

ATM Security

Emergent challenges and opportunities
focusing on increasing automation and cyber-security

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Civil-Military ATM Security Coordination Unit
SECONOMICS, 5 November 2014

Air Traffic Management Evolution



SESAR Targets 2005

Reducing the environmental impact per flight by 10%

Cutting ATM costs by 50%

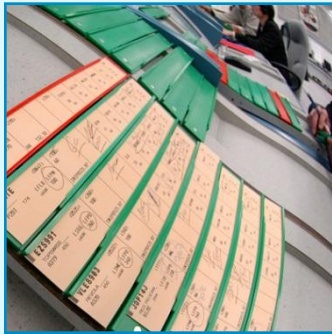
Enabling EU skies to handle 3 times more traffic

Improving safety by a factor of 10



SESAR Concept of Operations is a Paradigm Shift for ATC

Past



Procedural Control

the current and planned a/c positions

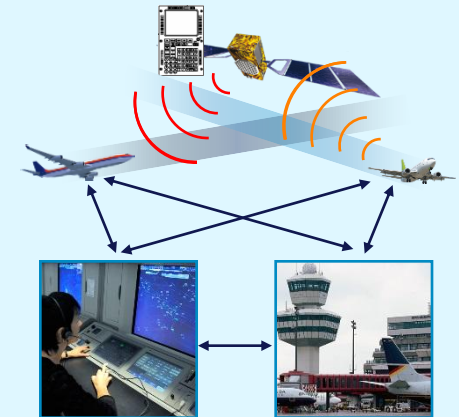
Today



Radar Control

Know the current and **estimate** planned a/c positions

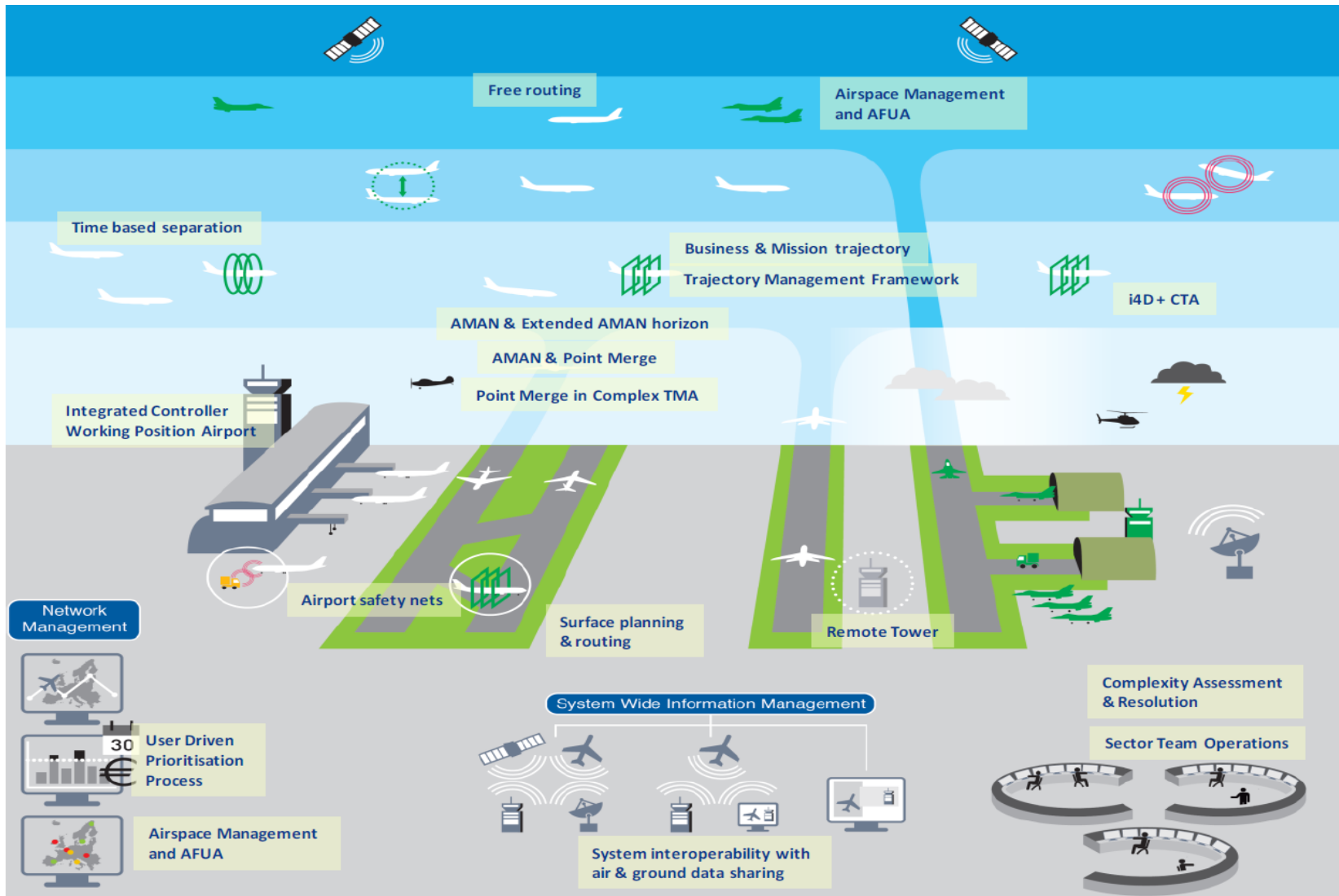
Future



Trajectory Management

Know & share the current & planned a/c positions

Expected SESAR Changes



SWIM – System Wide Information Management a key enabler to the future ATM

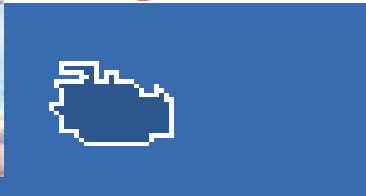
- Integrates the aircraft
- both G/G and A/G
- Regional systems
- Both Civil and Military



- Safety requirements imply high levels of availability, continuity, integrity
- **Information security** addressed - **increased security** needed due to increased information access through SWIM

Challenges

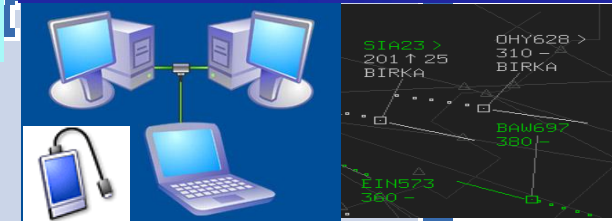
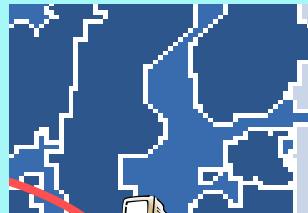
Cyber & Technology



ATM over IP
 Net Centric Ops
 Cyber Target

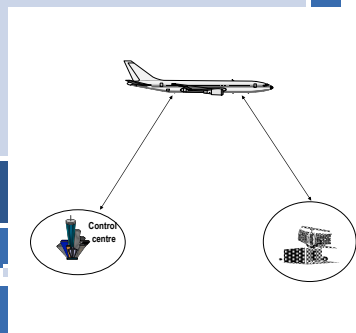


Contingency Planning



Crisis Management

Communications
 Navigation
 Surveillance SEC
 Data Link Control



Service Continuity



New comers



ATM & cyber Security in ICAO: AN-C/12

2.3 SECURITY

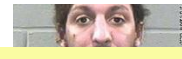
2.3.1 On the subject of security of air navigation systems, the Committee was presented with an oral report covering the outcome of the High-level Conference on Aviation Security (HLCAS) that was held in Montréal from 12 to 14 September 2012. The Committee agreed **that cyber security could be an impediment to the implementation of the Global Air Navigation Plan.** The term “cyber security” encompasses the protection of electronic systems from malicious electronic attack and the means of dealing with the consequences of such attacks. Although, numerous industry groups are making standards in their own areas of expertise, it was noted that there was no overall oversight thus resulting in potential for gaps, overlaps and inconsistencies **and no global framework that addresses cyber security issues with a clear view of air traffic management (ATM) efficiency and based as far as possible on existing ICAO structures and bodies but with proper involvement of the necessary cyber security expertise. Consequently, the Committee called upon ICAO, while continuing its work on air traffic management (ATM) security, to establish a mechanism for addressing cyber security issues.** The Committee noted that the ICAO *Air Traffic Management Security Manual* (Doc 9985), was now available.

