



ICAO | UNITING AVIATION

Update on the ICAO work programme on Conflict Zones and way forward

ICAO AVSEC2018

Global Aviation Security Symposium

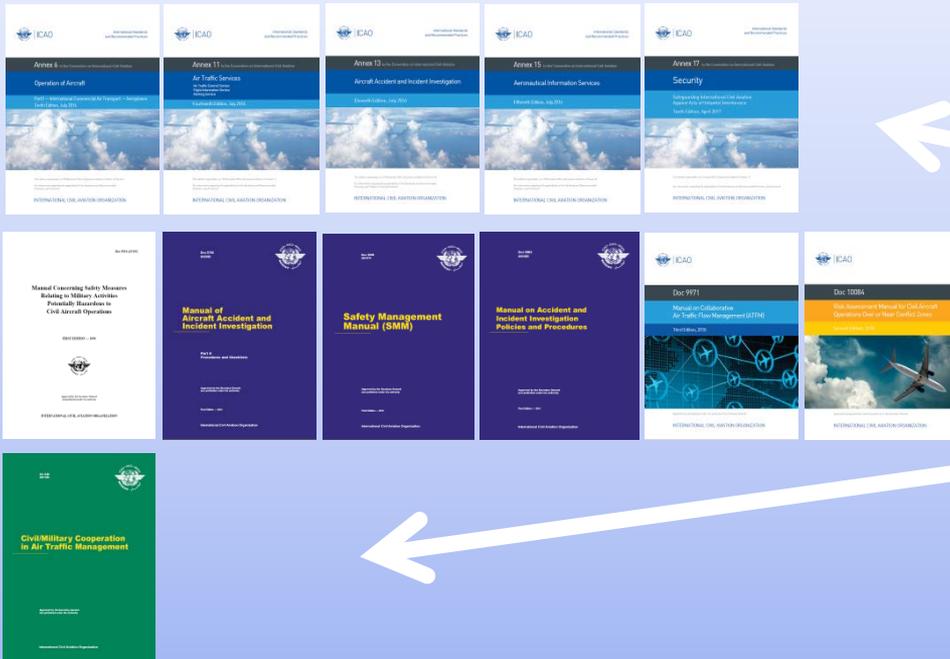
Kas E. Beumkes, Senior Safety Expert ANB/ICAO

Montréal, 26 November 2018





Involved ICAO provisions



- 5** Annexes
- 6** Manuals (Docs)
- 1** Circular *)
- *) Circ 330 → Doc 10088



ANNEXES

Annex 6 – *Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes*

Annex 11 – *Air Traffic Services*

Annex 13 – *Aircraft Accident and Incident Investigation*

Annex 15 – *Aeronautical Information Services*

Annex 17 – *Security*

GUIDANCE MATERIAL

Doc 9554, *Manual concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations*

Doc 9756, *Manual of Aircraft Accident and Incident Investigation, Part I*

Doc 9859, *Safety Management Manual*

Doc 9962, *Manual on Accident and Incident Investigation Policies and Procedures*

Doc 9971, *Manual on Collaborative Air Traffic Flow Management*

Doc 10084, *Risk Assessment Manual on Civil Aircraft Operations over or near Conflict Zones*

Doc 10088, *Manual on Civil/Military Cooperation in Air Traffic Management* *)

*) replaces Circular 330



ANNEXES
6, 13, 11, 15, 17

2018
AN 6: State Letter
AN 13: review ANC
AN 11 and 15: ANC approved
AN 17: published

2019
State Letters

2020
Adoption Council

DOCs

2018
9554, 9756 Part I: started
9962, 10088: ongoing
9859, 9971, 10084: published

2019
ICAO Secretariat

2020
Published



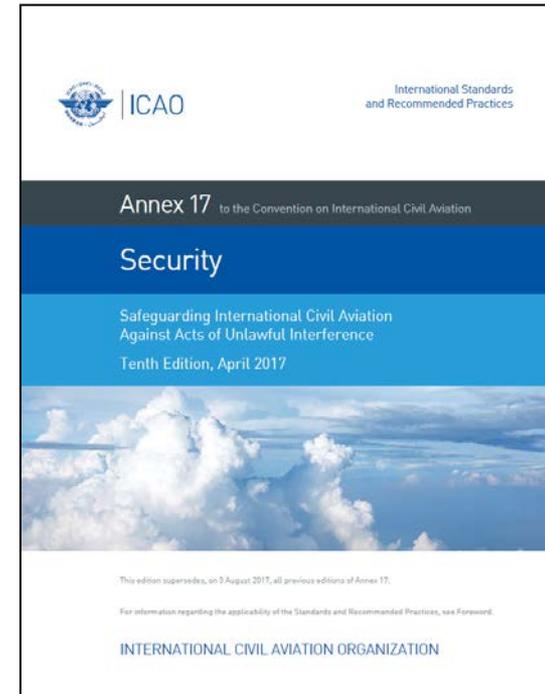


IMPROVEMENTS

Annex 17 - Security

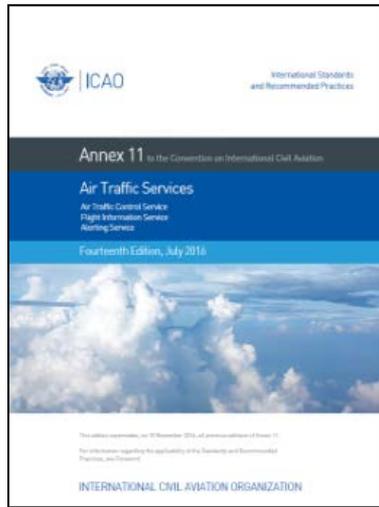
Published (2017) → to adjust NCASP elements:
Expanding existing State requirement to constantly review, **besides** the level, also **the nature** of the threat to civil aviation in its territory **and the airspace above**

New requirement (Nov 2018): **the appropriate authority to establish and implement procedures to share, as appropriate, relevant information with operators, ANSPs or other entities concerned in a practical, timely manner to assist them to conduct security risk assessments relating to their operations**

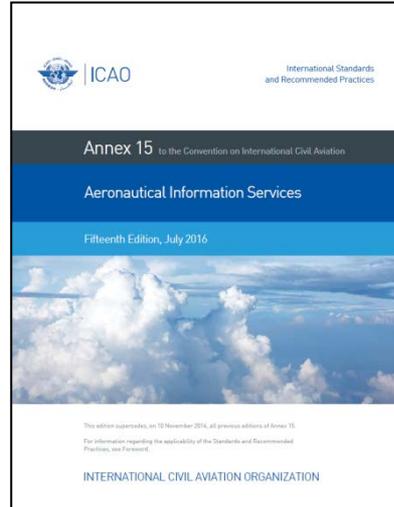


ONGOING IMPROVEMENTS

Risk assessment and sharing information – Air Traffic Services



Annex 11



Annex 15

New requirements (2020)

- **ATS ensures to conduct a risk assessment of airspace concerned for hazardous activities to civil aircraft and take mitigating actions when necessary**
- **conflict zone is a reportable hazard for civil aviation in NOTAM, include nature, extent of threat, and consequences**

