The Aerospace Industry In Morocco

GIMAS
GROUPEMENT DES INDUSTRIES MAROCAINES AÉRONAUTIQUES ET SPATIALES

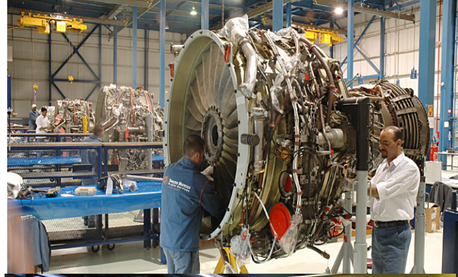
AMC
AEROSPACE MOROCCAN CLUSTER

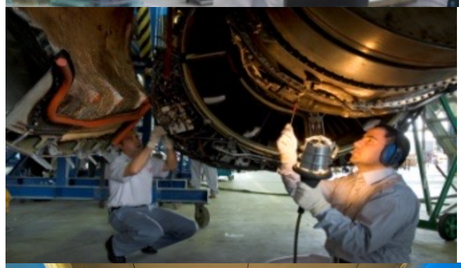
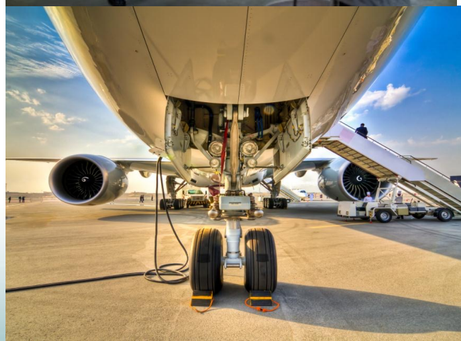
The Aerospace Industry in Morocco

The Moroccan aerospace industry is a success story of 20 years for the Kingdom, an industry in full expansion thanks to several factors.

One of the most dynamic aerospace platforms in the world...

- ✓ **N°5 platform worldwide and N°1 in Africa**
- ✓ **A 20-year adventure from 5 to +140 companies in Morocco**
- ✓ **Including world leaders: Airbus, Boeing, Collins, Safran**



The Aerospace Industry in Morocco

The Moroccan aerospace industry is a success story of 20 years for the Kingdom, an industry in full expansion thanks to several factors.

... Through a unique combination of competitive advantages

Strategic location to serve Europe and the United States: 14 km from Europe

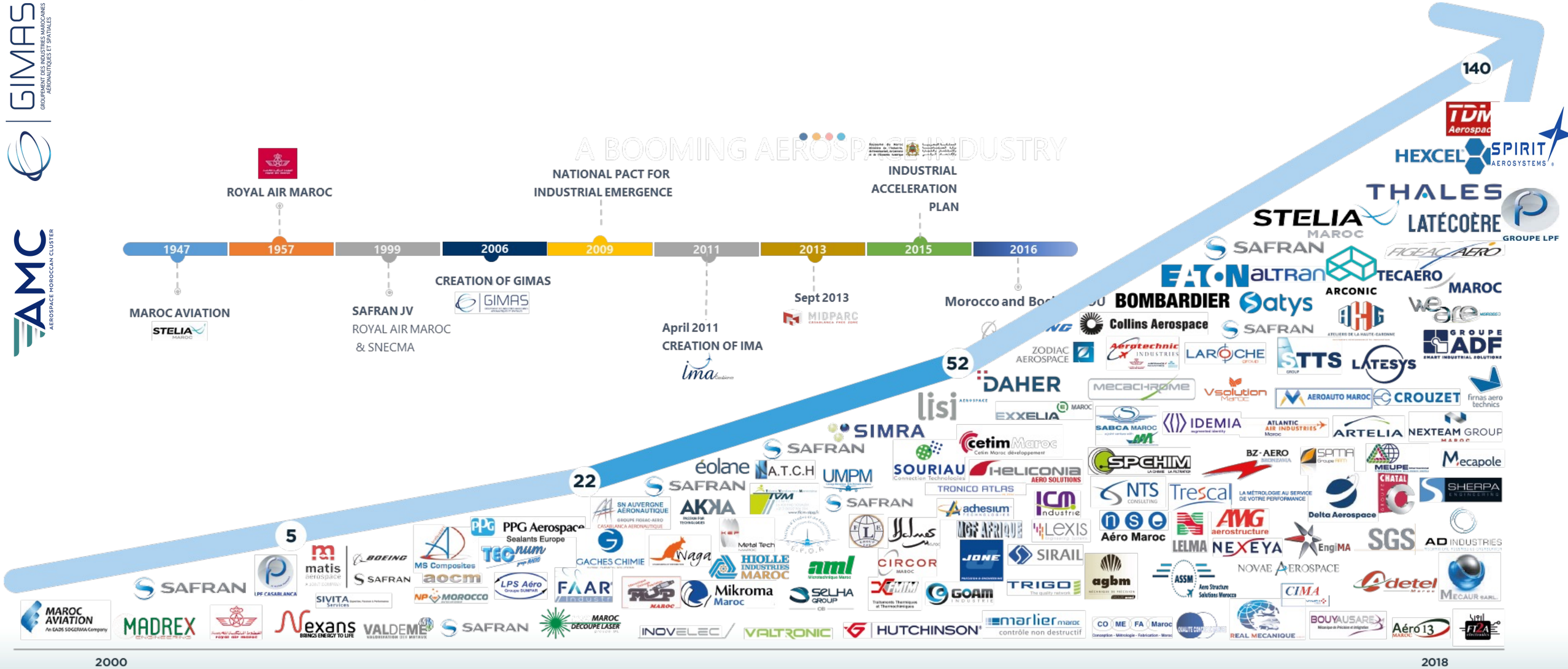
On-time delivery: connected platform; No. 1 maritime connection in Africa

world-class quality: international certification

competitive cost: Competitive high quality labor costs and low export costs through free trade agreements with 55 countries

