

TIGER COMBAT HELICOPTER

Lessons learnt on
EMAR implementation



TIGER: EMAR LESSONS LEARNT



AGENDA

1. OCCAR-EA procurement organisation
2. TIGER combat helicopter framework
3. TIGER airworthiness management
4. EMAR's implementation
5. Practical cases on EMAR implementation
6. Conclusions

1. OCCAR-EA procurement organisation

Introduction

Organisation

Business model

Programme structure

1. Introduction



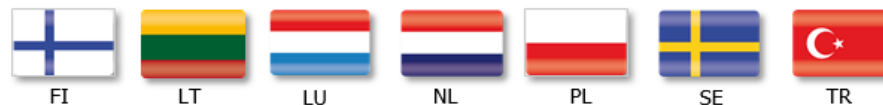
OCCAR is an international organisation for the management of cooperative defence equipment programmes.

OCCAR was created through the "Convention", equivalent to an international treaty.

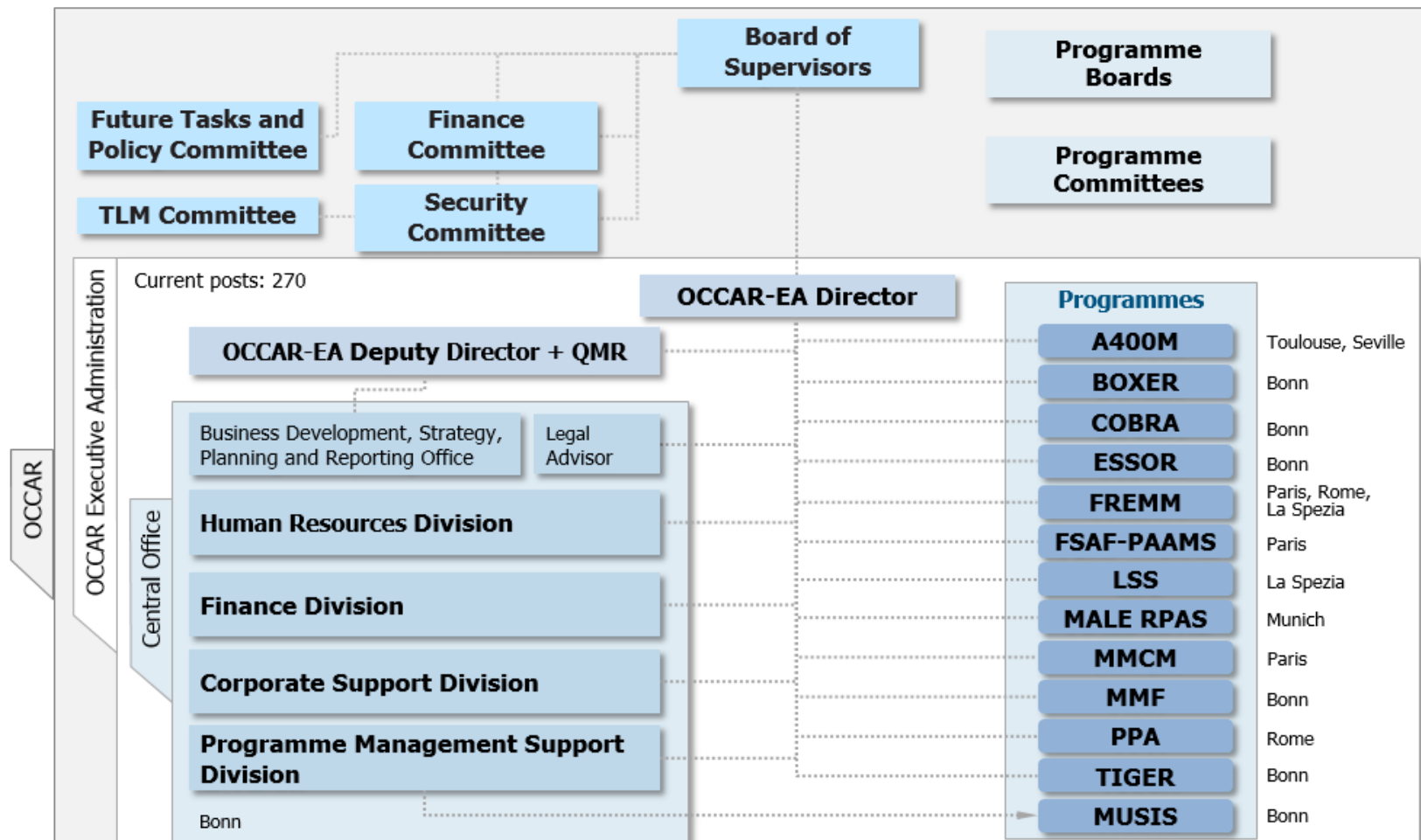
Current Member States:



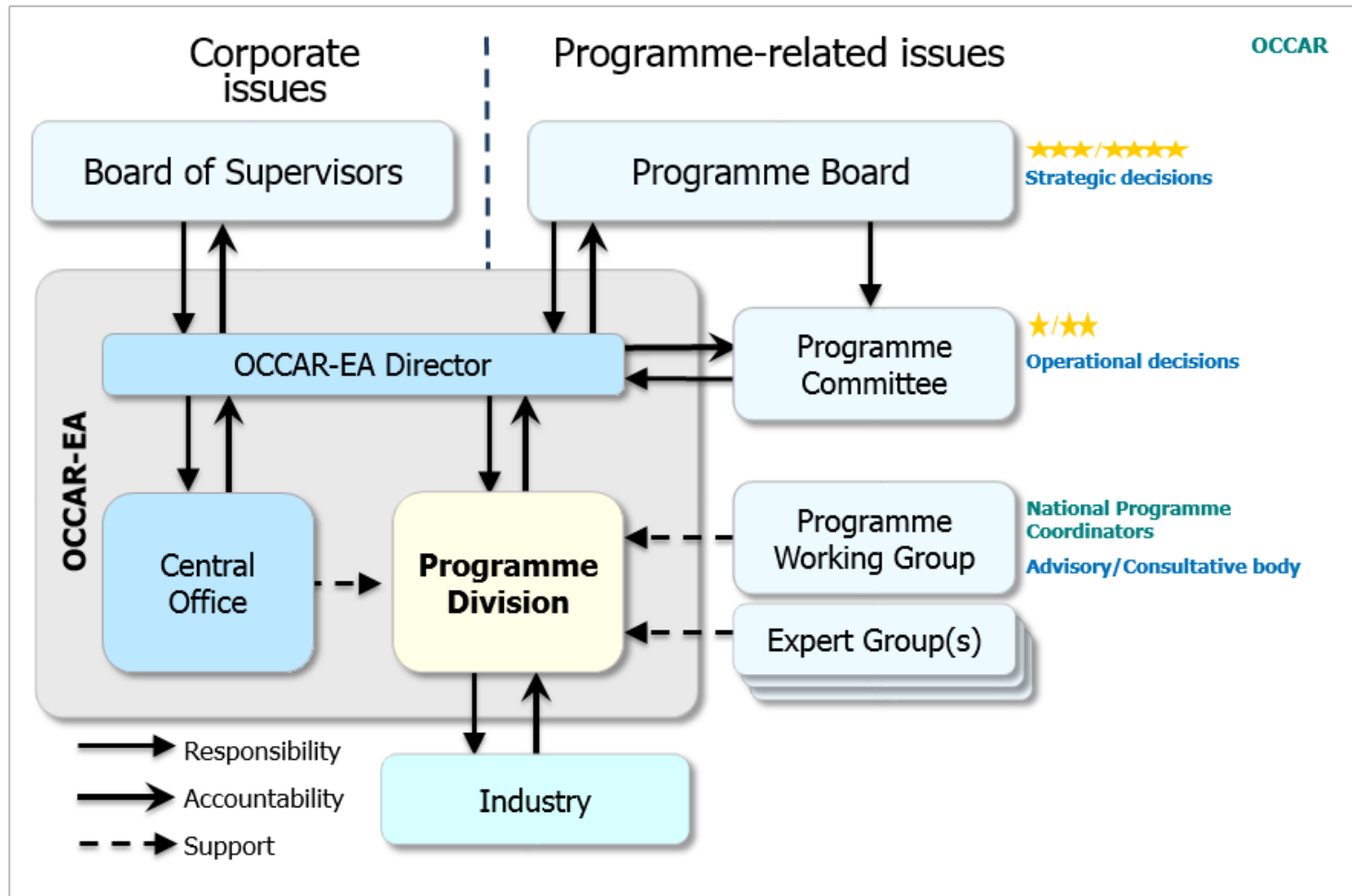
Current (non-Member) Programme Participating States:



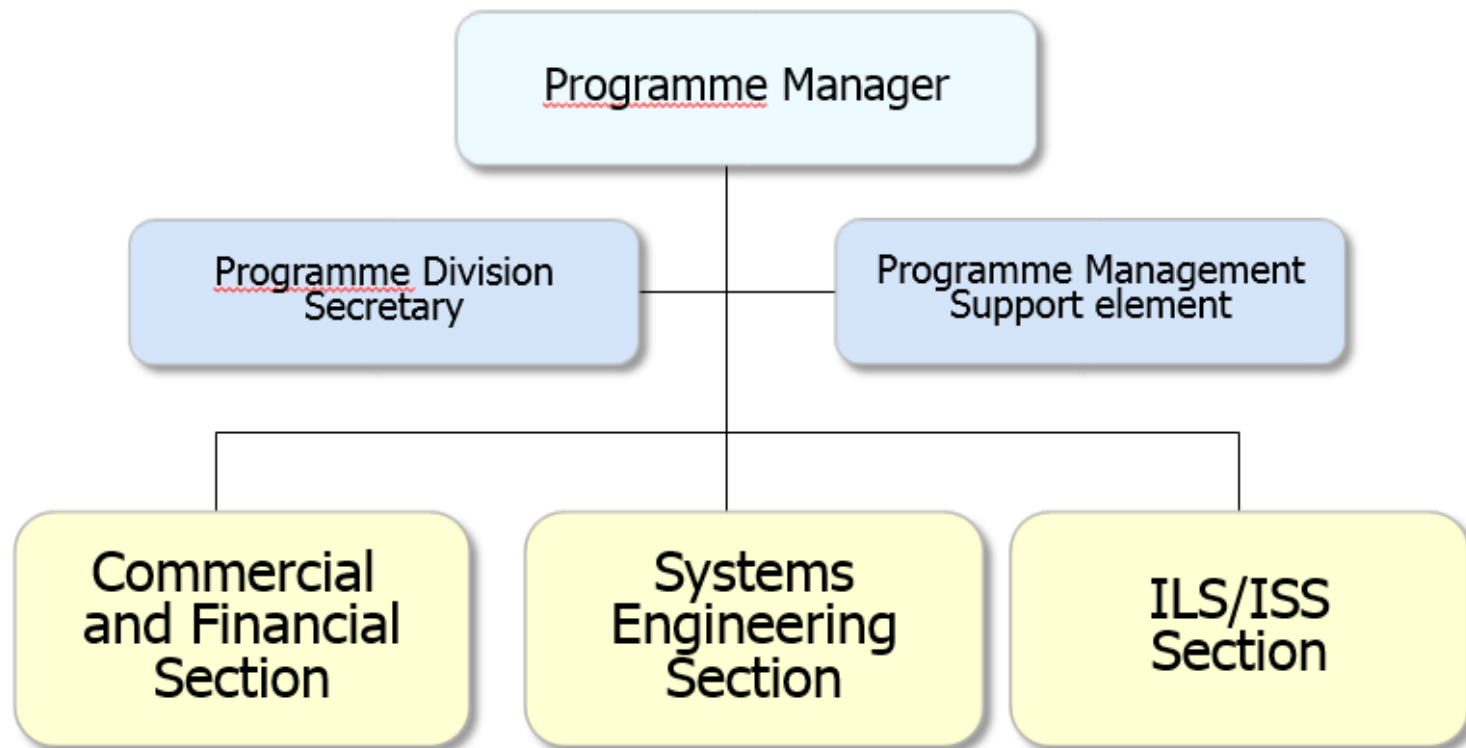
1. Organisation



1. Business model



1. Programme division structure



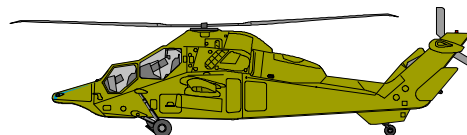
2. TIGER combat helicopter framework

Presentation

Industrial network

Procurement approach

2. Presentation



Basic Helicopter

Weapons

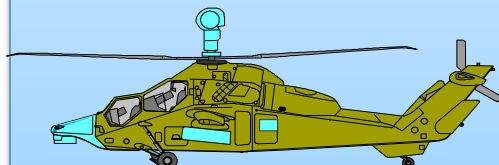
12.7 mm wing gun pods
HOT/TRIGAT air-to-ground missiles
70 mm HYDRA air-to-ground rockets
STINGER air-to air missiles

Other Capabilities

OSIRIS Roof Mounted Sight

Main Mission

Force Protection
Air-To-Ground/Anti Tank



UHT



Weapons

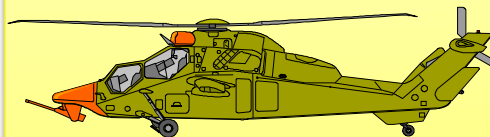
Chin-mounted 30 mm gun
MISTRAL air-to-air missiles
68 mm air-to-ground rockets

Other Capabilities

STRIX Roof Mounted Sight

Main Mission

Force Protection
Air-to-Air



HAP



Weapons

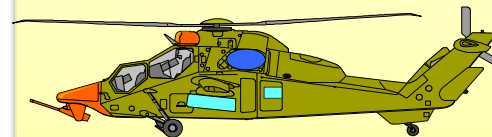
Chin-mounted 30 mm gun
MISTRAL air-to-air missiles
68 & 70 mm air-to-ground rockets
SPIKE & HELLFIRE air-to-ground missile

Other Capabilities

STRIX Roof Mounted Sight
Enhanced Engine
Additional Ballistic Protection

Main Mission

Force Protection / Recce
Air-to-Air / Air-to-Ground



HAD



2. Industrial network



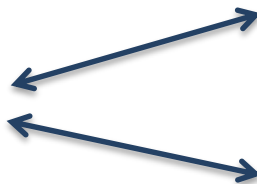
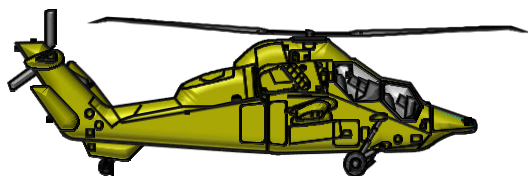
TIGER industrial organization



2. Procurement approach



The TIGER is organised around contractual pillars ensuring the enforcement of Nations' requirements toward industries .



Development contract

In Service Support contract

Production contract



Initial Airworthiness

Continu –ed & -ing Airworthiness



3. TIGER airworthiness management

Product certification
Lessons learnt



3. Product certification



The TIGER followed a product certification concept in accordance with certification specification standards.

