Airport Security and Facilitation

Dr. Joe Sulmona

Istanbul Technical University

Air Transportation Management

M.Sc. Program

Airport Planning and Management

Module 19

January 2016

Outline

A. Introduction

B. Security Management Principles

C. Airport Security Planning

D. Security-Oriented Facility Design

E. Airport Facilitation and Coordination

F. Conclusion

TURKISH AVIATION ACADEMY

İTÜ

Introduction

Introduction

National Security Realities

- **Airports just another business**
  - Typical risks like property theft, hackers seeking intellectual property, and staff corruption
  - Demands typical crime-prevention response like door locks, cyber protection, and integrity audits
- **Airports face sovereignty related costs with little relationship to transport business**
  - Border control and national security protections complicate airport operations, especially for international flights

National Security Realities

- **Peaceful now, but future attacks ongoing risk**

Privatization Complicates National Security

- **Strategic (geo-political) target**
  - Threat to aviation not bound by geographic limits
  - Air transport represent huge political target, whether privatized or remain in state hands
  - Violent acts introduce uncertainty, affecting safety, security and regularity of air transport
  - Aviation security protocols undermine the industry's value proposition
  - Encourages travellers / shippers to use more user-friendly alternative modes where practical

Other Modes Starting to Face Similar Scrutiny

Airport Management Strategy

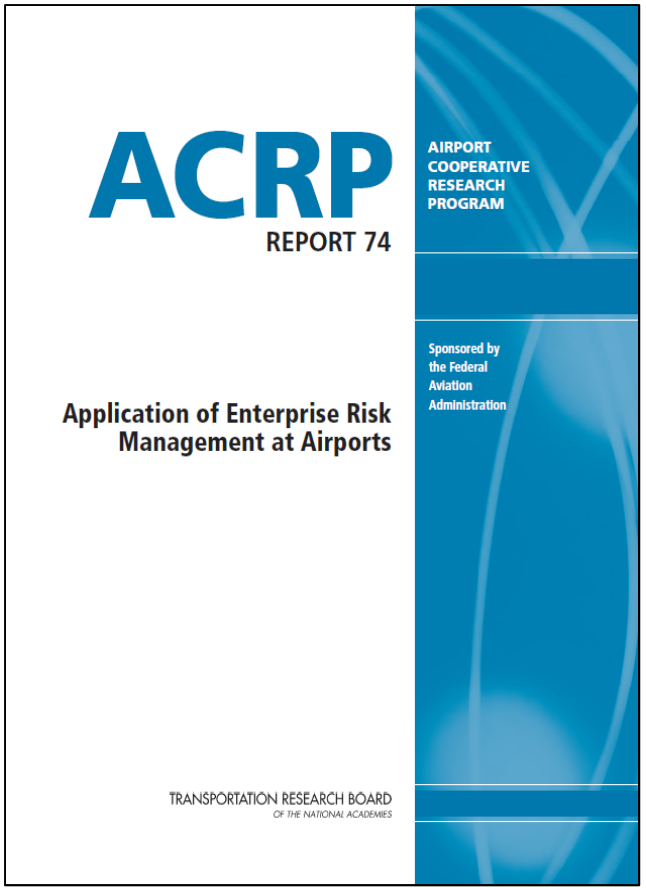
- **Better coordinated response needed**
  - Facilitation vital to remove national security obstacles to travel within and between states
  - Facilitation measures necessary to retain aviation industry speed advantages or industry will wither
  - State directives to protect national security interests will not disappear anytime soon
  - Collaboration will reduce delays, administrative expenses, and improve customer service

http://www.futuretravelexperience.com/2014/10/melbourne-airport-and-qantas-sign-up-to-smart-security/video

