The Aeronautics and Space Cluster of the Basque Country

HEGAN
BASQUE AEROSPACE CLUSTER

AERODAYS 2006
Vienna, 19-21June

Basque Country figures

	1985	2004
Per capita income	10,600 €	25,361
Convergence with Europe	88%	123%(UE_{25}= 100) UE_{15} = 108,3 %
Unemployment	21%	7,8% (UE_{15} = 8,1%)
R&D expenditure	0,5%	1,44%

Source: Basque Government

The economy in brief
THE BASQUE COUNTRY IN SPAIN (2004)

POPULATION	4.89 %
GDP	6.32 %
BILLING INDUSTRY	9.90 %
EXPORTS	9.06 %
IMPORTS	6.02 %

Source: INE

DISTRIBUTION OF GDP* (2004)

	Basque Country	Spain	European Union-25
Agriculture & Fishing	1.18 %	5.90 %	2.10 %
Industry	28.56 %	16.01 %	20.80 %
Construction	8.83 %	10.76 %	5.90 %
Services	61.42 %	67.30 %	71.20 %

•Gross added value. Current prices.

•Source: EUSTAT (Annual accounts for 2004.) y EUROSTAT

HEGAN History brief

- **1970s**
  SENER starts working in the space sector: ESA projects
- **1980s**
  SENER starts working in the aeronautical sector: EJ200
- **1988-1992**
  ITP and GAMESA and some aeronautical SMEs are founded
- **1992**
  The Basque Government commisioned MONITOR (Michael Porter) and SENER an study about the competitiveness of the Aeronautics Industry of the Basque Country
- **1993**
  The Technology Committee of the Aeronautics Cluster is created by GAMESA, ITP, SENER, Technology Centres, the UPV (Basque Country University), and the Industry Department of the Basque Country
- **1997**
  The Aeronautics Cluster of the Basque Country – "HEGAN" – and the CTA (Aeronautical Technologies Centre) are created with GAMESA, ITP and SENER as founder companies.
- **1998-2005**
  29 SMEs and 3 CCTT have become members of the association

Cluster results (I)

