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International Airports; Avoiding and Mitigating Delays

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About the Speaker



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- ❑ Director – Forensic Delay Analysis, Arcadis – London
- ❑ 17+ years in construction
- ❑ 7+ years on international airport projects
- ❑ Appointed as programming/delay expert on multiple ME airport projects
- ❑ RICS Accredited Expert Witnesses, WWL Consulting Expert
- ❑ Doctoral researcher – claims management on international projects
- ❑ Lecturer in Construction Law, University of Salford, LL.M Construction Law and Practice.



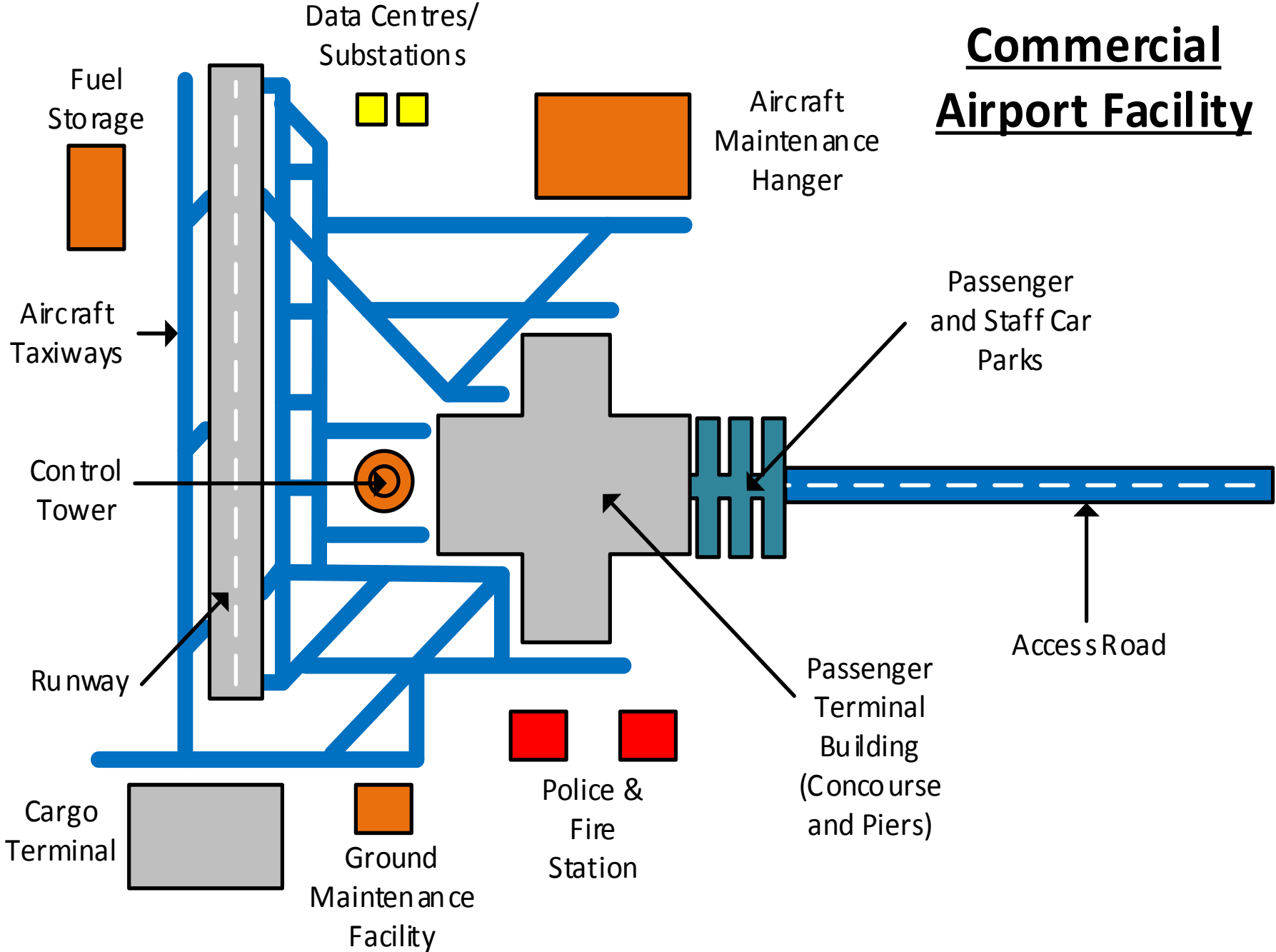
What's different about Airports?