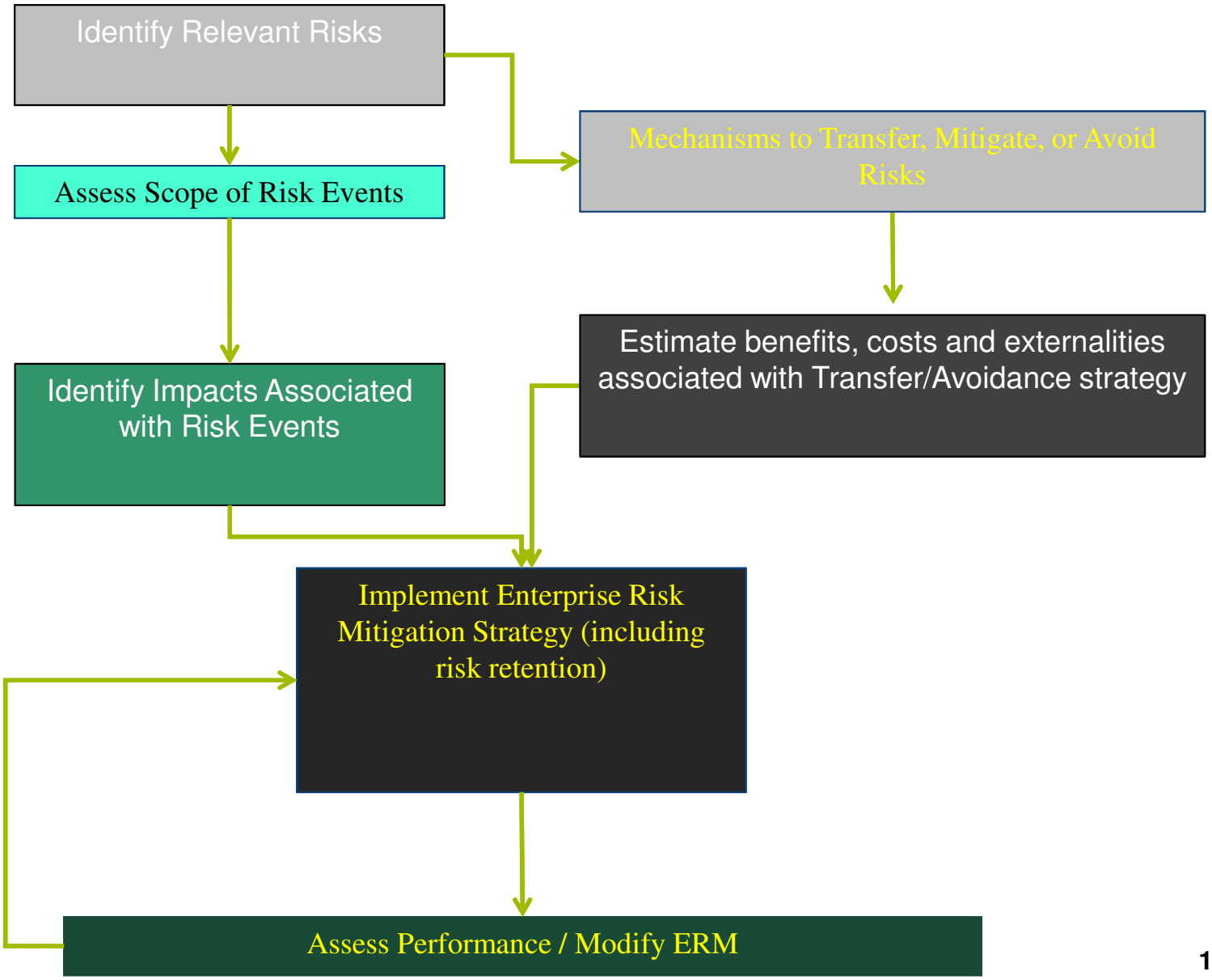
Security Management Principles

Enterprise Risk Management

- **Airport Security Framework**
  - Risk from operations create adverse outcomes leading to costs and system failures
  - ERM process to identify and assesse risk
  - Need strategy to implement actions that mitigate, monitor, or control probability, and accompanying adverse effect of un-desirable events



