




# **Brazilian Military Airworthiness Certification and KC-390 Project Challenge**

## **MAWA Conference 2014**

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**Aeronautical Engineer**





# Overview

- The Industrial Fostering and Coordination Institute - IFI
- Brazilian Certification History
- International Agreements
- FAB Aerospace Product Life Cycle
- Regulation Improvement
- KC-390 Certification Challenge



## *IFI's MISSION*

*To contribute in ensuring performance, safety and availability of aerospace products and systems of Brazilian Air Force concerns, by acting in the fields of Normalization, Metrology, Certification, Intellectual Property and Technology Transfer.*



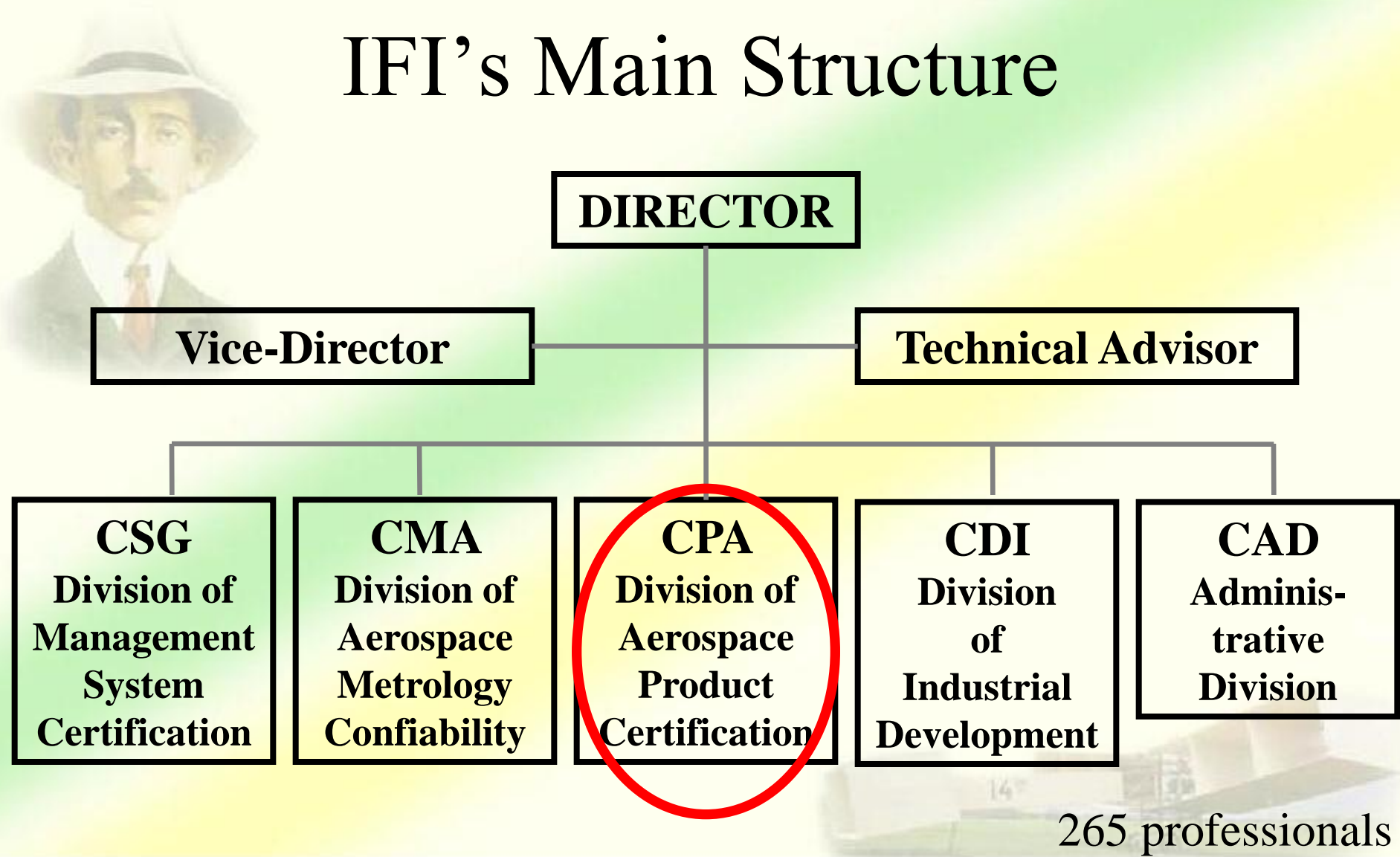
IFI



**Located in São José dos Campos – São Paulo**  
**One of the Air Force Command Institutes,**  
**Inside Department of Science and Aerospace Technology**



