	Stable	Acceptable	Good	• New York T4 • San Francisco (int) • Deli T3 • Heathrow T5 • Toronto and Vancouver • Brisbane and Sydney
D	Unstable	Tolerable	Adequate	• Miami (several terminals)
E	Unstable	Unacceptable	Inadequate	• Guarulhos • Bogota

2.2 Quality of Service

Quality of service index

Measuring methods

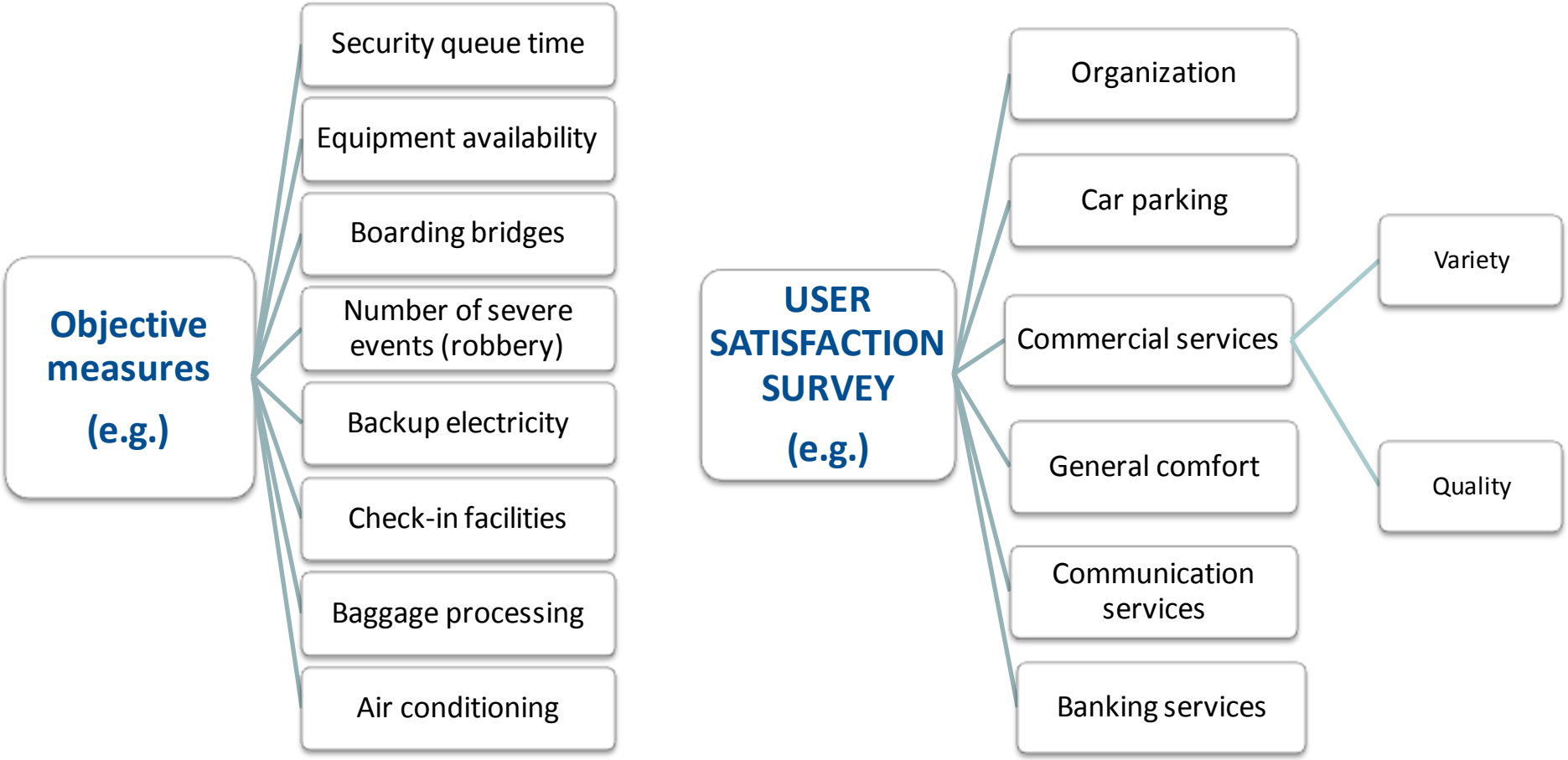
TECHNICAL REPORT

+

USER SATISFACTION SURVEY

Q factor

Quality of service index (QSI)



2.2 Quality of Service

Quality of service and the Q factor (e.g.)