*The more complex the project, the less likely it is to be completed on time
(Hamida et al.; 2015)*

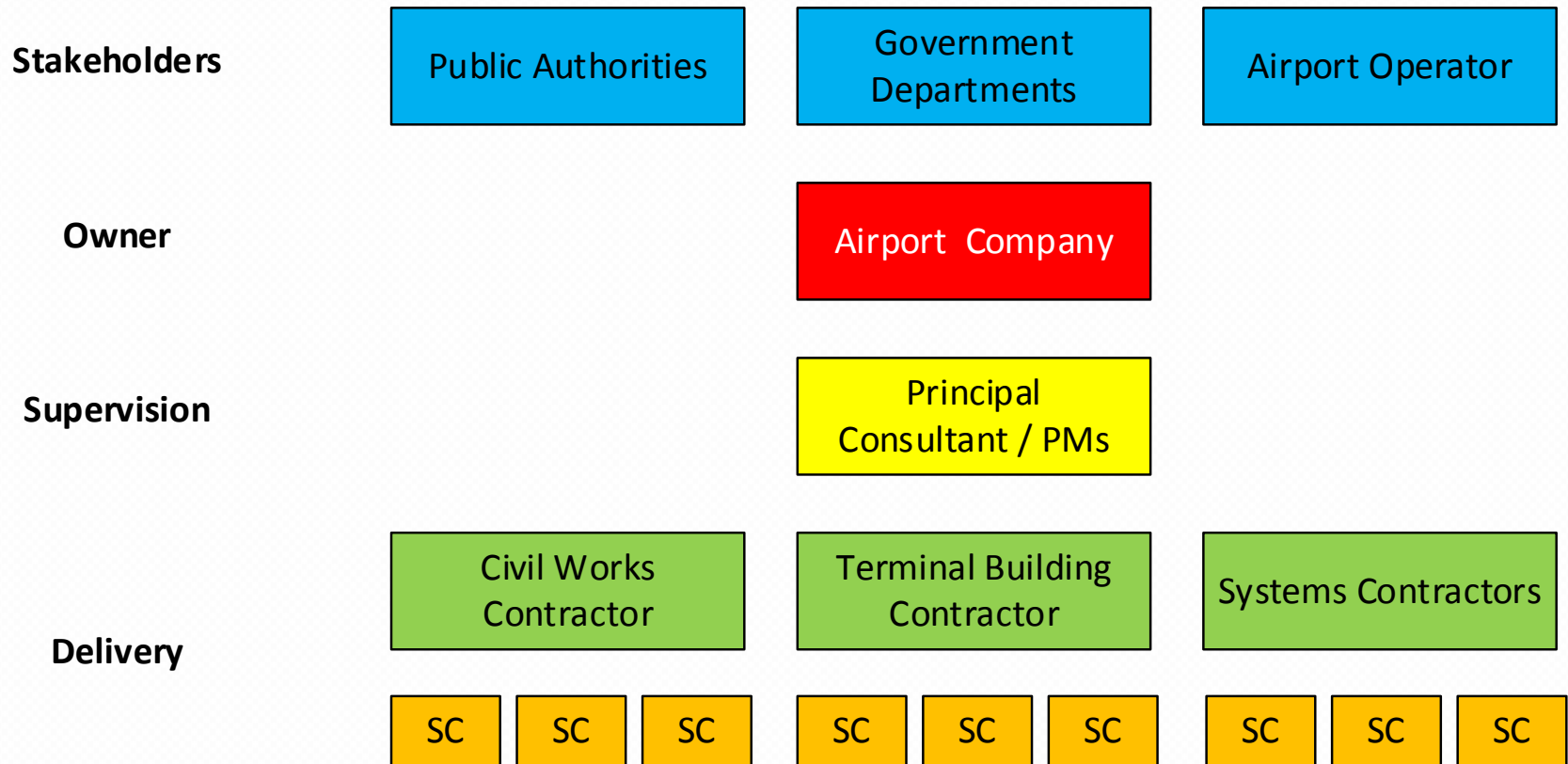
What's different about Airports?

