



The Regional Ministerial Conference on Aviation Security in Africa and the Middle East

المؤتمر الوزاري الإقليمي لأمن الطيران بإفريقيا والشرق الأوسط

GASeP: The Roadmap to Foster Aviation Security in Africa and the Middle East

Sharm El Sheikh, Egypt 22-24 August 2017





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الهيئة العامة للطيران المدني
GENERAL CIVIL AVIATION AUTHORITY



Dubai Declaration on Cyber Security in Civil Aviation

6 APRIL 2017

Reasons and Prospect



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Dubai Declaration on Cyber Security in Civil Aviation

Why ?





The Global Cyber Security Issues Today

1. Civil aviation organizations depend heavily on electronic systems for critical parts of their safety and security operations

2. New technology is continuously evolving - therefore there may be lack of technical insight

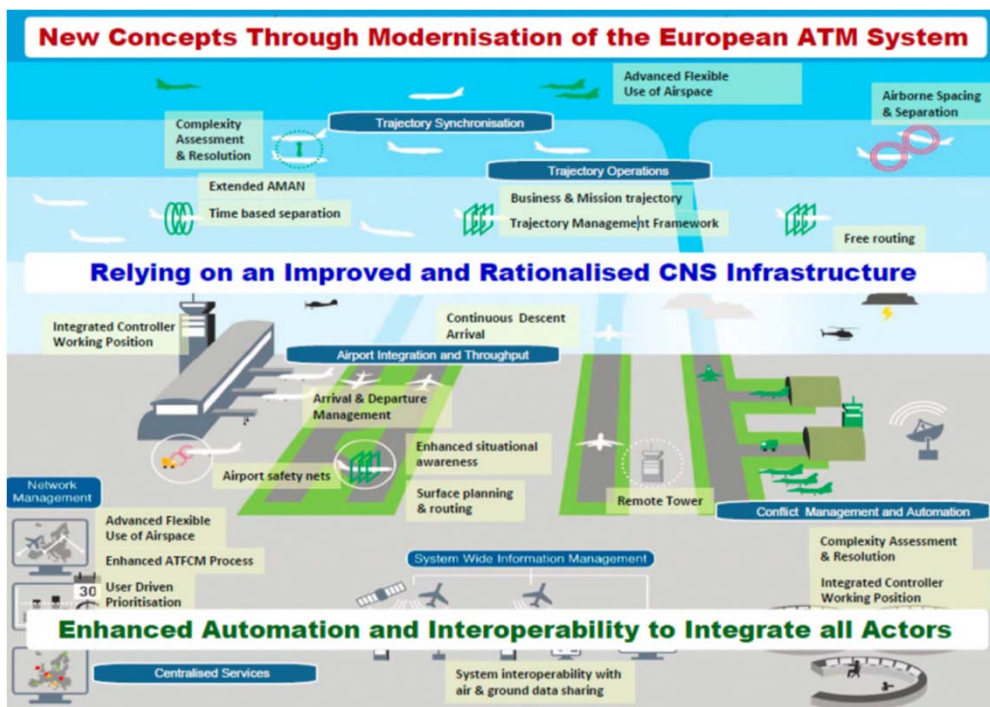
3. Consolidation of IT Systems – the aviation industry systems are becoming increasingly interfaced which exposes risks caused by other organisations' cyber security weaknesses

The protection of electronic systems from malicious electronic attacks depend on managerial oversight and technical expertise to continuously maintain and sustain integrity of the systems