# IFI's Main Structure



265 professionals



# Brazilian Certification History

1941 – Creation of Aeronautics Ministry (MAER), in charge of Brazilian Air Force (FAB) and Department of Civil Aviation (DAC)

1950 – Creation of Technical Centre of Aeronautics - CTA (now Department of Science and Aerospace Technology - DCTA) and Technological Institute of Aeronautics - ITA.



# Brazilian Certification History

1957 – Implementation of Certification Commission inside of Institute for Research and Development - IPD

1971 – Creation of Industrial Fostering and Coordination Institute - IFI

1975 – Certification activities were transferred to IFI

1976 – First Bilateral Airworthiness Agreement between Brazil and USA



# Brazilian Certification History

- 1982 – Agreement Brazil - Italy to produce AMX aircraft
- 1983 – Creation of Military Homologation Division – FHM (now CPA – Certification of Aeronautical Product Division) and Civil Homologation Division – FDH
- 2005 - Creation of National Agency of Civil Aviation – ANAC  
(FDH Division was transferred to ANAC)







# International Agreements

1976 – First Bilateral Airworthiness Agreement between Brazil and USA

1997 – Technical Agreement DAC, CTA – JAA – validation of EMB-145 homologation

2004 – Bilateral Aviation Safety Agreement (BASA) – Brazil - USA

2004 – Administrative Arrangement Brazil (DAC) - EASA focused in the EMBRAER commercial needs

# International Agreements

1982 – Italy



A-1



EMB-121 XINGU

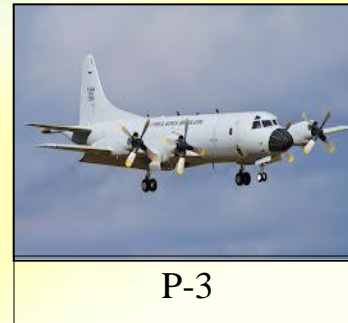


T-27 TUCANO



H-XBR

1984, 2005 – France – DGA



P-3



C-295

2007 – Spain – INTA, DEGAM

2014 – Sweden – FLYGI (under negotiation)



F-X2

# Military Certification



1972 – Homologation of EMB-110  
Bandeirante

1978 – EMB-110 validated by FAA  
(first FAA validation)



1979 - Homologation of EMB-121A  
Xingu



1985 - Homologation of EMB-120  
Brasília

# Military Certification



1996 – Homologation of Embraer 145



1998 – Homologation of MAA-1 Missile



2002 – EMB-314 Super Tucano followed a Verification and Acceptance Plan (PVA)




2004 – Homologation of ERJ-170

# Military Certification

A faded image of a person wearing a white hard hat, looking forward.