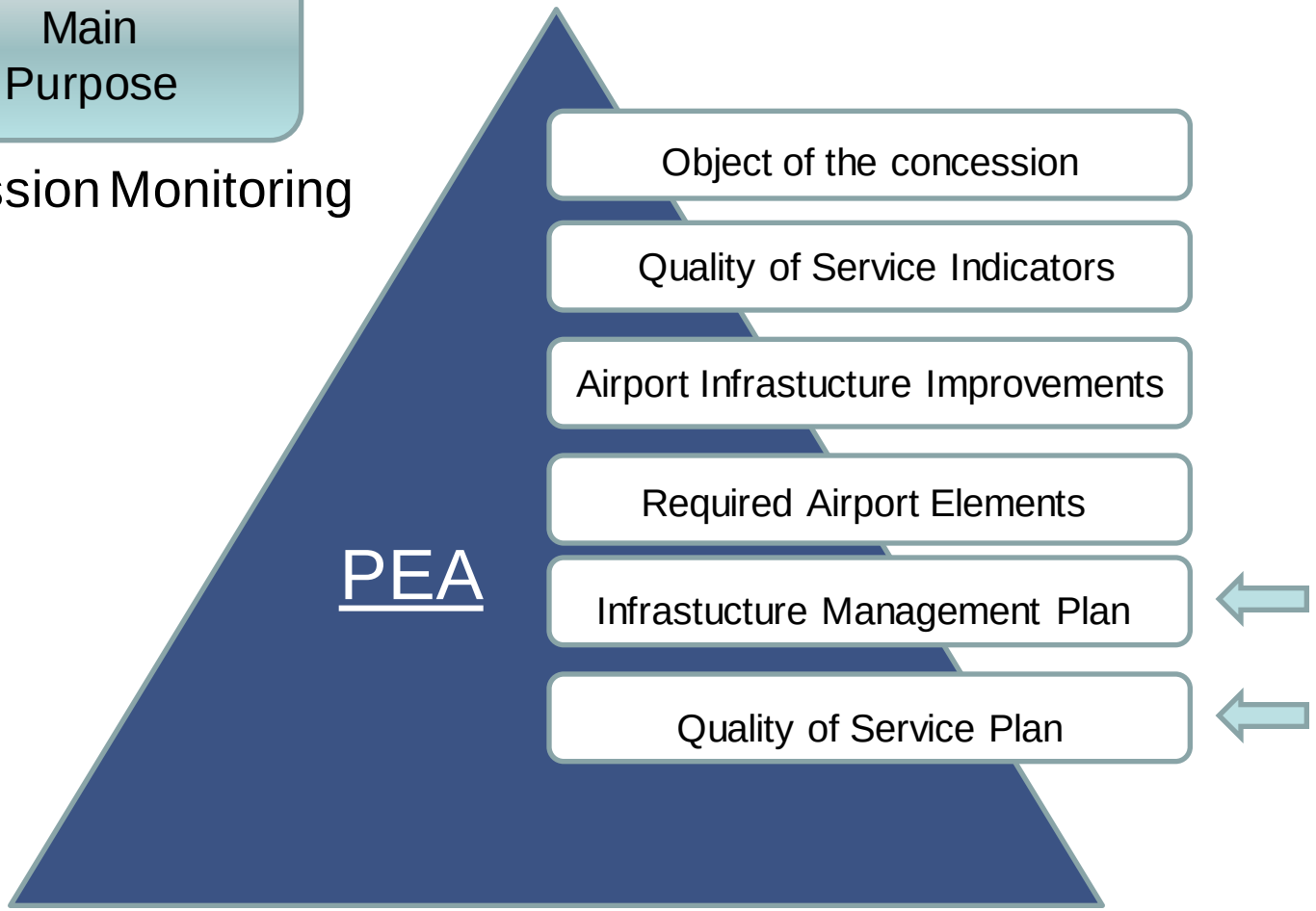
Category	Criterion	Standard	Penalty	Target	Bonus
Security queue time	% pax waiting more than 5 minutes	10%	-1%	-	-
Escalator, elevator, conveyor belt	Percent of time that the item is available	99%	-0,45%	100%	0,2%
Baggage processing system		99%	-0,55%	100%	0,2%
Boarding bridges		99%	-0,65%	100%	0,2%

