

SMS interfaces Operator - CAMO - Maintenance

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Abstract

- **Relying safety requirements** to the CAMO and AMOs: the Operator's perspective
- **SMS integration**: bridging the gap between Operator, CAMO and AMO
- **Contracted maintenance and occurrence reporting**: the lack of occurrence reports from AMOs
- **Interfaces and challenges** among players:
 - Risk classification integration
 - Making safety objectives and targets compatible
 - Occurrence reporting and safety data sharing

1. SMS Regulatory Update
2. SMS Interfaces
3. Interface Threats
4. Conclusions





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1. SMS Regulatory Update

What is being done by the Authorities to implement and harmonize a comprehensive set of Safety management regulatory tools ?

SMS Regulatory Update



■ ICAO



■ Annex 19 “Safety Management”, Ed. 1 (July 2013), 14/Nov/2013

■ Integrates safety management provisions contained before in:

- Annex 1 - Personnel Licensing
- Annex 6 - Operation of Aircraft
- Annex 8 - Airworthiness of Aircraft
- Annex 11 - Air Traffic Services
- Annex 13 - Aircraft Accident and Incident Investigation
- Annex 14 - Aerodromes

Phase 1

■ Annex 19, Amendment 1:

- Adopted 02/Mar/2016
- Effective 11/Jul/2016
- Applicable by 07/Nov/2019

Phase 2



SMS Regulatory Update



■ ICAO



- (i.a.w. Annex **19**, **Ed. 1**) each State shall implement an SSP and shall require that the following service providers under its authority implement an SMS:
 - Approved **Training** Organisations (ATPL, CPL, ATCO)
 - **Operators** (aeroplanes & helicopters, authorised to conduct international CAT)
 - Approved **Maintenance** Organisations
 - Organisations responsible for the type **Design** or **Manufacture** (aircraft)
 - Air **Traffic** Services Providers
 - Operators of Certified **Aerodromes**
 - International **General Aviation** operators of large or turbojet aeroplanes

SMS Regulatory Update



■ ICAO



■ Annex 19, Amendment 1 - main changes:

- Harmonization of 8 Critical Elements (CE) of State Safety Oversight (SSO), i.a.w. State Safety Program (SSP)
- Enhanced Guidance and Applicability of SMS
 - Applicability extended to engine and propeller type designers and/or manufacturers
 - Accountabilities vs. Responsibilities
 - Safety Culture
 - Scalability for large & small service providers
 - IGA Recommendation elevated to Standard
- Enhanced Protection of Safety Data / Safety Information and Related Sources

SMS Regulatory Update

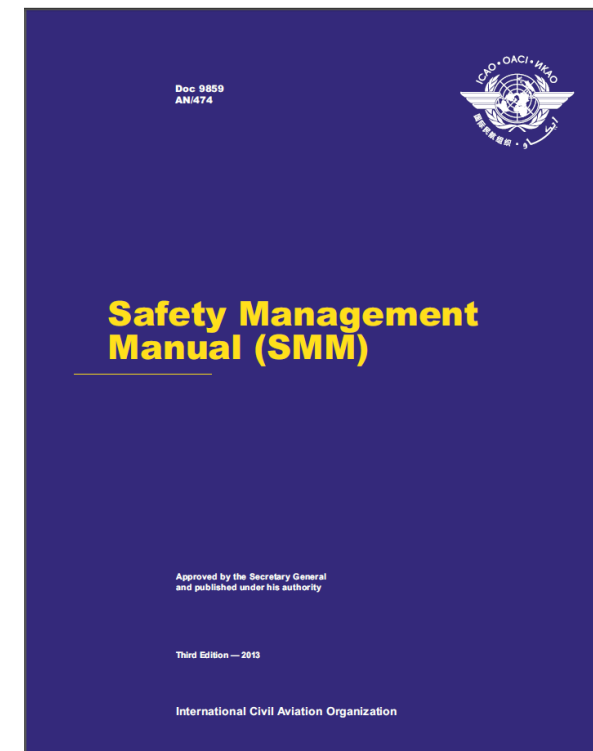


... affecting OPS-CAMO-AMO

■ ICAO



- Doc. **9859** “Safety Management Manual (SMM)”
Ed. 3, 08/May/2012
- Development of **SMM Ed. 4**
 - Currently under way
 - Publication of **Ed. 4** expected in **Jul/2017**