Enterprise Risk Management



Aviation Security Perspectives

- **ICAO Annex 17 Requirements**
  - "*Combination of measures, regulations, practices and procedures to safeguard civil aviation against acts of unlawful interference, taking into account the safety, regularity and efficiency of air travel*"
  - State may delegate security functions to airport entities, aircraft operators, and local police
  - State to determine which costs for security facilities and services should be borne by the State, airport, or other responsible agencies

Aviation Security Perspectives

- **IATA Position**
  - First and foremost, state responsible for security
  - Governments should assess and provide cost effective solution for security measures
  - Provide airlines with adequate and transparent financial information
  - Consult airlines on security measures at a given airport and on the level of security charges
  - Airports and airlines should agree a fair share allocation of costs to ensure that all users make a contribution towards security costs

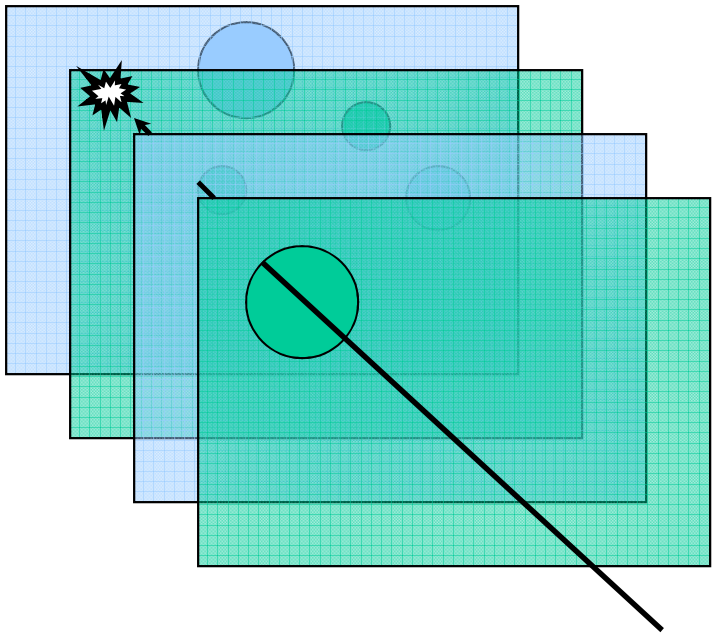
Airport Management Relevance

- **Crucial to Airport Business Continuity**
  - Allocation of resources and organizational accountabilities to respond and recover
  - Capital markets require risk management to ensure cash flow continuity / bond coverage
  - Requires specific Board and Executive level governance / oversight structures
  - **C**orporate **S**ocial **R**esponsibility integration
    - IATA / ACI signed in 2013 *Memorandum of Understanding* to jointly develop **Smart Security** (SmartS)

Airport Security Planning

Security Planning Model

- **"Swiss Cheese" Risk Model**
  - No single security application is 100% effective
  - Layered and stratified system reduces threat penetration



LAYERED SYSTEM

Security Planning Model

- **"Swiss Cheese Model" by J. Reason (1990)**
  - Hypothesis that non-standard events traced to organizational failures, but if dealt pro-actively would reduce fault occasions and severity
  - Cheese holes represent individual system weakness that continually vary size and location
  - System produces failures when holes align permitting "trajectory of accident opportunity" so hazard freely passes through all defences
  - ICAO adopts Reason model, and recommends firms organize defences through series of barriers