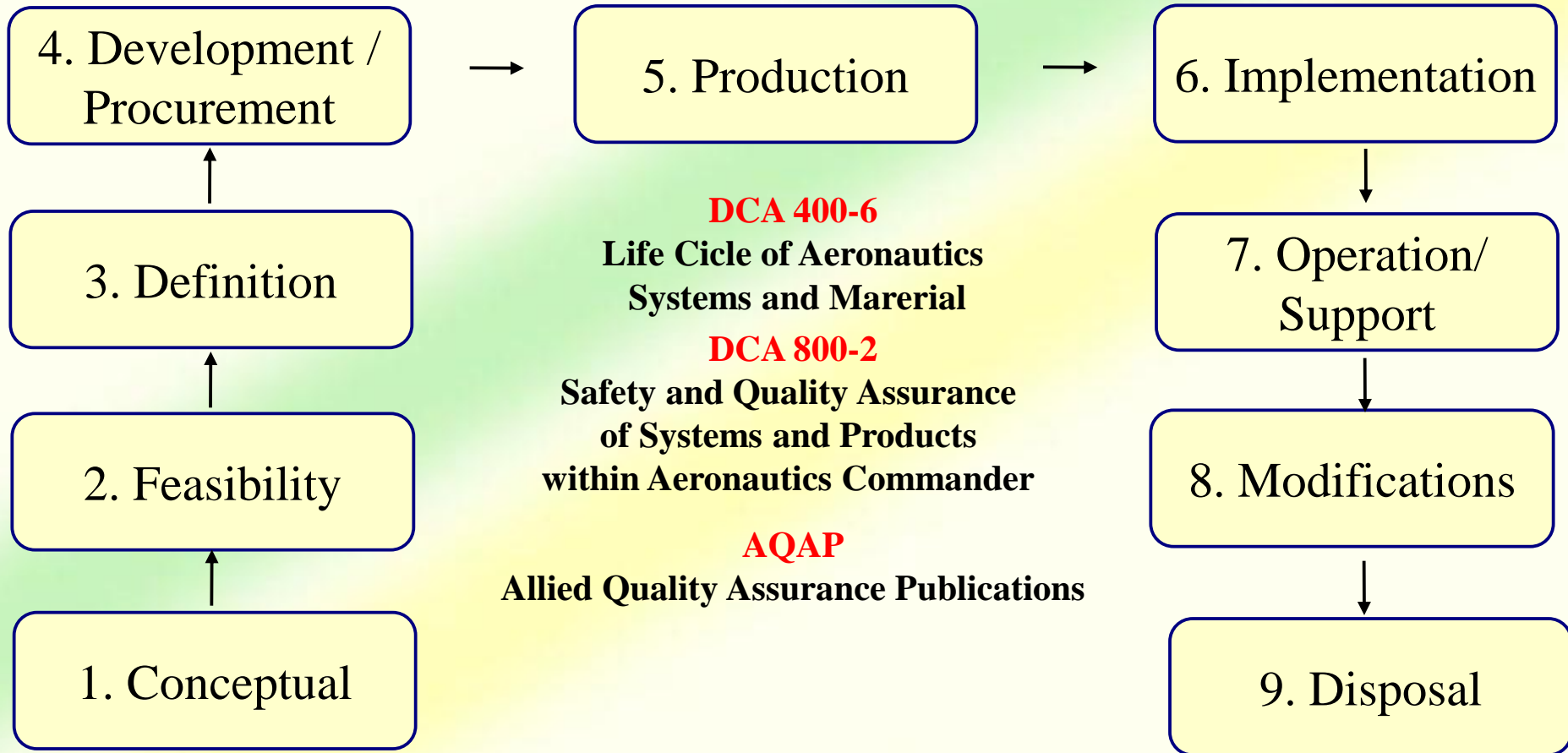
2010 – Validation of EC 725  
(H-XBR) certification

A photograph of a white C-130M military transport aircraft parked in a hangar.