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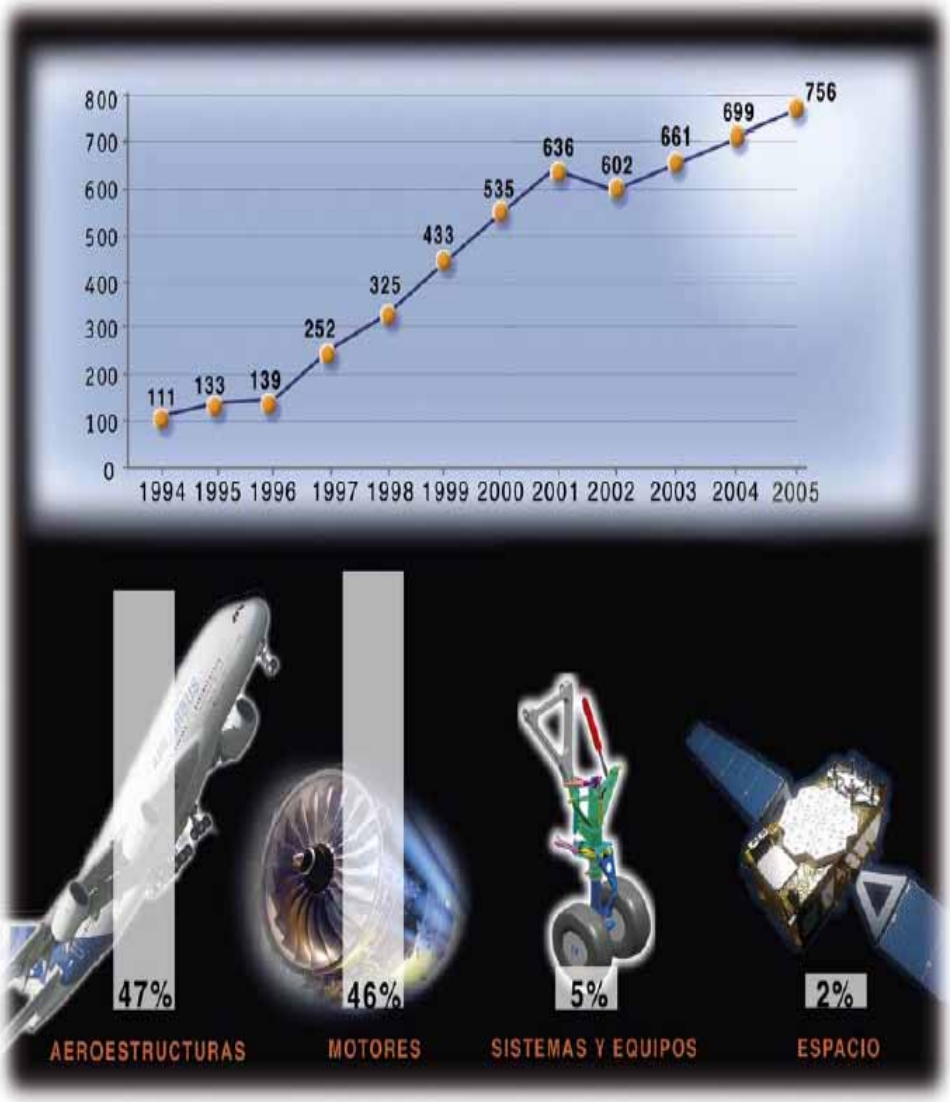
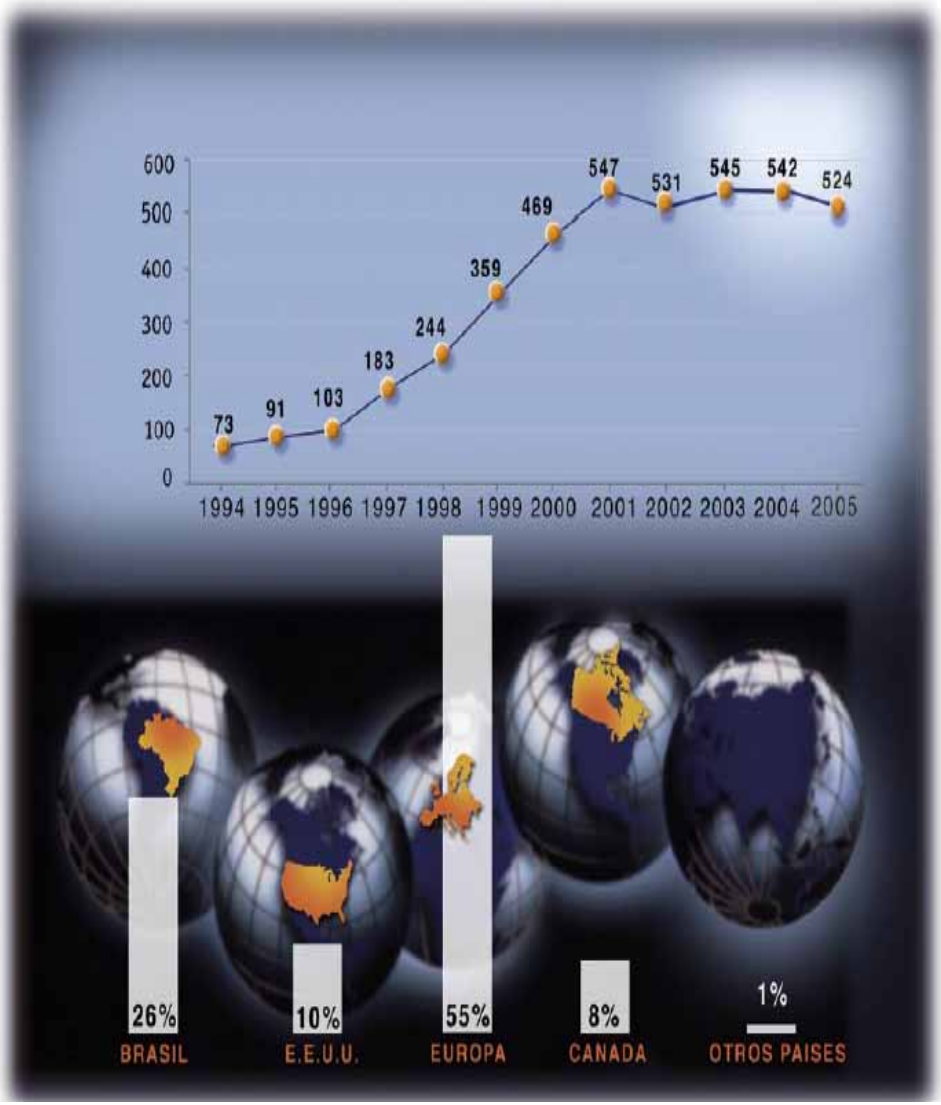
Sales (M€)



Exports (M€)



Cluster results (III)