PUBLISHED & ONGOING IMPROVEMENTS

ATS Contingency and Civil - Military Coordination

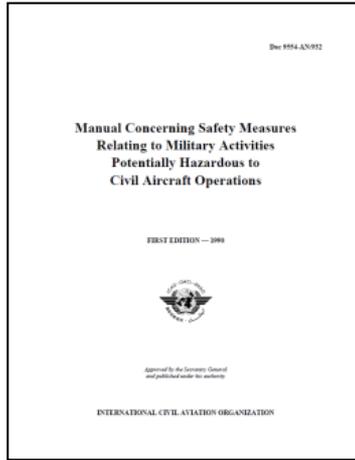
2018

2020

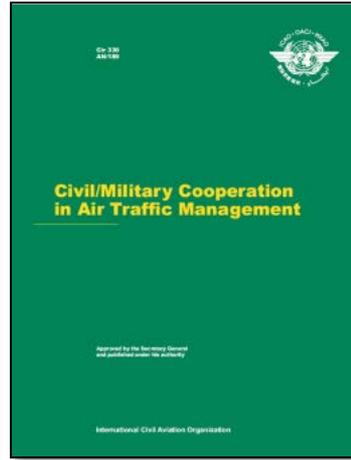
2018



Doc 9971



Doc 9554



Circ 330 → New Manual (Doc 10088)

Improved guidance: 2018 - 2020

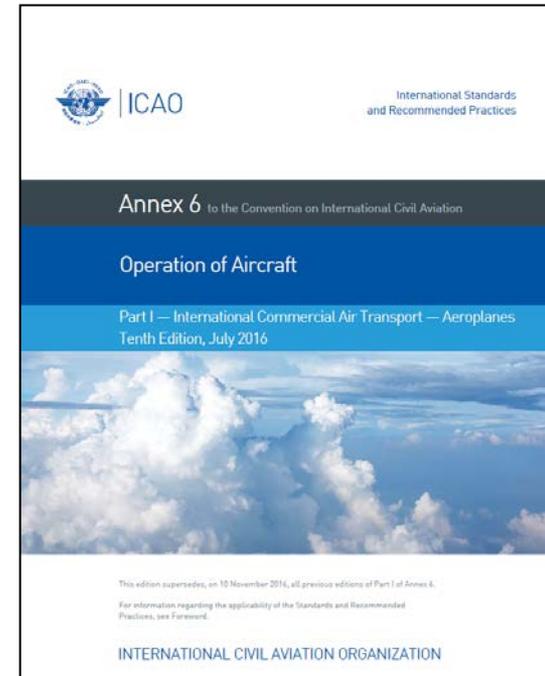
- Coordination and contingency improvements during conflicts
- Responsibilities of parties
- Establish joint high-level policy body for oversight

ONGOING IMPROVEMENTS

Annex 6 – Operation of Aircraft, Part I

New requirement (2020)

- **Operator ensures to conduct before the flight a risk assessment for the entire flight plan route, including alternates, and when necessary to take mitigating actions**
- Note with reference to new *Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones* (Doc 10084)



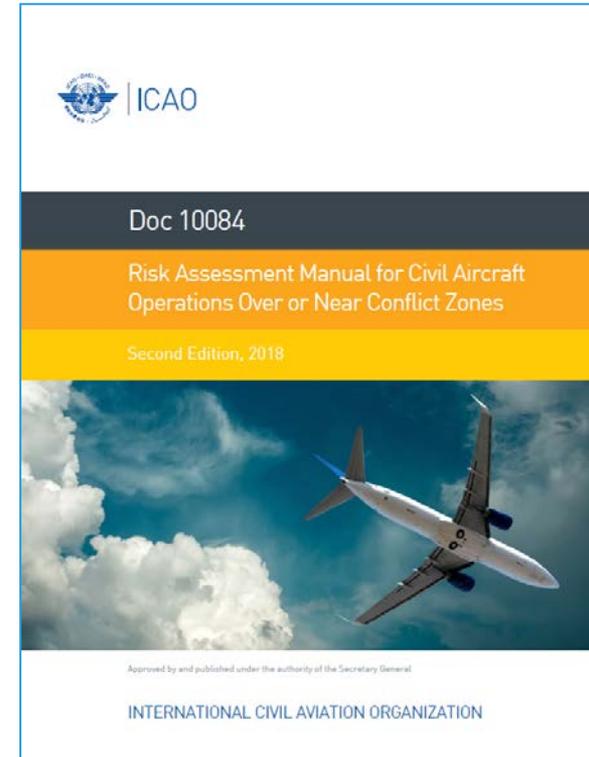
PUBLISHED IMPROVEMENTS

Doc 10084 – *Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones*

1st Edition (2016): Conflict zones defined and advice to States and operators about risks of overflying conflict zones

2nd (non-restricted) Edition (2018):

- Improved ICAO framework and procedures
- Responsibilities of all stakeholders
- Consolidated source material for risk assessments
- Risk information sharing mechanisms
- Guidance what to do with threat and risk information
- Best practices





2nd Edition Doc 10084

So, what's new?



History and related work in progress	(vii)
Glossary	(xi)
Related ICAO publications	(xv)
Chapter 1. Introduction	1-1
1.1 Purpose and scope	1-1
Chapter 2. Risks to civil aircraft from operations over or near conflict zones	2-1
2.1 Surface-to-air missiles — capability and proliferation	2-1
2.2 The historic threat to civil aviation	2-1
2.3 The risk of intentional attack	2-2
2.4 The risk of unintentional attack	2-2
2.5 Air-to-air attacks	2-3
Chapter 3. Roles of parties concerned and promulgation of information	3-1
3.1 The State that manages the airspace	3-1
3.2 Aircraft operator	3-2
3.3 Air navigation service provider	3-3
3.4 State of the Operator	3-4
3.5 International Civil Aviation Organization (ICAO)	3-4
3.6 Regional civil aviation authorities	3-5
3.7 Other stakeholders	3-6
3.8 Provision of aeronautical information	3-6
Chapter 4. Conducting risk assessment for flying over or near conflict zones	4-1
4.1 Introduction	4-1
4.2 Risk assessment cycle	4-2
4.3 Collection of relevant information	4-4
4.4 Threat analysis	4-5
4.5 Hazard identification	4-5
4.6 Risk assessment	4-5
4.7 The role of the State	4-7
Appendix A. Security risk assessment factors, information, sources, methodology and concept	App A-1
Appendix B. Example of a safety risk assessment methodology	App B-1
Appendix C. Differences between the guidance provided by States in the risk assessment process	App C-1
Appendix D. Examples of how organizations or States share information between States, aircraft operators, and service providers for exchange and promulgation of information	App D-1



State that manages the airspace

Primarily relevant Annex 17 provisions

→ Establish and implement procedures for risk assessment mechanisms to share information own territory and airspace above it

Also some Annex 11 and 15 provisions

→ Geographical area of CZ and contingency plans

→ Promulgation of information



Aircraft Operator

Primarily Annex 6 provisions

→ Not to commence the flight before appropriate risk assessment of the entire route, incl. en-route alternates, and if necessary, take mitigating actions for a safe and secure flight



Air Navigation Service Provider

Primarily Annex 11 provisions

- Development and promulgate contingency planning
- Perform risk assessment for activities potentially hazardous for civil aircraft and if necessary take mitigating actions
- Civil – Military ATS coordination



State of the Operator

Primarily Annex 17 provisions

- Assure protection and safety of passengers, crew, ground personnel and general public safeguarding acts of unlawful interference
- Establish an organization and structure to ensure the safety, regularity and efficiency of flights