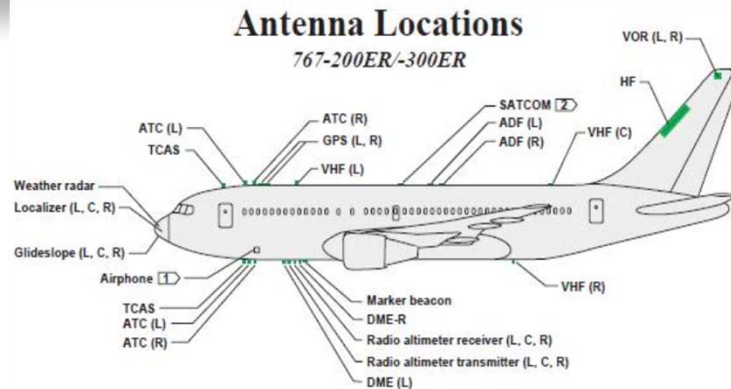




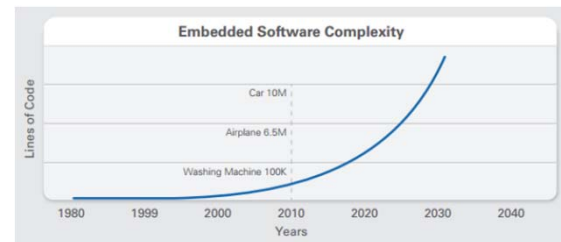
Complexity



DATA Communication ATM



Consider all radio communications and protocols as critically exposed

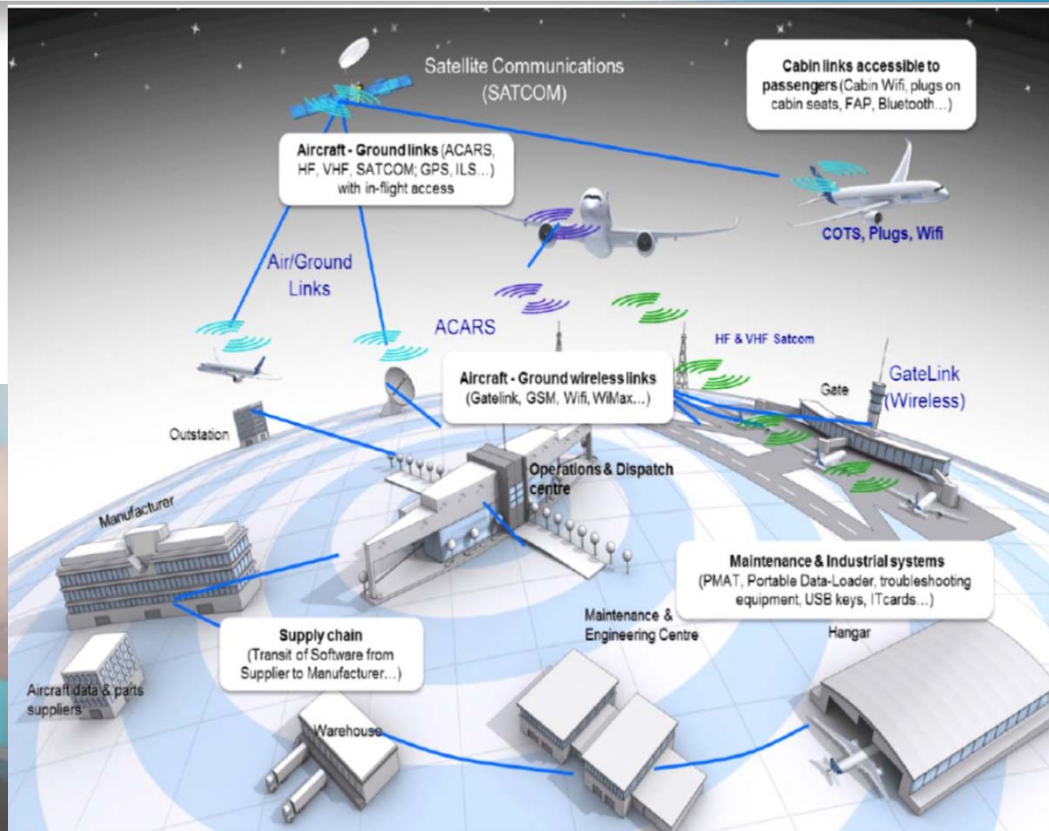


Software growth and dependence
LOC (8%-80%)





Complexity





Reasons for this initiative – Concerns and challenges

Complexity

- Complexity of the Civil Aviation systems (ATM, Communication, Interfaces and system integration, Internet needs...)