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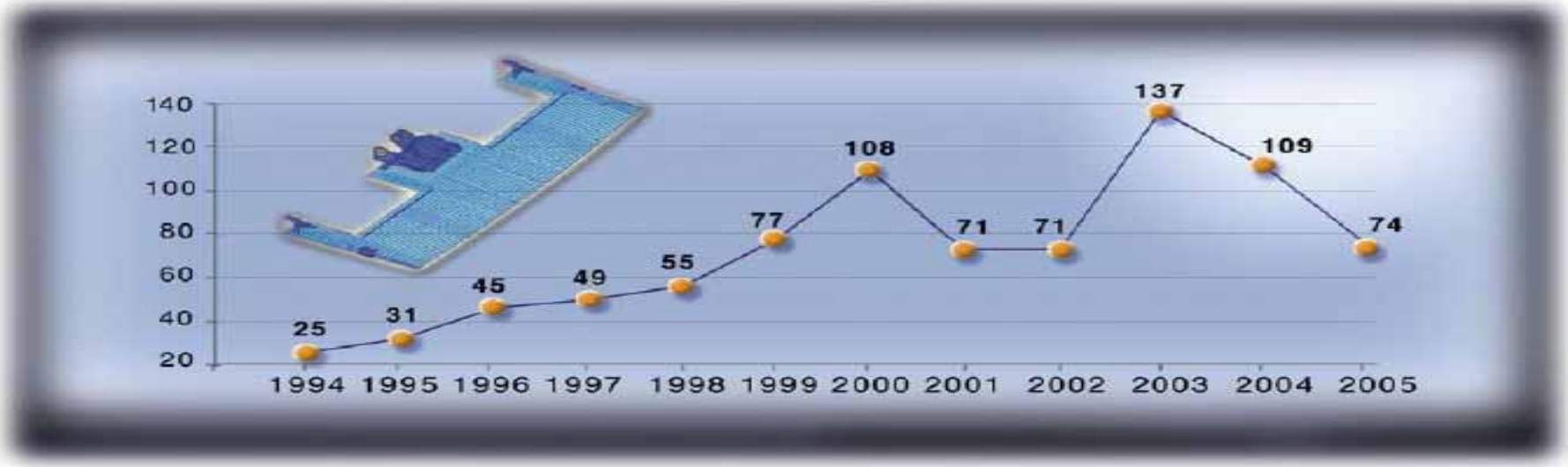
Employment

R&D (M€)



Cluster results (III)

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BASQUE AEROSPACE CLUSTER

- 20% of the Spanish Aeronautical **turnover** and **employment**.
- Average **Investments in R+D** over sales: 20%.
- Average **Exports** over sales: 80%.
- Two industrial **companies** (GAMESA and ITP), an engineering company (SENER) and about 40 High tech and qualified SMEs.
- More than 400.000 square meters of **workshops** and more than 5.000 direct **employees** generated
- More than 200 **machine units**, 100 CNC
- Joint technological and strategic **plan**.
- An **sectorial association** –HEGAN- with the aim of representing the Basque Aeronautical and Space sector and to become an international reference as an association provide answers to the strategic challenges by acting in cooperation: **Technology, Quality and Internationalisation**

Cluster results (IV)

- Experience implementating a ‘reference model for **quality** assurance system’, before EN9100, according to the latest requirements of main aerospace companies. All the companies EN9100 certified and ready for NADCAP. Hegan is member of the IAGQ through EAGQ by being represented by ITP.
- Companies with experience in creating consortiums and in R+D **programmes** at all levels (European, National and Local)
- An Aeronautical Technologies Centre (CTA) with structural and fluidynamic testing capabilities, 2 Tech Corporations, 4 Research Centres, 4 **Universities** and an experienced **Technology** and Innovation Network.
- One **Aeronautical Intensification Course** at the Bilbao Upper Industrial Engineering School designed by the companies.

R+D → **Design** → **Manufacturing** → **Assembly** → **Testing and Certification** → **Product Support**

THANK YOU VERY MUCH!!