ICAO

Based on Annex 11 provisions

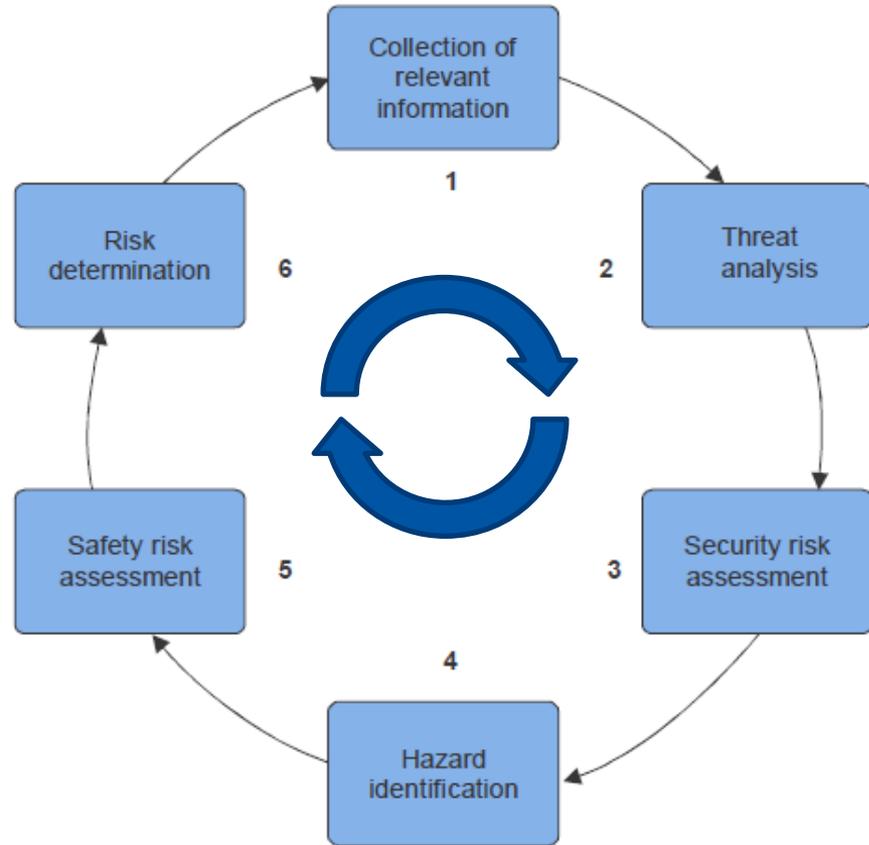
→ When necessary, initiate and coordinate appropriate contingency actions with stakeholders involved

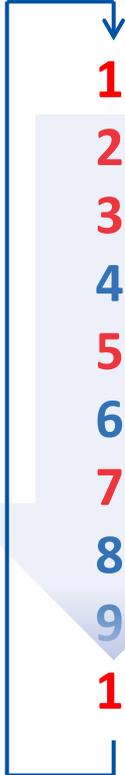
Practice example with industry

→ ICAO – IATA Contingency Coordination Team (CCT)
(airspace avoidance in ICAO Middle East and North Africa region)

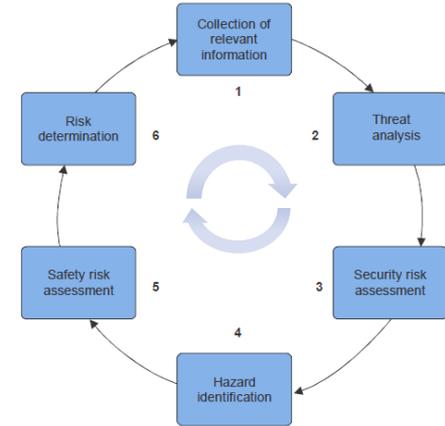


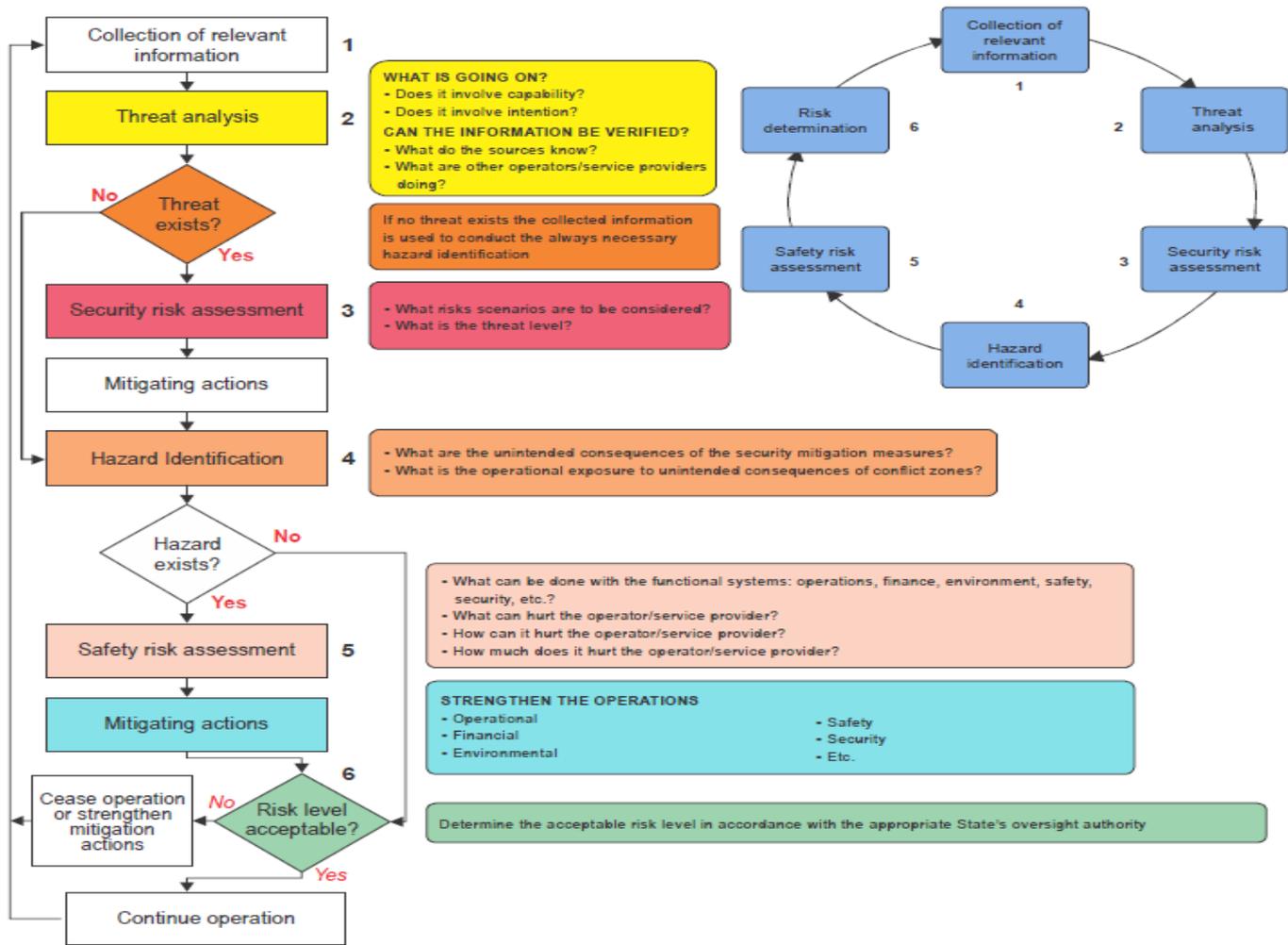
Risk Assessment Cycle





- 1. Collection of Relevant Information**
- 2. Threat Analyses**
- 3. Security Risk Assessment**
- 4. Mitigating Actions**
- 5. Hazard Identification**
- 6. Unintended Consequences of Security RA Mitigating Actions**
- 7. Safety Risk Assessment**
- 8. Mitigating Actions – *Functional Systems***
- 9. Unintended Consequences of Safety RA Mitigating Actions**
- 10. Acceptable Risk Level**