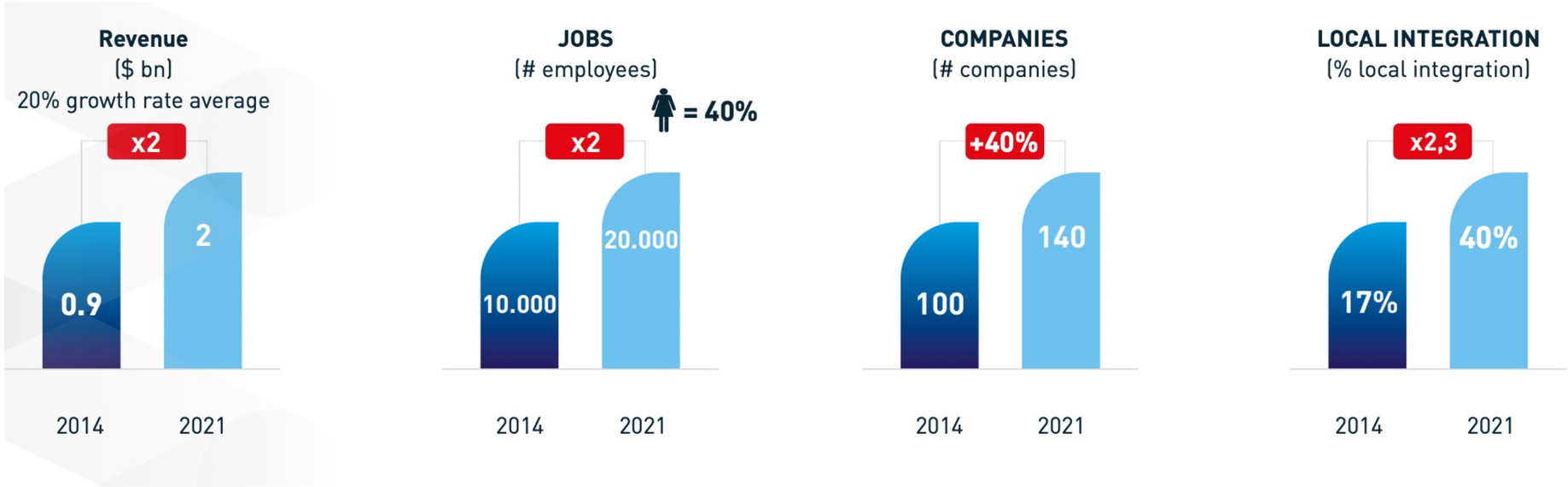
The Aerospace Industry in Morocco

A Growing Industry



The Aerospace Industry in Morocco

Key Figures



Morocco has emerged as a world class platform for the aerospace industry in 20 years

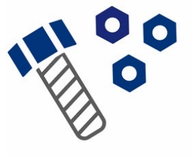
The Aerospace Industry in Morocco

6 Aerospace Ecosystems

Engineering

EWIS

Engine



Assembly

MRO

Composites

The Aerospace Industry in Morocco

Strong Installations

STELIA

2 Sites

1000 Employés

DAHER

3 Sites

590 Employés

matis aerospace
A JOINT COMPANY
BOEING
SAFRAN

1 Site

1100 Employés

SAFRAN
AEROSPACE · DEFENCE · SECURITY

7 Sites

4500 Employés

SPIRIT AEROSYSTEMS

1 Site

350 Employés

Collins Aerospace

1 Site

140 Employés

The Aerospace Industry in Morocco

A Highly Diversified Supply Chain

AERONAUTIC EQUIPMENT

AEROSTRUCTURE

ENGINEERING

MRO

MACHINING

SURFACE TREATMENT

SHEET METAL WORKS

ELECTRICAL WIRING

PARTS **MADE IN MOROCCO**

HIGHLY INTEGRATED CAPABILITIES

STELIA

Fuselage
Airbus A321

SABCA Maroc

upper Fuselage panel
Dassault Falcon

STELIA

Side Panel
Airbus Family

Spirit Aerosystems

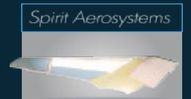
Em door
Bombardier CRJ

STELIA

Pavillon
Airbus A350

SABCA Maroc

Porthole fuselage panel
Falcon 900-2000

Spirit Aerosystems

Winglets
Bombardier CRJ

Spirit Aerosystems

Flaps
Bombardier CRJ

SABCA Maroc

Tail Cone
Airbus A330

STELIA

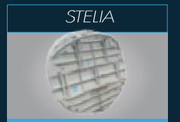
Underbody Boxes
ATR

Spirit Aerosystems

Slats
Bombardier

SABCA Maroc

Depth ruler
Falcon 900-2000

STELIA

Frame
Airbus Family

SABCA Maroc

frames belly support floors
Airbus A380

STELIA

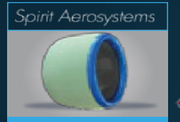
Boxes
Airbus A350

STELIA

Hatch
A320

Safran Nacelles

thrust reverser
Bombardier & Gulfstream

Spirit Aerosystems

Inlet
Bombardier CRJ

STELIA

Tubes & Pipes
Airbus Family

Safran Nacelles

Thrust reverser fan
Bombardier & Gulfstream

Safran Nacelles

thrust reverser
Airbus A320

GOAM

Blades
Engines

MATIS (BOEING/SAFRAN)