- In many ways, building an airport is like building a city....
 - Large and complex
 - Facilities to accommodate movement of people, goods and traffic
 - Extended construction period
 - Multiple stakeholders
 - Frequent delays
- High airport construction activity in Middle East

Commercial Airport Facility



AIRPORT EPC STRUCTURES/STAKEHOLDERS





Airports in the Middle East



2004 to 2008

Dubai International Airport T3

- Construction cost – \$4.5BN
- Largest terminal building in the world, 47m pax
- **2 year delay**

2012 to 2018

Muscat Airport

- Construction costs – \$1.8bn
- National airport, 20m pax
- **4 year delay**

2012 to 2019

Abu Dhabi International Airport Midfield Terminal

- Construction costs – \$6.8bn
- Increases airport capacity by 18m pax
- **2-3 year delay**

2004 to 2014

New Doha International Airport

- Construction costs – \$16bn
- National airport, 29m pax
- **4-5 year delay**



Airports in the Middle East



- Now huge ME Airport opportunities going forward, not least:
 - Al Maktoum International in Dubai – Largest Airport ever built
 - Kuwait International Airport – New national airport
 - Further expansion to NDIA, Doha
 - Further expansion to Muscat International and regional airports

Causes of delay to ME Airports

- All mega-projects suffer common causes of delay, such as unforeseeable conditions, late design information, access delays and financing constraints
- However, due to their complex stakeholder structures and cutting edge technologies, airports are particularly prone to delays

Common problems

1. Slow preparation and approval of drawings
2. Slowness of owner's decision making
3. Shortage of manpower
4. Poor site management and supervision / Low productivity of manpower
5. **Inadequate planning of the project**

□ *Faridi AS, El-Sayegh SM., 2006*

Case Study: Muscat International Airport (1)

- Major Scope Change (Variation) by the Employer
 - *The project had run into delays after tropical cyclone Gonu flooded the site in 2007. This led to the decision to remove basements and underground areas, resulting in a complete redesign.*

- *ACI Works Airport Development News – Issue 1 (2012)*

Case Study: Muscat International Airport (2)

- Lost cargo (insurance fraud!)
 - *The ATLANTIK CONFIDENCE sank on 3 April ... The cargo laden on board in Turkey, which was to be used in the building of a passenger terminal at Muscat International Airport...*
 - *Kairos Shipping Ltd & Anor v Enka & Co LLC & Ors [2016] EWHC 2412*

Case Study: Abu Dhabi Midfield Terminal

□ Delays to design and execution of roof steels

- *...[T]here were complexities relating to the design and execution of the roof that were causing the initial delay. The terminal had been due to open in September 2017.*

□ *Gulf Business, 6 March 2017*

Case Study: New Doha International Airport

- **Delays to passenger lounges**
 - Substantial dispute over access delays to lounge fit out
 - Led to major arbitration

- **Delays to “soft” opening caused by Civil Defence non-compliance**
 - Opening delayed by a further several months

- ME Construction News (2013)

ME Airport Delays

- To sum up, history tells us that ME airport projects almost inevitably face delays

- But what can we do?

Avoidance vs. mitigation

We should try to either:

1. Avoid the causes of delays, or
2. Minimise the effects of delays

Avoiding delay

“An ounce of prevention is worth a pound of cure..” De Bracton (c. 1240)

But can we really avoid delays?

- Allot of focus on “delay avoidance”

- Industry knows that it should try to achieve:
 1. Fewer design changes
 2. Simpler construction
 3. Realistic timescales and budgets
 4. Vetting
 5. Partnering

Probably not...

- But these goals are often not achieved, particularly on major airport projects:
 - Clients will change their minds – latest technology
 - Contractors will face issues with workforce and subcontractors – international projects
 - Lower bids often win
 - Almost inevitable that an adverse event of some kind will occur and cause some delay

Managing delay

- As delays probably will occur, we should not only try to avoid them...
- We should also focus on **managing delay effectively**
- With the objective of *minimizing the effect of the delay*

The problem with managing delay

- However, contracting parties often fail to manage delay effectively:
 - A focus of individual interests over the interests of the project
 - Not being aware there is a problem until it's too late
 - A failure to take the programme seriously as a tool for managing delay

The problem with managing delay

- Leading to
 - Uncertainty on delivery deadlines and completion date
 - Claims and disputes
 - More delays

Managing delay effectively

- Four primary issues that inhibit effective delay management:
 1. Rigid project governance
 2. Adversarial contract structures
 3. Deficient programme coordination
 4. Ineffective mitigation