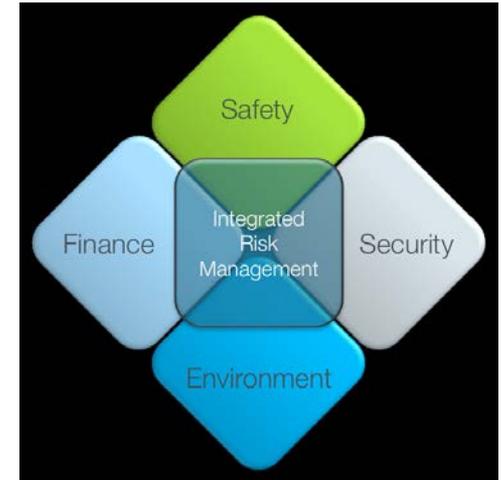


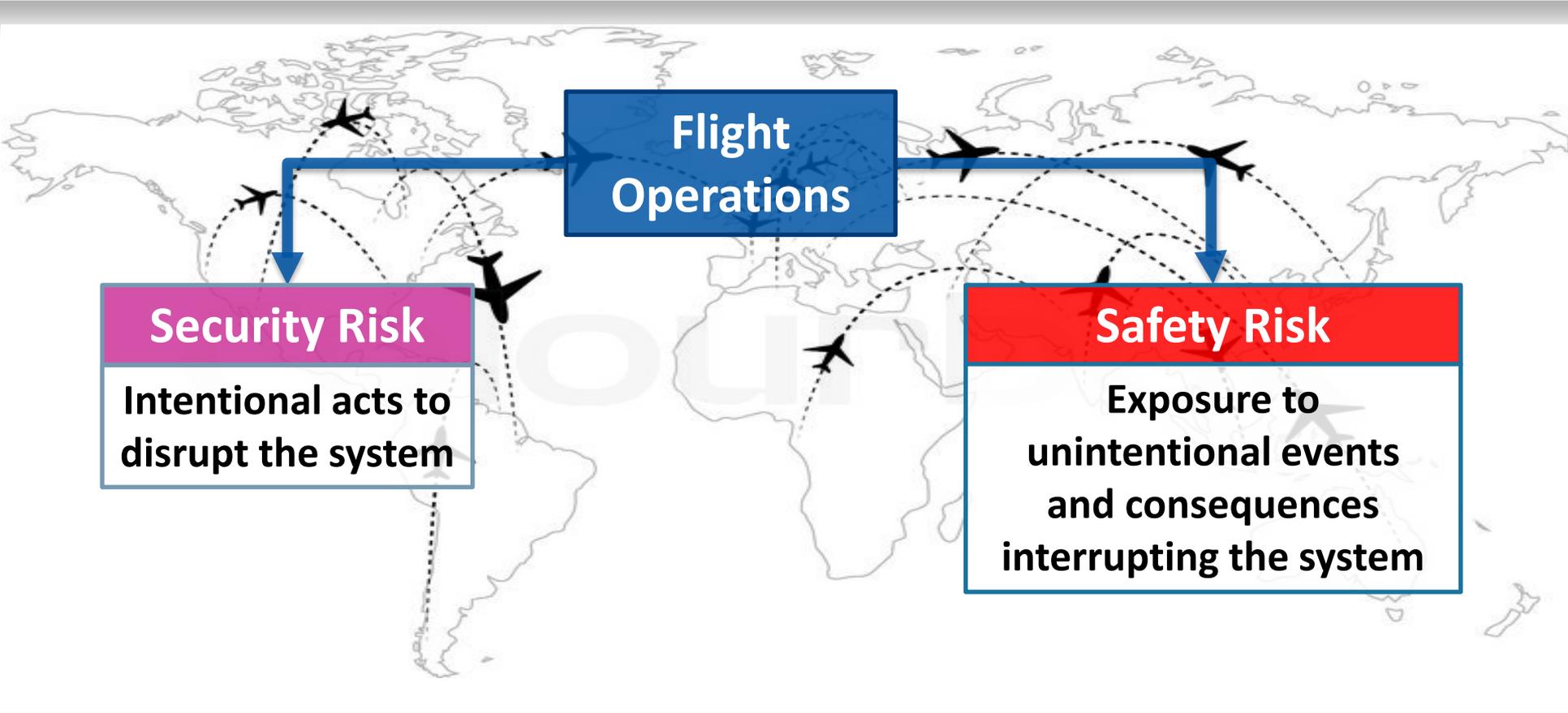
Mitigating actions – Functional Systems

- Operations
- Safety
- Security
- Environment
- Maintenance
- **Quality**
- **Finance**

ICAO

NOT LIMITED





Security Risk
Intentional acts to
disrupt the system

Safety Risk
Exposure to
unintentional events
and consequences
interrupting the system