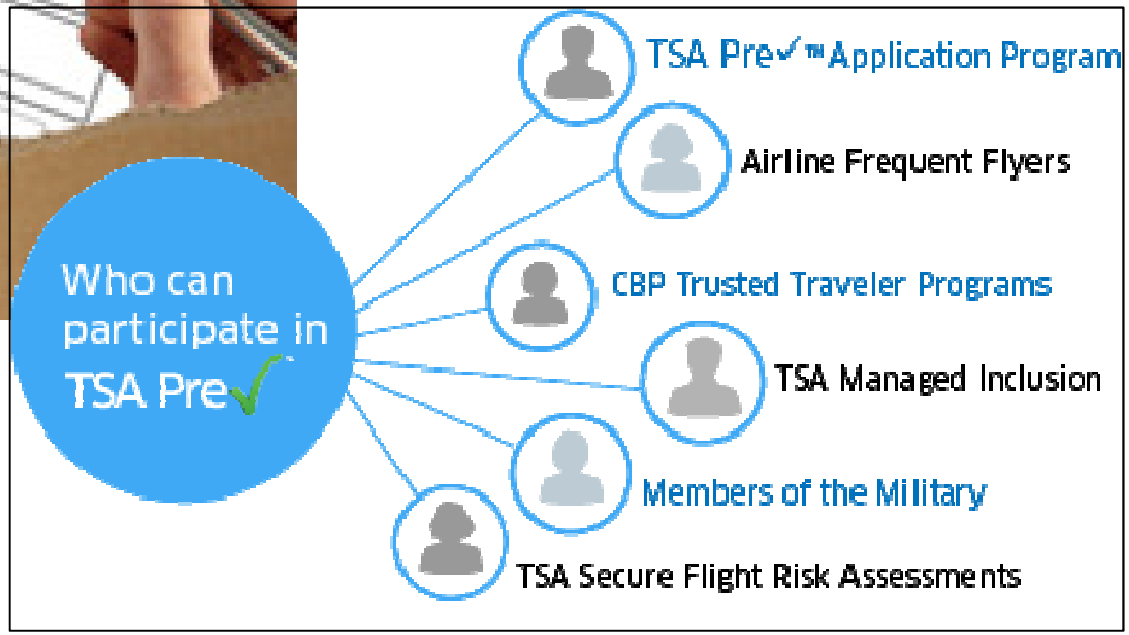
Airport Security Practice

- **Security Management System (SEMS)**
  - Holistic approach to security intended to permeate the entire organizational structure, consistent with **Annex 19, Safety Mgmt System**
  - Performance-based and established against carefully evaluated threats
  - Fully structured yet flexibly designed to respond to changing needs
  - Widespread introduction remains work-in-progress, although no alternative approach would appear superior at present

Airport Security Practice

- **Integrate process across value chain**
  - Closer cooperation and common objectives involving all relevant stakeholders
  - Encourage states to share information in timely manner, without duplication, to identify advance threats so appropriate risk management strategy / tactics can be employed
  - Information technology solutions to reduce costs and delivery global solutions across partners
  - Focus where insufficient data, but maintain some defences for “Known” traveller / shippers

Known Shipper / Traveler Programs



TURKISH AVIATION ACADEMY

İTÜ

Security-Oriented Facility Design

ICAO Related Obligations

- **Annex 17, Standard 3.2.6**
  - "Each Contracting State shall ensure the architectural and infrastructure requirements for the optimum implementation of security measures are integrated into design and construction of new facilities and alterations to airports"
  - Privatized airports, through concession or national law must be obliged in all circumstances to comply with security rules in compliance with ICAO, treaty obligations, and national practice
  - Creates uncertainty and undermine project viability

Security Design Principles

- **Design Fundamentals**
  - Demarcation of secure airside and groundside areas through designation of security access restrictions
  - Protection of barriers between access points
  - Recognize that each type of airport development may have unique security requirements
  - Establish protocols for segregation of passengers, and possibly staff that require screening before access permitted to sensitive areas, increasingly involving flight crews

Security Design Principles

- **Design Fundamentals**
  - Mitigate impacts of weapons use within the building on passengers, staff, and building integrity
  - Design core structural elements to limit impacts and casualties from post-attack structural failure
  - Require construction materials and assembly techniques resilient to anticipated threat events
  - Enhance protection for vulnerable or high threat areas

Security Design Principles

- **Design Fundamentals**
  - Integrate security designs in building fabric so to avoid conflicts between efficient use of passenger processing areas and system flow requirements, including facilitation, and commercial services
  - Recognize failure to adopt balanced approach can lead to having security requirements overwhelm or seriously interrupt passenger and staff flows
  - Permit contingency plan implementation so that non-affected building areas remain generally usable to avoid total operational system failure