SMS Regulatory Update



- IATA 
 - IOSA, “Standards Manual”, Ed. 10, 01/Sept/2016
 - (Ed. 11 published Apr/2017, effective date 01/Sept/2017)

- EU 
 - EASP “European Aviation Safety Programme”
2nd edition, 07/Dec/2015
 - EPAS “European Plan for Aviation Safety”
6th edition, EPAS 2017-2021, 24/Jan/2017
 - SSP “State Safety Program” of each Member State

SMS Regulatory Update



■ EASA Air Operations



- Commission Regulation (EU) No **965/2012**
05/Oct/2012, OPS.ORO.GEN.200

■ EASA Initial Airworthiness



- **Task RMT.0262 (MDM.060)** “Embodiment of Level of Involvement (**LOI**) requirements into **Part-21**”, ref **NPA 2015-03 Opinion 07/2016**, 23/May/2016
- **Task RMT.0550 (MDM.060)** “Embodiment of **SMS** requirements into **Part-21**” (Decision initially expected **4Q 2016**)
superseded



■ EASA Continuing Airworthiness

- **Task RMT.0251 (MDM.055)** “Embodiment of SMS requirements into Regulation (EU) No 1321/2014 for the implementation of a State Safety Plan” (covers **NPA 2013-01** and **NPA 2013-19**)
- **NPA 2013-01** “Embodiment of SMS requirements into Commission Regulation (EC) No 2042/2003”, 21/Jan/2013
 - (A) – Explanatory note and RIA
 - (B) – **Part M**
 - (C) – **Part 145**
- **NPA 2013-19** “Embodiment of SMS requirements into Commission Regulation (EC) No 2042/2003: **Part 66** & **Part 147**”, 10/Oct/2013



■ EASA Continuing Airworthiness

- In 2015, EASA decided to adopt a two-phased approach for task **RMT.0251 (MDM.055)** and to include the SMS part of task **MDM.060**:

- **Phase I:**

- Embodiment of SMS requirements in Part M and creation of Part CAMO, **Opinion 06/2016**, 12/May/2016 (Decision expected **2Q 2017**)

- **Phase II:**

- Embodiment of SMS requirements in Part 145, Part 21J and Part 21G
- SMS elements to be added to Part 66 training syllabi
- ToR RMT.251(b) (issue 1) expected **May 2017**, NPA expected **1Q 2018**, Opinion expected **2Q 2019**, Decision expected **1Q 2021**

Note: Part 147 will not have an SMS



■ EASA Continuing Airworthiness

■ Opinion 06/2016 “Part CAMO”:

- Introduces SMS in Continuing Airworthiness Management through the creation of new Annex Vc “Part CAMO” to Regulation 1321/2014
- Part CAMO approval will be needed for continuing airworthiness management of aircraft
 - Operated by **licensed air carriers**
 - **CMPA** (twin-turboprops < 5700 kg MTOM exempted)
- Opinion 06/2016 prepares the grounds for allowing licensed air carriers to **contract** a CAMO (objective of RMT.0209 (M.014))



■ EU Occurrence Reporting



- Regulation (EU) No **376/2014** of the European Parliament and of the Council on “Reporting, analysis and follow-up of **occurrences** in civil aviation”, 24/Apr/2014, due by **15/Nov/2015**
- Commission Implementing Regulation (EU) **2015/1018** on a “**List** classifying occurrences in civil aviation to be mandatorily reported”, 30/Jun/2015, due by **15/Nov/2015**