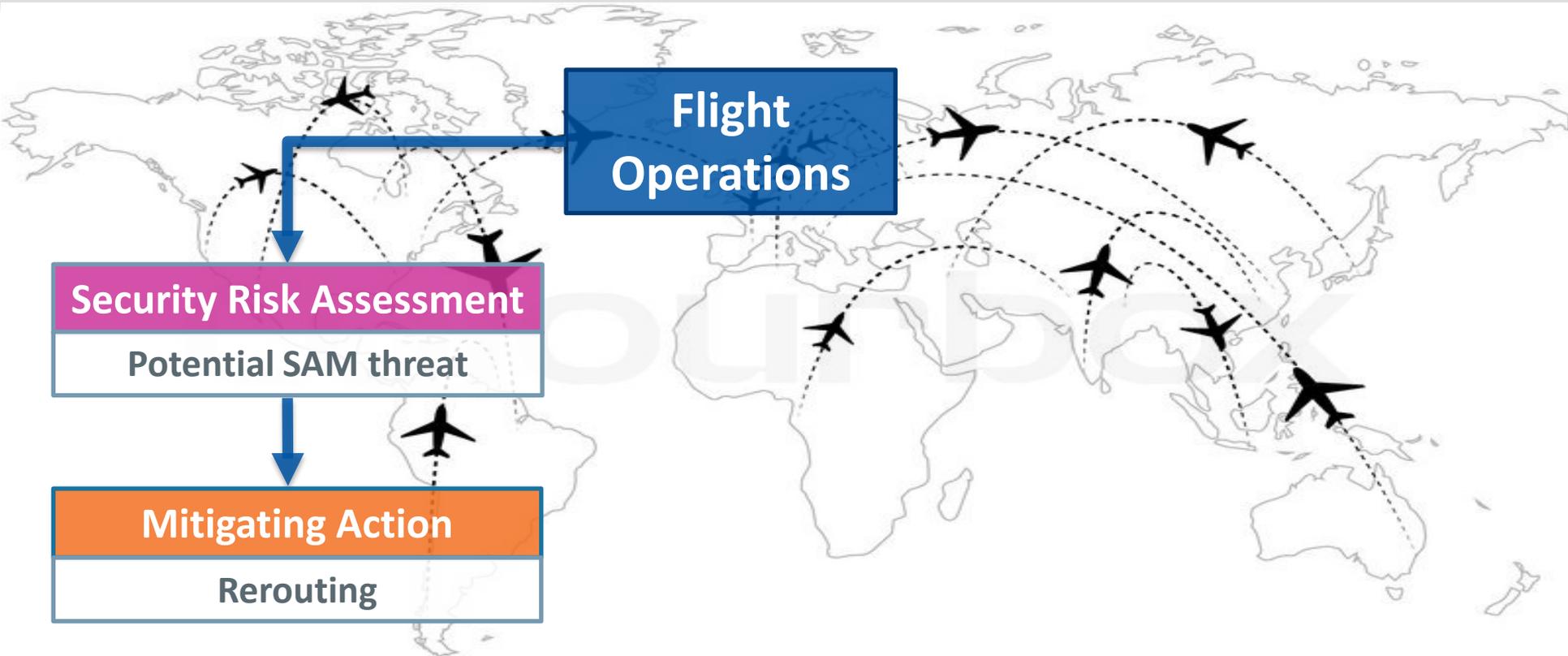
**Flight
Operations**

Security Risk Assessment

Potential SAM threat

Mitigating Action

Rerouting





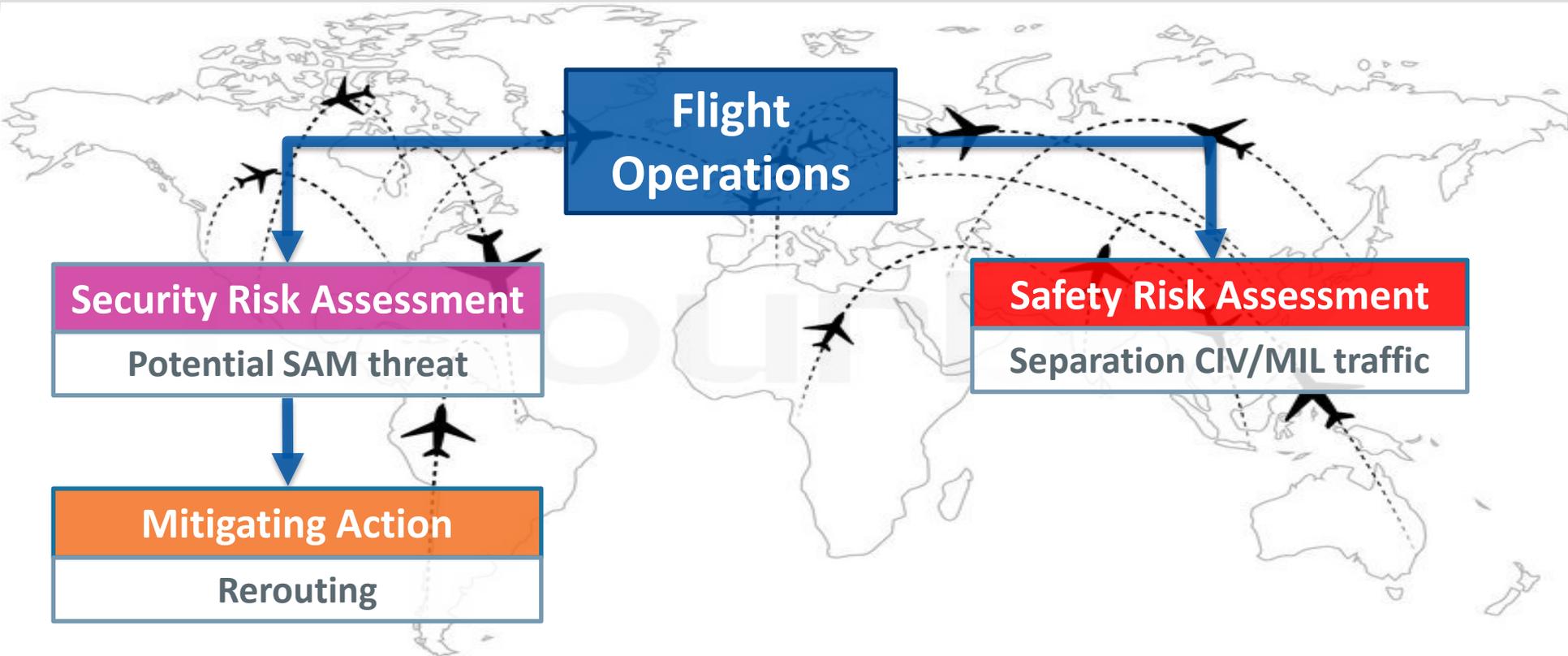
**Example Risk Assessment
Conflict Zones 1**

