

THE CERTIFICATION OF THE
SPERWER-RNLA UAV SYSTEM



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RNLAF

Report Documentation Page

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Main Driver for action

SECURITY

SAFETY



Quality of life



Sperwer-RNLA UAV Certification



- **RNLAF Airworthiness Program**
- **RNLA Sperwer program**
- **SPERWER Certification**
- **UAV-system under Airworthiness**



RNLAFA Airworthiness Program

JAA

EU



NETH. Legislation



JAR 21

JAA

JAR 145

LE 21



LE 145

RNLAFA Airw. Requirements

Certification Process

Continued Airworthiness

Aircraft/Air Vehicle:

Each Machine > Atmosphere > Forces of Air > over 20 kg

Requirement for "pilot on board" traded for "Restricted Area"



SPERWER/RNLA Program

4 SYSTEMS

EACH:

1 Ground Component

Launching station
Ground Control Station
Ground Data Terminal
Platoon Maintenance facility
Flight Safety System

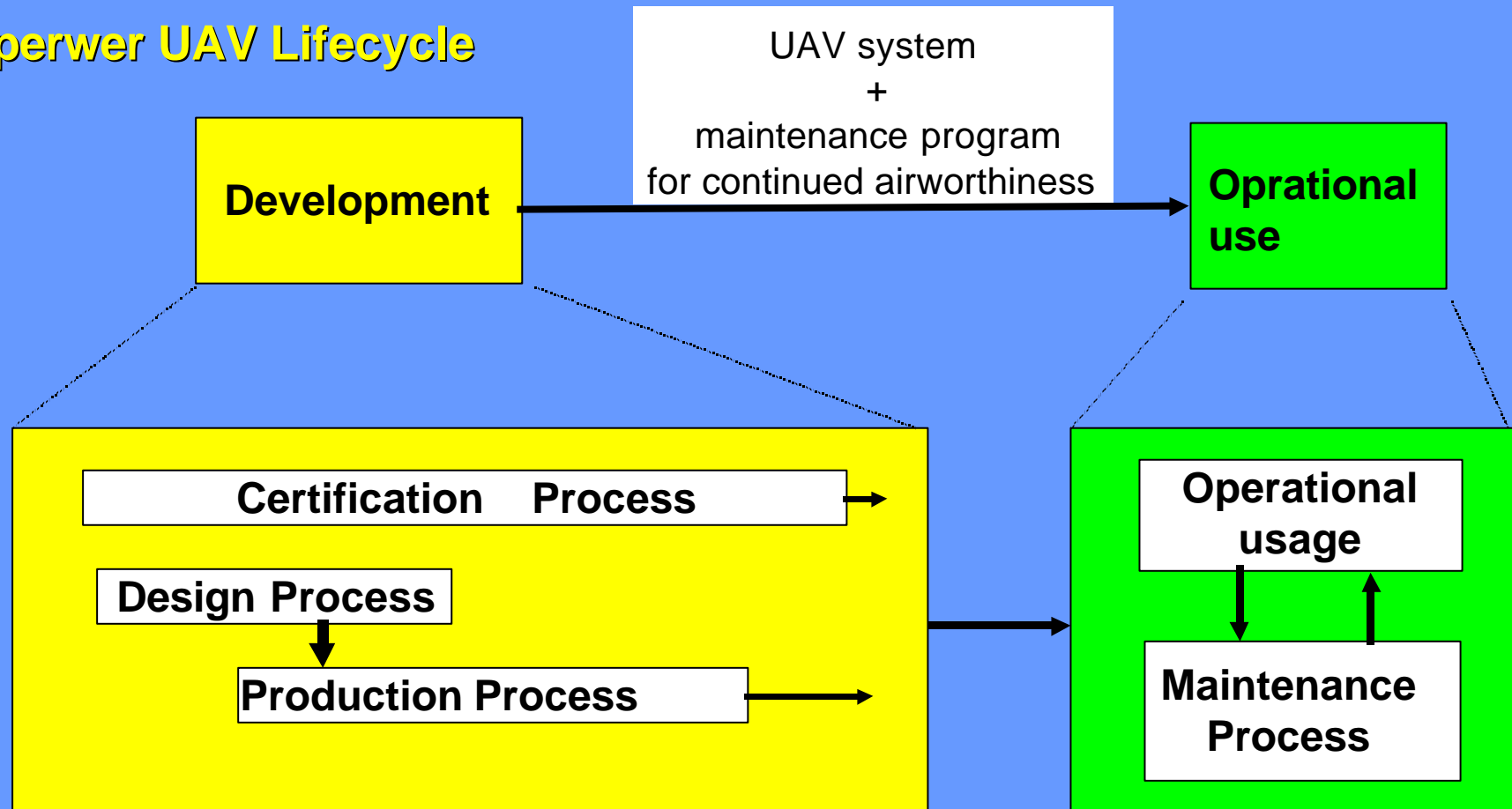
8 Air Vehicles

- **CONTRACT: Functional + Airworthiness**
- **Start 1995 >>>>>>>delivery 1999/2000/2001**



