CONSTRUISONS ENSEMBLE
LA DÉFENSE DE DEMAIN

Mission Equipment certification

FR DGA
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DGA

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE LA DÉFENSE

AGENDA

- French airworthiness context
- Mission Equipment issue
- French Process

FRENCH AIRWORTHINESS CONTEXT

AIRWORTHINESS PRINCIPLES IN FRANCE

- **Military Airworthiness based on civil airworthiness system:**
  - **Industry is familiarized with same processes**
  - **Expertise is shared between civil & military**
  - **Benefit of return of civil experience**

- **But with military specifities:**
  - **Some systems do not exist in civil**
  - **Longer development**
  - **Operators are State services**

FRENCH NMAA STRUCTURE

Engineering Branch

- Design
- Production

Inspection Branch

- Maintenance
- CAMO

7 Operational Authorities

- Qualification (training, licences) of crews,
- Exploitation procedures
- Airport safety rules

Accident/incident investigations

DGA ROLE IN AIRWORTHINESS

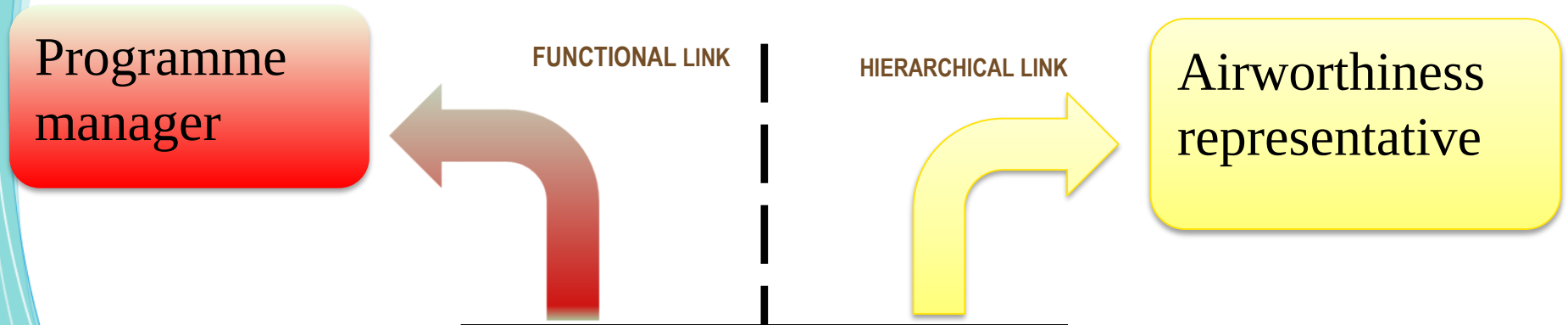
Technical Authority main duties:

- Define technical safety objectives
- Perform Type certification
- Ensure the continued airworthiness of the products
- Grant Design Organization Approval
- Grant Production Organization Approval

DGA LEAN ORGANISATION TO ACCOMMODATE AW ACTIVITIES & PROCUREMENT ACTIVITIES

TO AVOID DUPLICATION OF RESSOURCES, TECHNICAL MANAGER HAS A DUAL ROLE

BUT INDEPENDANT DECISION BODY



Qualification
Non-Conformity acceptance
design improvement

Certification
Modification approval
Repair solution approval
Continued airworthiness
Permit to fly

MISSION EQUIPMENT ISSUE

IS IT FAIR?

- Even if fixed onboard, some equipment are not really aircraft system:
  - Tactical computer
  - Armament management
  - Optical systems,
  - Jammers…

=> Is it necessary to apply same rules for such equipment?

IS IT FAIR?

- Some mission equipment are developed and produced by industry not familiar with aeronautical environment (e.g. armament, command system…)
  - Is it necessary to impose DOA, POA, MOA?

- Some mission equipment are common to various platforms (such ships, ground vehicle or aircraft)
  - Is it necessary to apply aeronautical rules to every equipment or to segregate air-systems from others?

FRENCH PROCESS

REGULATORY SOURCES

- **Based on 21A.303 (d) interpretation**

The showing of compliance of parts and appliances to be installed in a type-certificated product shall be made: (…)

(d) For specific equipment not subject to recognized airworthiness standards covered by the above and which has been demonstrated to the Authority not to adversely affect the airworthiness of the aircraft, in accordance with integration or installation requirements at aircraft level.

As mission equipment does not have recognized standard

- **French continuing order which allows deviations for some equipment defined by DGA**

A DEDICATED INSTRUCTION

DGA developed an instruction

- For equipment
  - Which has no function in aircraft piloting
  - Equipment failure does not have any hazardous impact
- To define adapted rules
  - To maintain safety level
  - To avoid authority unnecessary burden
  - To avoid significant over costs

FRENCH AIRWORTHINESS REGULATION STRUCTURE

Interdepartmental level

decree 2013-367 (amended)

Order « Duties »	Order « Conditions »	Order « Registration »	Order « Continuing airworthiness »	Order « UAS »

Authorities level

Instruction « Initial airworthiness »

- Essential airworthiness requirements
- Regulations considered as acceptable means of compliance
- **FRA 21**
- **FRA Forms**

DGA Technical Authority

Instruction « Report of technical occurrences »

Instruction « Civil ADs and TCH technical directives »

Instruction « Stores and equipment excluded from continuing airworthiness »

Instruction « Continuing airworthiness »

- **FRA M**	- **EMAR(FR) M (provision)**
- **FRA 145**	- **EMAR(FR) 145**
- **FRA 147**	- **EMAR(FR) 147**
- **FRA 66**	- **EMAR(FR) 66**
- **FRA Forms**	- **EMAR Forms**

DSAÉ State Aviation Safety Authority

AMC & GM for all FRA

Internal documents

Mementos and procedures

EQUIPMENT ELIGIBILTY

- Every equipment can be subject to alternatives rues only if:
  - The equipment has no function in aircraft piloting
  - Equipment failure has no hazardous impact on Aircraft
- Eligibility shall be confirmed by a formal decision of DGA technical Authority (« acte technique »)
- Such demonstration may be performed at the occasion of A/C certification

ALTERNATIVES REQUIREMENTS (1/3)

- **Modification & repair solution:**
  - **Can be developed under a procedure**
    - which guarantees integration requirements are not impacted (interface, electromagnetic, laser….).
    - Such procedure shall be approved by DGA technical authority

Advantage:

- no DOA required,
- no authority surveillance

ALTERNATIVES REQUIREMENTS (2/3)

- **Manufacturing**
  - **Produced under a suitable quality system**
  - ***Simple* CoC as released certificate**

Advantage:

- No POA required
- no authority surveillance

ALTERNATIVES REQUIREMENTS (3/3)

- **Maintenance:**
  - **Maintained under a suitable quality system**
  - **dedicated record to attest conformity with equipment maintenance manual**

Advantage:

- No MOA required
- no authority surveillance

AIRCRAFT INSTALLATION

- Integration of mission equipment remains in the usual controlled environment:
- Integration specification are approved and are part of A/C design data
- Installation of such equipment
  - shall be performed in an approved Maintenance Organization and
  - is subject to CRS

CONCLUSION

- DGA considers Technical Authority duty is
  - To balance operational needs versus safety requirements
  - To fine-tune requirements to design risks

- Adapted rules for mission equipment airworthiness is a solution to address such balance


Thank You for your attention