Security Design Principles

- **Complementary Requirements**
  - Permit access for merchandise delivery throughout building without onerous costs to operators
  - Enhanced lighting and CCTV for surveillance
  - Recognize special arrangements will complicate security access protocols (e.g. diplomatic baggage, prisoners and deportees under armed escort)
  - Social equity concerns demand service levels to disabled and mobility impaired travelers must be equivalent to standard process requirements
    - Accommodation versus Equivalence

Security Design Principles

- **Industry Consultation Really Not Optional**
  - New build or renovations require conceptual design study well before detailed construction plans and tender documents prepared to ensure security elements are sufficiently addressed
  - Requires collaboration between security agencies, airport managers, building architects throughout the building planning process
  - Attention to anticipated future security / border control facility design standards will assist in planning practice

Security Planning Criteria

- **Security Design Manual**
  - Numerous advantages to incorporating security into airport planning at earliest planning and design phase
  - Timely consideration of such needs is almost guaranteed to result in cost effective, less obtrusive, and more effective and efficient security systems

U.S. TSA Facility Planning Topics

- **Overview**
  - Introduction
  - Applicability
  - Purpose
  - Background
  - Coordination
  - Changing Security Concerns and Contingency
- **Initial Planning**
  - Security Boundaries
  - Vulnerability Assessment
  - Protection Criteria
  - Physical Protection
  - Crime Prevention
  - Record Keeping
  - Responsibilities
  - Design Factors

U.S. TSA Facility Planning Topics

- **Guidelines**
  - Airport Layout
  - Aircraft and airside maneuvering areas
  - Landside ground access and facilities
  - Passenger and cargo terminals, including baggage and pre-board screening and inspection
- **Supplementary Topics**
  - Vulnerability Management
  - Weapons of Mass Destruction Protocols
  - Airport Blast Protection
  - General Aviation
  - Command and Control
  - International Parameters
  - Agency coordination