Wirings & Harnesses
Boeing family

SAFRAN ELECTRICAL POWER

Wirings & Harnesses
Airbus Family

NEXANS

Wires
Airbus Family

ESTERLINE

Connectors
Airbus Family & Bombardier

Safran Aerosystems Morocco

Actuators - Calculators Densimeters - gauges
Airbus Family Bombardier Dassault

LATÉCOÈRE

Cockpits Control Panel
Airbus A320

CROUZET MAROC

Circuit Breaker Panels
MRJ90

CROUZET MAROC

Electromechanical Circuit Breakers
Airbus Family Boeing 737Max

TRONICO ATLAS

electronic board assembly
Airbus Family

EATON

power electronics modules
Various planes

Collins Aerospace

Side Stick unit
Airbus Family

STELIA

Business Class Seats
Airbus & Boeing Families

HEXCEL

Honey comb
Various planes

STELIA

Overhead Compartment
ATR

STELIA

helmet box
A320

STELIA

equiped panels
A320

DAHER Composite Industrie

Air conditioning parts
Airbus Family

STELIA

Door panel
A320

STELIA

Cockpit Furnishings
Airbus A320

STELIA

Protect panels
A320

STELIA

Cockpit panel
A320

STELIA

Crew seats
A320

THALES

3D natives parts
Various planes

LPF

Taper Cone
CFM 56

FIGEAC AERO

Other machined parts
Airbus Bombardier Dassault

LPF

Brake Piston Plating
A320

Structural Aerospace Morocco

Primary parts
Airbus Family

LPF

Command ring
Engines

ARCONICS

fasteners
Various planes

LPF

Box and tablet pilot
A320

ARM (SPMA)

Other machined parts
Airbus family

LEGEND

- Subassembly aerostructure & engines parts
- interior equipments & composite parts
- Machined & sheet metal parts
- Electrical harnesses, components & parts

Why Such a success?

Successful Colocations

Why Such a success?

Geographical and cultural proximity
A competitive advantage in technology transfer and subsidiary management

16 International airports

1st hub between Europe and Africa

More than 1,200 weekly flights

Strong advantage for technological transfers & subsidiary management

Source : Analyses de la RAM, OACI, ONDA, BCG

Why such a success?

Highly Qualified Human Ressources

Specialist Technicians

Ad hoc training programs jointly developed with investors to address industry specific needs

Subsidized by the government

Aeronautics engineers trained in Morocco

2,500 engineers to be trained per year in Moroccan specialized engineering schools

A growing number of partnerships with leading international universities

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Top engineers trained abroad

Hundreds of Moroccan graduate from top international engineering schools working in Morocco

