Aeronautics Supply Chain in Greece Public – Private partnership. The missing link

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General View

- The Greek Aeronautic sector considered to be strategic because of its importance for NATIONAL DERENCE
- It is also economically important. The annual turn over has increased basically due to defense investment
- On 2004 Greece joined officially ESA investing more than 10M€ yearly
- However, the sector is small and has not experienced the same growth technology-wise
- The industrial sector is dominated by HAI
- The research community although with structural problems performs well both in the fields of excellence and competence

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General View (cont.)

- Greece has good relations with the Balkans, North Africa and the Middle East.
- Geo-politically Greece is well positioned in these opening markets and this is promising for future business in aeronautics.
- Greece could act as a link or even a hub, between Europe and its neighbouring countries.
- Additionally, Greece has a good human potential, with a very large number of engineers and many academics educated in well-known establishments. This is a strong force of attraction for foreign aeronautics companies.

Facts and Figures

year / data	2001	2004
Employment	4000	5000
Industry Turnover (M€)	345	480
Research base employment	400	630

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Facts and Figures (cont.)

Aeronautical and aircraft segments	Total Employment, including aeronautics
Industry (including SMEs and engineering specialists)	7500
Research Institutes / Universities	630
ATM, Airports, Infrastructure	1000
Airlines + Operators	6300
Total	15430

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Facts and Figures (cont.)

Organisation	Technical Sector	Excellence
Hellenic Aerospace Industry	Maintenance, Manufacturing, Electronic Systems	Materials R & D, Manufacturing Methods
INTRACOM/INTRASOFT	TELECOM equipment	Software Development
State Aeroplane Factory	Maintenance of Military a/c	
Olympic Airways Technical Base	Maintenance of Civil Airports	
Olympic Tools	Component Mfg	Mfg Metal Parts, Assembly
THALES International Greece	Electronics Subsystems	Mfg of Electronic Parts
MIRTEC	Engineering Company and Research Institute	Materials, Processes
3 SIGMA SA	Unmanned Aerial Vehicle (UAV)	Development of UAVs
ELFON	Wiring Systems	Mfg of Wiring Systems
ACT	Electromagnetic Compatibility Test Range	Antennas Testing
PLAN AERO	Equipment	Brake Systems
VOSA	Equipment	Mfg Composite Material Structures
MICRON	Component Mfg	Mfg of Metal Parts
General Machining	Component Mfg	Mfg of Metal Parts
IMMG	Engineering Company	Test Machines
ISTRAM	Engineering Company	Design of Advanced Materials and Structures
NAX	Component Mfg	Mfg Metal Parts
INASCO	Engineering Company	Dynamic Behaviour of Structures
Ω-VISION	Engineering Company	Design of Aircraft Structures
Analysis systems research	Engineering Company	Aerodynamics
PARAGON	Engineering Company	Dynamic Behaviour
DAMIGOS	Engineering Company	logistics

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The Greek Technological Capabilities along the supply chain

- EADS
- Thales International Greece
- Dassault Aviation
- SIEMENS (SECURITY SECTOR)
- ALENIA Aeronautica

Invested in Greece in the Aeronautics sector during the last 5 years

HAI invests in engineering and in the fields of

Composites (new production line)

Space Technologies

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The Greek Technological Capabilities along the supply chain

Capacity of Greek aeronautical industry, using AECMA product group classification

Type of activity		Rank capacity
Airframes and Components	Y	2
Engines & Engine Components (inc. propellers & rotor blades)	Y	1
Electrical & Electronic Components & Hardware	Y	3
Computer Software/Services & Databases	Y	4
ATC, Communications Systems and Components	Y	5
Avionics Systems, Instruments & Components	Y	
Composites	Y	

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The Aeronautical Research base in Greece

Estimate of annual spend by source of funds

Source of funds	**annual spend** (M€)
General university funds	5
GSRT thematic programmes	1.2
Framework Programmes	1.8
Industry	0.5 – 0.75
Total (M€)	8.5

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The Aeronautical Research base in Greece (cont.)

Greek universities and research institutes

Research Organisation	Staff	Specialisation	International Partners
National Technical University of Athens	100	Helicopter Aerodynamics, Design of Jet Engine components, CFD methods, RF systems	Westland, Dassault, SNECMA, RR, DLR, etc
University of Patras	150	Characterization of Advanced Materials, Damage Tolerance, Fatigue, Combustion Processes Automatic Control	Airbus, Alenia, Eurocopter, Dassault, Snecma etc
Aristotle University of Thessaloniki	30	Internal Aerodynamics	
University of Athens	20	Airport Systems Automation	Eurocontrol
Technical University of Crete	20	Design of Electrical Equipment	
Helenic Institute of Transport	10	Airport Systems	
Hellenic Airforce Research Center	200	Design of Electronics and Weapon Systems	

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Research capabilities

The rating of the Greek research capabilities

		Research capability ranked 1-10 in terms of current national research capability
1	Flight physics	9
2	Aerostructures	1 or 2
3	Propulsion	1 or 2
4	Aircraft Avionics	3
5	Flight Mechanics	5
6	Integrated Design & Validation	4
7	Air Traffic Management	6
8	Airports	8
9	Human Factors	4
10	Innovative Concepts & scenarios	8

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Greek Aeronautical Research Program

The main industry-related priorities of the current defence strategy are:

- operating existing systems
- extending their life cycle and investing in new platforms for their upgrade;
- smart devices and
- becoming more independent from state funding.

In 2003, the government commissioned a study to inform preparation of a national strategy to improve the technology base relevant to defence.

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Greek Aeronautical Research Program

The main national source of funding for the aeronautics researchers in the public sector is the General Secretariat for Research and Technology (GSRT).

The principal source of income to fund applied research and technology development in the field of aeronautics is the 6th Framework Programme as well as several other international research organisations such as the European Space Agency (ESA).

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Greek Aeronautical Research Program

Aeronautics firms can apply to general business-support programmes, in competition with all industrial sectors as well as specific measures for small businesses and fiscal measures.

Moreover, there is an upcoming investment law that will allow lower taxation for companies that invest in high tech areas.

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The missing Link

A missing link at national level, is **the lack of centralised agencies and active associations for aeronautics**. These types of focal points are necessary for the smaller countries.

The independent ways of development followed by the local Aeronautics Industry and the Research community is also a major problem for the Greek Industry in general since **the technology spill over effects are limited**.

Problematic future for any attempt for public private partnership in the field

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The missing Link

The formation of the **Union of Hellenic Aerospace Manufacturers (HAIG)** could be a way to permit national actors to join forces and to elaborate a common strategy for the future.

The fragmented research base is attempting a similar approach by the formation of a **Virtual Aeronautic Institute** mobilized mainly by the participation of Greece in AirTN

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Future Trends and policy Implementation

- The reorganization of the major player (HAI) resulted in improvement of productivity
- Another important step forward for the Greek aeronautic industry is HAI's plan to join domestic forces and create a technological park
- Large foreign companies, are slowly penetrating the Greek market. Some of these daughter companies have demonstrated outstanding performance.
- Greek aeronautical specialists – and policy makers - advocate a common European approach to the procurement of armaments and centralised European agencies, and in particular a European NASA.
- It is believed that this kind of arrangement would permit Greece to untap its potential to a much greater extent and help businesses to find its place on the European market.