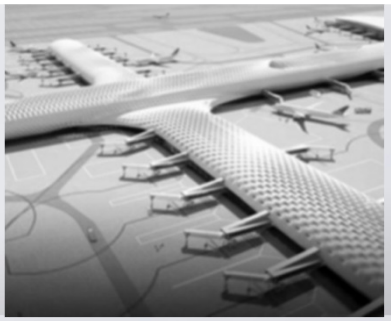
AIRDEV

Airport Development



"Evaluation of Quality of Service in airport Terminals"

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AIRDEV Seminar

Lisbon, Instituto Superior Tecnico
20th of October 2011

INSTITUTO SUPERIOR TÉCNICO

Universidade do Porto
Faculdade de Engenharia
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Universidade da Beira Interior
Covilhã | Portugal

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Outline

- Motivation
- Objectives
- Components of airport passenger buildings
- Users of airport passenger buildings
- Evaluation of Quality of Service in Airport Passenger Buildings and Operational changes
- Presentation of the Airport Under Study
- Airport Terminal performance simulation
- Future steps

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Objectives

- Exploration of quality of service
- Designation of underperforming areas
- Proposal of software and hardware solutions
- Testing the performance and quality of service levels under scenarios

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Components of Airport Passenger Buildings

- The landside curb
- The ticketing lobby
- The check-in concourse
- Check-in counters
- The out-going baggage handling system
- Outbound passport control
- Security screening of passengers
- Corridors
- The departure lounge
- Retail (or concessions)
- Catering
- Gate rooms
- Executive lounges
- Inbound government controls
- The baggage claim
- The arrivals hall
- Airline offices

Users of Airport Passenger Buildings

A) Passengers

DESTINATION
- International travelers
- Domestic travelers

PURPOSE
- Business travelers
- Vacationers and personal travelers

ROLE OF THE AIRPORT IN THE TRIP
- Transfer
- Final destination

TYPE OF AIRLINE
- Conventional
- Low cost
- Charter

Users of Airport Passenger Buildings

B) Meeters and greeters

C) Employees

D) Non-aviation users

E) Leisure visitors

F) Business people

G) Police and security guards

A. THEORIES

IATA recommendations

(passenger flow routes, LOS standards, performance indicators)

ACI recommendations

(Service Quality determinants)

Airport Cooperative Research Program (ACRP) recommendations

(facility sizing, Service Quality determinants)

Airport professionals´ recommendations

- Academians and experts
  (performance indicators, Service Quality determinants)

- Airport industry
  (Service Quality determinants)

Evaluation of Quality of Service in Airport Passenger Buildings and Operational changes

B. METHODS

A) Passenger perception

•Based on passenger responses

•Analyzes multi-attribute behavior

B) Queuing theory

• Involves mathematical models of queuing systems

• Used to analyze production and service processes exhibiting random variability in arrival times and service times

C) Simulation

• Represents the real world by a computer program

• Imitates the internal processes and can be used for the evaluation of different scenarios

D) Decision support system

• Builds a computerized information system

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C. PRACTICE

A) Designation of LOS determinants

- Measurement of current level of service at airport passenger terminals and formulation of new standards
- Exploration of overall airport performance (both landside and airside)
- Establishment of operational standards for airport transfer passengers
- Exploration of spatial and operational requirements for different types of passengers

B) Proposals for infrastructure changes

- Exploration of potential changes caused to the planning and use of an airport terminal by the introduction of new large aircrafts (NLA) in air transport
- Investigation of charter passenger effects on air terminal facilities design

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C. PRACTICE

C) Proposals for operational changes

- Analysis of the trade-offs between the utilization of the operators and the service quality offered to passengers in terms of queue length
- Redesign of passenger handling
- Analysis of security issues
- Cost minimization of operating the check-in desks and the waiting time minimization for the passengers.
- Analysis and evaluation of the check-in and baggage handling operations

D) Delays

- Designation of delay categories
- Reduction of passengers that miss their flights due to the large number of passengers proceeding at the airport . Kansai International Airport was the case study

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E. Conclusion - Limitations

- Cumulative diagrams used for the investigation of space requirements
- Waiting time studied both by perception based studies and analytical studies
- Inefficiency in using average times to evaluate the processes
- Lack of passenger type discrimination
- Scenarios based more on demand variations and less on operational or spatial changes
- Seldom use of flight rate occupancy
- Lack of focus on different process times instead of total times