Sperwer-RNLA UAV Certification

Sperwer UAV Lifecycle





SPERWER/RNLA Certification Plan

- **CERTIFICATION SPERWER**
 - **Subject of certification**
 - **Basic Requirements**
 - **Certification Committee**
 - **Certification process**
 - To be included:**
 - **Continued Airworthiness** (config.man., documentation, maintenance plan, organization)
 - **Operational Organization**

Goal: >>> **Type Certificate for Sperwer System (restricted Area)**
>>> **Certificate of airworthiness each AV (restricted Area)**



SPERWER/RNLA Certification plan

Subject of certification
AV + "Command Line"

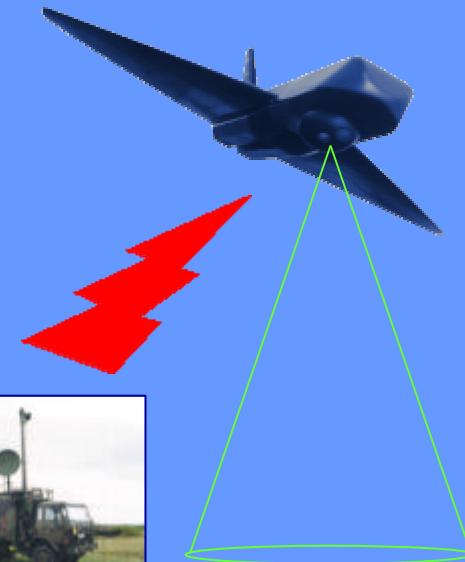
LAUNCHER



GCS - GDT



**Flight
Safety
System**





SPERWER/RNLA Certification Plan

BASIC REQUIREMENTS

**In 1995 no Requirements nor Experience (UAV)
Still a Requirement for Certification!**



- **From JAR/VLA developed:**
 - **Type Requirement Basis Definition (AS96 - 013)**
 - Description Requirements (DR)
 - Means of Compliance Definition

**UAV (sperwer) differences from VLA:
Software (pre-programmed flight), Up/down link, Rules of Safety**



SPERWER/RNLA Certification Plan

- **CERTIFICATION Committee**
 - **Director of Materiel RNLAF/Q&A**
 - Chair + secretariat + QA (GQAR)
 - **Director of Materiel RNLAF/Weapon System Manager**
 - Technical assistance A/C Systems/requirements
 - **Director of Operations RNLAF/Ops Research & Eval.**
 - Operational/technical assistance / flight testing
 - **Neth. Aerospace Laboratory (NLR)**
 - Technical assistance
 - **Director of Materiel RNLA**
 - Program / project management + Software & maintenance



SPERWER/RNLA Certification Plan

- Certification Process (TC + CoA)
 - Further definition of Means of Compliance
 - Compliance Demonstration
 - Design, testing (ground/flight), simulation
 - Airworthiness Compliance Reports
 - Airworthiness Acceptance
 - Configuration + Manufacturing and Inspection File
 - Production and Testing >> Acceptance Test Report
 - GQA all over the process
 - Operational Verification at Mourmelon (Fr)
 - Logistic Verification (Maintenance Concept + documentation)
 - Final Qualification Review



SPERWER/RNLA Certification

• MILESTONES

- September 1999 - First system Acceptance by RNLA for test & training , *LIMITED RELEASE* to fly for RNLA OPERATIONAL VERIFICATION at *Mourmelon Range (FR)*
- December 2000 - Temporary Certificate of Airworthiness per AV for flight in *RESTRICTED AREA*
- December 2001 - Final Qualification Review: Type Design ready for Certification
- January 2002 - Type Certificate for *RESTRICTED AREA* issued to *RNLA* for the Sperwer-RNLA system
- ultimate 2002 - All Air Vehicles upgraded to TC Configuration, CoA for each AV