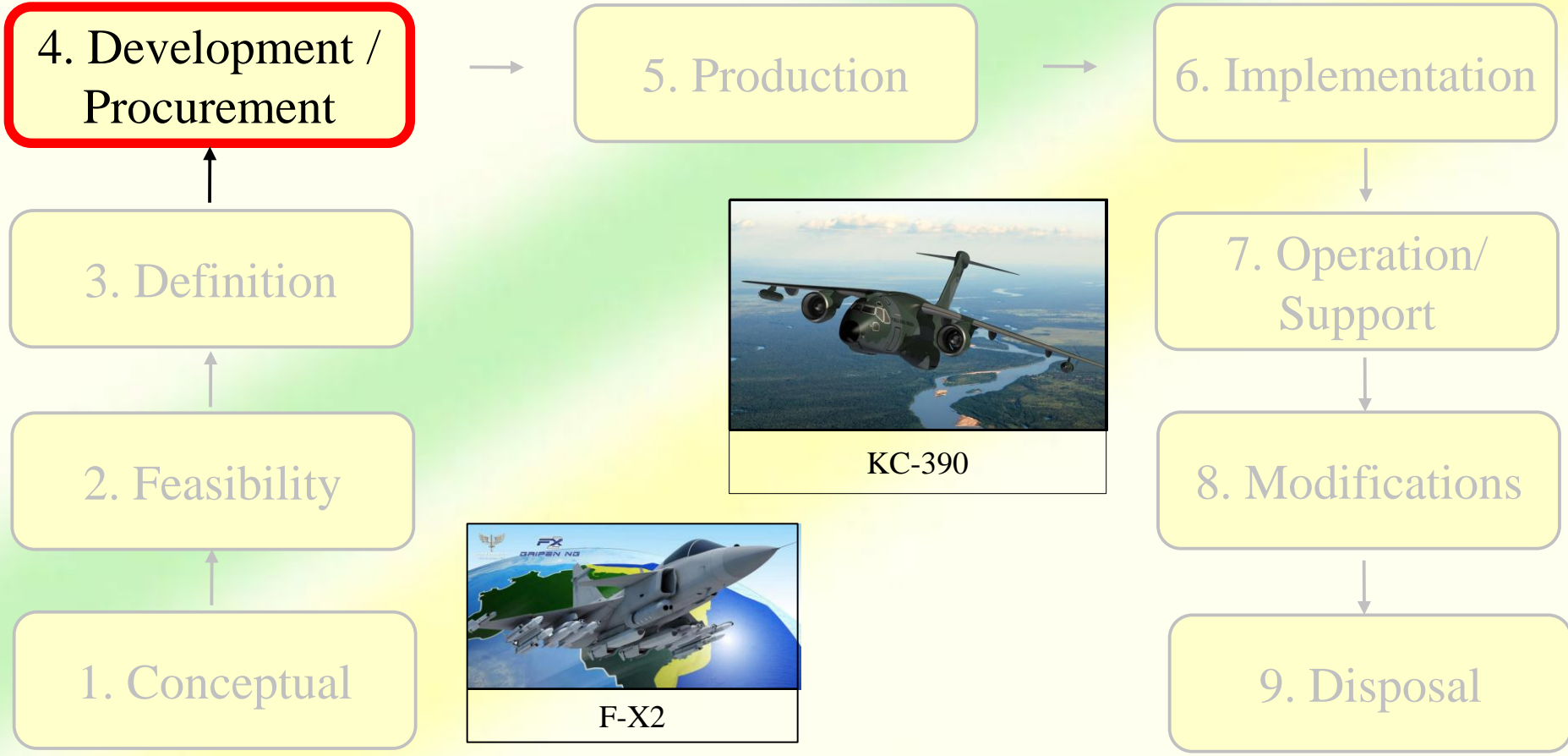
2012 – Certification of C-130M  
Modification, including Self Defence