Source : AMDIE, MIICEN

The Future Starts NOW…

Future Challenges = Innovation Opportunities

Over 40000 Air Planes to be Built

Global

Overview

43,110
Deliveries

4,0%
Traffic growth

2,086K
Personnel Demand

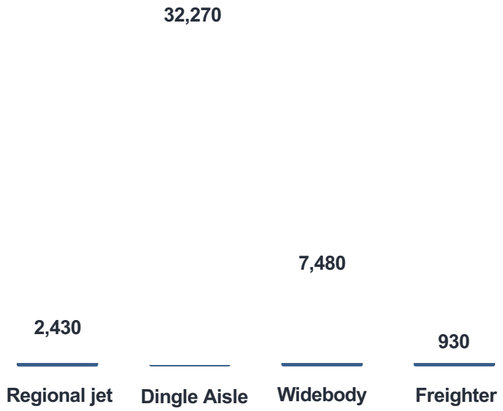
3,2 %
Fleet Growth

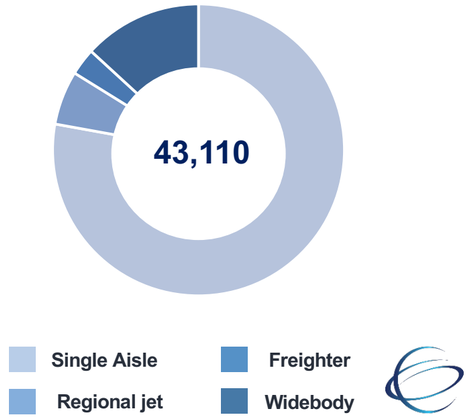
2,5%
GDP growth

43,110
Services Market Values

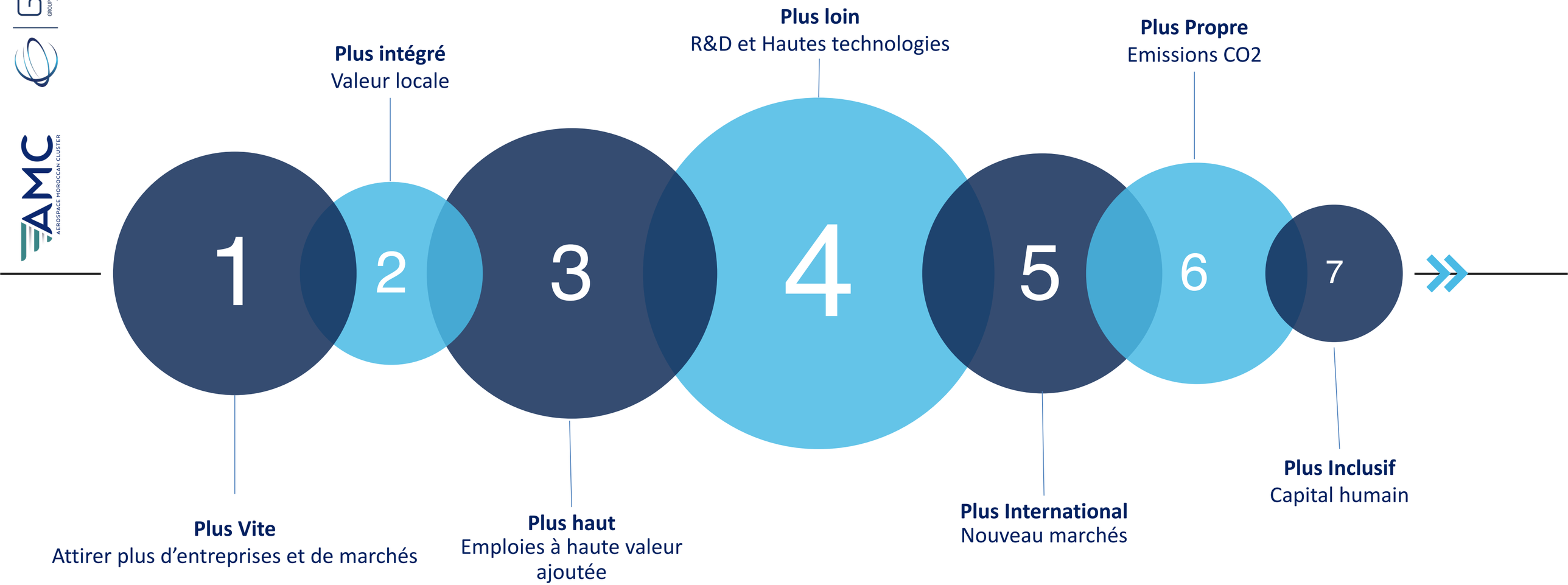
Select Region

- Global
- Africa
- Asia-Pacific
- China
- Europe
- Latin America
- Middle East
- North America
- Northeast Asia
- Oceania
- Russia &Central Asia
- South Asia
- Southeast Asia





The Moroccan Aerospace Industry – Phase 2



MOROCCO AERO 2.0 ECO-SYSTEMS

INGENIERIE R&T

Sustanaible Aviation Full

Engines

Spatial

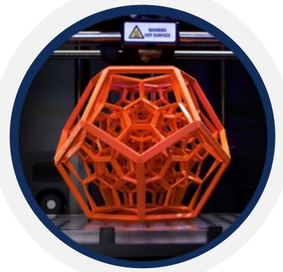
Embedded Electronics

BOEING

SAFRAN

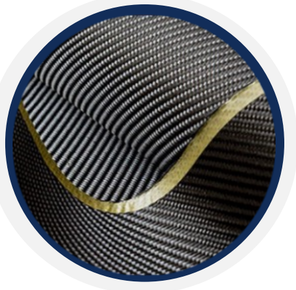
Collins Aerospace

SPIRIT AEROSYSTEMS



Additive Manufacturing

Défense



Composites

GIMAS
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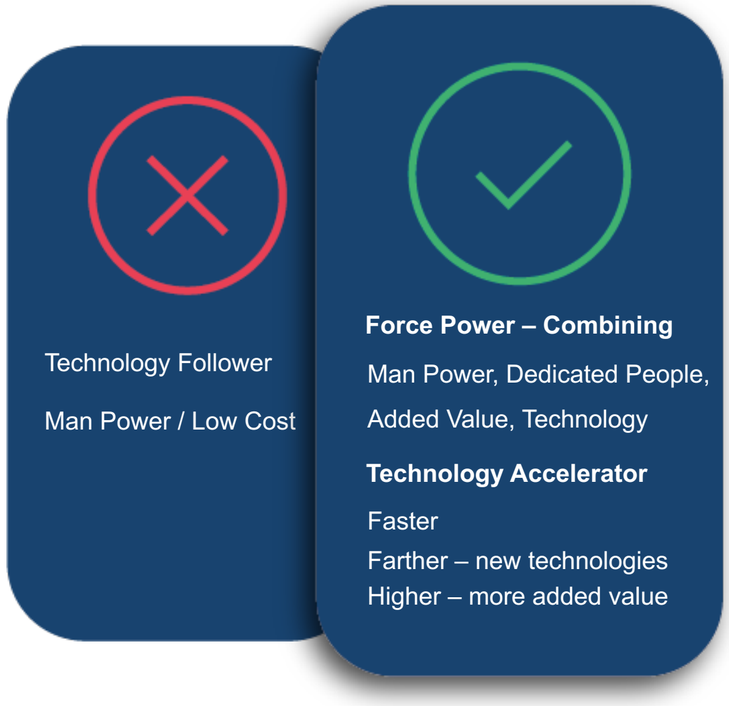
AMC
AEROSPACE MOROCCAN CLUSTER

Future Challenges = Innovation Oportunities

Morocco Phase 2 – Developing Our Technological Place in the Global Industry



Need to Become an Established Research & Technology Base –Including:

- Virtual and Augmented Reality
- Artificial Intelligence
- Additive Manufacturing
- Collaborative Robotics & Automation
- Advanced Materials and Manufacturing

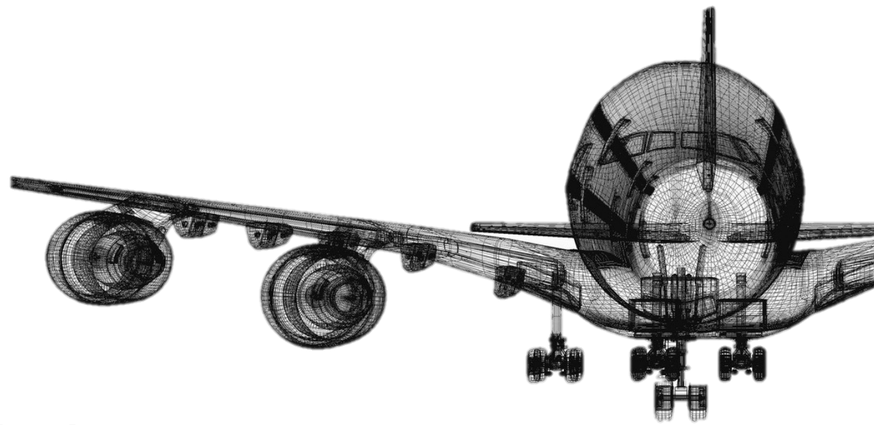
Future Challenges = Innovation Oportunities

Morocco Phase 2 – Developing Our Technological Place in the Global Industry

Why AMC ?

The AMC cluster was born from an observation on the Moroccan aeronautical industry. Taking advantage of the structural and sustainable growth of the sector, as well as the recognised assets of the Moroccan base to attract new players, particularly SMEs with technology and new trades, we can now claim to be in related industries

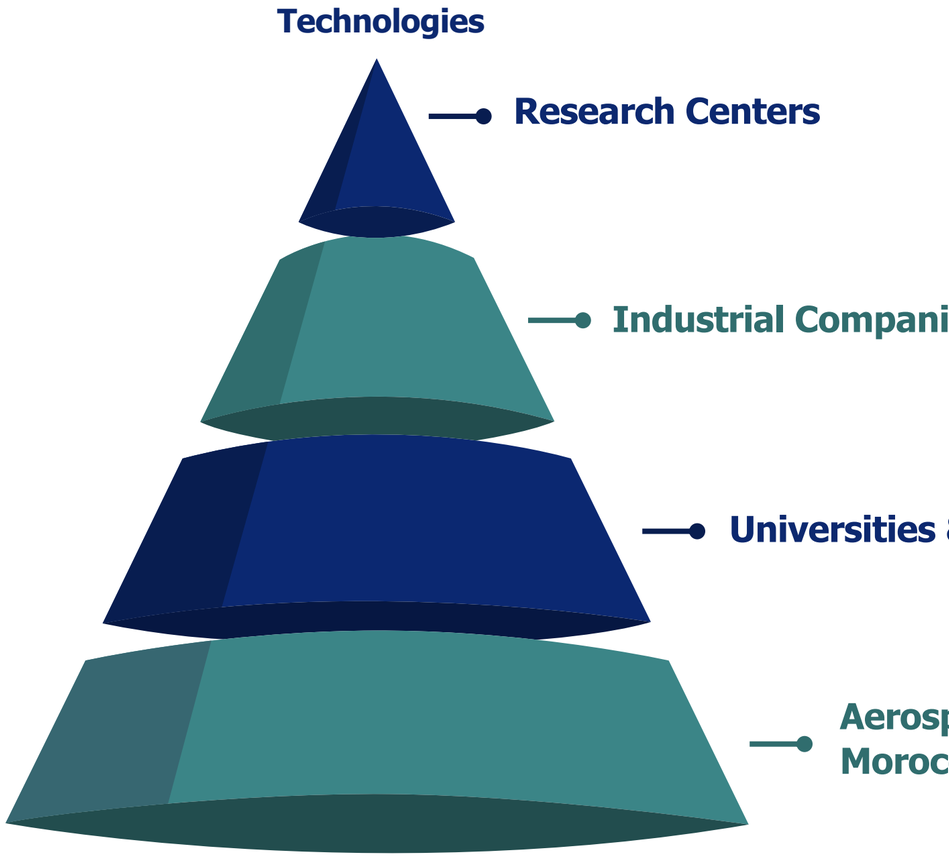
- **Space & Defence**
- **safety and security**
- **Composites Materials**
- **on-board electronics**
- **The medical**
- **Disruptive innovation**
- **maintenance and engineering department**
- **Associated Technological Research**



The Aerospace Moroccan Cluster: GIMAS's Cluster of Innovation

« Men build too many walls, not enough bridges » Isaac Newton

Local integration of Engineering and Technological Research activities



Involvement of Moroccan Academic Actors

Future Challenges = Innovation Oportunities

Goals and Missions

01_ RESEARCH ANDDEVELOPMENT

Promoting R&D, collaborative projects and innovation for the aeronautics sector and federating players around high value-added themes

02_ PROMOTION

Promoting the creation of companies operating in the aerospace sector and supporting the development of their skills, growth and competitiveness.

03_ FORMATION AND MENTORING

Offer formation and mentoring opportunities to help young entrepreneurs and project leaders who want to operate in the sector to establish and develop their business

04_ PUBLIC AND PRIVATE PARTNERSHIP

To offer assistance and advice to public authorities or any other legal or physical person in the fields of the Council in order to promote the aerospace sector.