SPERWER/RNLA Situation

**EMERGING
AIRWORTHINESS
PHILOSOPHY**

**AW AUTHORITY:
RNLA**

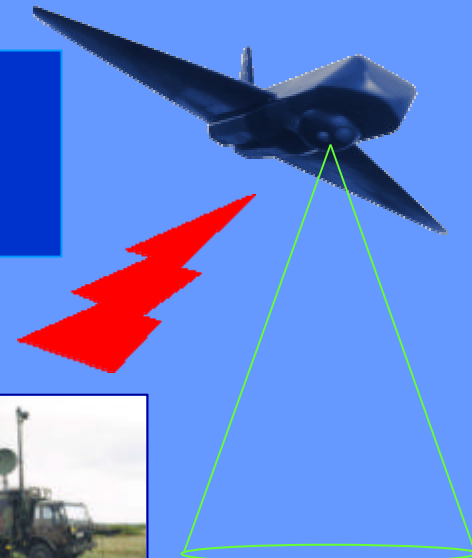
SPERWER/RNLA system

- TC/RA
- COA per AV

TC - Holder: RNLA

GCS - GDT

OEM: SAGEM (FR)

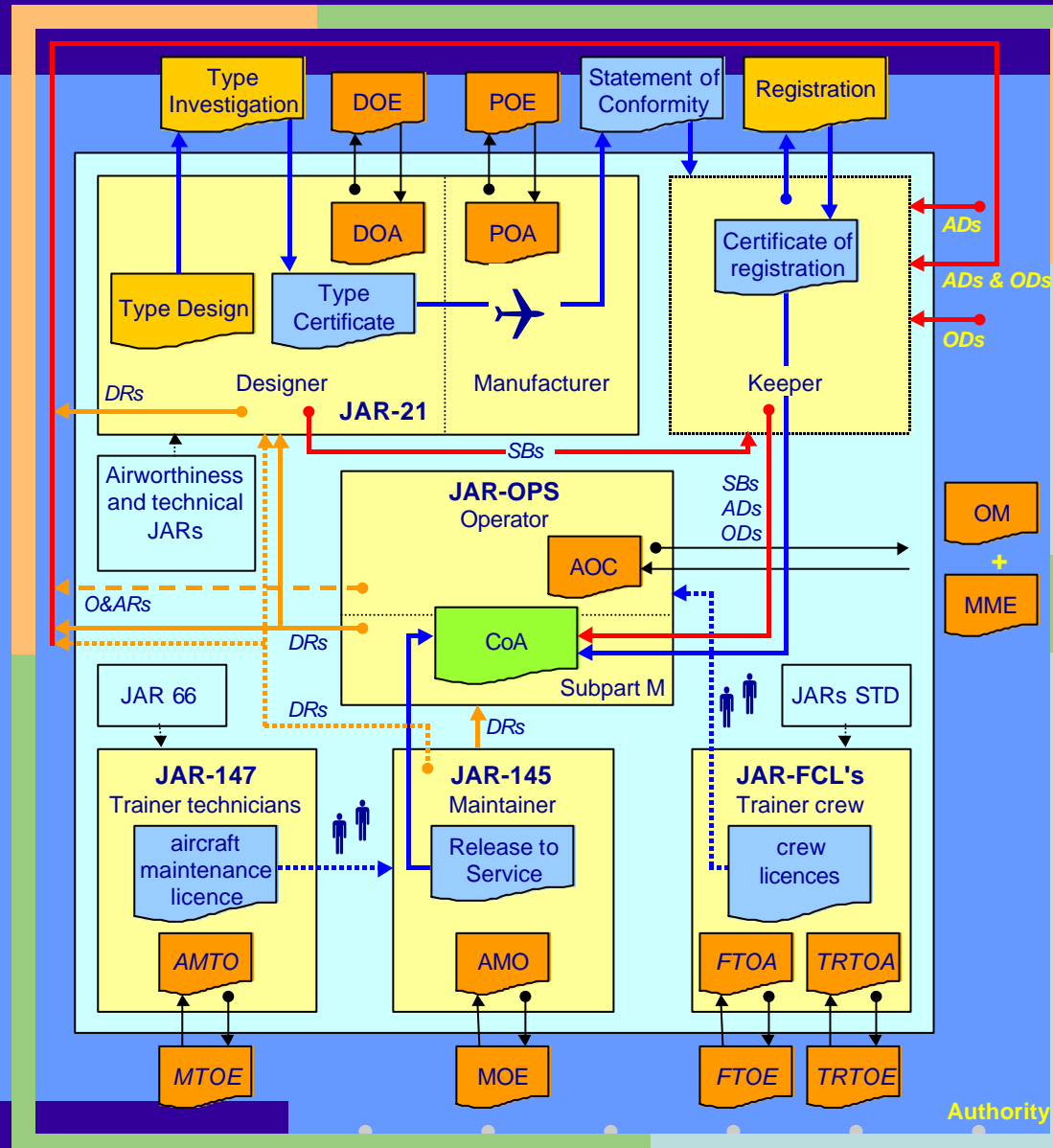


**Flight
Safety
System**



JAA- philosophy