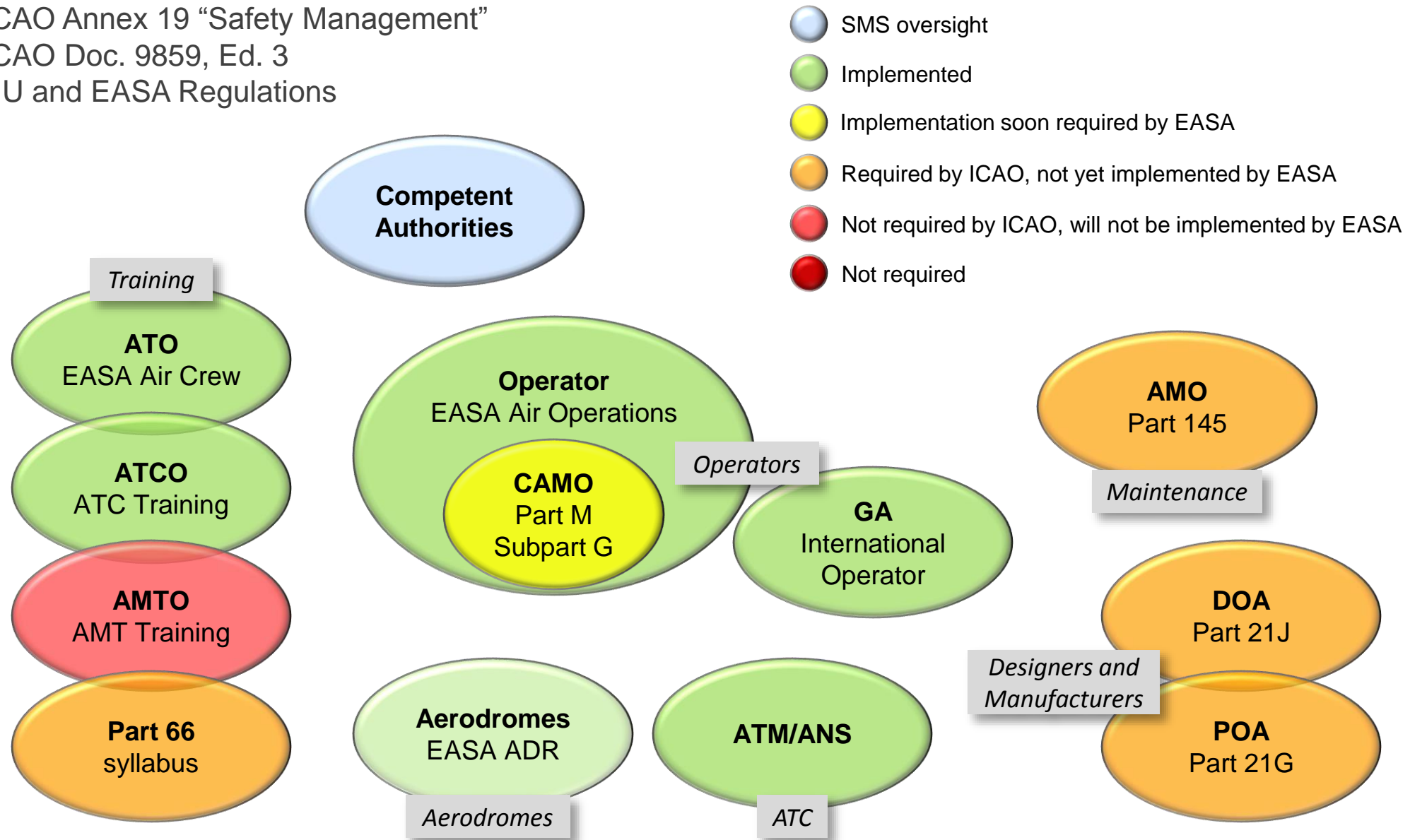
2. SMS Interfaces



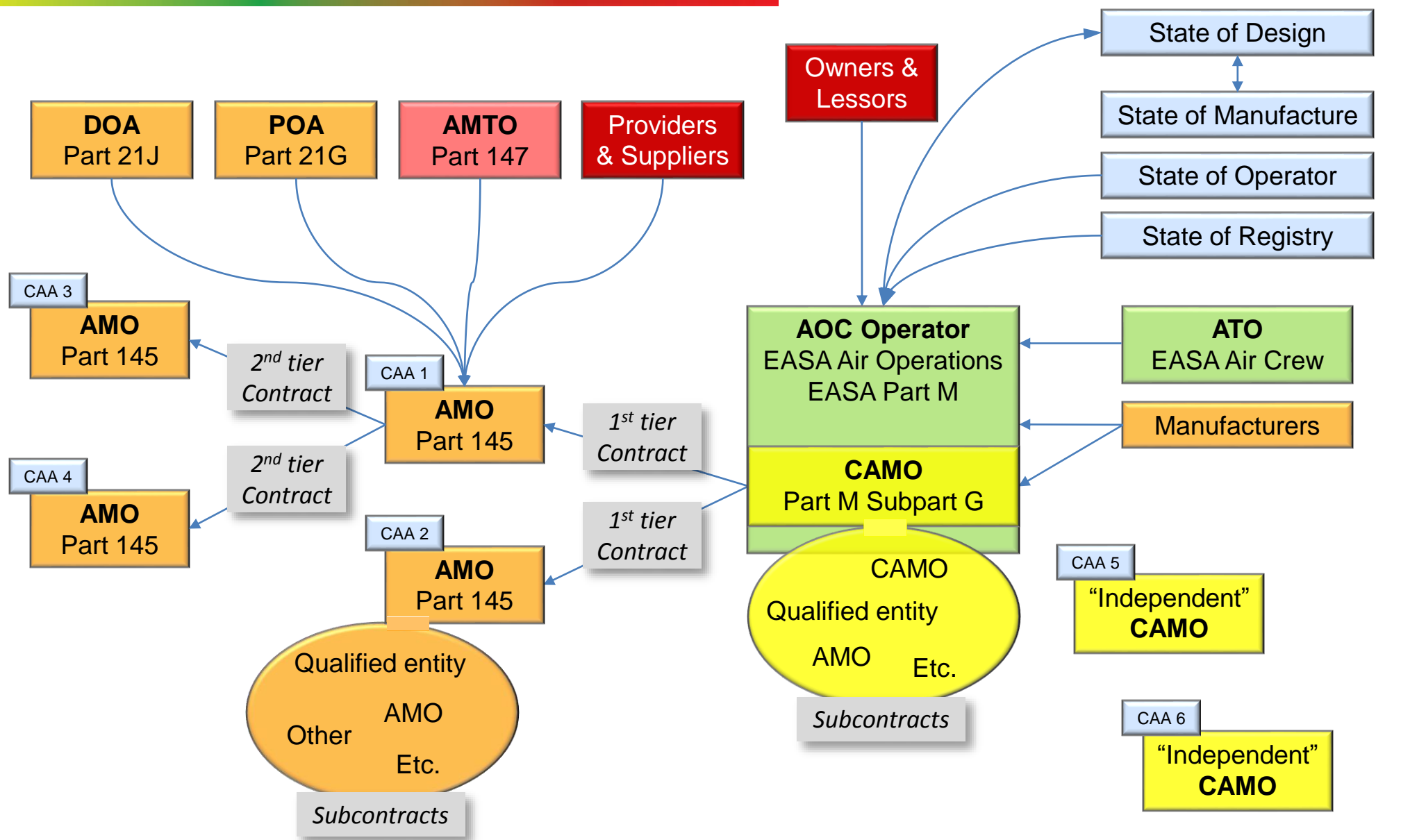
Even when organisations run well organised and efficient (internal) Management Systems, they repeatedly encounter hidden and unexpected hazards in the interfaces