05_ ACCOMPANIMENT

To develop solidarity between the actors of this sector, the sharing of experience and the various assistance with the organizations and institutions, in order to break the isolation of certain companies especially at the beginning

06_ STARTUPS & SMES

Fto promote the development of SMEs and the creation of start-ups on a national level by representing the operators of the sector to the Public Authorities, Local Authorities, and any other organization, association or federation on a permanent or occasional basis.

Future Challenges = Innovation Oportunities

Sectors and Topics

Aerospace

Composite
Embedded Electronics
Tooling
Engineering

Airports

Passenger and
Cargo Logistics
Equipments

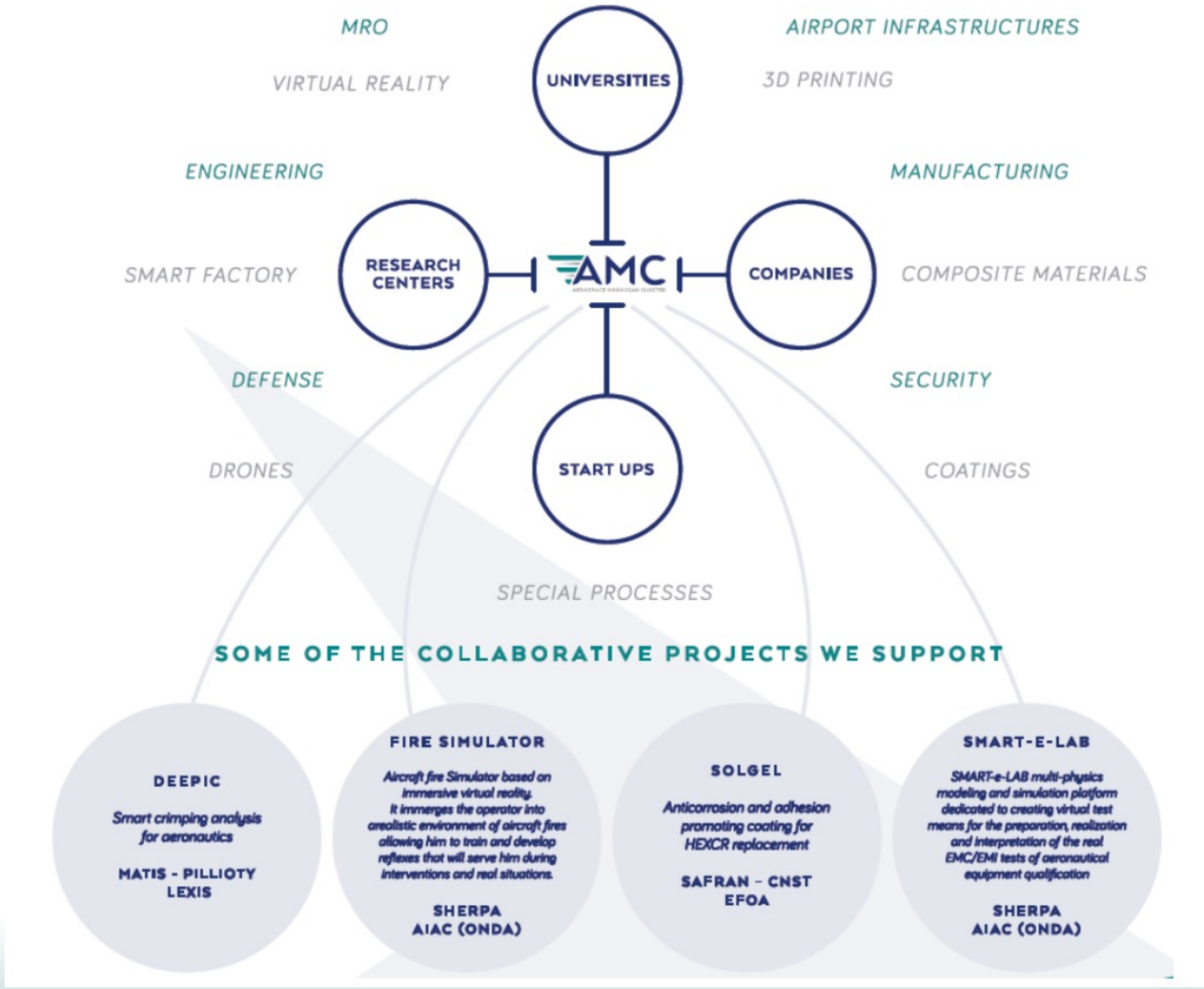
Defense & Security

Identification / Authentification
Content management, cryptography
Electronic Signature, Standardization
Biometric techniques