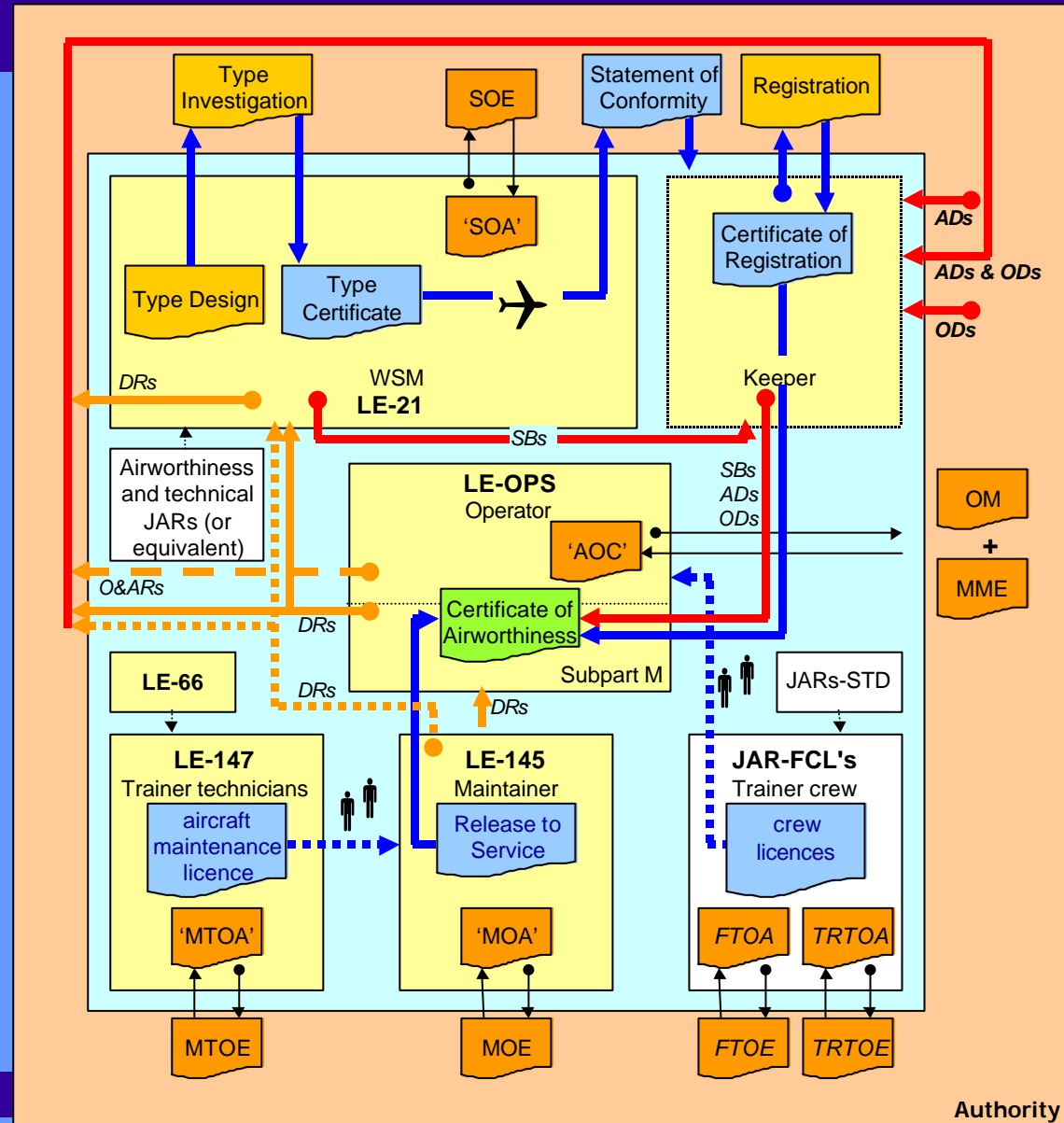
Certification
Maintenance
Operations
Licensing



RNLAF Military Aviation Requirements



Certification
 Maintenance
 Operation
 Licensing





SPERWER Certification Program

AIRWORTHINESS...

From the *first START* ...



...**T0** the last **FINISH !!!**