2.3 Concession Monitoring

Airport Operation Plan

Main Purpose

Concession Monitoring

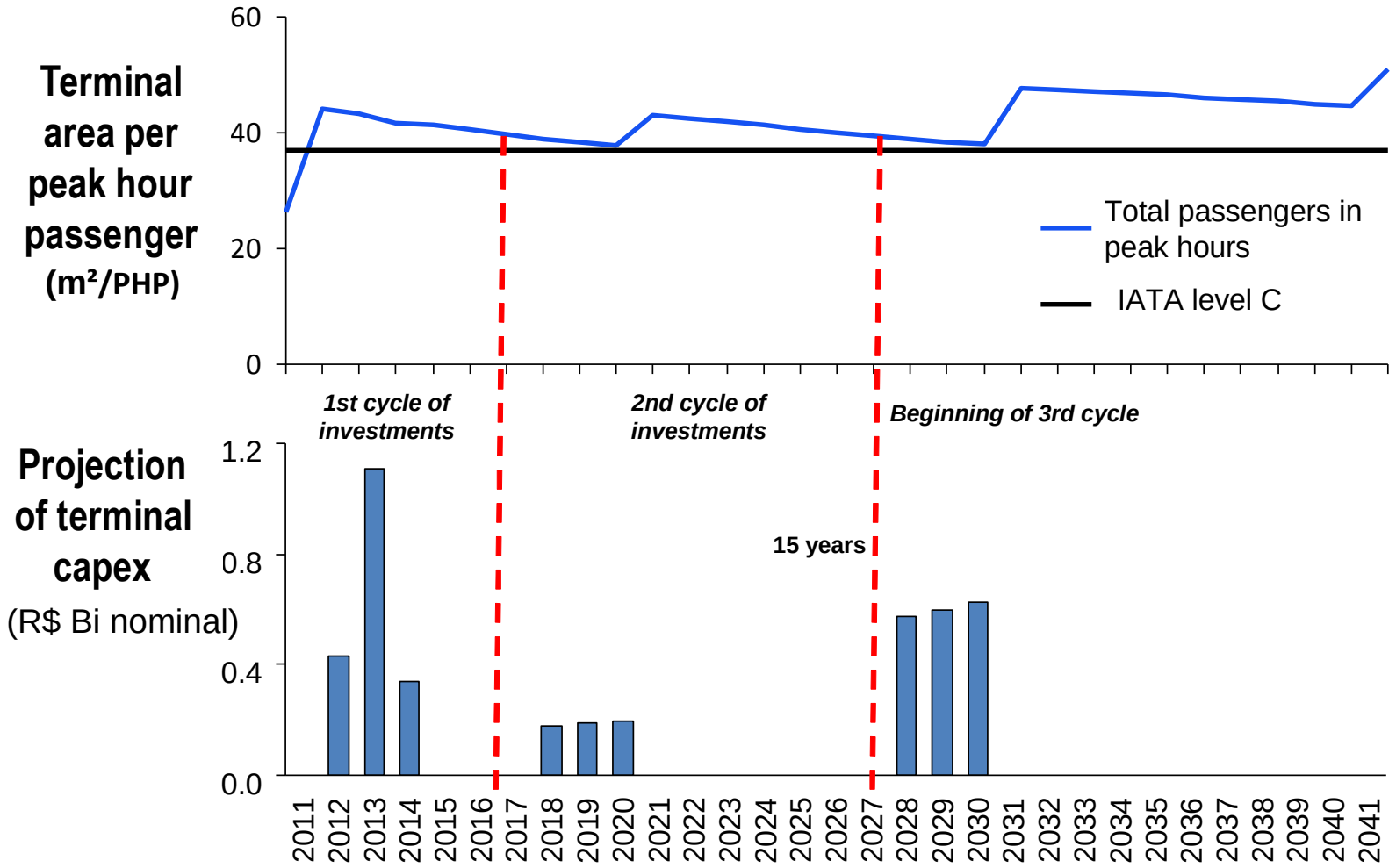


Airport Operation Plan: key parts

- Infrastructure Management Plan
  - Must be approved by ANAC
  - Mandatory for the Concessionaire
  - Contains the concessionaire plan for the maintenance and improvement of the airport infrastructure, in accordance to the investment triggers
  - The Airport Operation Plan will be reviewed every 5 years or every time that real demand surpasses the demand forecast
- Quality of Service Plan
  - Must be approved by ANAC
  - Contains the concessionaire plan to meet the Quality of Service Indicators
  - Mandatory for the Concessionaire
  - The Airport Operation Plan will be reviewed every 5 years

2.3 Concession Monitoring

Investment trigger



Revision of the Concession Parameters

Rationale:

- Long Term Agreements;
- The uncertainty of future technical and economic scenarios;
- Public Utilities.