MRO

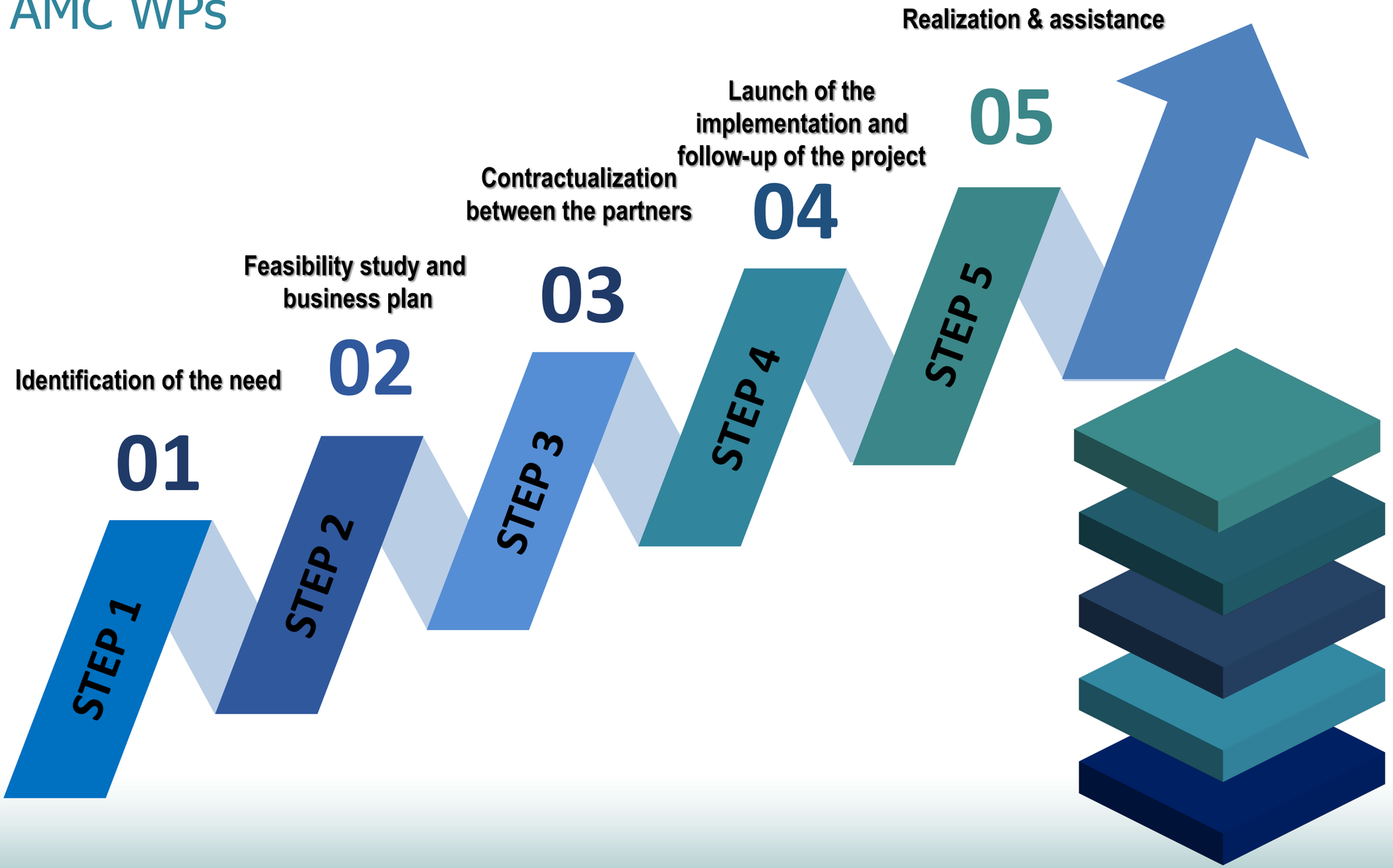
Maintenance
Reparation

The Aerospace Moroccan Cluster: GIMAS's Cluster of Innovation



The Aerospace Moroccan Cluster: GIMAS's Cluster of Innovation

AMC WPs



Our Academic & Institutional Partners

GIMAS
GROUPEMENT DES INDUSTRIES MAROCAINES AÉRONAUTIQUES ET SPATIALES

Royaume du Maroc
Ministère de l'Industrie et du Commerce
المملكة المغربية
وزارة الصناعة والتجارة

MOHAMMED VI POLYTECHNIC UNIVERSITY

UM6P VENTURES

جامعة محمد الخامس بالرباط
Université Mohammed V de Rabat

UEMF
الجامعة الأورومتوسطية بفاس
EUROMED UNIVERSITY OF FES
UNIVERSITÉ EUROMED DE FÈS

AIAC
ACADEMIE INTERNATIONALE MOHAMMED VI DE L'AVIATION CIVILE

UIR
THE INNOVATIVE UNIVERSITY

جامعة مولاي إسماعيل
UNIVERSITÉ MOULAY ISMAÏL

ENSAM
المدرسة الوطنية العليا للفنون و المهن
ÉCOLE NATIONALE SUPÉRIEURE D'ARTS ET MÉTIERS

جامعة عبد المالك السعدي
Université Abdelmalek Essaadi

Fondation de Recherche de Développement et d'Innovation en Sciences et Ingénierie

ENSAM RABAT
جامعة محمد الخامس بالرباط
Université Mohammed V de Rabat
المدرسة الوطنية العليا للفنون والمهن بالرباط
Ecole Nationale Supérieure d'Arts et Métiers de Rabat

MARRAKECH
جامعة القاضي عياض
UNIVERSITÉ CADI AYYAD

CE3M
Cluster Electronique, Mécatronique & Mécanique du Maroc

جامعة الحسن الثاني بالدار البيضاء
UNIVERSITÉ HASSAN II DE CASABLANCA

AMC
AEROSPACE MOROCCAN CLUSTER

Startups are at the hearth of AMC

Among the Startups Accompagnied

ATLAN Space

IsyChain

OCP MAINTENANCE SOLUTIONS

BK INDUSTRIES THINK IT. WE MAKE IT

UralS THE PAINLESS POWER

EAGLE AI

LISOL LIFE FULL OF ENERGY

ARport

ENERCONTROL

KORAIR

ENERGYTek

AMC AEROSPACE MOROCCAN CLUSTER

Morocco as the first African and Arabic country exhibiting in CES LAS VEGAS Since 2018