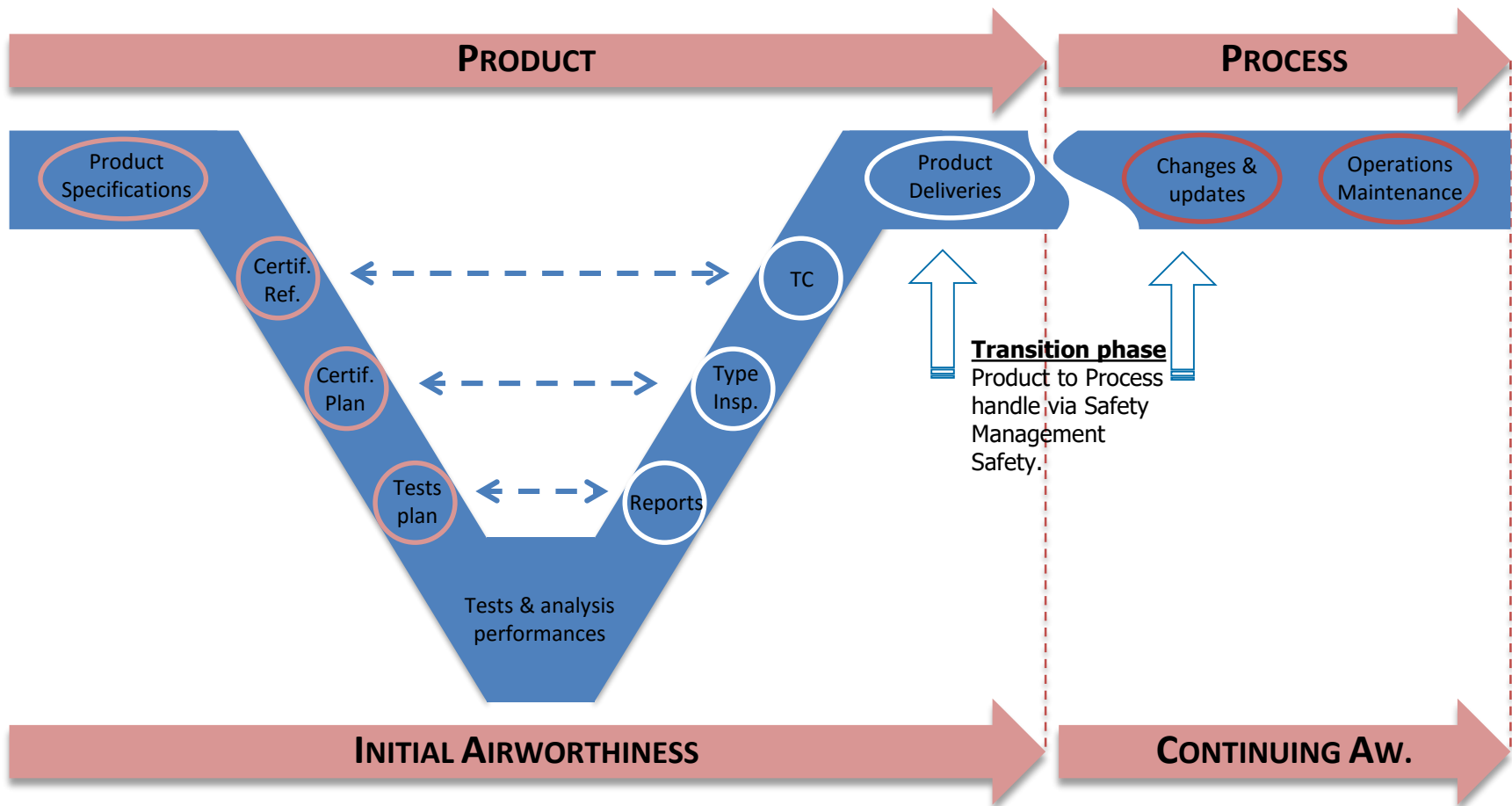
Airworthiness management over the life cycle phases.

- ❑ Initial airworthiness: type inspection process.



- ❑ Continu -ed & -ing airworthiness: change management process.

3. Product certification



3. Lessons learnt



With this TIGER business model, some lessons could be extracted in order to improve for future variants (mid-life upgrade).