Concession Parameters Revision (every 5 years):

- Preceded by Public Hearing
- X Factor
- IQS / Q Factor
- WACC to MCF

2.5 Bidding rules and auction design

Technical Qualification:

✓ Minimum experience of 5 years operating airports; and

✓ Over the last ten years must have operated airport that has processed at least 5 million passengers/year, including boarding, landing and connecting passengers.

Rationale:

- Concessionaire has the incentive to partner up with top operators or hire globally recognized experts in master planning and operation
- Technical expertise easily found in the market:
  - Major operators: investments in equity, management contracts and consultancy contracts
  - Several high quality consultancy firms: master planning and operation

2.5 Bidding rules and auction design

	FRAPORT investments in equity shares	
Partner	Majority	Minority
Private	• Antalya, Turkey (51%) • Lima, Peru (70%) • Varna e Burgas, Bulgaria(60%)	• Delhi, India (10%)
Public	-	• St. Petersburg, Russia (35.5%) • Hanover, Germany (30%) • Xian, China (24,5%)

	AdPM investments in equity shares	
Partner	Majority	Minority
Private	-	• México (25,5%) • Jordan (9,5%)
Public	-	• Belgium (25%) • Mauritius (5%) • Saudi Arabia (5%)

2.5 Bidding rules and auction design

Operation by management contract

Operator	Airport	Pax
Fraport	Riyadh and Jiddah, Saudi Arabia	30 and 46 m
Fraport	Cairo, Egypt	16 m†
Fraport	Dakar, Senegal	6,5 m[1]
AdP*	Sharm el Sheikh, Hurghada, Luxor, Aswan and Abu Simbel - Egypt	20,1 m
AdP*	Algiers airports	4.4 m
AdP*	Phnom Penh and Siem Reap in Cambodia	3.3 m

* Aéroports de Paris

† traffic before turmoil

[1] Capacity

2.5 Bidding rules and auction design

Selection of Major Projects

Investor Operator_ ADPM

- 13 Airports - North Central Group of Airports – Mexico
  14 million pax
  25.5% & Operator
- 5 regional Airports – Egypt
  14,5 million pax
  Operator
- Amman QAIA – Jordan
  4 million pax
  9.5% & Operator
- Hajj Terminal – Jeddah – Saudi Arabia
- Algiers Airport – Algeria 4 million pax
  Operator
- Beijing Airport – China
  48 million pax
  9,9% (sold in 2007)
- Liege – Belgium – 25%
- Mauritius Airport – 10%

Planner _ ADPi

- Dubai Jebel Ali – UAE (Master Plan)
- Seoul Incheon – Korea (Master Plan revision)
- Nantes ND des Landes – France (Master Plan)
- Nice – France (Master Plan)
- Cairo – Egypt (Master Plan)
- Bogota - (Master Plan)
- Lybia
- Irak

Designer _ ADPi

- Dubai DXB – UAE (Terminal 3, A380 Hangars)
- Doha – Qatar (ControllTower, A380 Hangars, Amiri Pavilion, Cargo)
- Au Dhabi (Control Tower ...)
- Saudi Arabia (Hajj Terminal - New international - Jeddah)
- Moscow Sheremetyevo – Russia (Terminal 3)
- Fort Lauderdale – USA (Terminal 4)
- Nice – France (Terminal 2)
- Toulouse – France (A380 Plant)
- Sevilla – Spain (A400M Plant)
- Lybia – New Terminal Tripoli

Source: PPP in Airport Infrastructure Business
Dead Sea – Jordan - June 6th & 7th, 2010

Contribution to the airport system

Fixed fee

- Bid criterion
- Annual payment based on the winning bid adjusted by inflation (IPCA)

Variable fee

Annual payment as a share of the gross revenue:

- Brasília: 2% (value above an upper bracket: 4,5%)
- Viracopos: 5% (value above an upper bracket : 7,5%)
- Guarulhos: 10% (value above an upper bracket : 15%)

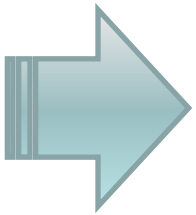
2.5 Bidding rules and auction design

Auction stages

1st Sealed envelope

2nd Verbal bids

- Simultaneous auction for all three airports
- Each participant can bid for all three airports but it is not possible to be the winner of more than one airport.
- The winning bid must be the one that maximizes the total fixed fee of the auction.