http://www.hegan.com/

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Annexe 2006

HEGAN mission

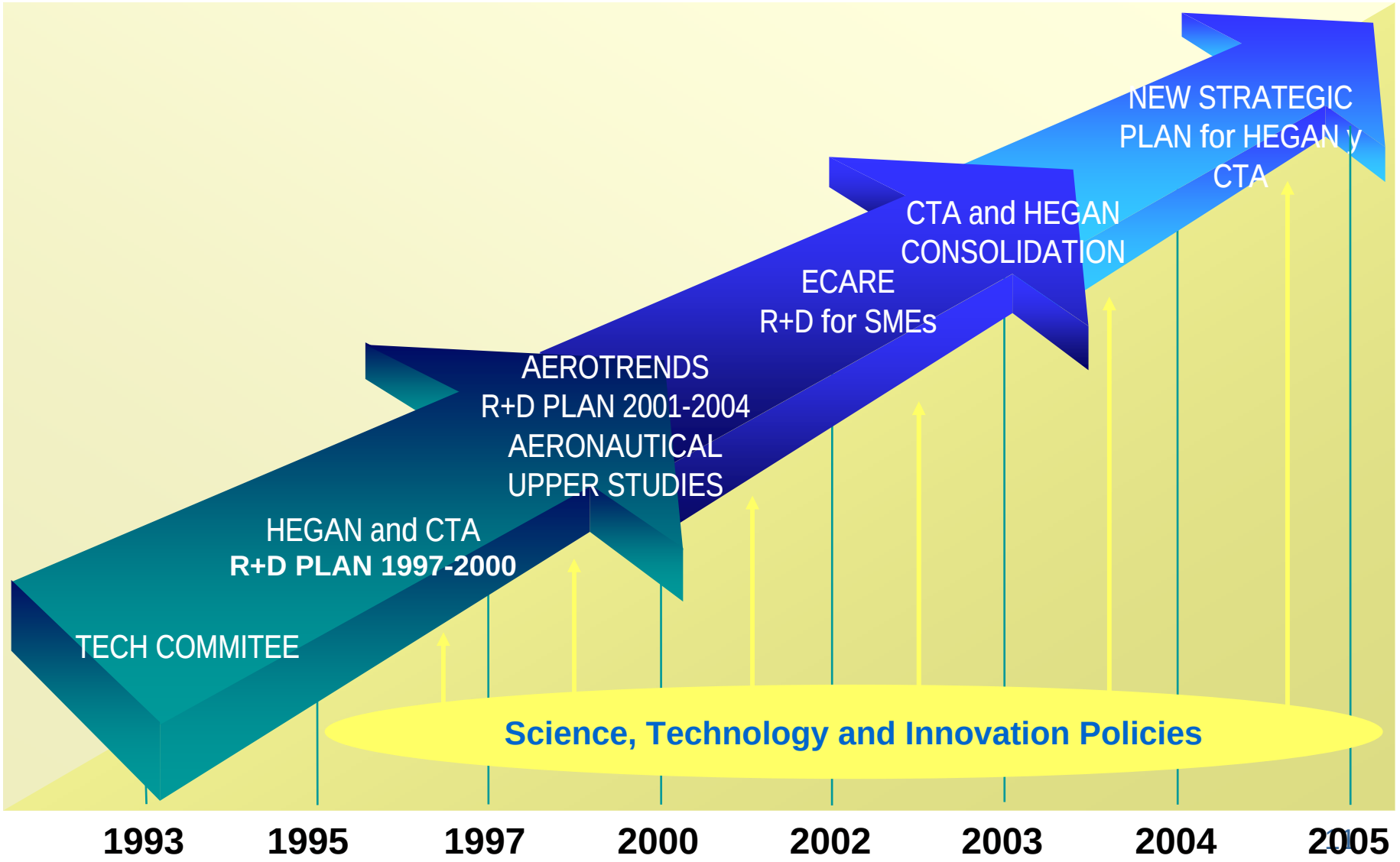
Mission:

- **HEGAN** is a non-profit association which groups together the **Basque aerospace companies of the Basque Country,** whose aim in to **strength, promote and