The airworthiness management from previous variants brought the following outcomes:

Pros

- Initial airworthiness inspected by each Nation
- Change managed by each Nation



Cons

- Loss of synergy between variants
- No management of industrial approved organisations
- Work sharing between NMAAs difficult
- No spare pooling possible
- No possibility to outsource repairs
- Reduced interoperability
- Different approach on safety methodology



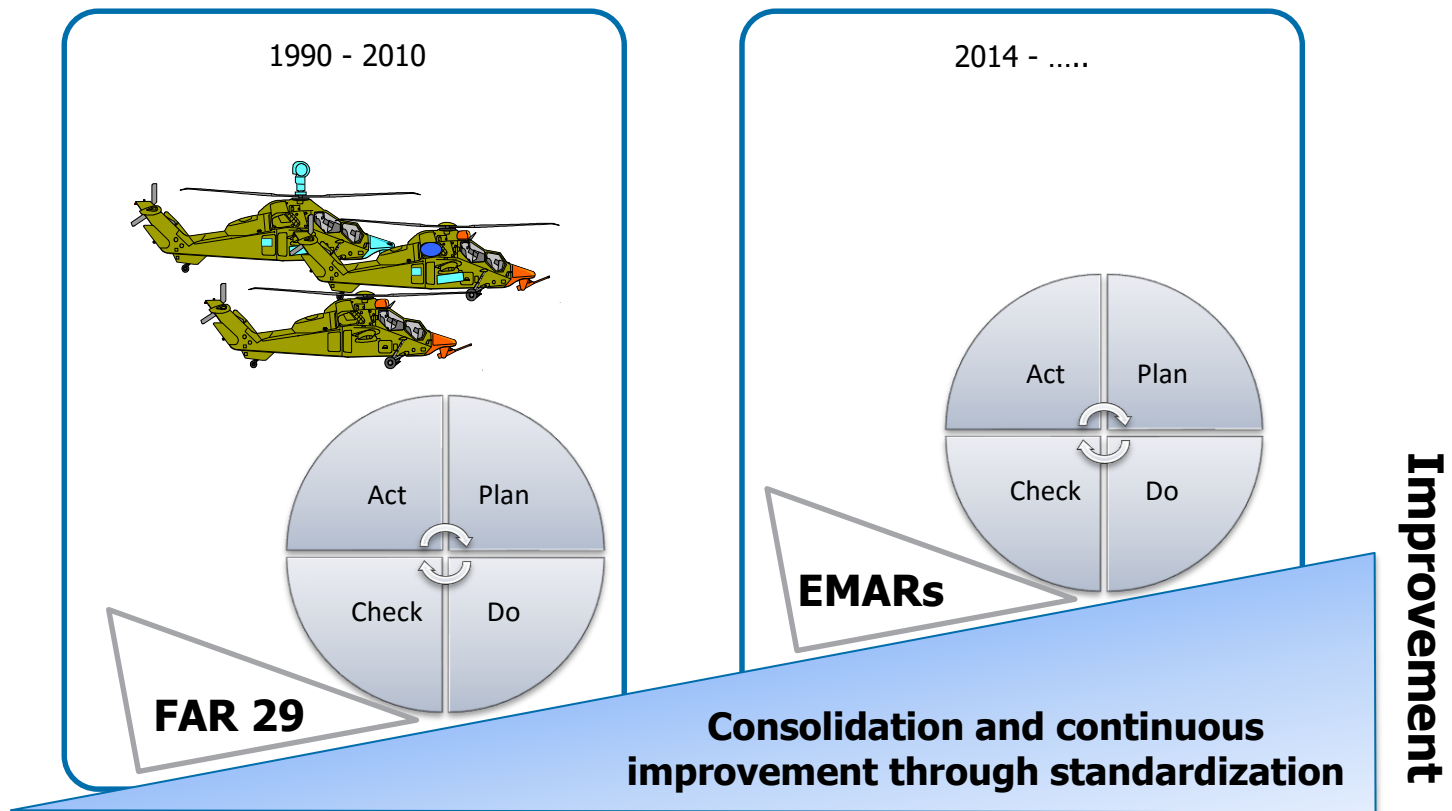
4. EMAR's implementation

Initiative
Organisation
Contract perspective

4. Initiative



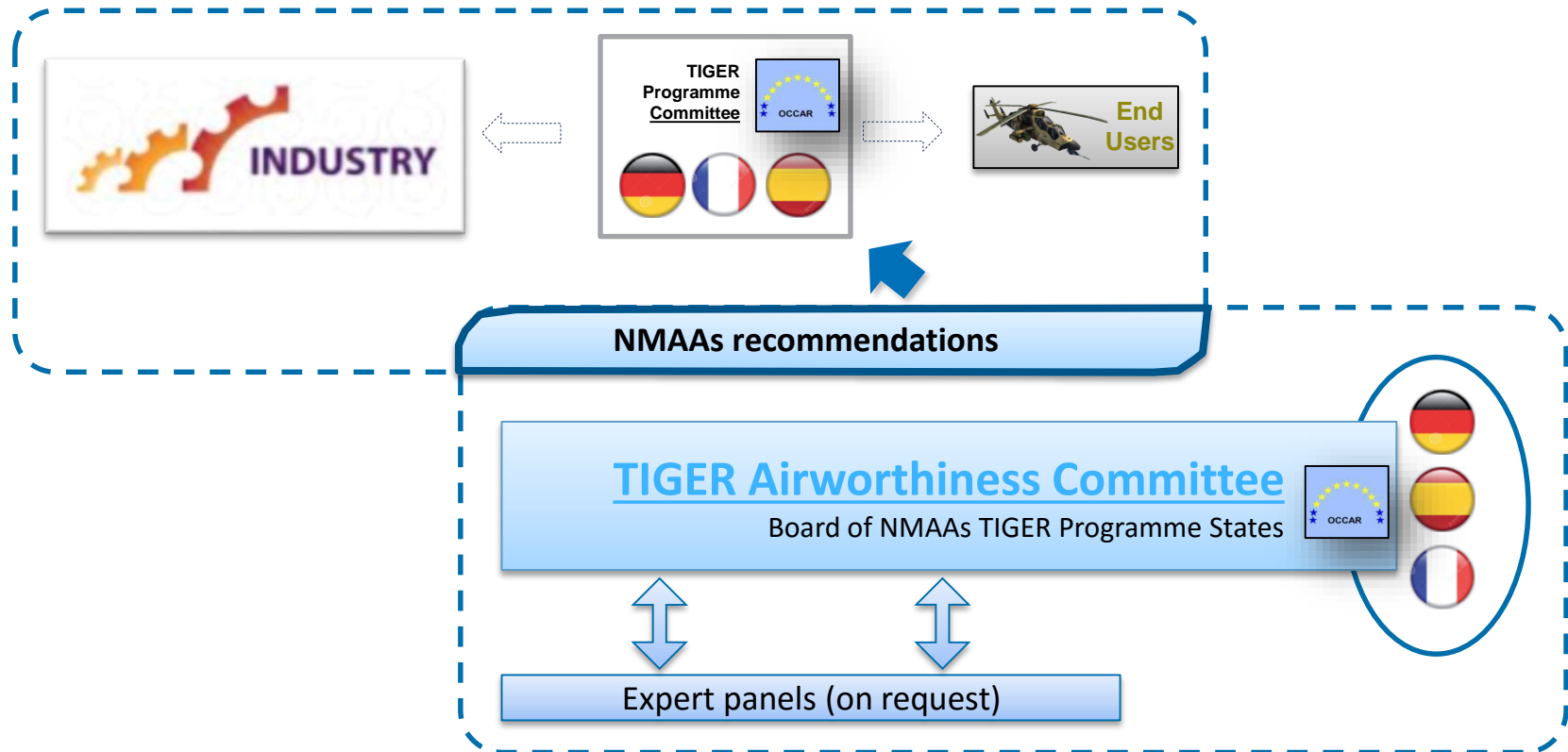
Improving our current model should take place via a controlled change process management.