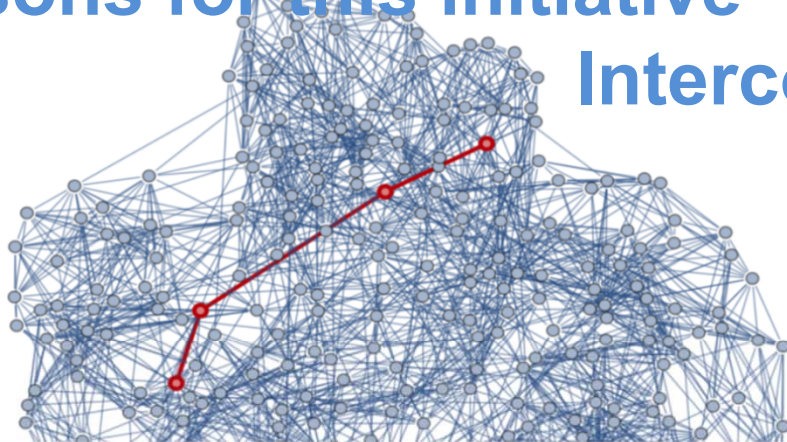
Reasons for this initiative – Concerns and challenges Interconnectivity

- Airlines
- Concessionaires
- Tenants
- Vendors
- Passengers (BYOD)
- Anyone who is connected to the airport's network





Reasons for this initiative – Concerns and challenges Interconnectivity

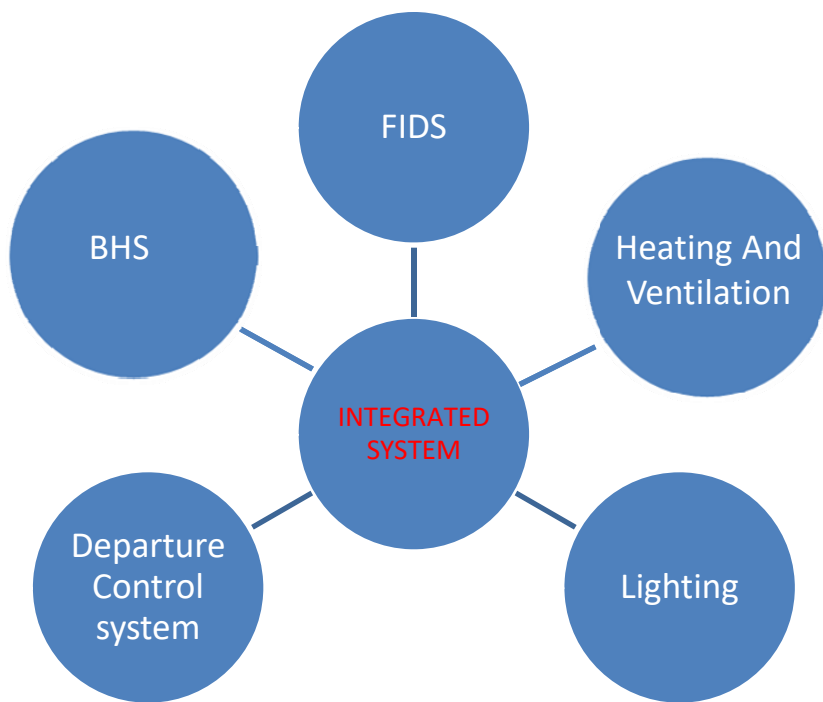


The increasing number of new ways of interaction also create novel attack paths which are **not predictable by definition**