stimulate** the aerospace sector in the Basque Country. Its mission is to contribute to the creation of new high-quality jobs, our society scientifical and technical development and the consolidation of our industry in a better future and more added value activities.

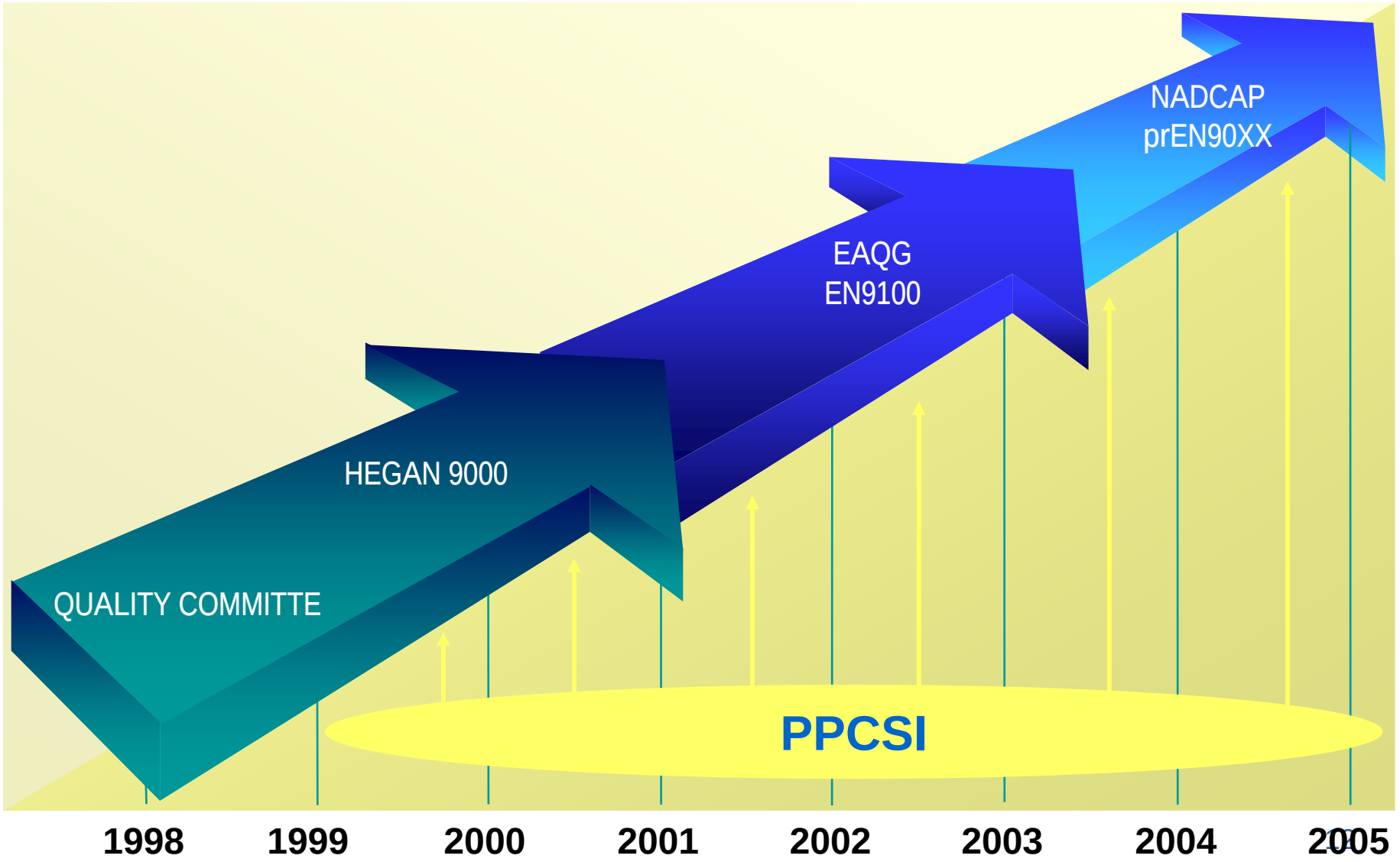
View:

- **HEGAN aims** to represent **the Basque Aeronautical and Space sector** and to become an international reference as an association provide answers **to the strategic challenges** by acting **in cooperation.**

R+D:
Actuation lines 1993 - 2005



Quality:
Actuation lines 1998 - 2005



HEGAN Members

ASSOCIATE COMPANIES:

Gamesa Aeronáutica

ITP GRUPO Industria de Turbo Propulsores S.A.

SENER

Advanced Dynamic Systems

Aero DL Tools

AEROMEC MECANIZADOS • AERONAUTICA

AIBE

AEROTEAM

Aerospace Engineering Group

ELECTRO HILO D G S.L.

ARATZ

MECANIZADOS ASTORKIA, S.L. MECANIZACIÓN CNC Y CAD-CAM

BURDIN BERRI

BURULAN

DMP

Tratamientos Superficiales IONTECH S.A.

LAZPIUR

mesima transformación y almacén de metales aluminio, latón y cobre

metraltec

microfusión de aluminio, s.a.

novalti, s.a.

Nuterisa

PCB Precicast Bilbao

SIEGEL S.A.

SPASA INDUSTRIA AERONÁUTICA

TECNASA TECNOLOGÍAS AEROESPACIALES, S. A.

TECNICHAPA

tey

STTT BERGARA

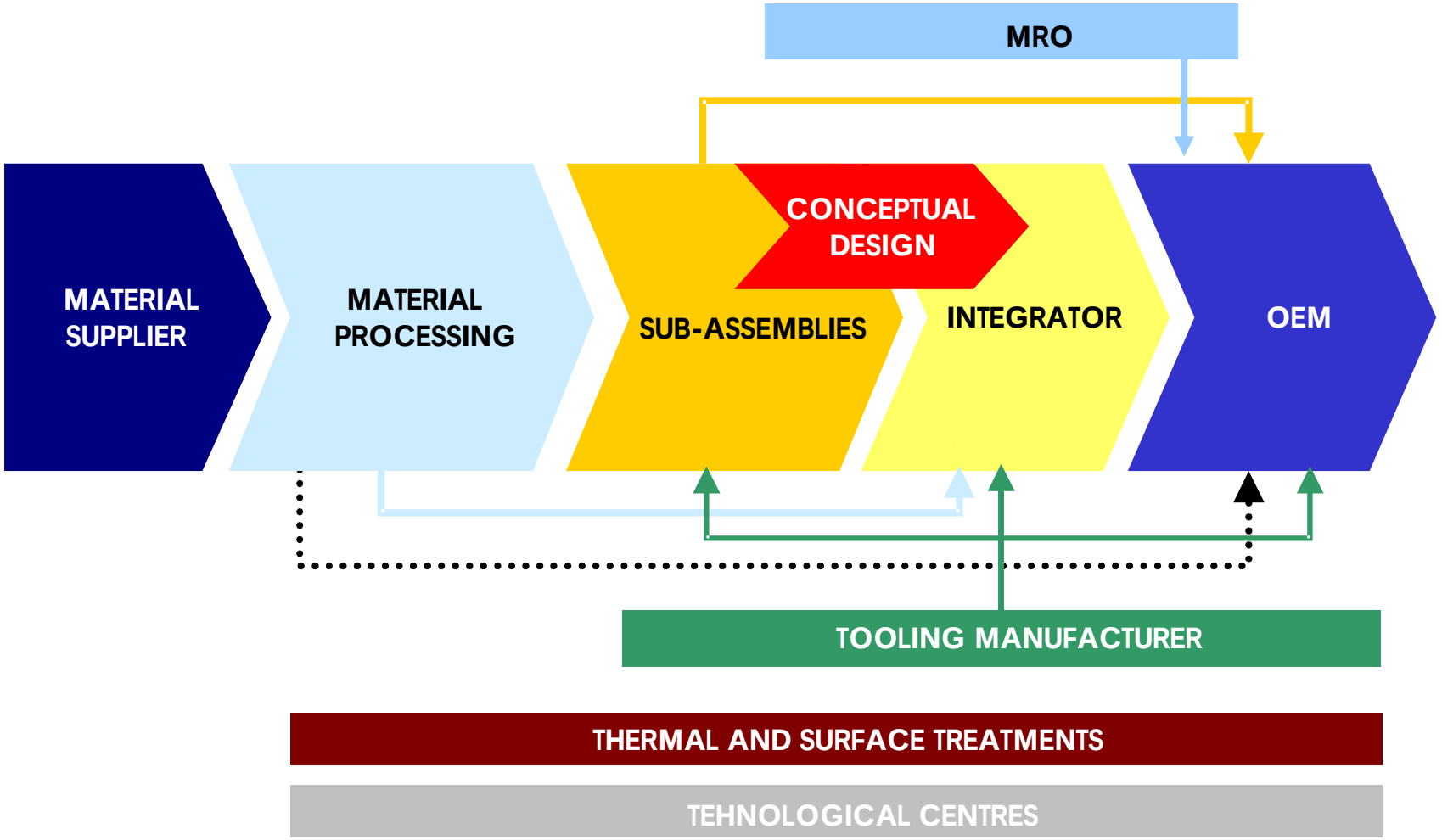
ASSOCIATE TECH. CENTRES:

CTA Centro de Tecnologías Aeronáuticas

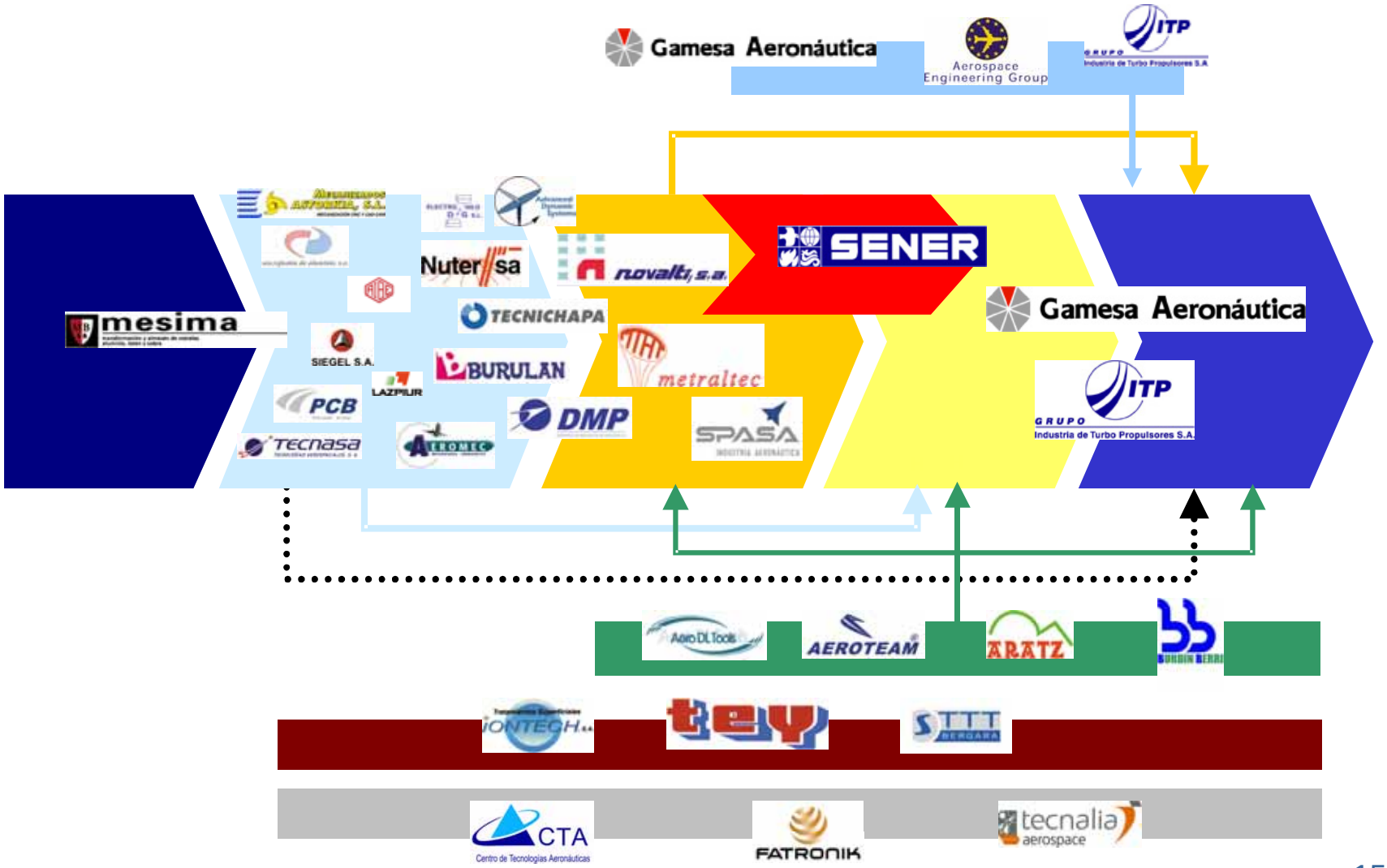
FATRONIK

tecnalia aerospace

Cadena de valor (I)



Cadena de valor (y II)



Main programmes and clients of Cluster members (I)

- **Structures**
  - AIRBUS — A-310, A-318, A-319, A-320, A-321, A-330, A-340, A-350, A-380, A-400M
  - BOEING — B-737, B-747-LCF, 787
  - BOMBARDIER — CRJ 700/900, C-Series
  - DORNIER — DO-728
  - EADS — C-212, C-295, CN-235, TBM700
  - EMBRAER — ERJ-135, ERJ-145, ERJ-170, ERJ-190, Legacy
  - SINO-SWERINGEN — SJ-30
  - SIKORSKY — S-92
  - DASSULT — Falcon 7X
  - BAE Systems — NIMROD-2000
  - 5FP (I+D) — AEROSHAPE, BUHO 2000 and DART
- **Equipments and systems**
  - AIRBUS — A-310, A-320, A-340, A-380, A-310-MRTT
  - MESSIER- DOWTY — A-320, A-340-600, A-380
  - MARTIN BAKER — EUROFIGHTER, NACES and JSF
  - EADS-CASA — EUROFIGHTER, C-235, C-295
  - EUROCOPTER — TIGRE

Main programmes and clients of Cluster members (II)

- **Engines**
  - **EPI: TP-400 for AIRBUS A-400M**
  - **EUROJET: EJ200 for EUROFIGHTER TYPHOON**
  - **GENERAL ELECTRIC: CF700, CT7, F404, F414, LM2500, J79 and T700 and GE90 for BOEING 777,**
  - **HONEYWELL: TF50, AS907, Lycoming T53 and T55, Garrett TPE331 and TFE731**
  - **ITP-SENER: THRUST VECTORING NOZZLE**
  - **M-138**
  - **MTR390 for TIGRE**
  - **PRATT & WHITNEY: PT6-T3, F135 for F35 (JSF), JT8-STD and JT8-200**
  - **ROLLS-ROYCE: TAY, BR 710, TRENT MT50, TRENT MT30; BR 715 for BOEING 717, RB211 for BOEING 747, 757, TRENT-500 for AIRBUS 340-600 and 500; TRENT-700 and 800 for AIRBUS 330 and for BOEING 777, TRENT-900 for AIRBUS 380, TRENT 1000 for BOEING 787**
  - **ROLLS-ROYCE NORTH AMERICA: A250, A601K and T63**
  - **SNECMA: ATAR 9K PLUS, ATAR 09C, ATAR 09K50, CFM 56 for BOEING 737**
  - **TURBOMECA: MAKILA**
  - **V Programa Marco: CPLIFE, DIVIPRO, HIPER-CRACK, HIPSID and SILENCER**

Main programmes and clients of Cluster members (III)

- **Space**
  - **GALILEO system**
  - **ESA and NASA programmes: HERMES, HUBBLE SPACE TELESCOPE, SOHO, ULISSES, HERSCHEL-PLANCK**
  - **ESA: CLUSTER, EGNOS, ENVISAT, EUREKA, HIPPARCOS, INTEGRAL, ISEE-B, ISS-COLUMBUS; ISS-CRV, ROSETTA, SPACELAB and XMM-NEWTON, AURORA, CX-OLEV**
  - **ESA with others: ARTEMIS, METOP and MSG**
  - **Others: ARIANESPACE, ASTRIUM, GE 1i and GE 2i, HELIOS I and II, HISPASAT 1C and 1D, METEOSAT, MINISAT, NETLANDER, OLYMPUS, SPOT-4, SYRACUSE III, YAMAL 200, ARABSAT 4A and B, GALAXY 17, KOREASAT 5**