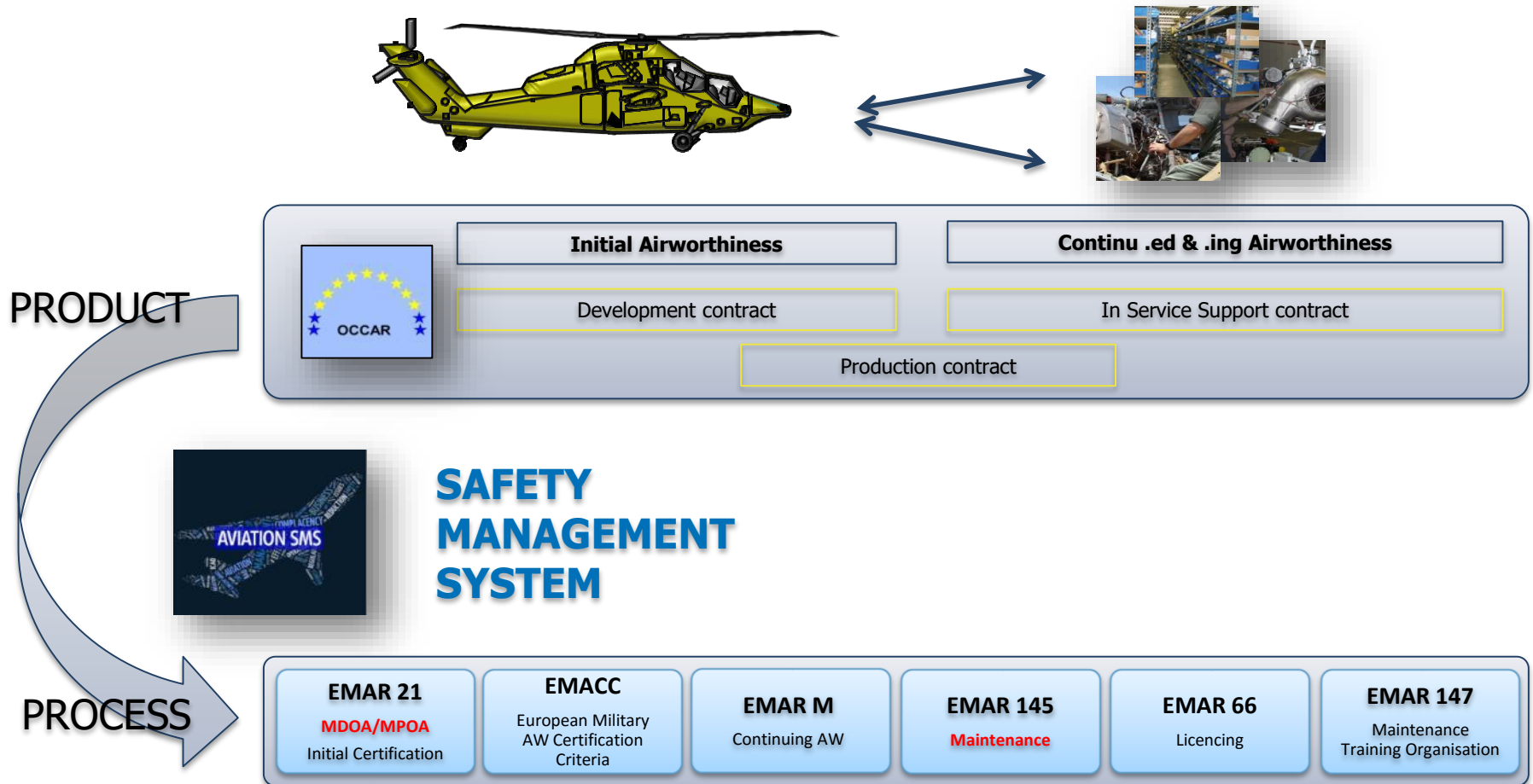
4. Organisation



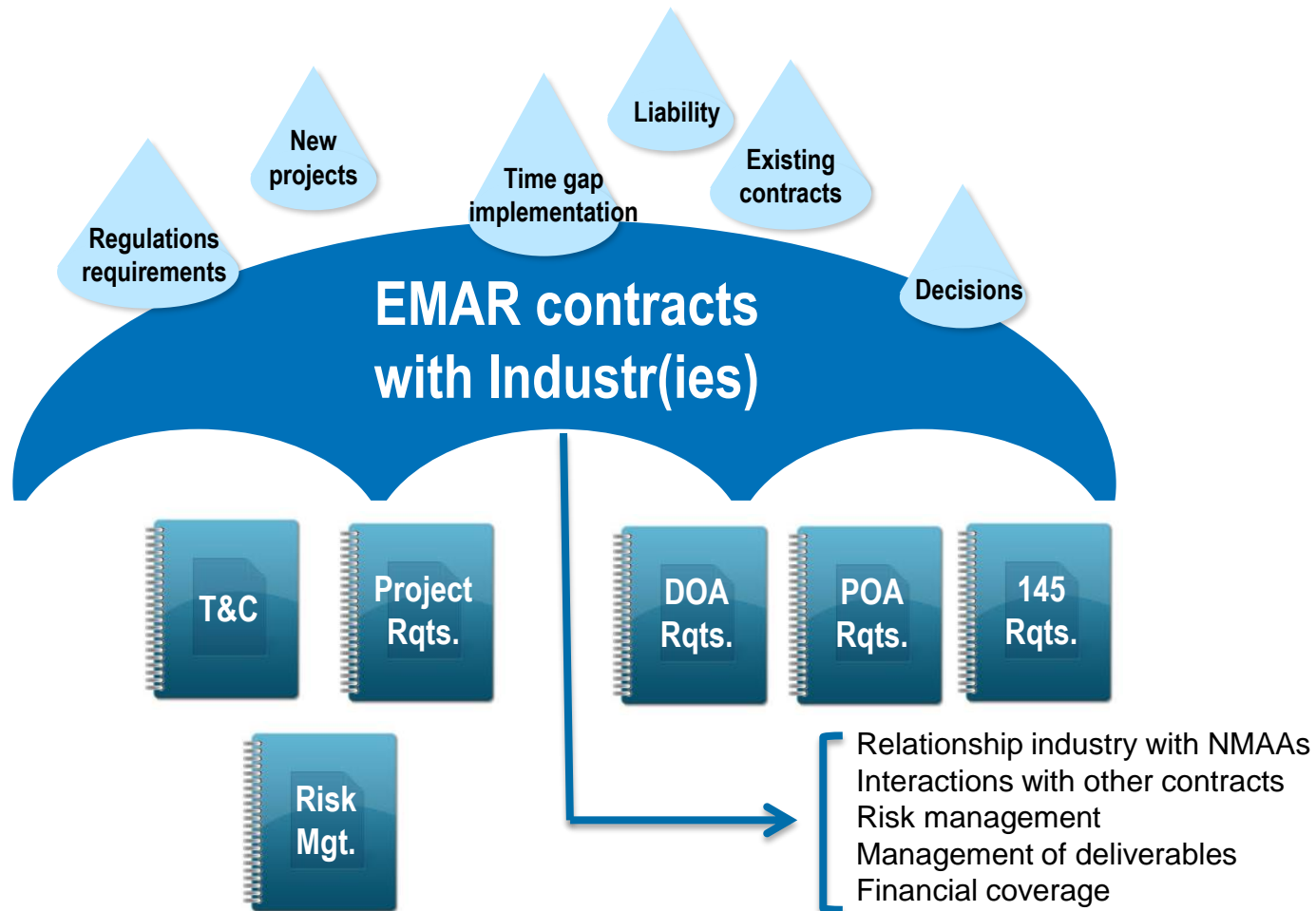
The TAC is providing the TIGER Programme with decision concerning the airworthiness management on the TIGER fleet.