**Flight
Operations**

Security Risk Assessment
Potential SAM threat

Mitigating Action
Rerouting

Safety Risk Assessment
Separation CIV/MIL traffic





**Example Risk Assessment
Conflict Zones 1**

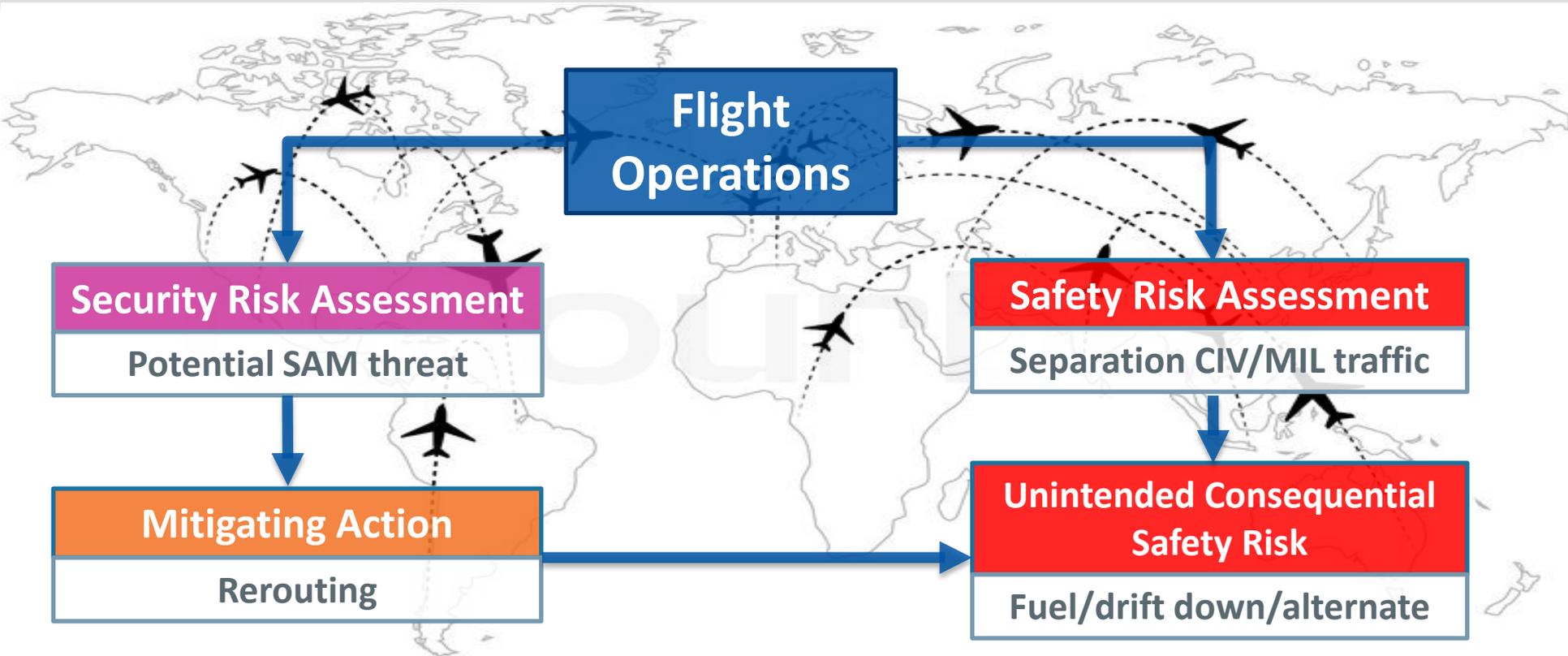
**Flight
Operations**

Security Risk Assessment
Potential SAM threat

Mitigating Action
Rerouting

Safety Risk Assessment
Separation CIV/MIL traffic

**Unintended Consequential
Safety Risk**
Fuel/drift down/alternate





**Example Risk Assessment
Conflict Zones 1**

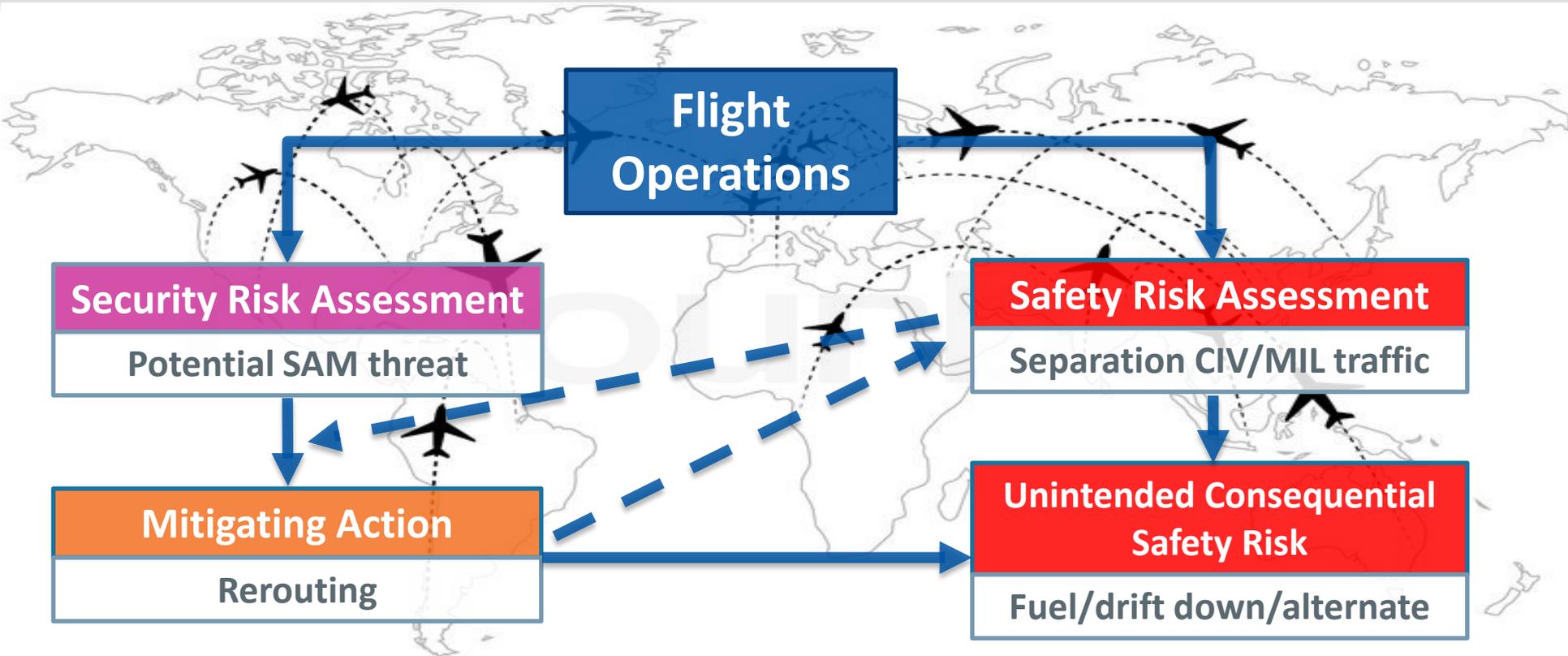
**Flight
Operations**

Security Risk Assessment
Potential SAM threat

Safety Risk Assessment
Separation CIV/MIL traffic

Mitigating Action
Rerouting

**Unintended Consequential
Safety Risk**
Fuel/drift down/alternate

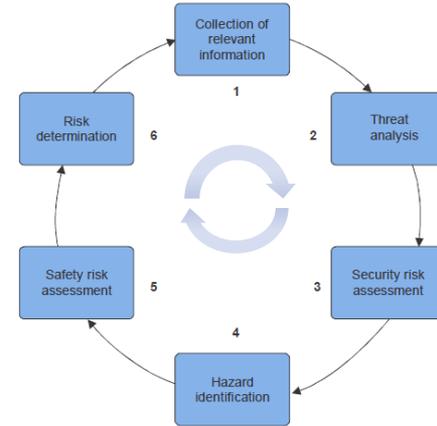




Overflying CZ: aircraft A330 (approx 300 POB)

Example assumptions

- In the case of a potential SAM attack, the only mitigation action available is likely to be avoidance of the affected airspace
- For explanatory purposes of the risk assessment process a potential attack with MANPADS is given below FL320





Example Risk Assessment Conflict Zones 2

Overflying CZ: aircraft A330 (approx 300 POB)

1. Collection of relevant information

CZ: conflict between non-state armed groups and government

No indications that the non-state groups possess medium or long range SAMs with a greater range than MANPADS

2. Threat analysis

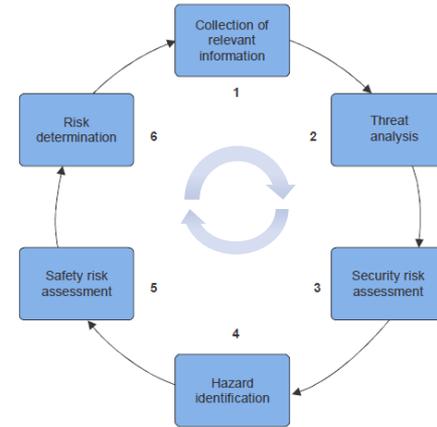
Q: Does it involve Intention and Capability?

A: Both YES for MANPADS

Q: Can the information be verified?

A: Security info, public info; e.g. NOTAMs potential risk airspace below FL320 (Note: variation in NOTAMs depending source)

Q: Does the treat exist? A: YES





Example Risk Assessment Conflict Zones 2

Overflying CZ: aircraft A330 (approx. 300 POB)

3. Security Risk Assessment (SeRA)

Q: Threat (Intent + Capability) → Consequence → Vulnerability → Risk
A: (T) Yes + Yes → (C) High → (V) High → (R) High (below FL320)

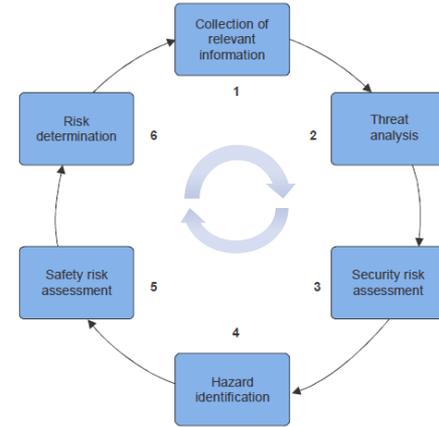
4. Security risk mitigating actions

A: NOT necessary for flights above FL320

5. Hazard Identification

Q: What is the operational exposure to unintended consequences of the conflict zone?