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Associates Capabilities (I)

HEGAN ASSOCIATES CAPABILITIES

		ADS	AERO DL TOOLS	AEROMEC	AERO. ENG. GR.	AEROTEAM	AIBE	ARATZ	ASTORKIA	BURDIN BERRI	BURULAN	DMP	ELECTROHILO	GAMESA AERONAÚTICA	IONTECH	ITP	LAZPIUR	MESIMA BILBAO	METRALTEC	MICROFUSIÓN DE ALUMINIO	NOVALTI	NUTER	PCB	SENER	SIEGEL	SPASA	TECNASA	TECNICHAPA	TEY	TRAT.TÉR. T.T.T.	CTA	FATRONIK	TECNALIA
AIRFRAME, ENGINE AND SPACE: SYSTEMS AND COMPONENTS	Design Engineering		■			■								■		■					■			■		■						■	■
	Systems Integration													■		■								■		■						■	■	
	Big components Assembly													■		■					■			■		■							■	
	Medium components assembly		■	■		■		■	■	■		■		■		■			■		■	■		■		■		■					■	
	Small componentes assembly		■	■	■	■		■	■	■	■	■		■		■	■		■	■	■	■		■	■	■	■	■				■	
	Materials Supply and Management													■		■		■			■			■		■		■					
	Special cutting and drilling												■			■		■						■		■		■				■	
	Robotics, automation & Production systems									■																■						■	■
	Aeroengine Metallic Component Manufacturing			■		■	■	■				■	■			■	■			■	■	■	■		■	■		■				■	
	Airframe Metallic Component Manufacturing		■	■		■	■	■	■	■	■	■		■					■		■	■			■	■		■				■	
	Space Metallic Component Manufacturing		■	■		■	■	■	■		■	■	■	■			■		■		■	■	■	■	■	■						■	■
	Manufacturing Engineering and CAD-CAM-CAE		■	■		■	■	■	■	■	■	■	■	■		■	■		■	■	■	■	■	■	■	■		■			■	■	
	High precision Machining		■	■		■	■	■	■	■	■	■	■	■		■	■		■	■	■	■			■	■							
	Sheet Metal Work													■		■		■	■									■						
	Metallic Tooling Design and Manufacturing		■	■	■	■	■	■	■	■	■	■	■	■		■	■		■	■	■	■	■	■	■	■		■			■	■	
	Investment casting																			■			■										■
	Thermal and Surface Treatments													■	■	■		■	■		■		■			■			■	■			
	Thermal Spray														■																			■
	Composites Engineering		■											■										■										■
	Composites Manufacturing													■																				■
	Composites Tooling Design		■			■		■		■				■										■								■	■	■
	Composites Tooling Manufacturing		■			■		■		■				■										■										■
	Nondestructive testing					■		■		■		■		■	■	■			■		■		■	■		■	■	■	■	■		■		■
	Testing and Certification													■		■					■		■	■								■		■
	Engine Maintenance Repair & Overhaul															■																		
	Airframe Maintenance Repair & Overhaul													■																				
	Electrical Components Maintenance Repair & Overhaul				■																													

Associates Capabilities (II)

HEGAN ASSOCIATES CAPABILITIES		ADS	AERO DL TOOLS	AEROMEC	AERO. ENG. GR.	AEROTEAM	AIBE	ARATZ	ASTORKIA	BURDIN BERRI	BURULAN	DMP	ELECTROHILO	GAMESA AERONÁUTICA	IONTECH	ITP	LAZPIUR	MESIMA BILBAO	METRALTEC	MICROFUSIÓN DE ALUMINIO	NOVALTI	NUTER	PCB	SENER	SIEGEL	SPASA	TECNASA	TECNICHAPA	TEY	TRAT.TÉR. T.T.T.	CTA	FATRONIK	TECNALIA
EQUIPMENTS AND AVIONICS	Design Engineering	■										■		■		■					■			■		■							■
	Mechanical systems	■				■		■				■		■		■					■			■		■		■			■	■	
	Control and Electronic Systems	■														■								■							■		
	High precision rubbers																										■						
QUALITY	ISO 9001/9002	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■
	EN 9100	■		■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■		■
		INDUSTRY																													TECH. CENTRES		

Key factors

1. Committed, GENEROUS and open-minded entrepreneurs
2. Public support with risk
3. Choice of market segments
4. Projects and partners selection
5. Long-term relationship search
6. Technology generation and investment
7. Constant COOPERATION institutions-companies
8. Look to the future with optimism, forget bad experiences and learn from them