4. Contract perspectives



4. Contract perspectives



5. Practical cases on EMAR's implementation

EMAR implementation project

Case#1 Organisation

Case#2: Recognition

Case#3: EMAR FORM 1

Case#4: Contracts

Case#5: Liability

Military Airworthiness Conference 2017 – 12/10/2017

5. EMAR implementation project



The oversight of process changes is being handled via a risk based approach to evaluate the impacts and undertaking actions.

The goal is to perform this changes and improve safety.



- Mutual recognition
- Define a common scope
- Technical agreement
- Define airworthiness requirements
- Liaise with National Programmes
- ...

- Oversight regulation
- Federate NMAAs
- Propose procedures
- Amend contracts



- Gap analysis on industrial business model
- Contract placement of new requirements
- Approval granting / maintaining
- Liability
- FORM 1
- ...

- Raise & monitor funding
- Manage implementation
- ...

5. Case #1: Organisation



In an existing Programme like the TIGER, a new decision making process shall be establish to deal with Airworthiness.

Structure to provide appropriate recommendation to steer properly via Terms of References (ToRs):

- ☐ Role and responsibilities
- ☐ Rules for airworthiness decision making
- ☐ Support of OCCAR-EA
- ☐ Reporting to the Programme Committee

Lesson learnt #1: ToRs depend on Programme participating States to allocate appropriate resources to airworthiness management.

5. Case #2: Recognition



The recognition process between NMAAs allow the programme to conduct airworthiness.

MARQs allow the NMAAs to provide evidence on how they conduct their national airworthiness assurance responsibilities.

1st implementation
plan for the TIGER.

		21 J	21 G		M	145			147 / 66	
	to be recognized	Design (Mods / Rep.)	Spare Prod.	A/C prod.	Exch. spares (operating)	A/C Repairs (ML3 ind.)	A/C retrofit	Spare Repairs	Training (type)	Training (initial)
DE	FR	Yes	Yes	No	Yes*	No	No	Yes	No	No
DE	ES	Yes	Yes	No	Yes*	No	No	Yes	No	No
ES	DE	Yes	Yes	No	Yes*	No	No	Yes	No	No
ES	FR	Yes	Yes	No	Yes*	No	No	Yes	No	No
FR	DE	Yes	Yes	No	Yes*	No	No	Yes	No	No
FR	ES	Yes	Yes	No	Yes*	No	No	Yes	No	No

Lesson learnt #2: Recognition is considered by NMAAs as a process beyond programmes (not driven by OCCAR-EA).

5. Case #3: EMAR FORM 1



The ultimate goal of granting organisation approvals is to issue FORM 1 on parts.

DAIN = Delivery And Inspection Note

DELIVERY AND INSPECTION NOTE Declaration of CoC and Airworthiness TIGER a				AMENDMENT <input type="checkbox"/> Yes	Copy 1	DAIN Bar Code
DAIN No		Customer Order No		Agency Order No		Procurement Budget Number
Consignee		Consignee		NATO Stock No		Supply Priority
Quantity		Description		Part No/MFU		Blank
Unit of Issue	Goods Value/Currency Code	Case Number	Dimensions (mm)	Gross Weight (kg)	Received Yes/No	Quantity Received
Unit of Measure	Prime Contract No	Material Condition		Terms of Issue	Signature Date	
Only for issue	Serial No or Batch Number	Used part		For Customer Use	Signature Date	
Airworthiness granted: <input type="checkbox"/> Yes <input type="checkbox"/> No Certified that part from the drawings/revisions noted in box is the whole drawing(s) and order relative thereto and that the supplier has been inspected and tested in accordance with the conditions and requirements of the order.				QA according to STANAG 4107 Signature Date		

Lesson learnt #3: Industry is mixing the airworthiness privileges (FORM 1) with the product acceptance process (DAIN).

Lesson learnt #3 bis: EMAR Form 1 are recognized by all NMAAs as Certificate of Release to Service.

5. Case #4: Contract



EMAR are considered by industry as new requirements to be supported by contracts.

The EMARs' implementation is generating a contractual placement effort claimed by industry:

- ☐ Analyze the new requirements to be enforced.
- ☐ Change to industry Business Management Model (BMS).
- ☐ Produce EMAR FORM 1.

Lesson learnt #4: Industries are requesting funding in order to implement airworthiness requirements that marginally differ from civil framework.

5. Case #5: Liability



EMARs requirements are to be contractually enforced and the industry liability depends of contractual commitments

In Military, Industry is liable according the commitment enforced into contract.

For future contracts, Industry is invited to converge to commercial aviation model.

The industry seeks reinsurance or insurance cover for the liability they have committed for.

Lesson learnt #5: If the level of liability changed, the Terms & Conditions of contracts would need to be adapted accordingly.

6. Conclusions

6. Conclusions



OCCAR Tiger welcomes the EDA initiative with the EMAR to be implemented as soon as practicable.

Demonstrated benefits of EMAR framework shall encourage all stakeholders to implement it.

It leads to develop, manufacture and operate military products in a fully controlled airworthiness environment.

Wills and flexibilities of all stakeholders shall pave the way for this implementation.

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