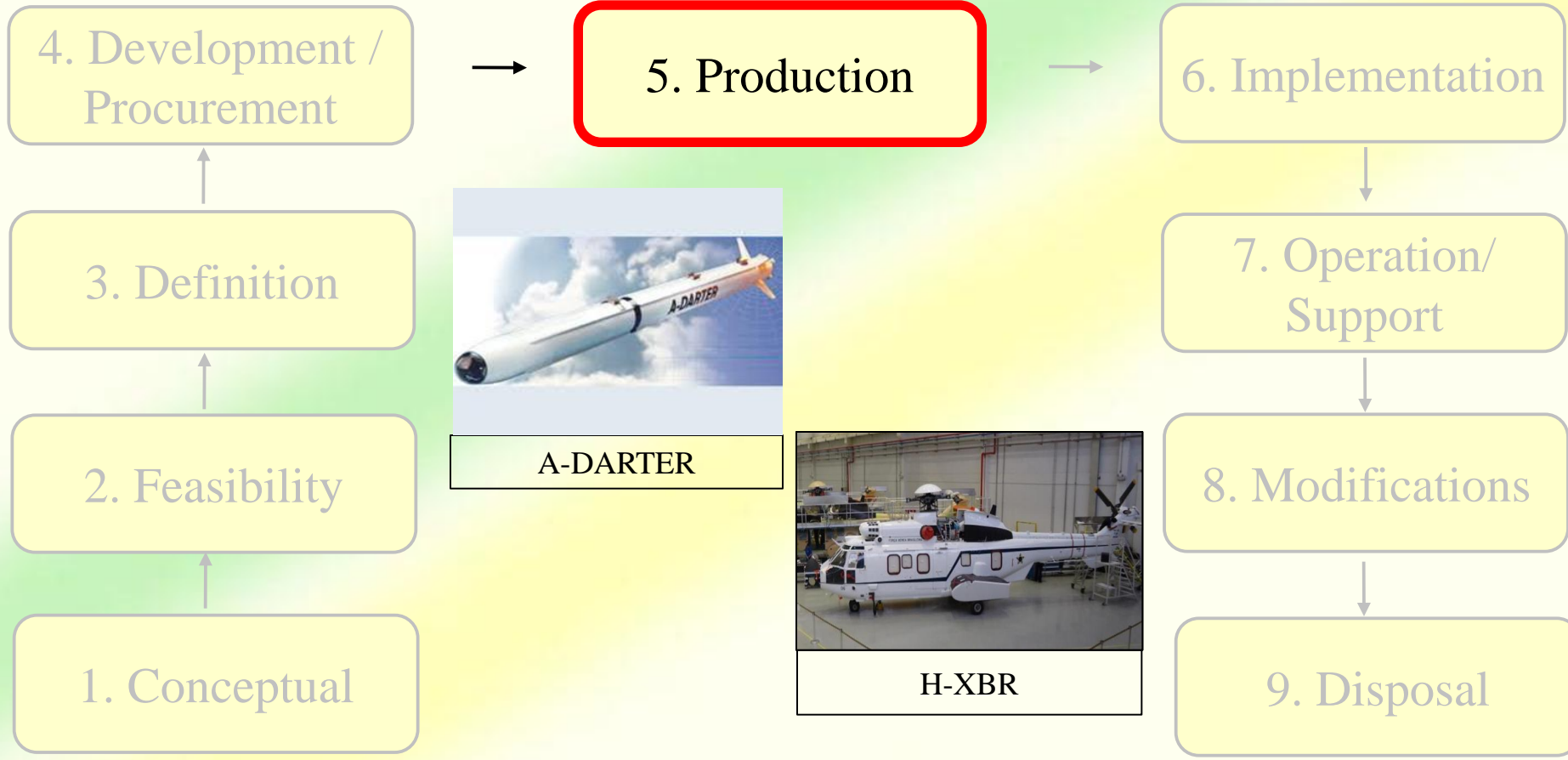
## FAB Aerospace Product Life Cycle



# IFI in Aerospace Product Life Cycle

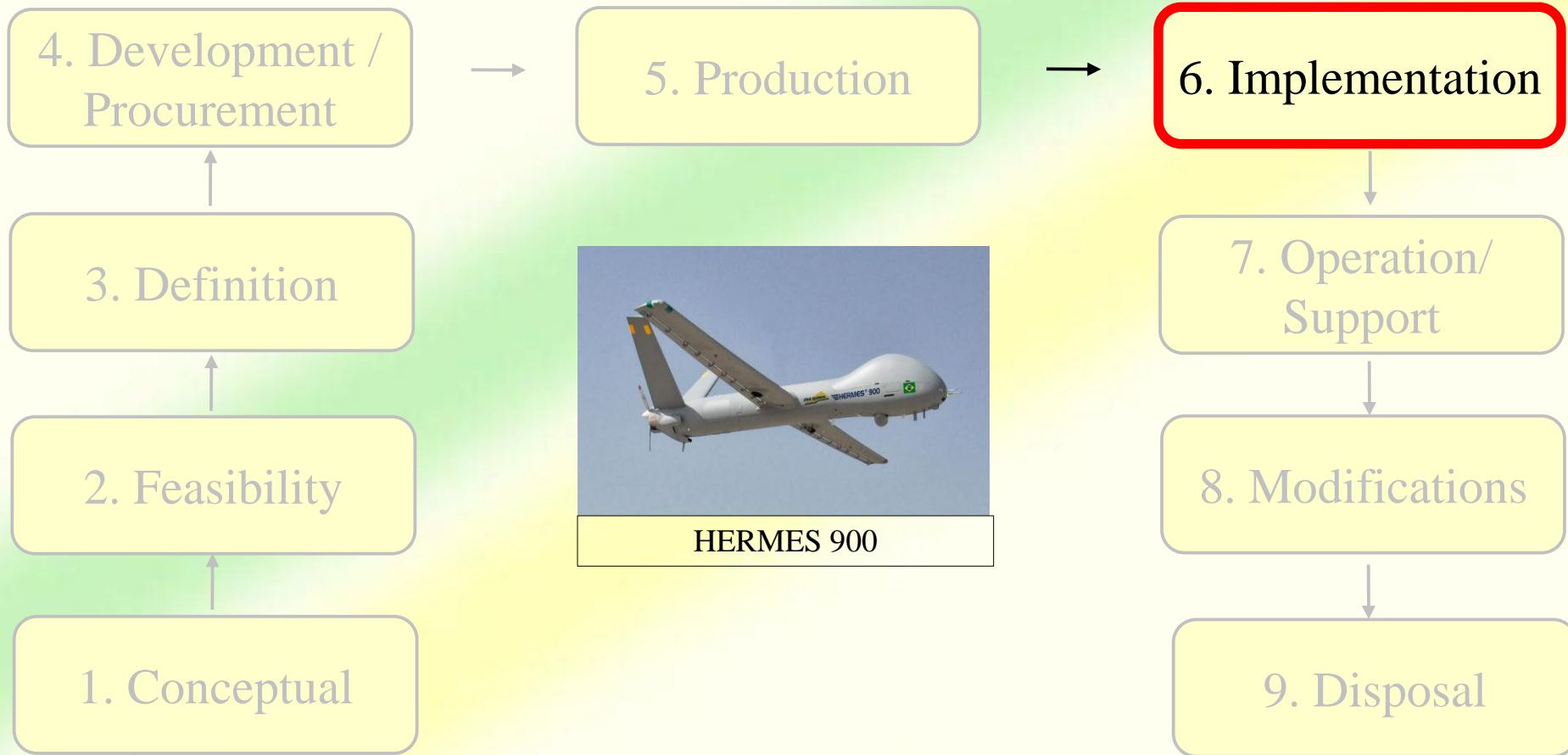


# IFI in Aerospace Product Life Cycle





## IFI in Aerospace Product Life Cycle



# IFI in Aerospace Product Life Cycle



# IFI in Aerospace Product Life Cycle





# Regulation Improvement

## **DCA 800-2**

### **Safety and Quality Assurance of Systems and Products within Aeronautics Commander**

apoved in 2014, establishes guidelines for the approval, certification  
and conformity evaluation of all systems and products

## **ICA 57-21**

### **Military Airworthiness Regulation – procedures for Aeronautical Product Certification**

To be aproved in 2014, is similar to RBAC21, PART21 and EMAR21

**A STEP FOWARD**

# KC-390 Project Challenge

- RFP delivered in 2008
- KC-390 was designed to fill the Brazilian Air Force needs to replace old C-130 from 2016.
- needs of other air forces → niche market
- IFI will certificate the KC-390 to fly all over the world