Aviation under threat



1962
First aircraft
Hijack

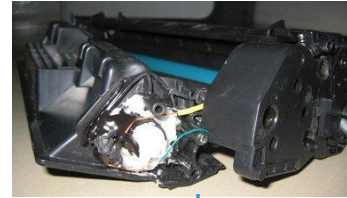
2001
9/11



Shoe bomber
Dec/2001



**Underwear
bomber**
Dec/2009



2010
Cargo plot



Laser attacks
Recorder since
2005
In the raise
nowadays

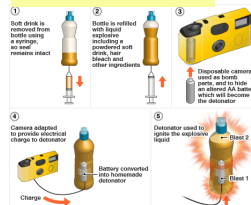
1988
Lockerbie
bombing



2003
Missile attack
DHL aircraft
Bagdad
(1975-2007)



2006
Liquids
explosives



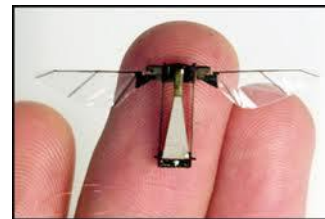
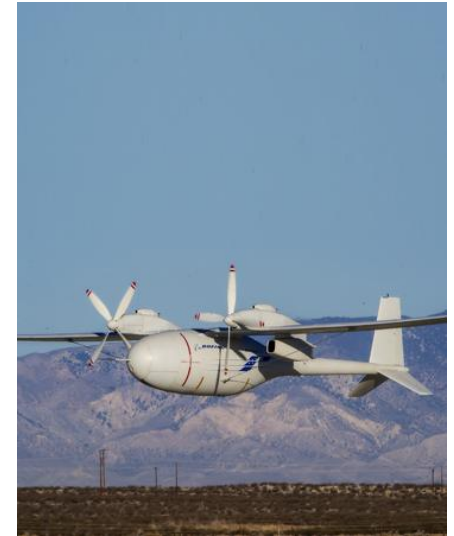
2011/12
Airport
terminals



What's next?
from **2014**
Into the **Future**
Cyber Security

RPAS: remotely piloted aircraft systems

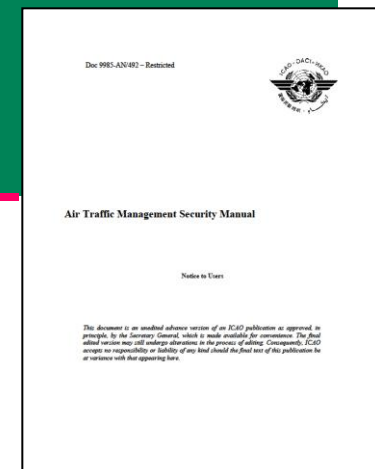
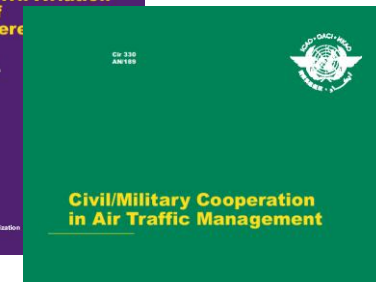
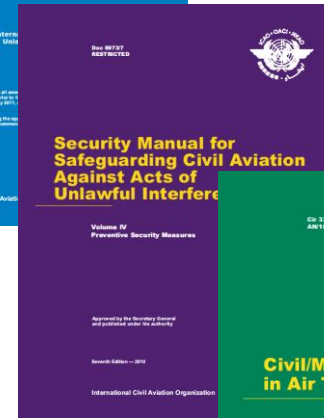
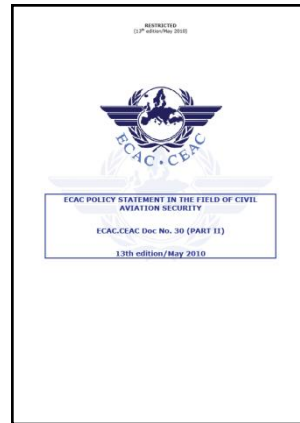
- Beyond military drones – the future of unmanned flight
- The UAV revolution
- Almost limitless applications
- All types, sizes, prices
- Business case