Greater competition

2.5 Bidding rules and auction design

R$ billions	Guarulhos	Viracopos	Brasília
Triunfo/Egis	4,6	3,8	1,8
Odebrecht/Changi	8,3	2,5	0,6
Invepar/ACSA	16,2	2,1	3,2
OHL Brasil/AENA	12,0	1,7	4,4
CCR/Zurich	8,9	-	1,0
Advent/ASUR	8,5	-	-
Queiroz Galvao/FAA	6,0	-	2,5
Ecorodovias/Fraport	12,9	-	-
Engevix/Corporacion America	11,5	-	4,5
Carioca Engenharia/ADP	6,1	-	-
ADC&Has/Fidens	-	-	3,9

Winner

2.Concessions of GRU, VCP and BSB

GRU: Airport engineering consultancy

Experience

AIRPORT CONSULTING VIENNA

- The Airport Consulting Vienna has performed about 300 consulting projects and has participated in approximately 70 cases of airport concessions to private enterprise.

Experience

TYPSA ENGECORPS

- The TYPSA Group is a set of independent consultancy companies in the fields of civil engineering, architecture and environment.

Barcelona Airport (34 m in 2011) – Construction project

Lima Airport (12 m in 2011) – planning and expansion

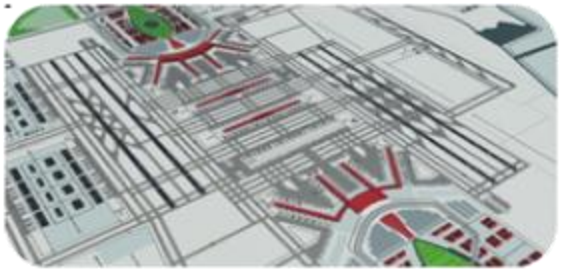
Madrid (49 m in 2011) - Construction project

2.Concessions of GRU, VCP and BSB

VCP: Airport engineering consultancy

Experience

NACO has worked in more than 550 airport projects around the world.



Beijing Airport (77 m in 2011) – Master plan

Frankfurt Airport (56 m in 2011) – Master plan

Schiphol Airport (49 m in 2011) – long term development

2.Concessions of GRU, VCP and BSB

VCP: Airport operation concultancy

Experience

- Operator of Munich Airport, the sixth largest airport in Europe, with expertise in all business segments

6x „Europe's Best Airport"
(2005, 2006, 2007, 2008, 2010, 2011)

3x Winner of the „era Airport Achievement Award"

8x Winner of the „Airport Marketing Award"
(2009-2010 second place winner)

2.Concessions of GRU, VCP and BSB

BSB: Airport engineering consultancy

Experience

Chicago O'Hare Airport – Modernization program (66 m in 2011)

Hong Kong International Airport (53 m in 2011) – Master plan

JFK International Airport – Terminal 9 (47m em 2011)

BSB: Operation consultancy

Experience

In U.S., MITRE acts - in partnership with the FAA - in the development of technologies related to airports operation , having a significant role in "FAA NextGen Air Transportation System" (program responsible for modernizing the U.S. air system)

Contact us

Thank you

Henrique Amarante Costa Pinto
Deputy Director
hacp@bndes.gov.br

www.bndes.gov.br

Back up

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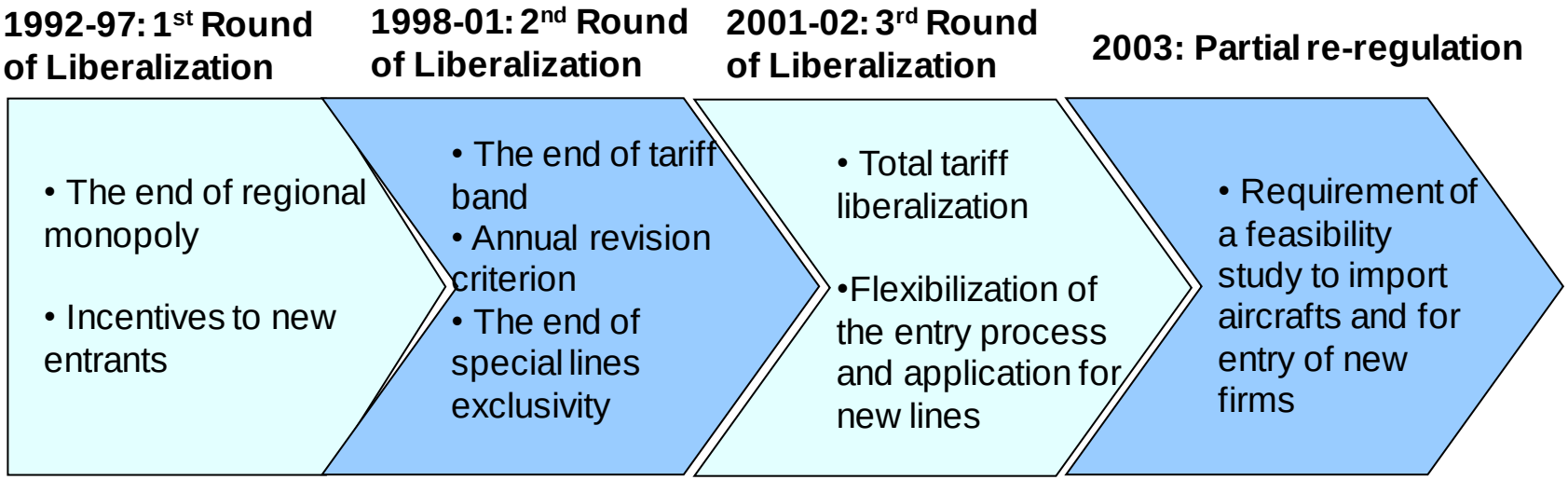
2. The first concession: Natal Airport (ASGA)