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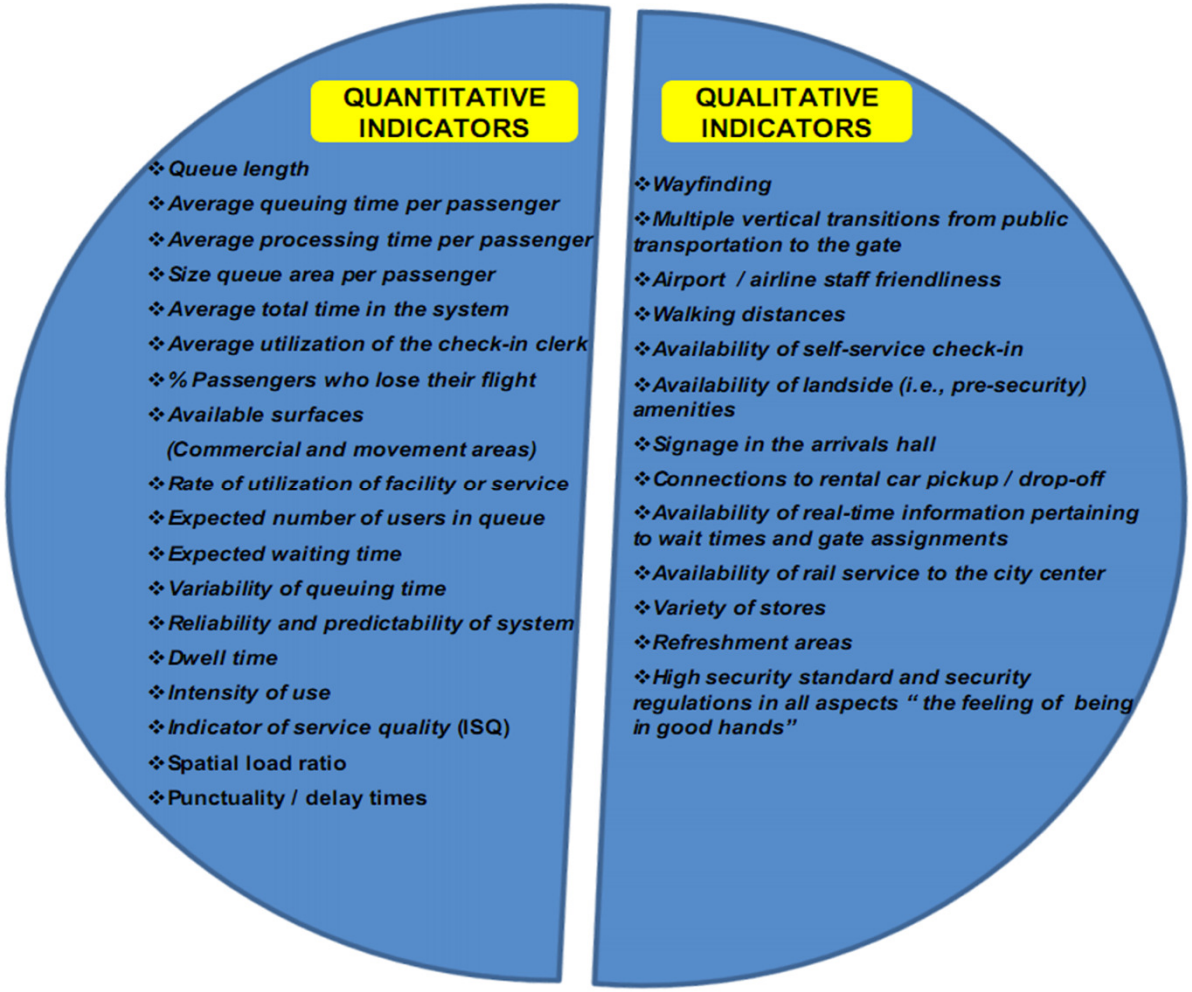
E. Conclusion-Limitations