**EMBRAER and FAB  
MUST HAVE KC-390  
ready as soon as possible.**





EMBRAER



Brazil

Aero Vodochody



Czech Republic

EEA, OGMA



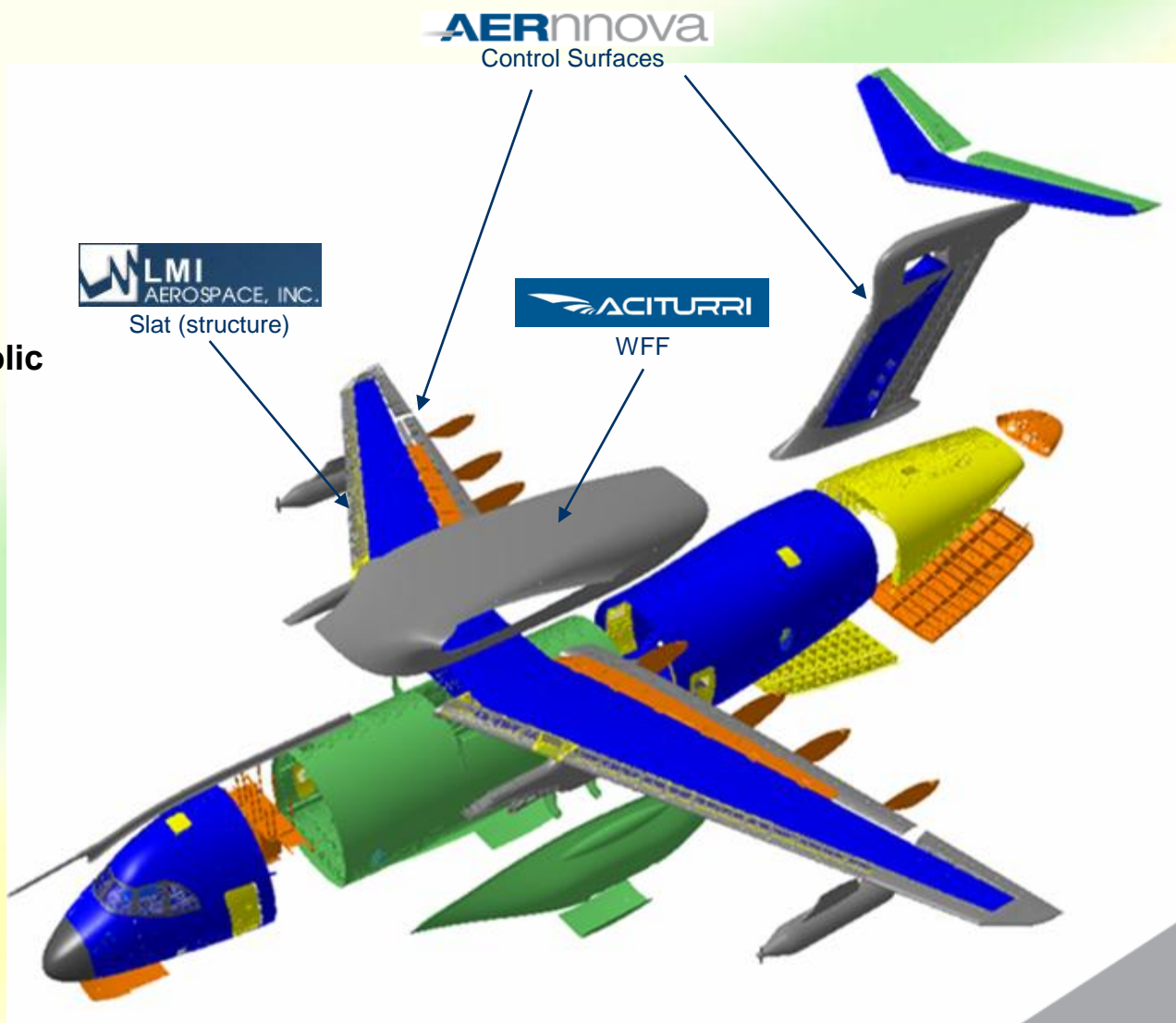
Portugal

FAdeA



Argentina

Suppliers





# KC-390 Project Challenge

“As civil as possible, as military as necessary.”

EMBRAER KC-390 shared certification:



Green aircraft – Part 25

Recognize Green Aircraft and  
Certificate all military specific  
conditions and mission  
accomplishment of RTLI



# KC-390 Project Challenge

- EMBRAER applied to certificate KC-390 with ANAC in a conventional process
- IFI agreed that EMBRAER apply to certificate KC-390 as an OPC (Organização de Projeto Credenciada - Qualified Design Organization) - similar to DOA

**Expected reduced time to certificate with improved certification confidence level**





# EMBRAER OPC Basic Rules

- Process based on the EMBRAER maturity and confidence relation between IFI and EMBRAER
- EMBRAER and IFI discuss all MoCs inside Certification Plan analysis
- IFI involvement focused on critical activities and audits to the all certification activities
- Programmed audits to the hole process



IFI intends to celebrate  
Mutual Certification  
Acceptance Agreements  
with Military  
Airworthiness Authorities  
over the world



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The screenshot shows the IFI website with a navigation menu on the left, a main content area with a 'Normalização' banner, and a 'Produtos e Serviços' section listing various technical services. At the bottom, there is a 'Destques' section with a news item about a 4% ICMS reduction for aerospace companies.

**Produtos e Serviços**

- Calibração em Metrologia Elétrica
- Calibração em Metrologia Dimensional
- Calibração em Metrologia Física
- Certificação de Produtos Aeroespaciais
- Certificação de Sistemas
- CESAER
- Convênio ICMS 75/91
- Cursos
- Ensaio em Câmara Aneóica
- Ensaio Não-Destrutivo
- Garantia Governamental da Qualidade
- Offset
- Proteção da Propriedade Intelectual
- Transferência de Tecnologia
- Inventor Independente

**Destques**

Publicado no Diário Oficial da União, em 04/04/2014, o Ato COTEPE/ICMS nº 8, de 10 de março de 2014. Este Ato divulga a relação de empresas nacionais que produzem, comercializam e importam materiais aeronáuticos, beneficiárias do Convênio ICMS 75/91 que reduz a alíquota do ICMS a 4%. As empresas constantes da Relação de Candidatas que não constam do Ato COTEPE/ICMS nº 8 foram evoluídas pela Secretaria de Fazenda correspondente, órgão que deve ser contatado para verificação dos motivos que demandaram a exclusão.