- **Object**: Structuring the concession of the new Rio Grande do Norte international airport, located 18 km from Natal.
- The existing airport Augusto Severo will become an Air Force Base.
- **Pre-existing works:** runway and apron are being completed by INFRAERO through the Construction Battalion of the Army.
- **Initial capex**: R$350 MM involving passenger terminal, cargo facilities, equipment, basic infrastructure etc.
- **Auction**: August 22 of 2011
- **Highest Bid** – R$ 170 m (228% above the minimum bid)

Timeline of airline deregulation in Brazil



Source: Oliveira, Alessandro V. M. (2007). A Experiência Brasileira na Desregulamentação do Transporte Aéreo: Um Balanço e Propositura de Diretrizes para Novas Políticas

Rede atual – INFRAERO:

Município	UF	Região	Voos (2011)	Passageiros (2011)
Cruzeiro do Sul	AC	N	1.598	103.238
Rio Branco	AC	N	5.762	375.482
Maceió	AL	NE	14.259	1.521.686
Manaus	AM	N	37.046	3.036.318
Tabatinga	AM	N	940	37.131
Tefé	AM	N	2.576	57.230
Macapá	AP	N	4.774	540.086
Ilhéus	BA	NE	8.563	494.700
Paulo Afonso	BA	NE	92	336
Salvador	BA	NE	95.157	8.894.883
Fortaleza	CE	NE	50.214	5.469.638
Juazeiro do Norte	CE	NE	4.308	333.534
Vitória	ES	SE	35.695	3.009.783
Goiânia	GO	CO	35.779	2.595.080
Imperatriz	MA	NE	4.326	261.938
São Luís	MA	NE	18.399	1.777.378
Belo Horizonte	MG	SE	17.746	561.644
Confins	MG	SE	103.111	10.101.366
Montes Claros	MG	SE	4.569	222.487
Uberaba	MG	SE	3.561	113.387
Uberlândia	MG	SE	15.550	876.860
Campo Grande	MS	CO	21.067	1.498.484
Corumbá	MS	CO	714	29.752
Cuiabá	MT	CO	35.512	2.500.208
Altamira	PA	N	3.942	100.102
Belém	PA	N	36.938	2.918.439
Marabá	PA	N	8.586	324.034

Rede atual – INFRAERO

BNDES

Município	UF	Região	Voos (2011)	Passageiros (2011)
Parauapebas	PA	N	3.395	85.525
Santarém	PA	N	8.674	443.426
Campina Grande	PB	NE	1.351	94.179
João Pessoa	PB	NE	10.345	1.135.271
Petrolina	PE	NE	5.453	368.383
Recife	PE	NE	64.856	6.263.951
Teresina	PI	NE	11.433	1.026.165
Curitiba	PR	S	82.748	6.929.976
Foz do Iguaçu	PR	S	15.346	1.655.868
Londrina	PR	S	12.938	954.961
Campos dos Goytacazes	RJ	SE	1.534	15.657
Macaé	RJ	SE	2.176	23.999
Rio de Janeiro – GIG	RJ	SE	114.240	14.946.918
Rio de Janeiro – SDU	RJ	SE	99.601	8.635.485
Natal	RN	NE	23.681	2.498.868
Porto Velho	RO	N	13.783	987.783
Boa Vista	RR	N	3.098	318.491
Pelotas	RS	S	1.792	5.244
Porto Alegre	RS	S	77.054	7.637.188
Uruguaiana	RS	S	476	2.868
Florianópolis	SC	S	33.575	2.971.070
Itajaí	SC	S	12.846	1.104.926
Joinville	SC	S	6.718	487.013
Aracaju	SE	NE	13.367	1.055.894
São José dos Campos	SP	SE	3.947	190.162
São Paulo – CGH	SP	SE	159.932	17.292.266
Palmas	TO	N	7.107	490.198