A: (1) Drift down (N-1) ceiling FL250 or (2) emergency decent (decompression) to FL100 or higher e.g. MSA (FL140) with mountainous terrain





Example Risk Assessment Conflict Zones 2

Overflying CZ: aircraft A330 (approx. 300 POB)

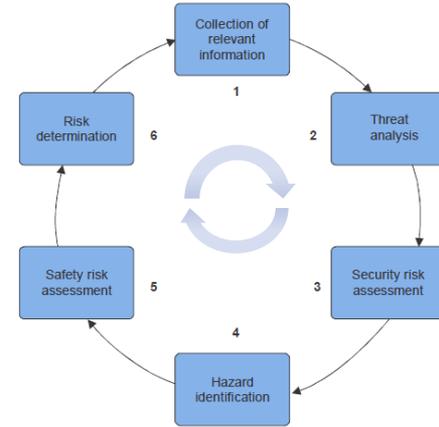
6. Unintended Consequences of SeRA Mitigating Actions
A: NO actions necessary above FL320

7. Safety Risk Assessment (SaRA)

A: Likelihood N-1 or emergency decent is LOW →
→ Consequences and Vulnerability are HIGH → SaRA is HIGH

8. Mitigating Actions – Functional Systems (Security/Safety/Operations)

- A: (1) Drift down ceiling FL250 or below: e.g. contact Mil ATC for traffic separation or divert outside FIR
- (2) Emergency decent: rerouting for ETOPS ERA and/or divert outside FIR





Example Risk Assessment Conflict Zones 2

Overflying CZ: aircraft A330 (approx. 300 POB)

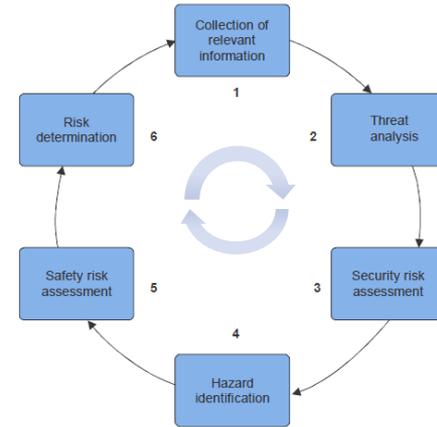
9. Unintended consequences of SaRA mitigating actions

A: More trip fuel necessary for possible risk of diversion/rerouting

→ recalculate trip fuel/alternate/MTOM/payload

10. Acceptable Risk Level – *defined with oversight authority*

A: Acceptable when outcomes all steps within operational limits and as low as possible





Introduction 2nd Edition Doc 10084



IATA Safety and Flight OPS Conference
→ 18 April 2018, Montréal

IATA AVSEC World Conference
→ 1 October 2018, Athens

ICAO AVSEC2018 Symposium
→ 26 November 2018, Montréal

RISK ASSESSMENT FOR CIVIL AIRCRAFT OPERATIONS OVER OR NEAR CONFLICT ZONES

ICAO has improved its framework of requirements and guidance to assist States, operators and air navigation service providers regarding risks from surface-to-air missiles (SAMs) and key risk factors to be considered for their own risk assessments

Come to learn more about these improvements and the new Risk Assessment Manual, Doc 10084, 2nd edition, during the following events:

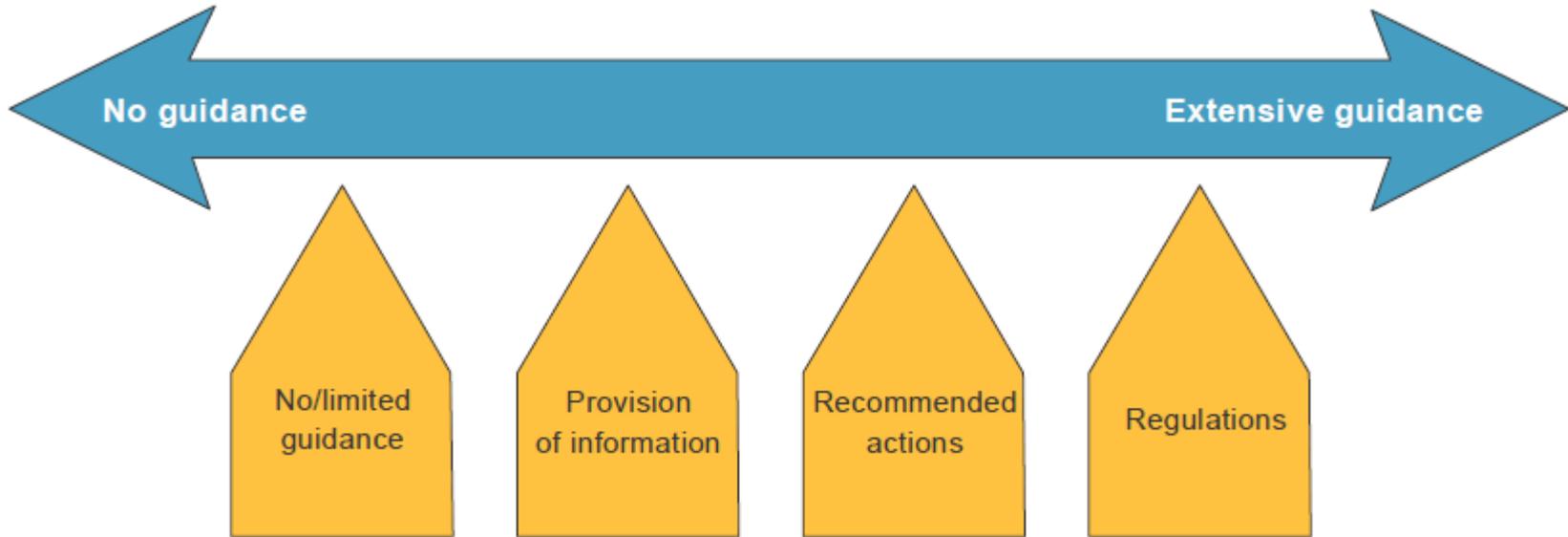
- **IATA Safety and Flight OPS Conference**
17-19 April 2018, Montréal, Canada
- **IATA AVSEC World Conference**
1 October 2018, Athens, Greece
- **ICAO AVSEC Symposium**
26-28 November 2018, Montréal, Canada



WITH SUPPORT FROM



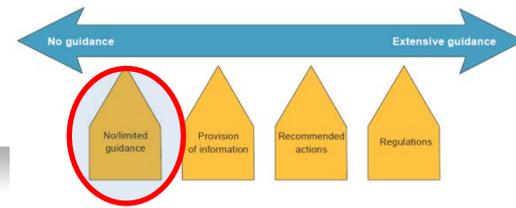
Differences between the guidance provided by States to airspace users in the risk assessment process





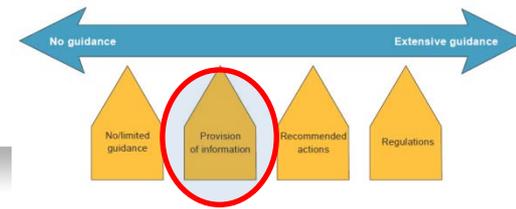
Inventory type of mechanisms in the ICAO Regions