Security/safety/privacy issue

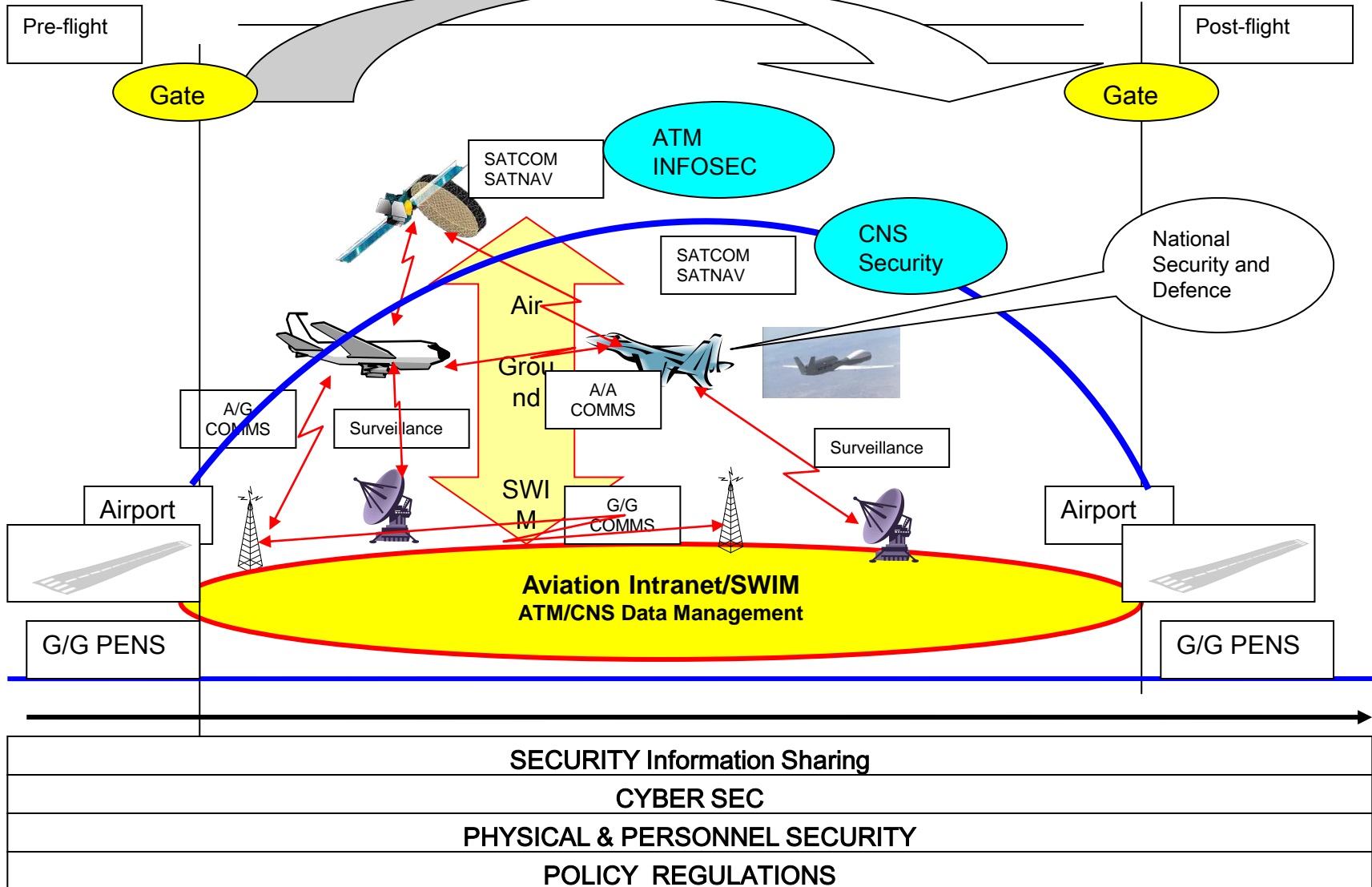
Command and control: data link

ATM Security evolution



ATM Security
 The safeguarding of the ATM System from security threats and vulnerabilities; and the contribution of the ATM system to civil aviation security, national security and defence, and law enforcement. (ICAO ATM Security Manual Doc. 9985 Restricted)

ATM Security scope



One **safe and secure** sky for Europe



ATM Security