ICAO SMS: implementation status by EASA

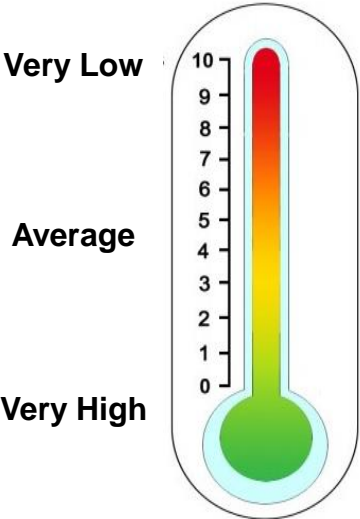
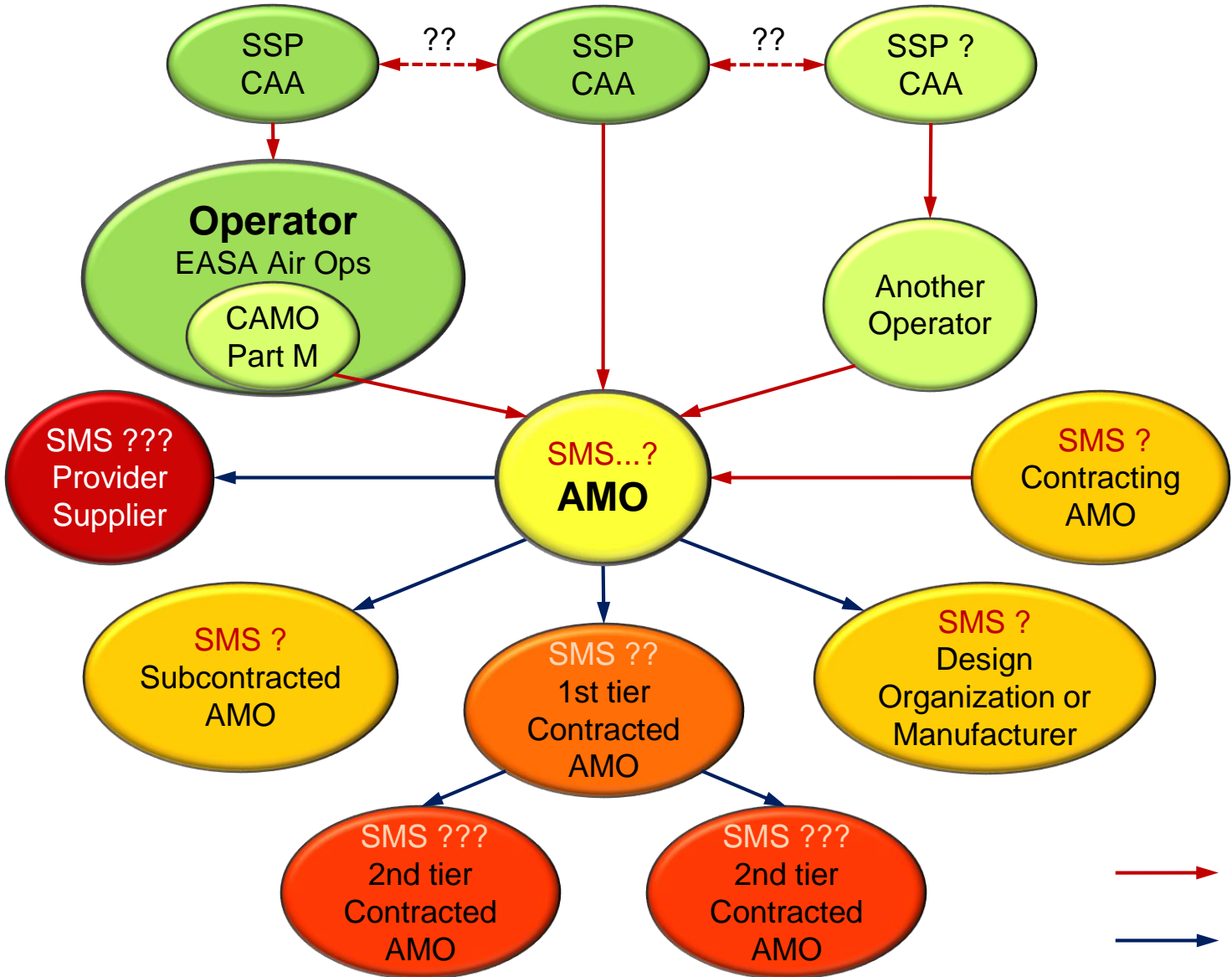
ICAO Annex 19 “Safety Management”
ICAO Doc. 9859, Ed. 3
EU and EASA Regulations



EASA Regulatory Interfaces



Operator-CAMO-AMO: SMS Expectation



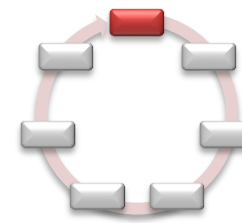
SMS Compliance Expectation “Thermometer”

3. Interface Threats

Clear lines of Safety accountability connect the Operator, through its CAMO to the many AMOs used. What can break those lines?