Airport Facilitation and Coordination

Facilitation Purpose

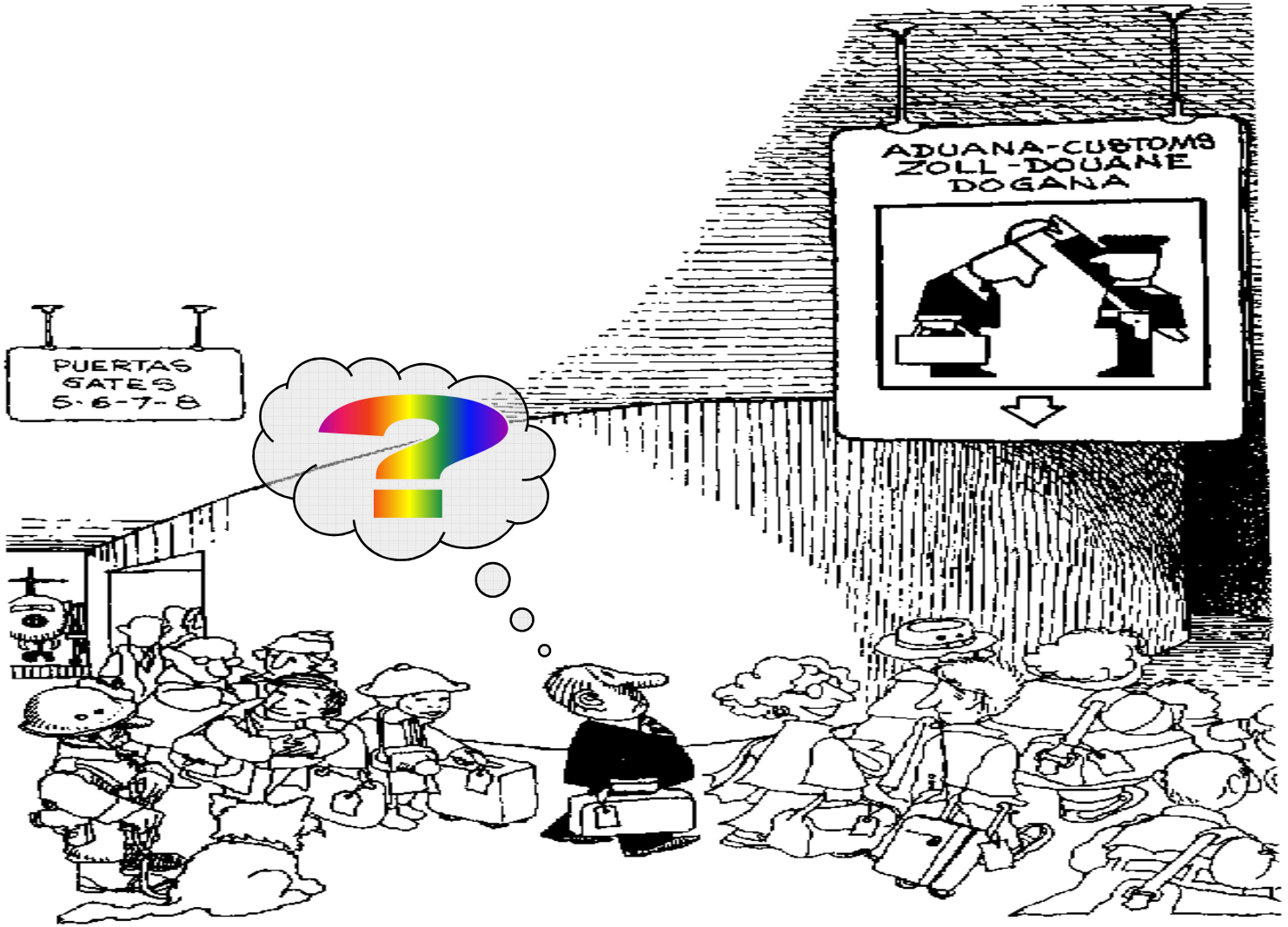
- **ICAO Annex 9**
  - *A combination of measures and resources intended to facilitate access to facilities and services as well as to expedite the process of air transportation*
- **Rationale**
  - Traffic volume and mix increasing
  - Fast technology evolution permits new services
  - Threat assessment demands greater sophistication
  - Implementation / monitoring costs in value chain
  - Despite gains, states increasing security protocols

Facilitation Challenges

- **Select Global Threats**
  - Acts of unlawful interference, illegal migration, illicit trafficking, and contagious disease
  - Response is severe state controls
    - Multiple passport controls
    - Aviation security measures
    - Special customs procedures
  - Need to reconcile facilitation and security

http://www.iata.org/pressroom/speeches/Pages/2014-06-02-1.aspx
(minutes 9:44 to 12:40)

Challenging Task for Security Agencies



Airport Facilitation Priorities

- **Service Quality**
  - Sequential travel stages depends on link efficiency
  - Airports monitor services for improvement actions
  - Passengers prefer consistent (preferably high) quality