(1) Rigid project governance

- For example:
 - Rigid planning procedure - reluctance to develop or modify “approved” programmes
 - Rigid/prolonged procedure for settling delay related issues (instructions, approvals, determinations)
 - Committee level control over spending – delays to approval of financing and adjustments to TFC

(1) Rigid project governance

- Difficult to address in current contracting climate, but can be tackled by:
 - Establishing a procedure for managing major delays
 - Notification with estimates of the delay, triggering process of re-planning and implementation
 - Decision makers involved in management process, pre-approved mitigation contingencies

(2) Adversarial contract structures

- For example:
 - Fault focused delay management – delays normally managed through contractual claim process
 - Blame culture between EPC v EPC and EPC v Employer
 - Delays in settling claims lead to financial constraints and loss of focus on delay management

(2) Adversarial contract structures

- Difficult to address in current contracting climate, but can be tackled by:
 - Collaborative contract structures / administration
 - Risk management meetings
 - Focus on avoiding delay as part of claim settlement

(3) Lack of programme coordination

- For example:
 - Programming information from EPC to EPC and EPC to Sub/EPCs often limited (commercial interests)
 - Agreed sequences and hold points represented differently through each programme
 - Tendency to manage coordination problems using “lists” and “trackers”

(3) Lack of programme coordination

- Addressed by good project controls:
 - Pre-defined build sequences used to monitor and coordinate programmes
 - Re-programming to address coordination issues and incomplete work (not lists!)
 - Integrated project wide programme / delivery schedule available to all stakeholders

(4) Ineffective mitigation

- For example:
 - Unclear mitigation obligations / compensation
 - Flooding the site with additional labor / equipment
 - Failing to consider the consequences of the mitigation measures

Mitigating delays effectively

- Mitigating delay means making changes to the current working plan, to increase the rate of progress or reduce the remaining critical path duration. This involves:
 1. Resequencing activities
 2. Increasing resources
 3. Increasing working time
 4. Temporary works
 5. Redefining Practical Completion

(1) Resequencing activities

- Potentially the easiest / least costly mitigation measure:
 - Simply reviewing programme logic developed at the outset of the project may be effective
 - More parallel working between rooms/floors/buildings sometimes possible
 - But can be costly if other measures needed to facilitate new sequence

(2) Increasing resources

- Only effective if properly planned:
 - Additional resources targeted on critical/near critical work
 - Time limited period with clear objective
 - Consider labour and supervision availability, cash flow restraints and increased site welfare/logistics burden

(3) Increased working time

- Only effective if properly planned:
 - Introducing overtime / additional shifts
 - Again, should be:
 - Targeted on critical/near critical work
 - Time limited period with clear objective
 - Consider labour and supervision availability, productivity/exhaustion, working hour restraints

(4) Re-defining Completion

- Changing the definition of completion to allow delayed works to be completed after PC can be effective
 - Consider items not essential to operation and management (parts of the retail offering, a transfer pier etc).
 - Targeted on critical/near critical work, or implemented to divert restricted labour to critical work
 - Formalised early

But Consider the Consequences of Mitigation

- Mitigation inevitably has some consequences on ongoing work

- These consequences must be considered in any coherent mitigation plan:
 - Operational consequences

 - Mitigation costs

Operational Consequences

- Always consider the **operational consequences** of mitigation when developing a mitigation plan:
 - Increased inspections
 - Expedited inspections/approvals
 - Permit to work systems (access before handovers)
 - Increased management time
 - Increased defects
 - Removal of float to accommodate further delays

Operational Consequences for Airports

- Also consider:

- Airside and other operation restrictions

- Operational priorities vs. contractual priorities

- Partial Airport opening (common)

- Systems commissioning needs

- Mandatory operation requirements

- Focus on “must haves” not “nice to haves”

Mitigation costs

- Also consider the **costs** of mitigation:
 - Enhanced labour and material costs
 - Additional costs for temporary works
 - Delay damages / lost revenue

- **What is the cost of delay vs. mitigation?**

- Who will pay for the mitigation?
 - Is there a clear obligation to mitigate in the Contract?

Summary

- ME Airports frequently face delays due to their size and operational complexity. But the most common causes of delay are **sometimes unavoidable**.
- Therefore, delays should be envisaged and **managed** effectively
 - Immediate responsive action, not constrained by rigid contract structures
 - Clear mitigation plan
 - Targeted, time limited mitigation measures focused on critical/near critical work
 - Consideration of the consequences of mitigation

Questions?