SMS Interfaces: some Threat Domains

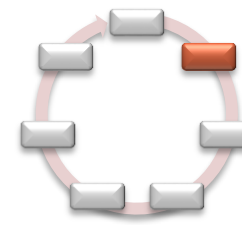




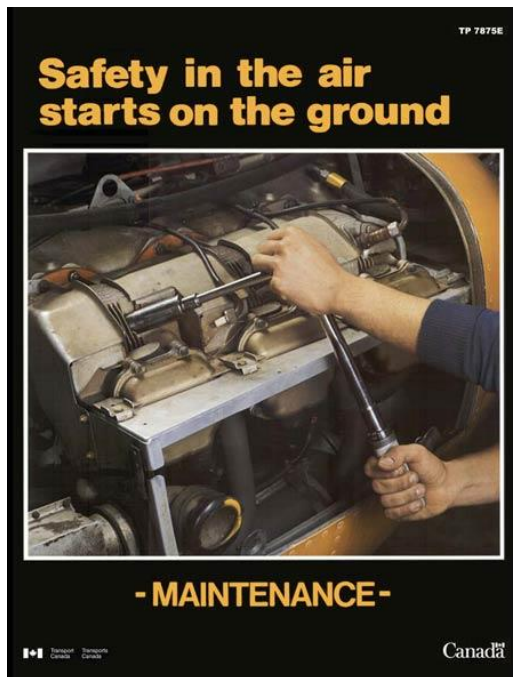
- Different **Countries** -> different **Safety Cultures**
- Players with different **levels of Safety maturity**
- Not all organisations equally **prepared**
- Systems/software **do not communicate**
- Not all **CAAs** equally prepared
- **Coordination** among CAAs
- **Prescriptive** vs. **risk based** oversight
- CAA oversight **proficiency**



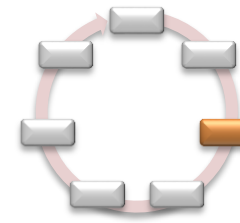
Hazard Identification



- Some CAMOs and AMOs **have not identified** their hazards
- AMOs **difficulty to correlate** own hazards with undesirable end states (risks) of each Operator's safety scenarios
- Some CAMOs and AMOs **lack enough data** to identify their hazards
- **Insufficient uniformity** in hazard identification tools, logs and analysis
- Pushing SMS **practical implementation** in AMOs (E.U.) to 2023 is also a hazard...!



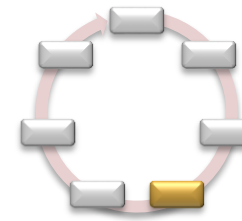
Occurrence Reporting & Safety Data



- **Competition** hinders data sharing
- **Confidentiality** issues impair data sharing
- **Occurrences** not treated or not transmitted

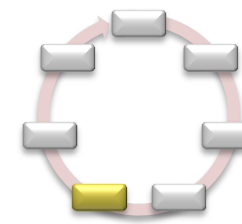


- Reports within AMO **typically less** than among Operator
- **Investigations** not coordinated with the Operator
- **Conclusions** not shared
- Communication **channels** not working



- Some players **cannot answer**:
 - What are **my** main risks?
 - How does **my** organisation **know** that?
 - What **am I doing** about that?
 - Is it **working**?
- **Risk models** vary among players and are **not harmonized** (should they be?):
 - Risk perception and classification
 - Risk acceptance and tolerability criteria
 - Action strategies and implementation periods
- There is no **risk management plan**

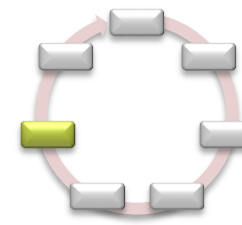




SPIs



- **SPIs** are they used? Which type?
- How to **correlate** different SPIs among players?
- How to compare different **targets** and **alert** criteria?
- Insufficient focus on **Safety performance**
 - Safety **trend** monitoring
 - Safety performance **continuous improvement** plans
 - **Resources** for continuous improvement
- No **contract** provisions about Safety performance

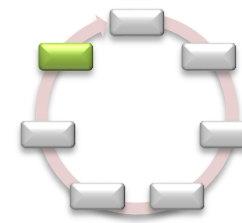


- Different levels of **Safety oversight** among players
- Despite of AMO being certified, **shortcomings in Safety assurance** are only revealed during maintenance work



- Maintenance work accomplished **differently** from contract, with impact on Safety
- Responsibilities and communication **channels do not work** as agreed

Management of Change



- Players do not know **which changes** may create new risks
- New hazards are identified but risk is **underestimated**
- AMO and/or CAMO do not have **contingency plans**
- Contingency plan **does not work** or **is not guaranteed**
- Operator **not informed** about significant changes



4. Conclusions



Conclusions

- Full SMS implementation is taking a **long time**, particularly in the E.U. (OPS in 2014, **CAMO in 2019?**, **AMO in 2023?**)
- SMS interfaces are becoming increasingly **more complex**
- Attention must be paid to **hazards hidden in the interfaces**
- **Compliance is not easy**, especially on 2nd tier contracts, entities outside Annex 19 and due to cultural differences
- **Clear lines of Safety accountability** must exist, from one or more AMOs, through the CAMO, to the Operator
- Safety **data sharing** needs to be increased

Thank you !



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