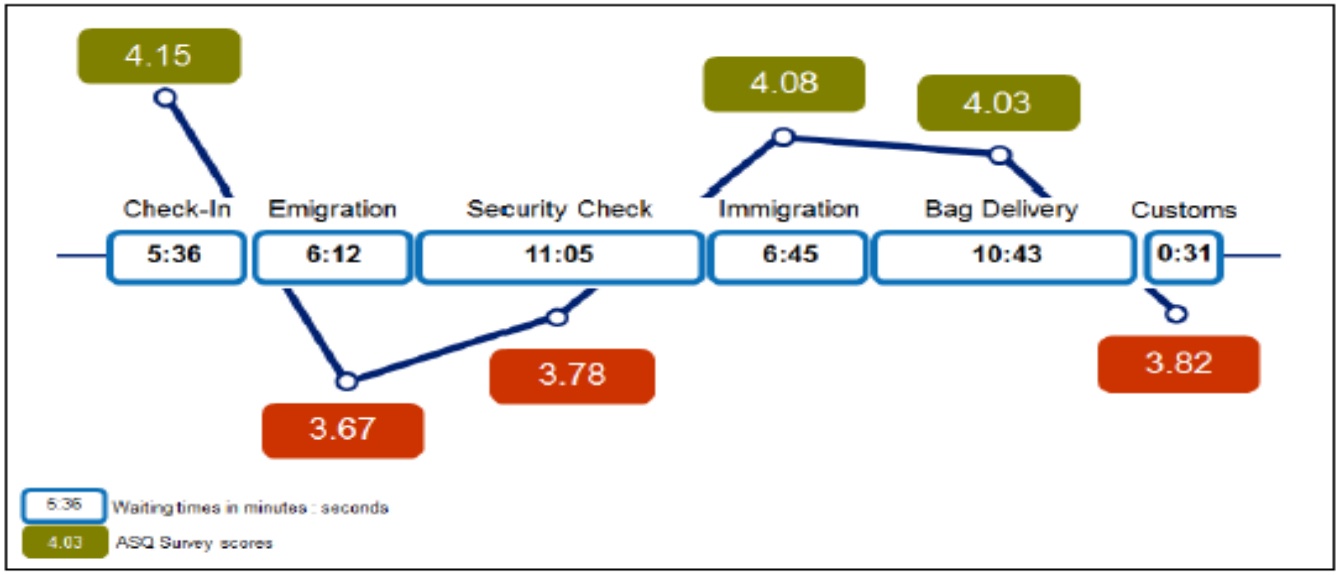


Figure 2: Impact of waiting times in customer satisfaction

Airport Facilitation Priorities

- **Operating Efficiency**
  - Airports and their concessionaires must improve processes and flows under their control
  - Frequently, major services that impact efficiency are controlled by others, thus improvements can only be achieved through negotiation
  - Establish cooperative process (e.g. Facilitation Committee) that allows all parties to see processes holistically with a common objective and focus
    - Irregular operations (IRROPS) will strain system, so build goodwill before you need it

Airport Facilitation Priorities

- **Facility Utilization**
  - Achieve capacity optimization through investment
  - Measure processes at key locations and optimize flow rates to avoid bottlenecks
  - Recognize, specialized facilities need to be allocated to specific users at specific times
  - Undertake thorough cost analysis with objective to improve handling control and redundancy
  - Postpone capital expenditures and use savings to invest in facilitation, as well as R&D with industry

Airport Facilitation Priorities

- **"Journey Management" Intermodal Integration**
  - While airports compete with each other, significant potential exists to expand airport catchment area
  - Airlines are beginning to pursue beyond aviation service offerings, including through rail ticketing
  - Combination of modes gains speed and convenience to reach smaller markets at lower cost
    - Lufthansa has multiple rail connections at FRA
  - Transport must be viewed from user mobility perspective, thus modal integration just a matter of time, and finding the right business model

"Journey Management" Underway

IATA Air Transport Consultancy Services

Air/ Rail Intermodality Study

Final Report

For

Central House, Lampton Road
Hounslow, Middlesex TW3 1HY
United Kingdom

February 2003

High Speed Rail Access to Heathrow

A Report to the Secretary of State for Transport by
Rt Hon the Lord Mawhinney Kt

July 2010

Future Paradigm

- **Business NOT as usual**
  - "***Trade with security*** *is a premise equally applicable to firms and the state in their respective decision-making processes*"