Le Maroc Aéronautique – L'Innovation

AMC AEROSPACE MOROCCAN CLUSTER · CE3M Cluster Electronique, Mécatronique & Mécanique du Maroc · GIMAS GROUPEMENT DES INDUSTRIES MAROCAINES AÉRONAUTIQUES ET SPATIALES · AMDIE · Kingdom of Morocco Ministry of Industry, Trade, Green and Digital Economy · المملكة المغربية وزارة الصناعة والتجارة والاقتصاد الأخضر والرقمي · CCG INNOV-STARTUP

The Moroccan Aerospace Industry 4.0

GIMAS Acting for the transition of its members to Industry 4.0

Purpose of the project:

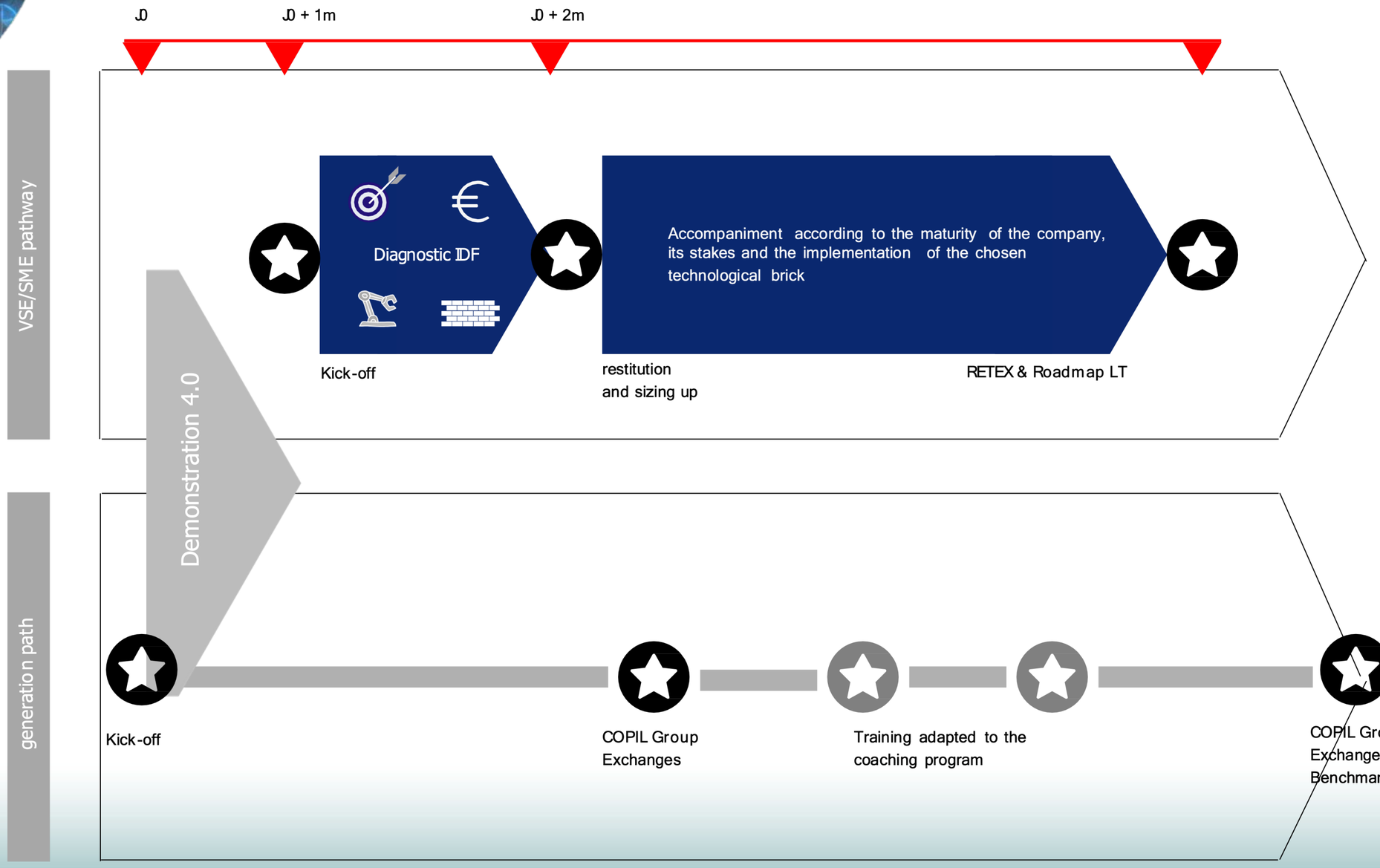
- Create a support project "Industrie du Futur", practical and on the field, differentiated by a scalable project according to the stakes of the companies, as well as support to the files and financing support AND turnkey investments.

- Capitalize on the know-how and methods deployed in the different companies, in order to create a complete ecosystem allowing training, exchange and inter-company benchmarking.

- Deploy synergies between consultants, technologists, solution providers, Fablab on a "Local to local" principle focused on the needs of the SME

The Moroccan Aerospace Industry 4.0

Project's Macro Plan



The GREEN Moroccan Aerospace Challenge

Acting for A Sustainable & Green Industry