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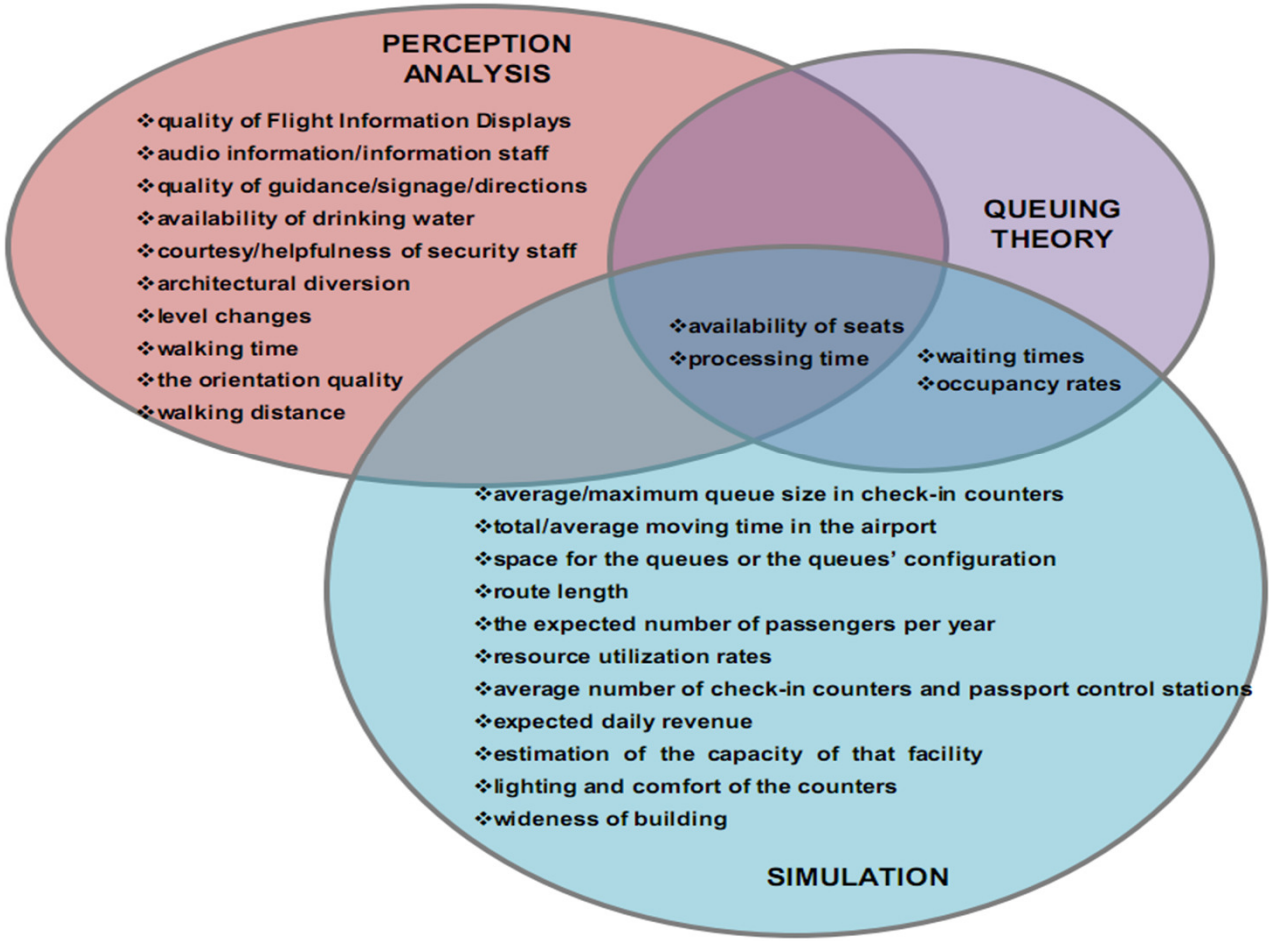
E. Conclusion-Limitations



Presentation of the Airport Under Study

Lisbon Portela airport

- General traffic characteristics 2010
  - 14.000.000 passengers in 2010
  - 8% increase in transit passengers
- Forseeable challenges
  - NEW airport and change of the traffic type in Portela
  - New HS railway Lisbon-Madrid and change in traffic type in Portela
  - Increase in transfer passengers to/from Latin America
  - Improvement of Barajas as Iberian hub
  - Low cost increase

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Airport Terminal Performance Simulation

- AnyLogic simulation program
- Agent base modelling
- Efficiency indicators
  - Waiting time in queue (for the Check-in, Security, Customs and Baggage areas) meausered for arriving passenger percentiles
  - Occupancy ratios (for the Check-in, Security, Customs and Departure areas)
  - Comparison of actual areas with the ratio

*(design (passengers / hour)) * (space standard (m^2 / person)) * (dwell time in hours)*

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Future steps

- Passenger building simulation

- Identification of Underperforming Areas and Exploration of Software (procedures) and Hardware (Building Reconfiguration) solutions

- General Recommendations of Airport Terminal Design for Greater Flexibility in Face of Future Requirements
  - Possible scenarios of future requirements
  - What kind of response would be desirable
  - What kind of design would be better prepared for those responses

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MUITO OBRIGADA PELA VOSSA ATENÇÃO

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