Role of Advanced Border Controls at Canadian Airports, Sulmona, L. et al, 2014

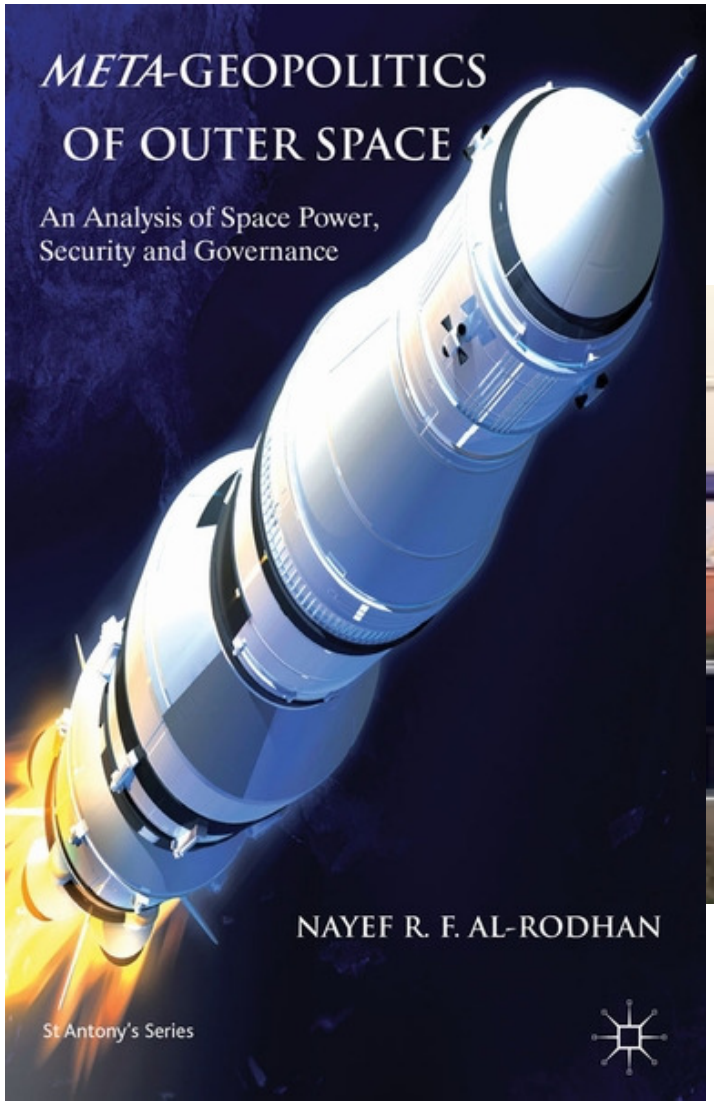
Emerging Paradigm

Emerging Paradigm

Future Paradigm

- **Airport system consequences**
  - Security / border control relocating to forward positions including to virtual cyber-space
    - Turkey introduces virtual pre-clearance - https://www.evisa.gov.tr/en/
  - Competitive advantage for first-movers
    - Just walk through, no immigration queues at Dubai airports by 2015, Khaleej Times, 2013
  - Fundamental design / process changes coming so airports that invest can create major advantages for their airline customers

Future Paradigm



Conclusion

Conclusion

- **Reality national security will permanently influence airport design, construction, and operations**
  - Airport security risk management starts with planning and system integration objectives
  - State, airline, and service provider consultation crucial to workable / affordable security system
  - Facility design needs security perspective to deliver cost-effective solutions and avoid retrofit
  - Facilitation and coordination efforts demand airport leadership that can become long-lasting source of competitive advantage

Select References

- ICAO Annex 9, 2011, "*Aviation Facilitation*", v.13
- ICAO Annex 17, 2011, "*Aviation Security*", v.9
- Reason, J., 1990, "*Human Error*", Cambridge Univ. Press
- Sulmona, L. et al., 2014, "*Role of Advanced Border Controls at Canadian Airports"*, Journal of Transport Geography
- U.S. Transportation Research Board, 2012, "*Application of Enterprise Risk Management at Airports"*, Airport Cooperative Research Program, Report 74
- U.S. Transportation Security Administration, 2011, "*Recommended Security Guidelines for Airports*"

TURKISH AVIATION ACADEMY

İTÜ

İSTANBUL TEKNİK ÜNİVERSİTESİ 1773

Questions ?