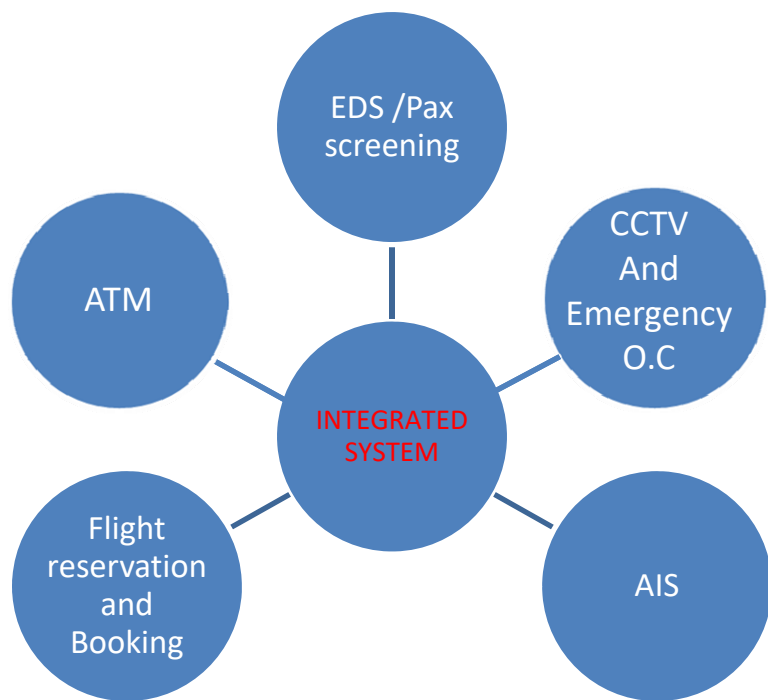


Reasons for this initiative – Concerns and challenges Vector of Vulnerability





Reasons for this initiative – Concerns and challenges Vector of Vulnerability





Cyber Security Concerns

Illegal access to security restricted, sensitive or controlled information

Unauthorized Access

Failure of communication between aircraft & ground services

Attack or Unauthorized Access

Threats due to compromised business parties

Damage or Attack

Misuse of aircraft information systems

Unauthorized Access

Unauthorized changes to flight path

Attack

Theft and misuse of staff or passenger data and information

Unauthorized Access

Misuse of aviation security restricted information

Attack

Overspending or loss due to theft or misuse of information

Loss of aircraft control during flight






Attack





Reasons for this initiative – Concerns and challenges

Level of Damage

Explore Explore user ID and access by means of Social Engineering and / or Malware (Mails / Web)	Exploit The attacker then uses vulnerabilities on the systems	Access The attacker gains access to the target system and admin account	Clean up Establishment of several tunnels and hiding the attack activities	Damage Export of sensitive data across different systems to external
				
<ul style="list-style-type: none"> • Network, systems • Server lists • Functional- and Default-Accounts • User-Accounts 	<ul style="list-style-type: none"> • Software • Passwords • Configuration • Applications • Processes 	<ul style="list-style-type: none"> • Login • Privilege Escalation • Resources (network, system) 	<ul style="list-style-type: none"> • Control Channel • New Account • New Systems, Services • Backdoor • Patching 	<ul style="list-style-type: none"> • DOS (System, Account) • DOS (Encryption) • Data Leakage • Manipulation • Publication





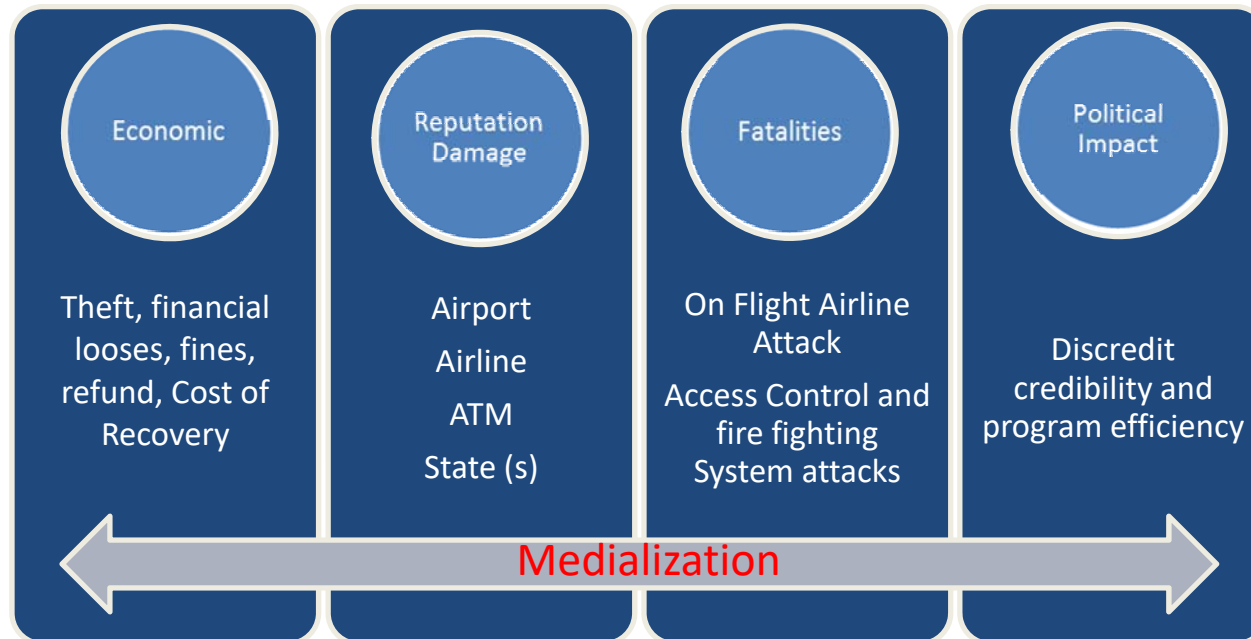
Reasons for this initiative – Concerns and challenges Threat Classification