Riyadh e Jiddah, Arábia Saudita

Management Contract

Project	– Management of both airports – Expansion and modernization projects (JED new terminal for max. 30m PAX, RUH terminal expansion for max. 46m PAX) – Landside and airside operation – Optimization of existing flight network – Supervision of construction progress – Staff training
Start	June 2008
Term	6 years each
Contract	– Management Contract – Management, development and operation – Fixed fee and result-driven incentives

Fonte: Global Investments & Management at a Glance

Cairo, Egito – Management Contract

Successful consulting turns Cairo International Airport into a major regional hub

Profile	Long-term objective: Development of Cairo International Airport into a passenger and cargo hub
Contract	– Management Contract – Modernization of the airport and upgrade to international standards – 3 Fraport executives hold the key management positions in co-operation with 3 Egyptian vice Managers – Comprehensive training for high-level Management of Cairo Airport
Start	February 2005
Term	8 years + 2 years extension option
Regulation	Annual fixed fee plus EBITDA linked success fee

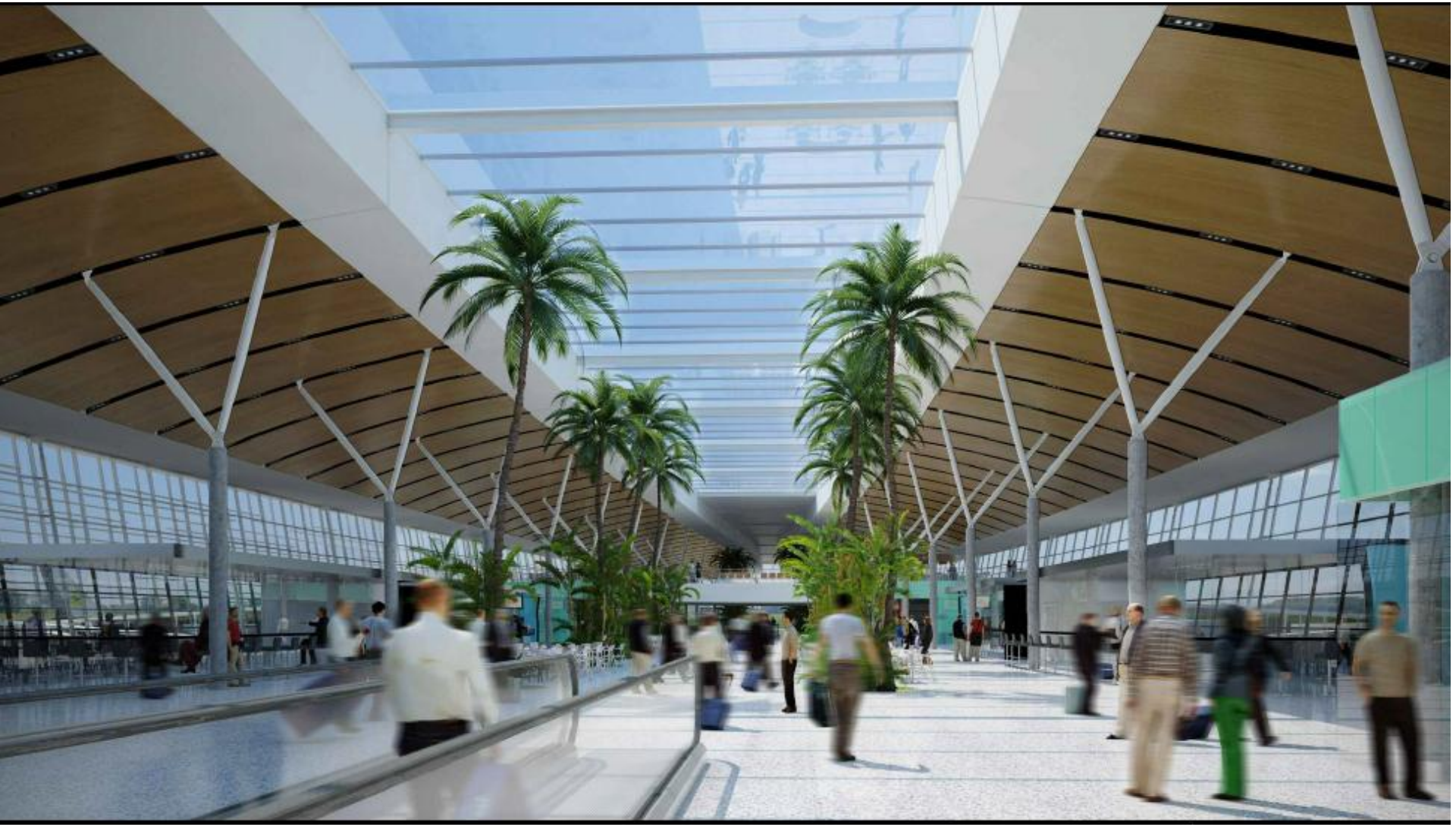
Fonte: Global Investments & Management at a Glance