A	B	C	D	E	F
Region	State	Contact person	Contact details (e-mail and telephone)	Mechanism (1,2,3,4)	Amendment of contingency plan needed (Y/N)
APAC					
1	<u>Afghanistan</u>	Raza Gulam	rgulam@icao.int, tel.: +1 514 954-8219 (24/7)	1	N
2	<u>Australia</u>	Kas Beumkes	kbeumkes@icao.int, tel.: +1 514 954-8219 (24/7)	4	Y
3					
<u>etc</u>					
ESAF					
1					
2					
<u>etc</u>					
EUR					
1					
<u>etc</u>					
NAT					
1					
<u>etc</u>					
MID					
NACC					
SAM					
WACAF					



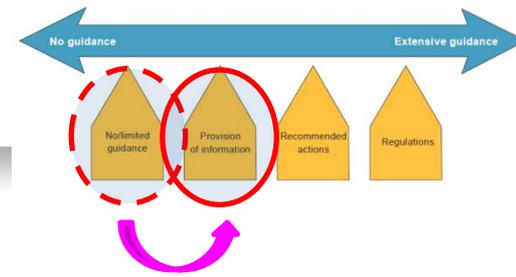
Example 1: No or limited guidance

- Focus on national/domestic security
- No advise about foreign CZ
- Operator depends on own Security Department or outsource risk assessment



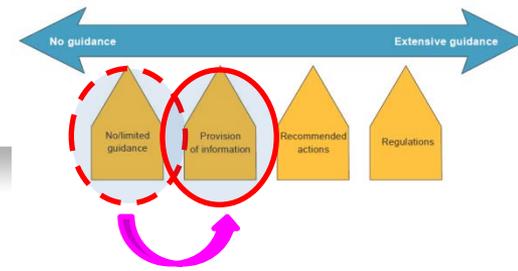
Example 2: Information provided by authorities

- Provide with threat-related info
- No advise where to fly
- Operator able to make risk assessment based on more consolidated data

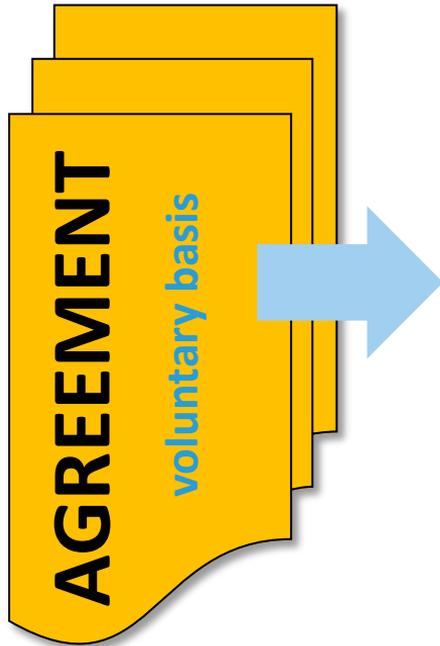


Experience of information sharing in the Netherlands

- No State regulation or advise for operators regarding airspace beyond State territory and/or FIR
- Operators make their own risk assessment and decide where (not) to fly
- **Agreement:** State authorities to exchange non-public information, as far as available



(Voluntary) Agreement State – operators

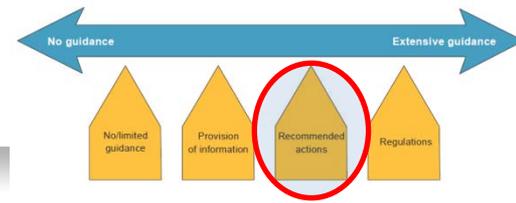


Relevant Ministries (like):

- Transport
- Justice/Security
- Foreign Affairs
- Home Affairs
- Defense

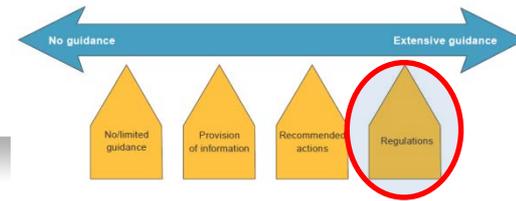
Scheduled / ad hoc meetings or bilateral contacts when needed

Information from States AND operators



Example 3: Recommendations by authorities

- Provide with threat-related info and risk assessment
- Advise where (not) to fly
- Operator includes this in its own risk assessment



Example 4: Regulation by authorities

- Provide with threat-related info or risk assessment and advise where (not) to fly
- Advise: low – high risk / fly – not fly (restrictions)
- Operator own risk assessment (pending)



Some key challenges for cooperation and sharing info

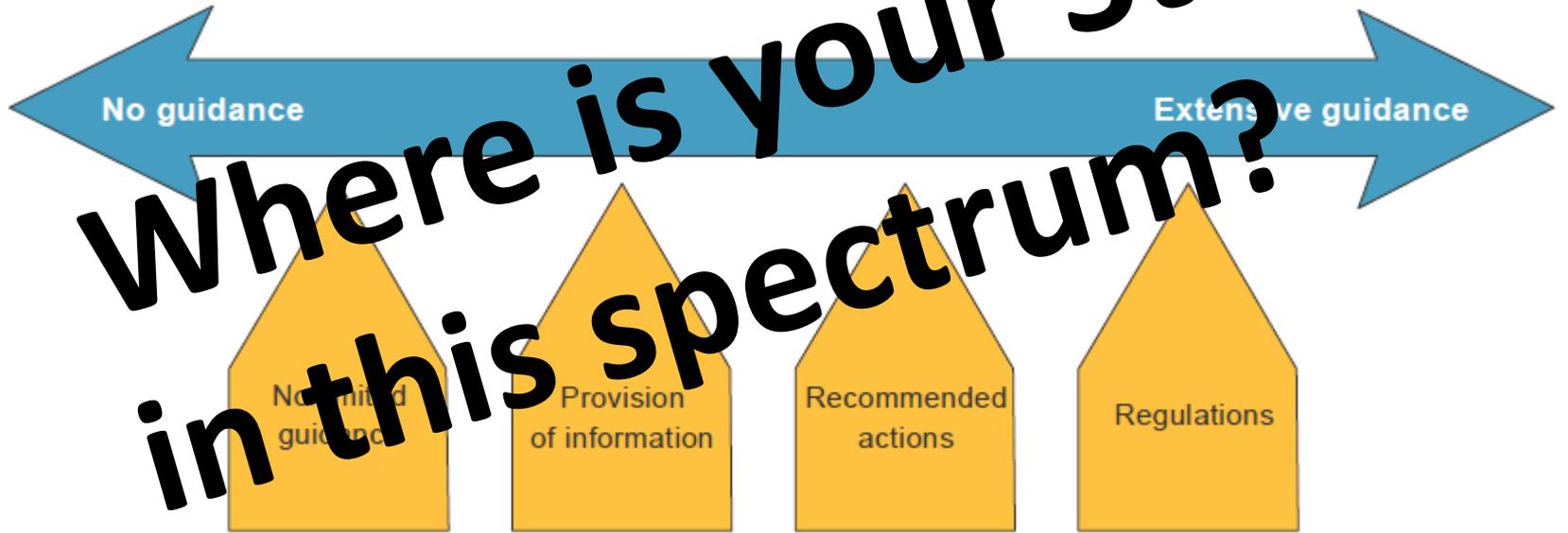
COOPERATION

1. Confidential (voluntary) cooperation
2. Involvement (military) security services
3. Create a structure - national, regional/international with the stakeholders

SHARING INFORMATION

1. Exchange based on trust and (legal) arrangements
2. Security clearances for persons and channels
3. Need for adequate information service (SWIM)

Differences between the guidance provided by States to airspace users in the risk assessment process





THANK YOU