- **Exploitation**
- **Disruption**
- **Destruction**





Reasons for this initiative – Concerns and challenges Consequence





Reasons for this initiative – Concerns and challenges

Global Challenges need Global Mitigation

- **The ICAO Assembly Resolution A39-19:**

Addressing Cyber security in Civil Aviation, and the importance and **urgency** of protecting civil aviation's critical infrastructure systems and data against cyber threats.

- **United Arab Emirates (GCAA) Initiative:**

ICAO summit was held in Dubai, from 4 to 6 April 2017 on cyber security in civil aviation **to address challenges** to aviation resulting from cyber threats.

- **GASeP :**

commit and develop **holistic mitigation** for aviation cyber security challenges (**Policy, Plan and mechanism,....**)





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Dubai Declaration on Cyber Security in Civil Aviation

Prospect



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Objective of The declaration

- a) implementing global, regional and State-level strategies on cyber security in civil aviation based on a shared vision;
- b) increasing the resilience of the global aviation system against cyber threats that may jeopardize the safety, security and efficiency of civil aviation; and
- c) reaffirming the prominent role of ICAO as aviation's highest-level forum for addressing collaboratively cyber security in civil aviation;





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Dubai Declaration on Cyber Security in Civil Aviation

How ?



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Resilience Approach - Scope

On the Ground

Airport operational process

- Pax, Staff, Supplies
- Baggage HS, CCTV
- Catering , CGO & MAIL
- Border Control & Security Screening
- Fueling

In the Air

ATM

- ASI
- Radio Communication
- Satellite Communication
- On board WIFI

A holistic resilience approach:

- For all phases of air transport;
- Global view: regional/international level.





Resilience Approach - Principles

- Need to improve resilience of the **whole air transport system**;
- Need for a conceptual approach: to move from being 'reactive' **to becoming 'anticipative'**
- Need to better define current and **future vulnerabilities**.





Outcome of the Declaration





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Outcome of the Declaration



**commitment to the development of
a robust, efficient and sustainable
civil aviation system.**





Outcome of the Declaration

1. It is **the responsibility of States** to act in such a way as to mitigate the risk posed by cyber threats, to build their capability and capacity to address such threats in civil aviation, and to ensure their legislative framework is appropriately established to take action against actors of cyber-attacks;
2. **Cyber capabilities** applied to aviation should be **used exclusively for peaceful purposes** and only for the benefit of improving safety, efficiency and security;
3. **Collaboration and exchange between States and other stakeholders** is the sine qua non for the development of an effective and coordinated global framework **to address the challenges** of cyber security in civil aviation;





Outcome of the Declaration

4. Cyber security matters must be fully considered and **coordinated** across all relevant disciplines **within State aviation authorities**;
5. **Cyber-attacks** against civil aviation **must be considered an offense** against the principles and arrangement for the safe and orderly development of the international civil aviation; and
6. **The ratification and entry into force of the Beijing Instruments** would ensure that a cyber-attack on international civil aviation is considered an offence, would serve as **an important deterrent** against activities that compromise aviation safety by exploiting cyber vulnerabilities, and therefore it is imperative that all States and ICAO work to ensure the early entry into force and universal adoption of the Beijing Instruments, as called for in ICAO Assembly Resolution A39-10: Promotion of the Beijing Convention and Beijing Protocol of 2010.





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