BSB: vista panorâmica copa

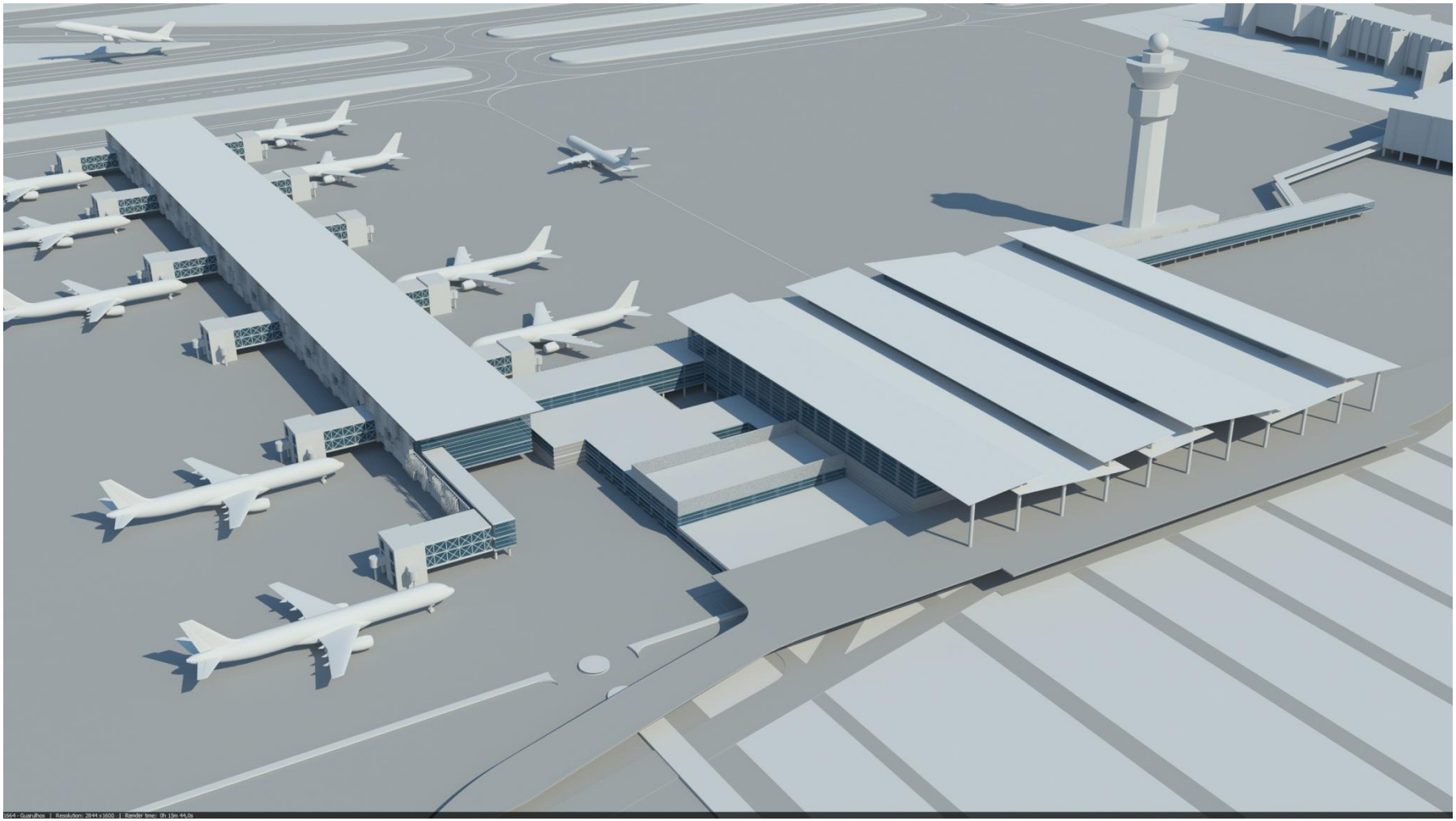
BSB: Vista Panorâmica Copa

BSB: Sala de embarque

BSB: novo *finger*



GRU: Vista Panorâmica



VCP: Vista Panorâmica Copa